



## aërQ Temperature & Humidity Sensor 8 (ZWA057)



| REVISION RECORD |            |                                          |
|-----------------|------------|------------------------------------------|
| Version         | Date       | Brief description of changes             |
| 0.1             | 2024.12.26 | First revision.                          |
| 0.2             | 2025.09.26 | update                                   |
| 0.3             | 2025.12.16 | Update Relative Humidity                 |
| 0.4             | 2025.12.19 | Update Mold Detection Trigger Conditions |

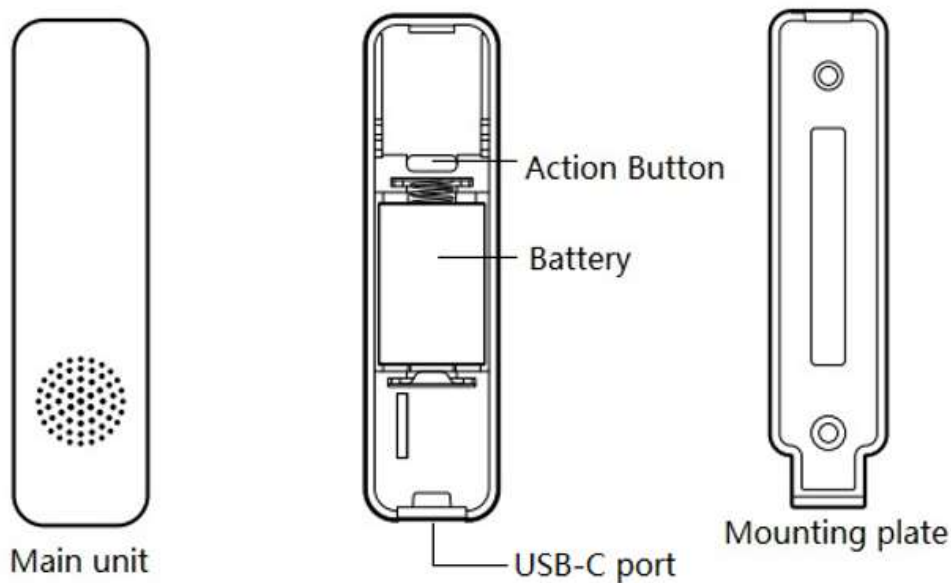
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## 1 Overview

The Temperature Humidity Sensor measures the three air quality parameters temperature, humidity and dew point and reports them to a central controller. Besides this, the device can directly control groups of other Z-Wave® devices on over- and undershooting a set temperature and/or humidity parameter. This can be used to establish control loops for temperature and humidity.

This product supports Security 2 Command Class. While a Security S2 enabled Controller is needed in order to fully use the security feature. This product can be operated in any Z-Wave network with other Z-Wave/ Z-Wave Plus® certified devices from other manufacturers. All mains operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network. This product also supports SmartStart.



| Terminology         | Description                                            |
|---------------------|--------------------------------------------------------|
| Action Button       | Used for networking, resetting and protect the device. |
| Led (red and green) | Used for indicating the current state of the product.  |
| Battery             | Power supply                                           |
| USB                 | Power supply                                           |
| tamper switch       | Trigger tampering report                               |

## 2 Specifications

### 2.1 Structural Characteristics

| Parameter             | Value             |
|-----------------------|-------------------|
| Product Identifier    | ZWA057            |
| Dimensions            | 70x18x19mm        |
| Color                 | White             |
| Usage                 | For indoor use.   |
| Operating Temperature | 32~104°F (0~40°C) |
| Relative Humidity     | 8%~80%            |

### 2.2 Hardware Characteristics

| Parameter                       | Value                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Z-Wave Module                   | EFR32ZG23                                                                                                         |
| Z-Wave TX Power                 | Max:14dBm                                                                                                         |
| Z-Wave Classic Antenna Distance | 40m(Indoor)/150m(outdoor)                                                                                         |
| Buttons                         | Action Button x 1                                                                                                 |
| Indicator Light                 | red, green                                                                                                        |
| Temperature Sensor              | -20 to 85°C (+- 1°C)                                                                                              |
| Relative Humidity Sensor        | 0 to 100% RH +- 3%                                                                                                |
| Dew Point Temperature           | -20 to 85°C (+- 1°C)<br>$T_d = T - (100 - RH) / 5$ ( $T_d$ =Dew Point, $T$ =Temperature, $RH$ =Relative Humidity) |
| Mold Detection                  | When humidity greater than or equal to 60% + configuration 13, it will trigger mold danger.                       |
| Power Type                      | USB or 1*CR14250                                                                                                  |

USB Power Supply:

| Parameter       | Value |
|-----------------|-------|
| Work Current    | 12mA  |
| Standby Current | 2mA   |

Battery Supply:

| Parameter       | Value |
|-----------------|-------|
| Work Current    | 12mA  |
| Standby Current | 10uA  |

