Setpoint User Guide

Office: 917 522 2009 Website: www.setpoint.ai Email: office@setpoint.ai

Setpoint User Guide

General Information

General Information

As part of the Setpoint service, this “User Guide” provides system operating essentials. This knowledge will help you to utilize the system to its full potential for energy efficiency.

This “User Guide” includes information concerning the specific hardware installed at the site such as controllers and sensors. It covers general functionality and troubleshooting, and basic dashboard features for remote monitoring and control of your HVAC system.

Setpoint Server Link

https://

Login Credentials

User	Username	Password
--	--	--
--	--	--
--	--	--
--	--	--

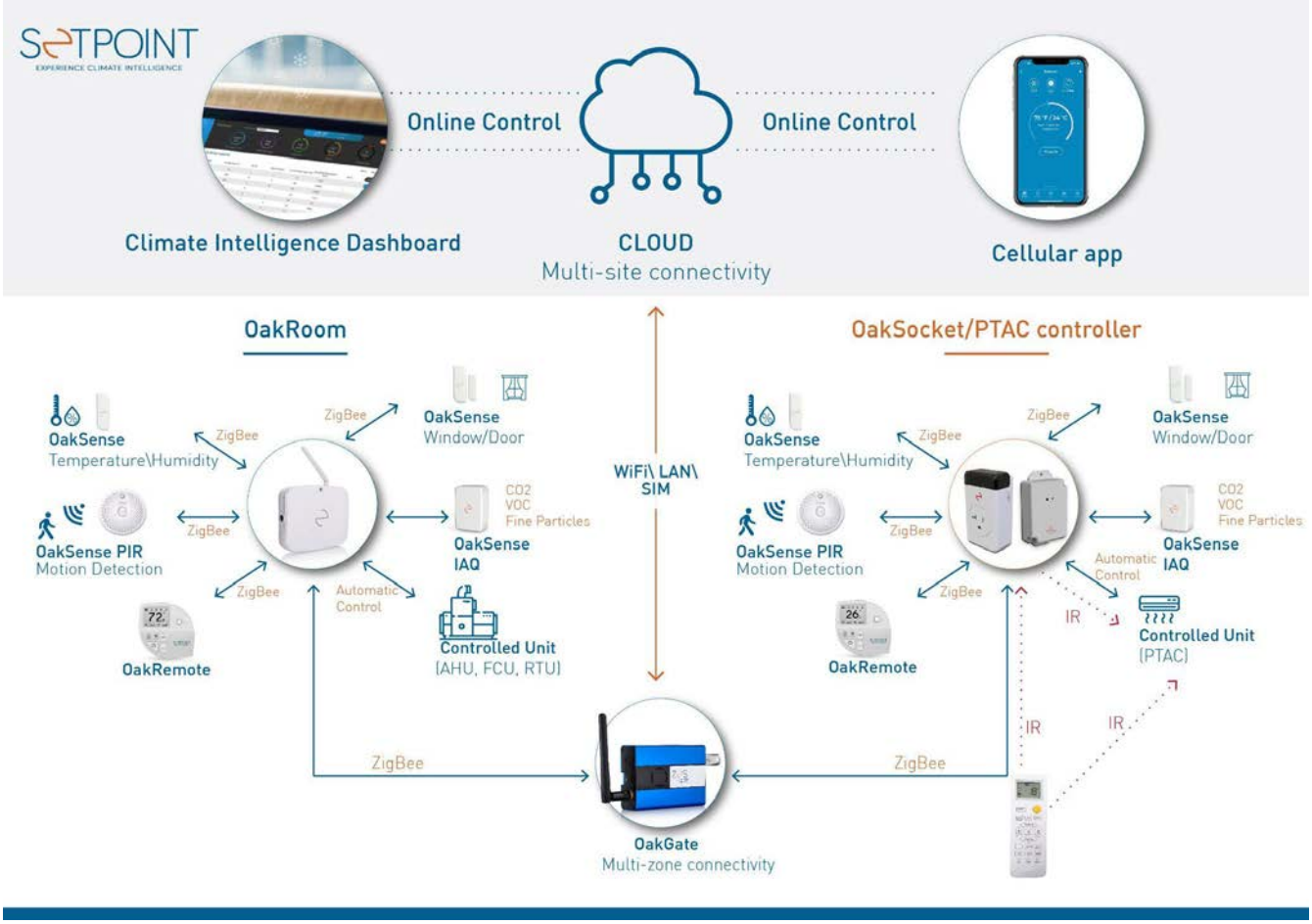
Setpoint Service team

Office:

System Design

System Design