### 2.3 Software Characteristics

| Parameter             | Value                                                                             |
|-----------------------|-----------------------------------------------------------------------------------|
| Wireless Technology   | Z-Wave                                                                            |
| Z-Wave Plus           | Z-Wave Plus V2                                                                    |
| Z-Wave Version        | 7.23.2                                                                            |
| Z-Wave Library Type   | Enhanced 232 Slave                                                                |
| Z-Wave Role Type      | Always On Slave (USB Power Supply),<br>Reporting Sleeping Slave (Battery Supply). |
| Generic Device Type   | GENERIC_TYPE_SENSOR_NOTIFICATION(0x07)                                            |
| Specific Device Type  | SPECIFIC_TYPE_NOTIFICATION_SENSOR(0x01)                                           |
| Security Class        | Non-Security, S2 Unauthenticated, and S2 Authenticated                            |
| SmartStart Compatible | Support. After powering on, SmartStart is auto activated.                         |

|                       |                                                                                                                      |
|-----------------------|----------------------------------------------------------------------------------------------------------------------|
| Over The Air (OTA)    | Support. Firmware can be updated via RF.                                                                             |
| Multi Channel Device  | No                                                                                                                   |
| Association           | Support. Refer to Section 4.7 Association Group Info.                                                                |
| Factory Reset         | Support. Refer to Section 3.7 How to factory reset.                                                                  |
| Power-down Memory     | Support. All command settings will stay unchanged even power down.                                                   |
| Low Battery warning   | Support.                                                                                                             |
| Control other product | Support. Control other Z-Wave product directly via Association Group when heat alarm and weather alarm is triggered. |

## 3 Quick Start

### 3.1 Important safety information

Please read this manual carefully. Failure to follow the recommendations in this manual may be dangerous or may violate the law. The manufacturer, importer, distributor and seller shall not be liable for any loss or damage resulting from failure to comply with the instructions in this manual or any other material. Use this equipment only for its intended purpose. Follow the disposal instructions. Do not dispose of electronic equipment in a fire or near open heat sources.

### 3.2 How to install the product

### 3.3 How to add the product

The following will step you through adding the product to your Z-Wave network.

#### 3.3.1 Classic inclusion

1. Power the product.
2. Place your gateway or controller into Z-Wave pair or inclusion mode. (Please refer to your controller/gateway manual on how to do this).
3. Click button 2x times within 1 second. Green LED fast blink which indicates entering inclusion mode, and Node Info will be issued for adding.
4. If your controller supports S2 security, and you want to add the product into S2 Authenticated network, please scan the QR code or enter the PIN code (the underlined 5-digits of the DSK) when prompted. **[IMPORTANT] QR/PIN code can be found on the product. A full DSK string can be found on the packaging.**
5. Wait for the adding process to end.
6. Confirm the adding result. Successful adding will be confirmed by the Z-Wave controller's message or LED status. If adding is successful, Green LED will light stays on 2 seconds and then off. If its LED breathing 3 times and then off, it indicates adding is unsuccessful. The product will auto-reset and then activate SmartStart. Repeat the above steps or contact us for further support if needed.

#### Note:

The classic manually inclusion will exit if click button once during the adding process. Its LED will flash 3 times and then off. The product will auto-reset and activate SmartStart.

#### 3.3.2 SmartStart

1. Scan the Z-Wave QR Code present on the product with a controller providing SmartStart inclusion. No further action is required and the product will be added automatically within 10 minutes after this product being powered on in the network vicinity.
2. Green LED will fast blink after your controller beginning to respond to its SmartStart inclusion request.
3. Confirm the adding result. Successful adding will be confirmed by the Z-Wave controller's message or LED status. If adding is successful, Green LED will stay on 2 seconds and then off. If its LED breathing 3 times and then off, it indicates adding is unsuccessful. The product will auto-reset and then activate SmartStart. Repeat the above steps or contact us for further support if needed.

### 3.4 How to remove the product

1. Make sure the product is powered.
2. Place your gateway or controller into Z-Wave pair or exclusion mode. (Please refer to your controller/gateway manual on how to do this).
3. Click button 2x times within 1 second. Green LED fast blink, which indicates entering exclusion mode.
4. Wait for the removing process to end.
5. Confirm the removing result. Successful removing will be confirmed by the Z-Wave controller's message or LED status. If removing is successful, Green LED will flash 3 times and then off. If its Green LED light stays on 2 seconds and then off, it indicates removing is unsuccessful.

### 3.5 About SmartStart

SmartStart enabled products can be added into a Z-Wave network by scanning the Z-Wave QR Code present on the product with a controller providing SmartStart inclusion. No further action is required and the SmartStart product will be added automatically within 10 minutes of being switched on in the network vicinity. You can find the QR code on the back of the product, like this:



PIN: 05065

The DSK information will be like this: **05065**-41336-16018-47313-50335-02212-29424-38760

### 3.6 About Product

This product can be operated in any Z-Wave network with other Z-Wave certified devices from other manufacturers. All mains operated nodes within the network will act as repeaters regardless of vendor to increase reliability of the network. The device is protected by a tamper switch.

### 3.7 How to factory reset

Reset procedure allows to restore the product back to its factory settings, which means all information about the Z-Wave controller and user configuration will be deleted.

1. Make sure the product is powered.
2. Press and hold the button for at least 12s, and then Factory Reset is performed. The product will issue a Device Reset Locally Command via its Lifeline to notify the Lifeline destination that the product has been reset to its factory default state. And it will perform the reset operation regardless of whether or not the delivery of the Device Reset Locally Notification is successful.

**Note:**

If you press and hold the button, 5 to 12 seconds, the Green LED will fast flash, and then Green LED light 2 seconds until the factory settings are restored.

Resetting the product is not the recommended way of removing the product from the Z-Wave network. Use reset procedure only if the primary controller is missing or inoperable. Certain product removal can be achieved by the procedure of removing described in "How to remove the product".