The Setpoint system transforms separate A/C units into an integrated system for efficient and intelligent climate automation. Installation of communication servers, A/C controllers and various sensors, allows for climate automation on site or via the climate intelligence dashboard.
The intelligent, manageable operation of personal or public indoor climates produces a customized end user experience and brings about a significant reduction in energy consumption costs.



Site Hardware

Site Hardware

Devices installed on site

Unit Name	Function	Total # of Units Installed
--	--	--
--	--	--
--	--	--
--	--	--

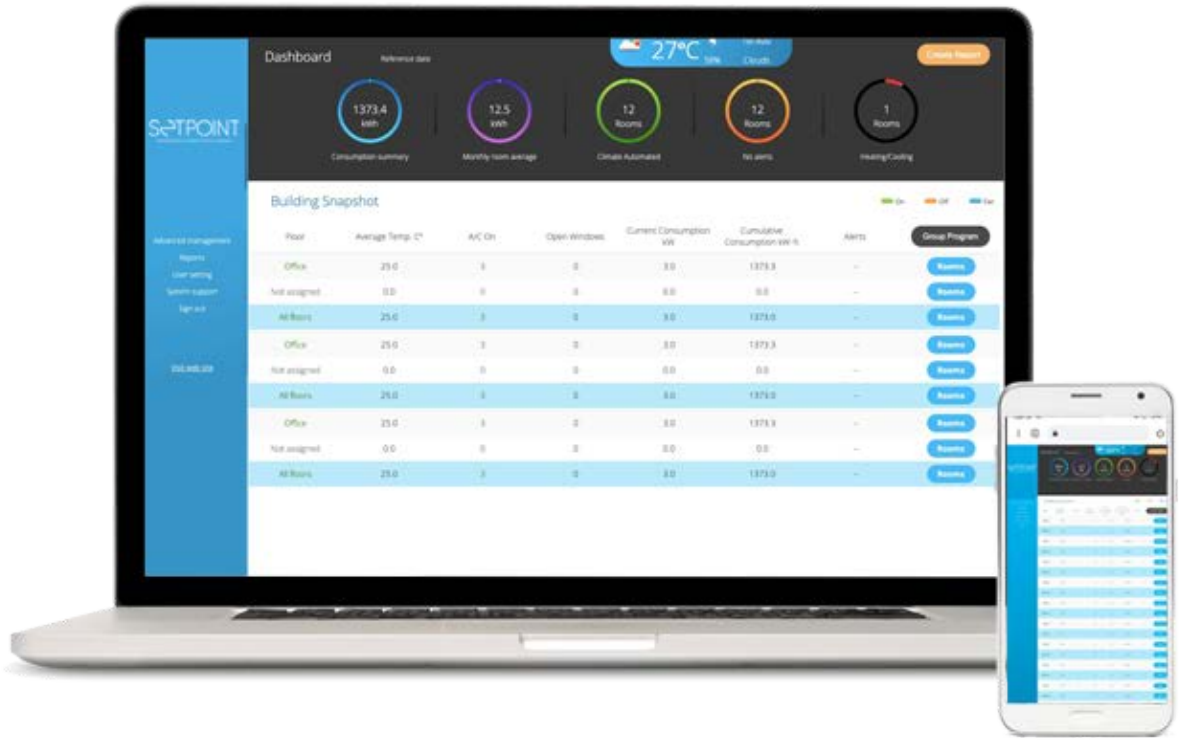
OakGate Service Coverage

Each OakGate has a unique Personal Area Network Identification (PAN ID). This code is necessary for all units connected (or “paired”) to the OakGate and must also be verified in case of OakGate replacement. The following table outlines the OakGate PAN ID designated to the different units as they are deployed within the site.