### 3.8 Long Range

ZWA057 A (US\_LR) can be included using Z-Wave Long Range.

ZWA057 C (EU\_LR) can be included using Z-Wave Long Range.

### 3.9 About Z-Wave Role Type

1. When include to the network using USB power, the role type of the product is Always On. Changing to battery power will keep the role type in its network, which is also a Always On Slave.
2. When powered by battery and include to the network, the role type of the product is Reporting Sleeping. Changing to USB power supply will keep the role type in its network, which is also Reporting Sleeping Slave.

## 4 Software Function Definition

### 4.1 User Behavior Interaction

The following brightness levels are all 100% unless otherwise specified.

| User behavior — status                   | Out of the Z-Wave network                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | In the Z-Wave network                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power OFF                                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Power ON                                 | <p>1, The red and green led will on for 1 second, indicating self inspection.</p> <p>2, The green led breathing 3 times and then turn off, indication out the Z-Wave network.</p> <p>3, Send Inclusion Requests for SmartStart Learn Mode.</p>                                                                                                                                                                                                                                                                                                                        | <p>1, The red and green led will on for 1 second, indicating self inspection</p> <p>2, LED will light up green for 2 seconds and turn off, indicating in the Z-Wave network.</p> <p>3, Send Wake Up Notification.</p> <p>4, Send all sensor data</p> <p>LED will become flash green once, and device will wake up for 15 seconds.</p>                                                                                                                                                                        |
| Click Z-Wave button once                 | <p><b>1, Exit Classic Inclusion Learn Mode:</b></p> <p>If during the Classic Inclusion Learn Mode, the Classic Learn Mode will exit. LED will turn off.</p> <p><b>2, Indicate network status</b></p> <p>The green led breathing 3 times and then turn off.</p>                                                                                                                                                                                                                                                                                                        | <p><b>1, Exit Classic Inclusion Learn Mode:</b></p> <p>If during the Classic Inclusion Learn Mode, the Classic Learn Mode will exit. LED will turn off.</p> <p><b>2, Send Wake Up Notification</b></p> <p>green led will on for 1 second, and device will wake up for 15 seconds (if received wakeup no more information, will go to sleep immediately).</p>                                                                                                                                                 |
| Click Z-Wave button twice                | <p><b>1. Send Node Info for Adding.</b></p> <p>LED will blink green for 30s until it is added into the network.</p> <p>If Adding succeeds, LED will light up green for 2 seconds</p> <p>If Adding fails, LED will turn off. Device will auto-reset and then activate SmartStart Learn Mode again.</p> <p><b>2.Exit Classic Inclusion Learn Mode:</b></p> <p>If Z-Wave button is clicked again during the Classic Inclusion Learn Mode, the Classic Learn Mode will exit. LED will turn off. Device will auto-reset and then activate SmartStart Learn Mode again.</p> | <p><b>1. Send Node Info for Removing.</b></p> <p>LED will blink green for 30 seconds until it is removed from the network.</p> <p>If Removing succeeds, LED will light up green for 2 seconds and become breathing light 3 times.</p> <p>If Removing fails, LED will light up green for 1 seconds and turn off</p> <p><b>2.Exit Classic exclusion Learn Mode:</b></p> <p>If Z-Wave button is clicked again during the Classic exclusion Learn Mode, the Classic Learn Mode will exit. LED will turn off.</p> |
| Press and hold Z-Wave button for (0, 1s] | LED: OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | LED: OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| hold Z-Wave button for (1, 3s]           | Green light on 10%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Green light on 10%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| hold Z-Wave button for (3, 5s]           | Green light on 100%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Green light on 100%, Release and enter sensor reporting mode, Send battery report, multilevel sensor report(Temperature/Humidity/ Dew Point Temperature)                                                                                                                                                                                                                                                                                                                                                     |
| Press and hold Z-Wave button for         | Green Led will accelerate Flash.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Green Led will accelerate Flash.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

|                                       |                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (5, 12s]                              |                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Press and hold Z-Wave button for >12s | <b>Factory Reset And Restart</b><br>Green Led will become constantly light for 1 second, and become breathing light indicates the reset is success. | <b>Factory Reset AND Restart.</b><br>Green Led will become constantly light for 1 second, and become breathing light.<br>The device will issue a Device Reset Locally Command via its Lifeline to notify the Lifeline destination that the device has been reset to its factory default state. And it will perform the reset operation regardless of whether or not the delivery of the Device Reset Locally Notification is successful. |
| wakeup notification of Periodic       | N/A                                                                                                                                                 | LED will light up green for 1 seconds and turn off                                                                                                                                                                                                                                                                                                                                                                                       |
| Multilevel report of Periodic         | N/A                                                                                                                                                 | LED will light up green for 1 seconds and turn off                                                                                                                                                                                                                                                                                                                                                                                       |
| Mold danger alarm or idle             | N/A                                                                                                                                                 | LED will light up red for 1 seconds and turn off                                                                                                                                                                                                                                                                                                                                                                                         |
| Plug in or unplug the USB             | The red led will light up green for 1 seconds and the green led breathing 3 times and then turn off.                                                | LED will light up red for 1 seconds and turn off                                                                                                                                                                                                                                                                                                                                                                                         |
| Tamper triggered or released          | The red led will light up green for 1 seconds and the green led breathing 3 times and then turn off.                                                | LED will light up red for 1 seconds and turn off                                                                                                                                                                                                                                                                                                                                                                                         |