PANID	Installed Location	MAC ID	Area served	Notes:
--	--	----------	--	--
--	--	----------	--	--

--	--	----------	--	--
--	--	----------	--	--

Dashboard



Dashboard

The Dashboard is the main interface for operators of the Setpoint system. It features functions for end users such as building snapshot, floor snapshot, room parameters and sensor operation.
Entry to the system shall be using the provided user name and password:

Familiarity with Dashboard options will allow better utilization of Setpoint's system benefits and capabilities.

Dashboard Overview

The dashboard overview section of the main dashboard page provides useful information and some functionality for the user.

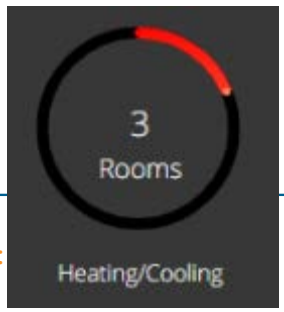
1. Consumption summary:
    a. A calculated estimate of total energy consumption.
    b. Output is dependent on “Reference date”.
    Be advised: selection of an earlier date requires retrieving data from the archive cloud, therefore creating a longer computation period.

2. Monthly room average - a calculated estimate of energy consumption focussed on room monthly average.

3. Climate Automated - number of “zones” working under Setpoint energy-saving program.

4. No alerts - number of “zones”/rooms having no current alerts.

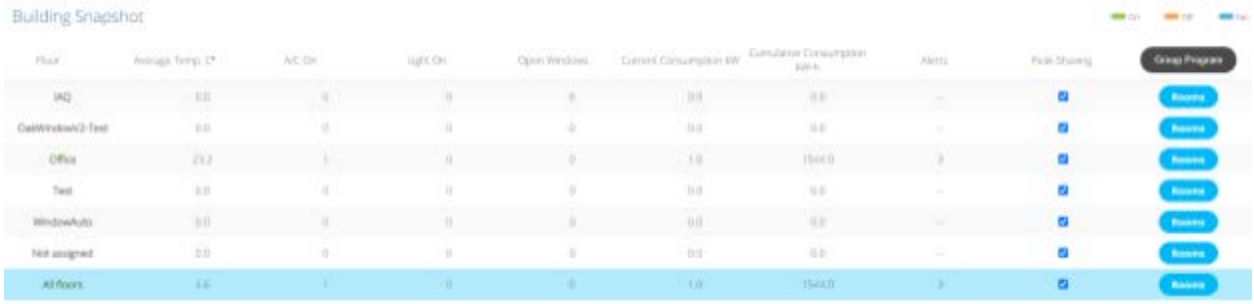
5. Heating/Cooling - number of controlled areas within the Setpoint system currently working using a cooling component (e.g. compressor, fan coil valve controlling hot/cold water to room). Other units not shown here are either “Off” or on “Fan” mode therefore minimizing energy consumption.



6. Outside Climate Conditions - provides current climate conditions in the designated location.

Building Snapshot

The dashboard “Building Snapshot” section of the main dashboard page provides useful information and some functionality for the user.