## 4.2 Supported Command Classes

In order to increase interoperability with legacy controlling nodes, this device can reply to Manufacturer Specific Get Commands received non-securely if it was granted the S0 network key as its highest Security Class.

| Command Class             | Version | S2 Securely added  |                |
|---------------------------|---------|--------------------|----------------|
|                           |         | Non-secure CC List | Secure CC List |
| ZWAVEPLUS_INFO            | 2       | Support            | Support        |
| ASSOCIATION               | 2       |                    | Support        |
| MULTI_CHANNEL_ASSOCIATION | 3       |                    | Support        |
| ASSOCIATION_GROUP_INFO    | 3       |                    | Support        |
| TRANSPORT_SERVICE         | 2       | Support            | Support        |
| VERSION                   | 3       |                    | Support        |
| MANUFACTURER_SPECIFIC     | 2       |                    | Support        |
| DEVICE_RESET_LOCALLY      | 1       |                    | Support        |
| INDICATOR                 | 3       |                    | Support        |
| POWERLEVEL                | 1       |                    | Support        |
| BATTERY                   | 1       |                    | Support        |
| SENSOR_BINARY             | 2       |                    | Support        |
| CONFIGURATION             | 4       |                    | Support        |

|                    |    |         |         |
|--------------------|----|---------|---------|
| SECURITY           | 1  | Support | Support |
| SECURITY_2         | 1  | Support | Support |
| NOTIFICATION       | 8  |         | Support |
| WAKE_UP            | 2  |         | Support |
| SUPERVISION        | 1  | Support | Support |
| FIRMWARE_UPDATE_MD | 5  |         | Support |
| MULTILEVEL SENSER  | 11 |         | Support |

### 4.3 Basic Command Class mapping

Basic Command Class is not mapped to any of the supported command classes.

### 4.4 Z-Wave Plus Info

| Parameter           | Value                                                                                                                                              |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Z-Wave Plus Version | 2                                                                                                                                                  |
| Z-Wave Plus Version | USB Supply: 5 (ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_END_NODE_ALWAYS_ON)<br>Battery Supply: 6 (ZWAVEPLUS_INFO_REPORT_ROLE_TYPE_SLAVE_SLEEPING_REPORTING) |
| Node Type           | 0 (ZWAVEPLUS_INFO_REPORT_NODE_TYPE_ZWAVEPLUS_NODE)                                                                                                 |
| Installer Icon Type | 0x0C10 (ICON_TYPE_SPECIFIC_SENSOR_NOTIFICATION_WEATHER_ALARM)                                                                                      |
| User Icon Type      | 0x0C10 (ICON_TYPE_SPECIFIC_SENSOR_NOTIFICATION_WEATHER_ALARM)                                                                                      |

Mark:

1. When include to the network using USB power, the role type of the product is Always On. Changing to battery power will keep the role type in its network, which is also a Always On Slave.
2. When powered by battery and include to the network, the role type of the product is Reporting Sleeping. Changing to USB power supply will keep the role type in its network, which is also Reporting Sleeping Slave.

### 4.5 Manufacturer Specific

| Parameter         | Value                        |
|-------------------|------------------------------|
| Manufacturer ID 1 | 0x03                         |
| Manufacturer ID 2 | 0x71                         |
| Product Type ID 1 | 0x00(EU), 0x01(US), 0x02(AU) |
| Product Type ID 2 | 0x02(PRODUCT_TYPE_ID_SENSOR) |
| Product ID 1      | 0x00                         |
| Product ID 2      | 0x39 (57)                    |

### 4.6 Version

| Parameter                    | Value     |
|------------------------------|-----------|
| Z-Wave Protocol Library Type | 0x03      |
| Z-Wave Protocol Version      | 0x07      |
| Z-Wave Protocol Sub Version  | 0x16      |
| Firmware 0 Version           | 0x01      |
| Firmware 0 Sub Version       | 0x00      |
| Hardware Version             | 0x39 (57) |
| Number of firmware targets   | 0x00      |

## 4.7 Association Group Info

| ID | Name                     | Node count | Profile                              | Function                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----|--------------------------|------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | Lifeline                 | 5          | General: Lifeline (0x0001)           | <b>Device Reset Locally Notification:</b><br>Issued when Factory Reset is performed.<br><b>Battery Report</b><br>Issued when the battery power changes by more than 10%.<br><b>Sensor Binary Report</b><br>Issued when Mold danger alarm.<br><b>Multilevel Sensor Report</b><br>Issued when timed report, threshold report, limit report.<br><b>Notification Report</b><br>Issued when Tamper Alarm, Heat alarm, Weather Alarm, Power Management Alarm. |
| 2  | Temperature High Trigger | 5          | Notification: Heat alarm(0x7104)     | <b>Basic Set</b><br>Issued when the temperature detected is higher than set value by Configuration parameter 14.                                                                                                                                                                                                                                                                                                                                        |
| 3  | Temperature Low Trigger  | 5          | Notification: Heat alarm(0x7104)     | <b>Basic Set</b><br>Issued when the temperature detected is lower than set value by Configuration parameter 15.                                                                                                                                                                                                                                                                                                                                         |
| 4  | Humidity High Trigger    | 5          | Notification: Weather alarm (0x7110) | <b>Basic Set</b><br>Issued when the humidity detected is higher than set value by Configuration parameter 16.                                                                                                                                                                                                                                                                                                                                           |
| 5  | Humidity Low Trigger     | 5          | Notification: Weather alarm (0x7110) | <b>Basic Set</b><br>Issued when the humidity detected is lower than set value by Configuration parameter 17.                                                                                                                                                                                                                                                                                                                                            |
| 6  | Air Temperature          | 5          | Notification: Heat alarm(0x7104)     | <b>Multilevel Sensor Report</b><br>Issued when timed report, threshold report, limit report.                                                                                                                                                                                                                                                                                                                                                            |
| 7  | Mold danger              | 5          | Notification: Weather alarm(0x7110)  | <b>Notification Report:</b><br>Sends alarm messages when Mold danger.<br>(When humidity greater than or equal to 60% + configuration 13, it will trigger mold danger.)                                                                                                                                                                                                                                                                                  |
| 8  | Tamper                   | 5          | Notification: Home security (0x7107) | <b>Notification Report:</b><br>Sends alarm messages when tamper is tripped.                                                                                                                                                                                                                                                                                                                                                                             |

## 4.8 Notification

| Notification Type |      | Notification Events    |      | Description                                                                                 |
|-------------------|------|------------------------|------|---------------------------------------------------------------------------------------------|
| Heat Alarm        | 0x04 | State Idle             | 0x00 | Issued when overheat or under heat alarm removed.                                           |
|                   |      | Overheat detected      | 0x02 | Issued when detect temperature is higher than set value by Configuration parameter 14.      |
|                   |      | Under heat detected    | 0x06 | Issued when detect temperature is lower than set value by Configuration parameter 15.       |
| Weather Alarm     | 0x10 | State Idle             | 0x00 | Issued when Moisture Alarm removed.                                                         |
|                   |      | Moisture Alarm         | 0x02 | When humidity greater than or equal to 60% + configuration 13, it will trigger mold danger. |
| Power Management  | 0x08 | State Idle             | 0x00 | Issued when replace new battery that battery power more than 90%.                           |
|                   |      | Power has been applied | 0x01 | Power has been applied                                                                      |
|                   |      | AC mains disconnected  | 0x02 | Supply by battery                                                                           |
|                   |      | AC mains re-connected  | 0x03 | Supply by USB                                                                               |
|                   |      | Replace battery now    | 0x0B | Issued when the battery power lower than 20%.                                               |
| Home Security     | 0x07 | Tamper Removed         | 0x03 | Tamper removed                                                                              |
|                   |      | State idle             | 0x00 | Going to idle                                                                               |

## 4.9 Wake Up

| Parameter                        | Value    | Time         |
|----------------------------------|----------|--------------|
| Min Wake Up Interval Seconds     | 0x000E10 | 3600 seconds |
| Max Wake Up Interval Seconds     | 0xEFF100 | 182 days     |
| Default Wake Up Interval Seconds | 0x093A80 | 7 days       |
| Wake Up Interval Step Seconds    | 0x0000F0 | 240 seconds  |

## 4.10 Binary Sensor

| Sensor Type | Sensor Value | Description |
|-------------|--------------|-------------|
| GENERAL     | 0x01         | 0xFF        |
|             | 0x00         | Mold danger |
|             |              | 0x00        |
|             |              | Mold Idle   |

## 4.11 Multilevel Sensor

| Sensor Type           | Support Scale | Measure Range        |
|-----------------------|---------------|----------------------|
| Temperature           | 0x01          | Celsius (C)          |
|                       |               | Fahrenheit (F)       |
| Relative Humidity     | 0x05          | Percentage value (%) |
| Dew Point Temperature | 0x0B          | Celsius (C)          |
|                       |               | Fahrenheit (F)       |

## 4.12 Battery

1. The 2.90V or more battery voltage corresponds to 100% battery level, and 2.60V or less corresponds to 0%.
2. If send Battery Get to the device, it will issue Battery Report with battery level to the requester when waked up.
3. If waked up or power on, it will detect battery level, and issue Battery Report via Lifeline when battery level change over 10%.
4. If waked up or power on, it will detect battery level, and issue Battery Report 0xFF via Lifeline when battery level is less than the value of configuration parameter 23.

## 4.13 Indicator

| Indicator ID                | Property ID                     |
|-----------------------------|---------------------------------|
| Node Identify<br>(blue Led) | 0x50                            |
|                             | On Off Period                   |
|                             | On Off Cycles                   |
|                             | On time within an On/Off period |

## 4.14 Configuration

| Parameter | 0x01 (1)                 |
|-----------|--------------------------|
| Name      | Set threshold Check Time |

|             |                                                                                                                                               |                  |               |         |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------|---------|
| Info        | Set threshold Check Time                                                                                                                      |                  |               |         |
| Properties  | Size                                                                                                                                          | 4                | Min Value     | 0       |
|             | Format                                                                                                                                        | Unsigned Integer | Max Value     | 2678400 |
|             | Read-only                                                                                                                                     | False            | Default Value | 900     |
|             | Altering capabilities                                                                                                                         | False            | Advanced      | False   |
| Description | When using battery power, follow this configuration, the minimum time is 30 seconds.<br>When using USB power supply, for real-time detection. |                  |               |         |
|             | Value                                                                                                                                         | Function         |               |         |
|             | 0                                                                                                                                             | Disable          |               |         |
|             | 30~65535                                                                                                                                      | Seconds          |               |         |