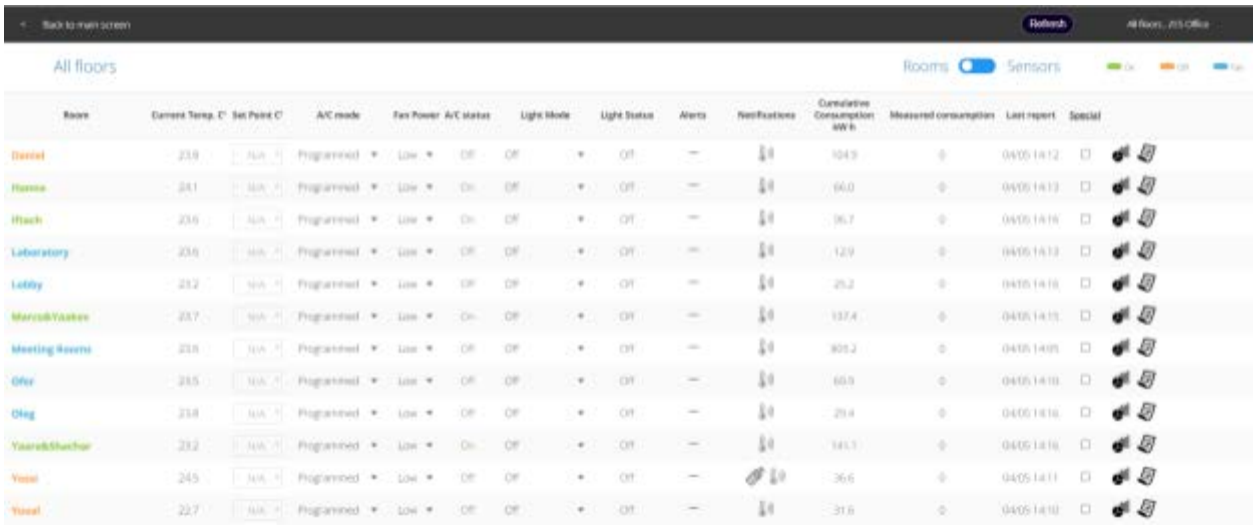
1. Floors:
    a. All the designated sectors containing the controlled zones of the Setpoint system.
    b. Each floor is typically controlled by one OakGate.
    c. The “All floors” provides a mathematical average or summation of the different parameters.
2. Average Temp. - provides a quick and general average of all controlled zones in a floor.

3. A/C On - indication of the currently working cooling component (e.g. compressor, fan coil valve controlling hot/cold water to room). Other units not shown here are either “Off” or on “Fan” mode therefore minimizing energy consumption.
4. Open Window - number of currently open windows on the floor.
5. Current Consumption - current consumption in kW.
6. Cumulative Consumption:
    a. Consumption summary starting from “Reference date” defined on the dashboard.
    b. After “refreshing” the “All floors” sum is equal to the “Consumption summary” dashboard display.

7. Alerts - number of active alerts on the floor.
8. Rooms - enables access to the selected floor where specific rooms or sensors may be monitored and controlled.
9. Group Program - see “Group Program”.
10. Color index:
    a. Green - A/C working with a cooling component (e.g. compressor, fan coil valve controlling hot/cold water to room).
    b. Blue - A/C working in “Fan” only mode.
    c. Orange - A/C off or not working (A/Cs typically stop working when achieving setpoint when in “heat” mode but are not turned off).

Floor Snapshot

The dashboard “Floor” overview section is displayed when selecting the “ROOMS” button on the relevant floor. It provides useful information and some functionality for the user. Specific rooms or sensors may be viewed.



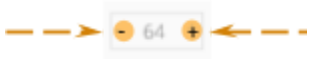
1. Room/Sensors toggle - selects between display of rooms (which is actually each room’s controller - OakPTAC, OakRoom, OakWall, OakSocket) and sensors (any multiple sensor installation in rooms according to customer configuration)

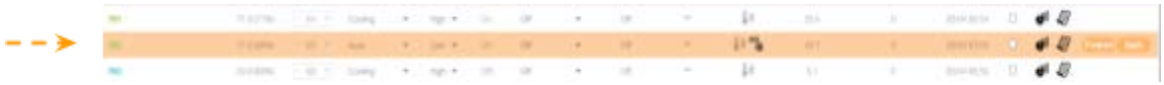
   Note:

   When viewing the sensor page, the display is informative (meaning no action can be made), apart from opening the sensor dialog box (which enables specific actions relating to the sensor)
2. Current Temp. - display currently measured temperature.
3. Set Point

a. Select requested temperature.



b. After initial change (as for any change made on a specific room line), the room line bar becomes orange.



c. Press “Apply” to incorporate the change

Be advised! If changes to a different room are made prior to pressing “Apply”, all changes will be lost and the newly selected room line bar will appear orange.

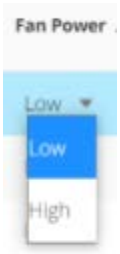
d. A/C mode - mode selection for optimal savings

i. Off - A/C turned off.

ii. Cooling - A/C cools until reaches Setpoint, then reverts to “Fan” mode. Restarts when temperature reaches “Hyst delta A/C” parameter setting.

iii. Heating - A/C heats until reaching Setpoint, then stops operation. Restarts when temperature reaches “Hyst delta A/C” parameter setting.
iv. Fan - operates fan only.
v. Programmed - operates according to the defined program (See Group Program).
vi. Perm. cooling - continuously cooling operation without shifting to “Fan” mode. Used mostly for troubleshooting and maintenance/installation issues.
vii. Perm. heating - continuously heating.
Used mostly for troubleshooting and maintenance/installation issues.

e. Fan Power - operation mode of the fan:
   i. High
   ii. Low



f. A/C status - indicates if the A/C compressor is working or the A/C is in “Fan” only or “Off” mode (similar to “Building Snapshot”).
g. Fallback mode - enables a return to operation via the original thermostat if installed.
   i. Off - operation via Setpoint sensor.
   ii. On - operation via original thermostat.

iii. Program - fallback will be according to selected “Program” (See “Group Program”).

iv. A protection mechanism for inadvertently activating the A/C with multiple commands, which could damage it, is a “Flag” in the “Room dialog” box. When activated, this feature will prevent Setpoint controller to send input commands to the A/C:

h. Fallback status - displays current Fallback status: On/Off.

i. Alerts - visual display of alert icons. Hovering with the mouse over the icon displays a written description of the alert.

j. Notification - display of current A/C operating indications. Hovering with mouse over the icon displays a written description of the notification.

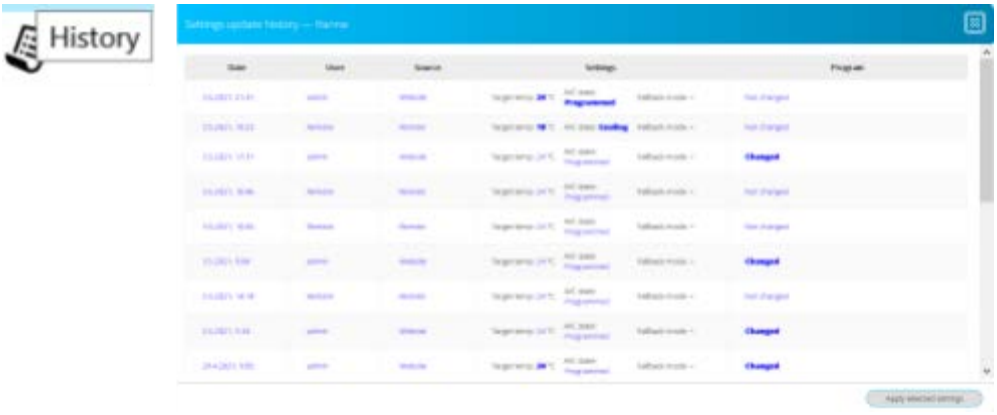
k. Cumulative consumption - consumption summary starting from “Reference date” defined on the dashboard (See “Building Snapshot”).

l. Last report - timely reports according to “Report period” definition in the room dialog box. This data is helpful for troubleshooting.

m. Special - a check-box which, when checked blue, excludes the checked room from the group program.

n. Room Chart - displays room chart parameter history for the last 24 hours or last week.

o. History - displays history of changes made to the Settings. Displays history for the last three months.