|             |                                                              |                  |               |                     |
|-------------|--------------------------------------------------------------|------------------|---------------|---------------------|
| Parameter   | 0x02 (2)                                                     |                  |               |                     |
| Name        | Minimum temperature change to report                         |                  |               |                     |
| Info        | Trigger temperature report                                   |                  |               |                     |
| Properties  | Size                                                         | 1                | Min Value     | 0                   |
|             | Format                                                       | Unsigned Integer | Max Value     | 255                 |
|             | Read-only                                                    | False            | Default Value | 20(EU,ANZ) / 36(US) |
|             | Altering capabilities                                        | False            | Advanced      | False               |
| Description | The check interval time is set by configuration parameter 1. |                  |               |                     |
|             | Value                                                        | Function         |               |                     |
|             | 0                                                            | Disable          |               |                     |
|             | 1~255                                                        | 0.1~25.5 degree  |               |                     |

|            |                                   |                  |           |     |
|------------|-----------------------------------|------------------|-----------|-----|
| Parameter  | 0x03 (3)                          |                  |           |     |
| Name       | Minimum humidity change to report |                  |           |     |
| Info       | Trigger humidity report           |                  |           |     |
| Properties | Size                              | 1                | Min Value | 0   |
|            | Format                            | Unsigned Integer | Max Value | 255 |

|             |                                                              |            |               |       |
|-------------|--------------------------------------------------------------|------------|---------------|-------|
|             | Read-only                                                    | False      | Default Value | 50    |
|             | Altering capabilities                                        | False      | Advanced      | False |
| Description | The check interval time is set by configuration parameter 1. |            |               |       |
|             | Value                                                        | Function   |               |       |
|             | 0                                                            | Disable    |               |       |
|             | 1~255                                                        | 0.1~25.5 % |               |       |

|             |                                                                                                                                                                                 |           |          |               |                            |                             |                                     |                              |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|---------------|----------------------------|-----------------------------|-------------------------------------|------------------------------|
| Parameter   | 0x04 (4)                                                                                                                                                                        |           |          |               |                            |                             |                                     |                              |
| Name        | Enable led indication                                                                                                                                                           |           |          |               |                            |                             |                                     |                              |
| Info        | Enable led indication                                                                                                                                                           |           |          |               |                            |                             |                                     |                              |
| Properties  | Size                                                                                                                                                                            | 1         |          | Min Value     | 0                          |                             |                                     |                              |
|             | Format                                                                                                                                                                          | Bit field |          | Max Value     | 0x0F                       |                             |                                     |                              |
|             | Read-only                                                                                                                                                                       | False     |          | Default Value | 0x0F                       |                             |                                     |                              |
|             | Altering capabilities                                                                                                                                                           | False     |          | Advanced      | False                      |                             |                                     |                              |
| Description | This parameter defines when the green or red LED will indicate events. Disabling all indications may extend battery life. Value 0 means no indications. 0 - disable, 1 - enable |           |          |               |                            |                             |                                     |                              |
|             | 7                                                                                                                                                                               | 6         | 5        | 4             | 3                          | 2                           | 1                                   | 0                            |
|             | Reserved                                                                                                                                                                        | Reserved  | Reserved | Reserved      | Device Tampering (red led) | Mold danger alarm (red led) | Wake up interval report (green led) | Periodic Reports (green led) |

|            |                       |           |               |       |
|------------|-----------------------|-----------|---------------|-------|
| Parameter  | 0x0C (12)             |           |               |       |
| Name       | Sensor Limit Enable   |           |               |       |
| Info       | Sensor Limit Enable   |           |               |       |
| Properties | Size                  | 1         | Min Value     | 0     |
|            | Format                | Bit field | Max Value     | 0x0F  |
|            | Read-only             | True      | Default Value | 0     |
|            | Altering capabilities | False     | Advanced      | False |

|             |                         |          |          |          |                      |                         |                      |                         |
|-------------|-------------------------|----------|----------|----------|----------------------|-------------------------|----------------------|-------------------------|
| Description | 0 - disable, 1 - enable |          |          |          |                      |                         |                      |                         |
|             | 7                       | 6        | 5        | 4        | 3                    | 2                       | 1                    | 0                       |
|             | Reserved                | Reserved | Reserved | Reserved | Humidity lower limit | Temperature lower limit | Humidity upper limit | Temperature upper limit |

|             |                                                                    |                  |               |       |
|-------------|--------------------------------------------------------------------|------------------|---------------|-------|
| Parameter   | 0x0D (13)                                                          |                  |               |       |
| Name        | Offset value for Mold danger alarm                                 |                  |               |       |
| Info        | Increase the humidity threshold                                    |                  |               |       |
| Properties  | Size                                                               | 1                | Min Value     | 0     |
|             | Format                                                             | Unsigned Integer | Max Value     | 40    |
|             | Read-only                                                          | False            | Default Value | 0     |
|             | Altering capabilities                                              | False            | Advanced      | False |
| Description | The default Relative Humidity to trigger Mold danger alarm is 60%. |                  |               |       |
|             | Value                                                              | Function         |               |       |
|             | 0--40                                                              | 0%--40%          |               |       |

|             |                                       |                  |               |                                          |
|-------------|---------------------------------------|------------------|---------------|------------------------------------------|
| Parameter   | 0x0E (14)                             |                  |               |                                          |
| Name        | Temperature Upper Watermark value     |                  |               |                                          |
| Info        | Send BASIC Set to Group 2 if exceeded |                  |               |                                          |
| Properties  | Size                                  | 2                | Min Value     | 0x0000 (0)(EU/AU)<br>0x0020(32)(US)      |
|             | Format                                | Unsigned Integer | Max Value     | 0x03E8 (1000)(EU/AU)<br>0x0848(2120)(US) |
|             | Read-only                             | False            | Default Value | 0x012C(300)(EU/AU)<br>0x035C (860)(US)   |
|             | Altering capabilities                 | False            | Advanced      | False                                    |
| Description |                                       |                  |               |                                          |
|             | Value                                 | Function         |               |                                          |
|             | 1~1000                                | 0.1~100 degree   |               |                                          |

|             |                                    |                 |               |                                          |
|-------------|------------------------------------|-----------------|---------------|------------------------------------------|
| Parameter   | 0x0F (15)                          |                 |               |                                          |
| Name        | Temperature Lower Watermark value  |                 |               |                                          |
| Info        | Send BASIC Set to Group 3 if below |                 |               |                                          |
| Properties  | Size                               | 2               | Min Value     | 0xFF38 (-200) (EU/AU)<br>0xFFD8(-40)(US) |
|             | Format                             | Signed Integer  | Max Value     | 0x03E8 (1000)(EU/AU)<br>0x0848(2120)(US) |
|             | Read-only                          | False           | Default Value | 0 (EU/AU)<br>0x0140 (320) (US)           |
|             | Altering capabilities              | False           | Advanced      | False                                    |
| Description |                                    |                 |               |                                          |
|             | Value                              | Function        |               |                                          |
|             | -200~1000                          | -20~+100 degree |               |                                          |

|             |                                       |                  |               |       |
|-------------|---------------------------------------|------------------|---------------|-------|
| Parameter   | 0x10 (16)                             |                  |               |       |
| Name        | Humidity Upper Watermark value        |                  |               |       |
| Info        | Send BASIC Set to Group 4 if exceeded |                  |               |       |
| Properties  | Size                                  | 2                | Min Value     | 0     |
|             | Format                                | Unsigned Integer | Max Value     | 1000  |
|             | Read-only                             | False            | Default Value | 700   |
|             | Altering capabilities                 | False            | Advanced      | False |
| Description |                                       |                  |               |       |
|             | Value                                 | Function         |               |       |
|             | 0~1000                                | 0%~100.0%        |               |       |

|           |                                    |  |  |  |
|-----------|------------------------------------|--|--|--|
| Parameter | 0x11 (17)                          |  |  |  |
| Name      | Humidity Lower Watermark value     |  |  |  |
| Info      | Send BASIC Set to Group 5 if below |  |  |  |

|             |                       |                  |               |       |
|-------------|-----------------------|------------------|---------------|-------|
| Properties  | Size                  | 2                | Min Value     | 0     |
|             | Format                | Unsigned Integer | Max Value     | 1000  |
|             | Read-only             | False            | Default Value | 300   |
|             | Altering capabilities | False            | Advanced      | False |
| Description |                       |                  |               |       |
|             | Value                 | Function         |               |       |
|             | 0~1000                | 0%~100.0%        |               |       |

|             |                                         |                  |               |       |
|-------------|-----------------------------------------|------------------|---------------|-------|
| Parameter   | 0x12 (18)                               |                  |               |       |
| Name        | High Temperature Trigger BASIC Set Send |                  |               |       |
| Info        | Set BASIC Set value send to Group2      |                  |               |       |
| Properties  | Size                                    | 1                | Min Value     | 0     |
|             | Format                                  | Unsigned Integer | Max Value     | 255   |
|             | Read-only                               | False            | Default Value | 0     |
|             | Altering capabilities                   | False            | Advanced      | False |
| Description |                                         |                  |               |       |
|             | Value                                   | Function         |               |       |
|             | 0~255                                   | Basic Set Value  |               |       |

|             |                                        |                  |               |       |
|-------------|----------------------------------------|------------------|---------------|-------|
| Parameter   | 0x13 (19)                              |                  |               |       |
| Name        | Low Temperature Trigger BASIC Set Send |                  |               |       |
| Info        | Set BASIC Set value send to Group3     |                  |               |       |
| Properties  | Size                                   | 1                | Min Value     | 0     |
|             | Format                                 | Unsigned Integer | Max Value     | 255   |
|             | Read-only                              | False            | Default Value | 255   |
|             | Altering capabilities                  | False            | Advanced      | False |
| Description |                                        |                  |               |       |

|  |       |                 |
|--|-------|-----------------|
|  | Value | Function        |
|  | 0~255 | Basic Set Value |

|             |                                      |                  |               |       |
|-------------|--------------------------------------|------------------|---------------|-------|
| Parameter   | 0x14 (20)                            |                  |               |       |
| Name        | High Humidity Trigger BASIC Set Send |                  |               |       |
| Info        | Set BASIC Set value send to Group4   |                  |               |       |
| Properties  | Size                                 | 1                | Min Value     | 0     |
|             | Format                               | Unsigned Integer | Max Value     | 255   |
|             | Read-only                            | False            | Default Value | 0     |
|             | Altering capabilities                | False            | Advanced      | False |
| Description |                                      |                  |               |       |
|             | Value                                | Function         |               |       |
|             | 0~255                                | Basic Set Value  |               |       |