Room/Group Program

Dashboard enables the use of a single program for multiple rooms.

Remember! The program feature is relevant for the following parameters:

1. The Setpoint
2. A/C mode
3. Fallback mode

In order to activate the program for the A/C mode and Fallback mode - verify that “program” is selected in the Dashboard floor display.

Once a program is defined into the controller, if a loss of communication to the controller occurs (and all other parameters such as electrical power are operable), the controller will continue to operate according to the program functionality.

1. Plan heating/cooling program according to site requirements.

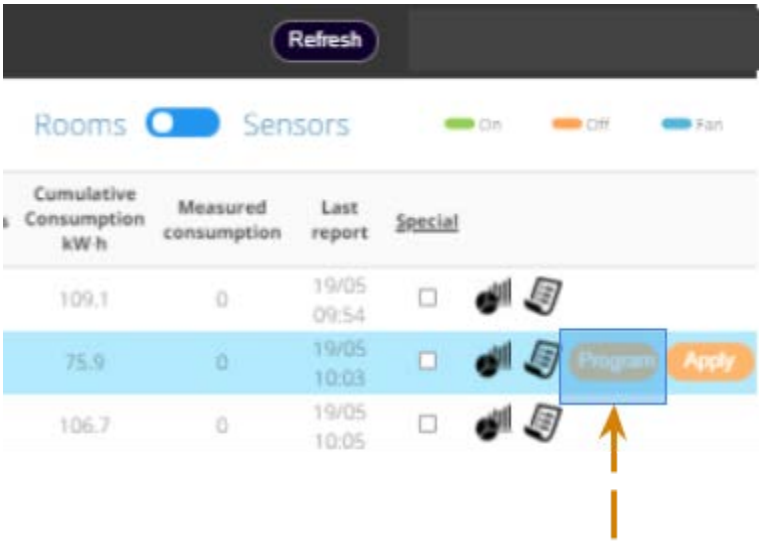
2. Enter Dashboard “Building Snapshot” page.

3. Select “Group Program” icon

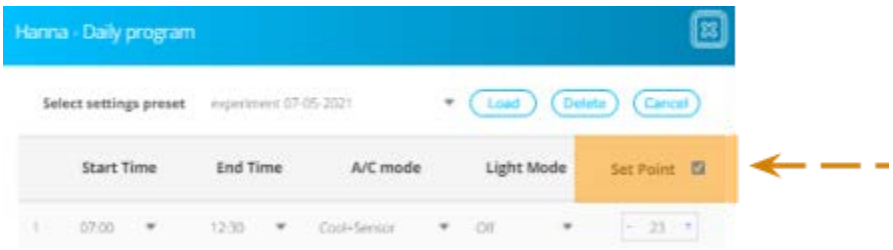
A program may be defined manually or loaded from a list of pre-defined preset settings.