|             |                                     |                  |               |       |
|-------------|-------------------------------------|------------------|---------------|-------|
| Parameter   | 0x15 (21)                           |                  |               |       |
| Name        | Low Humidity Trigger BASIC Set Send |                  |               |       |
| Info        | Set BASIC Set value send to Group5  |                  |               |       |
| Properties  | Size                                | 1                | Min Value     | 0     |
|             | Format                              | Unsigned Integer | Max Value     | 255   |
|             | Read-only                           | False            | Default Value | 255   |
|             | Altering capabilities               | False            | Advanced      | False |
| Description |                                     |                  |               |       |
|             | Value                               | Function         |               |       |
|             | 0~255                               | Basic Set Value  |               |       |

|           |                             |  |  |  |
|-----------|-----------------------------|--|--|--|
| Parameter | 0x16 (22)                   |  |  |  |
| Name      | Enable Binary Sensor Report |  |  |  |

|             |                                                              |            |               |       |
|-------------|--------------------------------------------------------------|------------|---------------|-------|
| Info        | for mold danger state                                        |            |               |       |
| Properties  | Size                                                         | 1          | Min Value     | 0     |
|             | Format                                                       | Enumerated | Max Value     | 1     |
|             | Read-only                                                    | False      | Default Value | 0     |
|             | Altering capabilities                                        | False      | Advanced      | False |
| Description | Backwards compatibility, Binary Sensor for mold danger state |            |               |       |
|             | Value                                                        | Function   |               |       |
|             | 0                                                            | Disable    |               |       |
|             | 1                                                            | Enable     |               |       |

|             |                                                                   |                  |               |       |
|-------------|-------------------------------------------------------------------|------------------|---------------|-------|
| Parameter   | 0x17 (23)                                                         |                  |               |       |
| Name        | Low battery threshold                                             |                  |               |       |
| Info        | Low battery threshold                                             |                  |               |       |
| Properties  | Size                                                              | 1                | Min Value     | 10    |
|             | Format                                                            | Unsigned Integer | Max Value     | 50    |
|             | Read-only                                                         | False            | Default Value | 20    |
|             | Altering capabilities                                             | False            | Advanced      | False |
| Description | Report low battery report when level goes under threshold setting |                  |               |       |
|             | Value                                                             | Function         |               |       |
|             | 10-50                                                             | 10-50%           |               |       |

|            |                  |                  |               |         |
|------------|------------------|------------------|---------------|---------|
| Parameter  | 0x18 (24)        |                  |               |         |
| Name       | Periodic Reports |                  |               |         |
| Info       | Periodic Reports |                  |               |         |
| Properties | Size             | 4                | Min Value     | 0       |
|            | Format           | Unsigned Integer | Max Value     | 2678400 |
|            | Read-only        | False            | Default Value | 43200   |

|             |                                                                                         |          |          |       |
|-------------|-----------------------------------------------------------------------------------------|----------|----------|-------|
|             | Altering capabilities                                                                   | False    | Advanced | False |
| Description | The period of battery, temperature and humidity report, the minimum time is 30 seconds. |          |          |       |
|             | Value                                                                                   | Function |          |       |
|             | 0                                                                                       | Disable  |          |       |
|             | 30~65535                                                                                | Seconds  |          |       |

|             |                                                                   |                    |               |       |
|-------------|-------------------------------------------------------------------|--------------------|---------------|-------|
| Parameter   | 0x19 (25)                                                         |                    |               |       |
| Name        | Offset value for Temperature                                      |                    |               |       |
| Info        | Calibrate temperature                                             |                    |               |       |
| Properties  | Size                                                              | 2                  | Min Value     | -200  |
|             | Format                                                            | Signed Integer     | Max Value     | 200   |
|             | Read-only                                                         | False              | Default Value | 0     |
|             | Altering capabilities                                             | False              | Advanced      | False |
| Description | Scale is defined by Parameter 64.eg: Value 15 means 1.5°C or 1.5F |                    |               |       |
|             | Value                                                             | Function           |               |       |
|             | -200~200                                                          | -20.0~20.0 degrees |               |       |

|             |                           |                |               |       |
|-------------|---------------------------|----------------|---------------|-------|
| Parameter   | 0x1A (26)                 |                |               |       |
| Name        | Offset value for Humidity |                |               |       |
| Info        | Calibrate humidity        |                |               |       |
| Properties  | Size                      | 2              | Min Value     | -200  |
|             | Format                    | Signed Integer | Max Value     | 200   |
|             | Read-only                 | False          | Default Value | 0     |
|             | Altering capabilities     | False          | Advanced      | False |
| Description |                           |                |               |       |
|             | Value                     | Function       |               |       |
|             | -200~200                  | -20.0~20.0%    |               |       |

|             |                                    |            |               |             |
|-------------|------------------------------------|------------|---------------|-------------|
| Parameter   | 0x40 (64)                          |            |               |             |
| Name        | Temperature Scale                  |            |               |             |
| Info        | scale for auto reports and setting |            |               |             |
| Properties  | Size                               | 1          | Min Value     | 0           |
|             | Format                             | Enumerated | Max Value     | 1           |
|             | Read-only                          | False      | Default Value | 0(EU)/1(US) |
|             | Altering capabilities              | False      | Advanced      | False       |
| Description |                                    |            |               |             |
|             | Value                              | Function   |               |             |
|             | 0                                  | Celsius    |               |             |
|             | 1                                  | Fahrenheit |               |             |