4. If a specific room is needed to be programed:
    a. Select relevant floor
    b. Hover with mouse on requested room

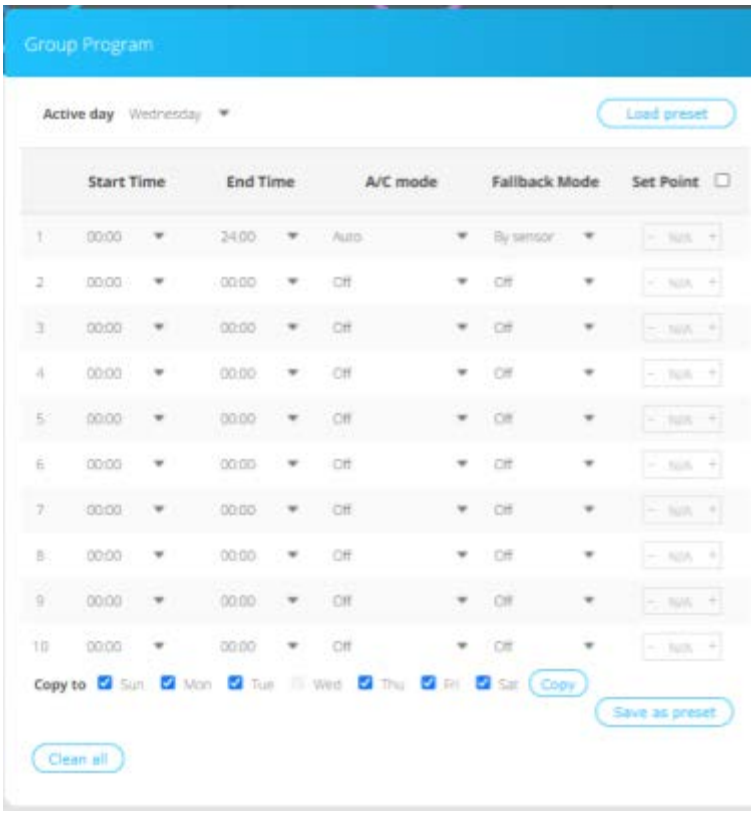
c. Select the “program” icon



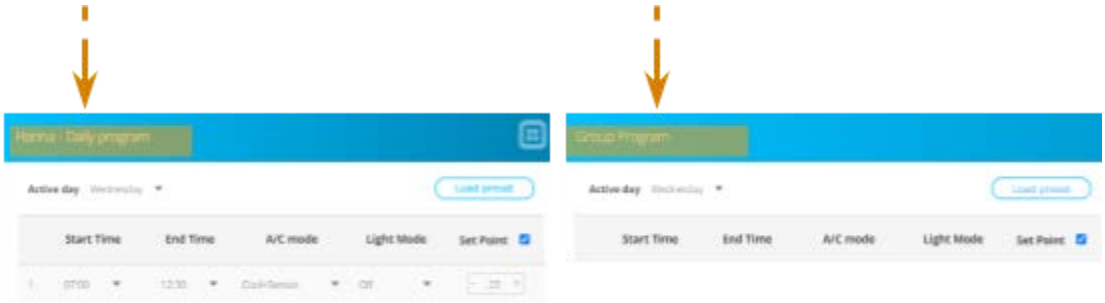
5. Manually defined program - Define all relevant parameters:
   a. Start and End time.
   b. A/C mode.
   c. Fallback mode.
   d. Set Point: the Set Point check box must be checked in order to calibrate the requested temperature:



   e. Days in use (“copy to”: check requested days, and then acknowledge by pressing “Copy”).

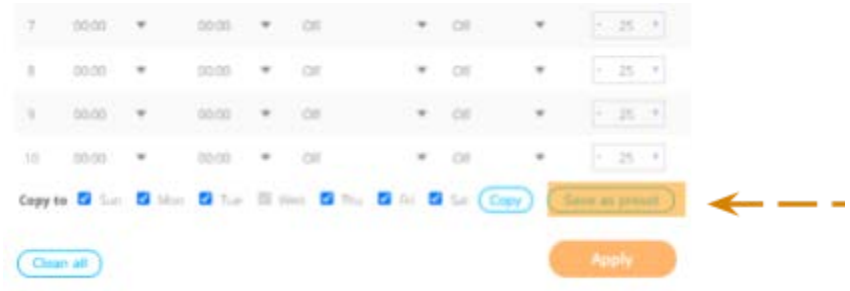


* when creating a Group Program the header of the dialog box will be “Group Program” and when creating a program for a specific room, the header will be the name of the room:



6. The program defined may be saved as a preset program:

a. Select the “Save as preset” button:



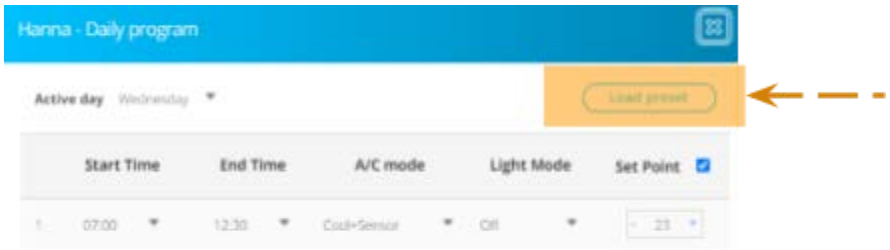
b. Enter the name for the program and press “save”:

Press “cancel” to exit without saving.

c. The program is saved in the cloud, not in specific controller. Therefore, it may be used throughout the site.

Be Advised! Deleting program presets is a one action function (no “are you sure?” mechanizm before system deletes).

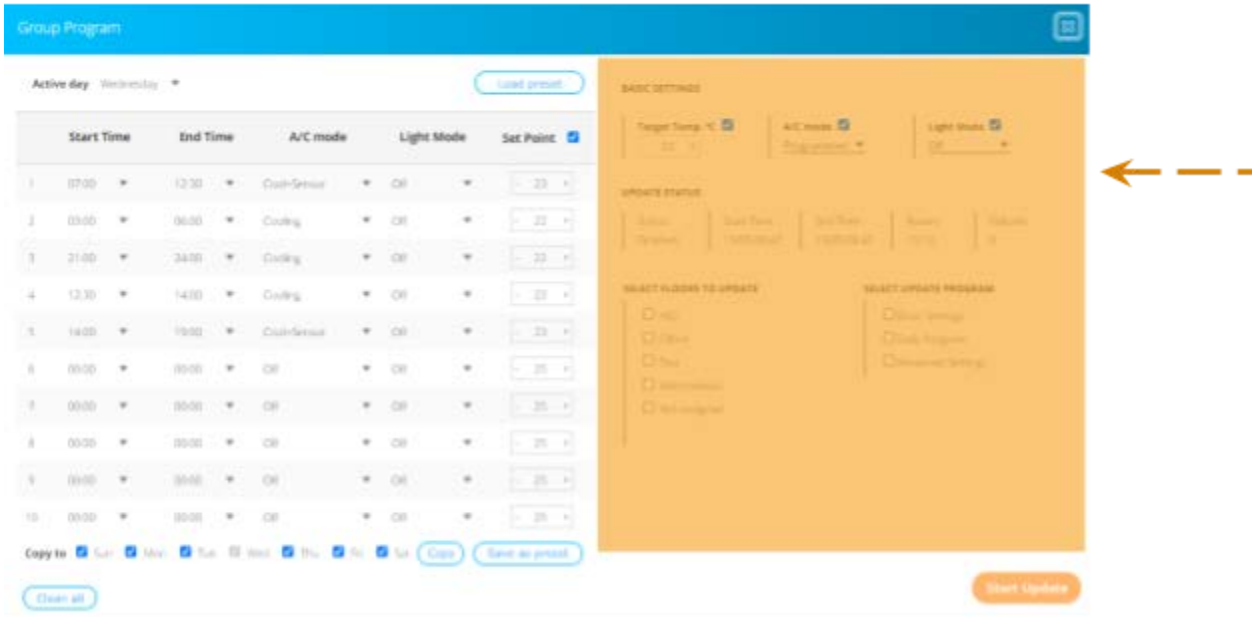
7. Loaded pre-set program - select the “Load preset” icon:



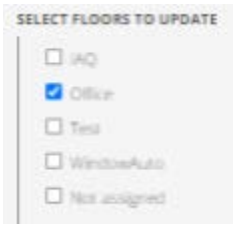
a. Select required preset program.

b. Press “Load” button.

8. For the Group programming the “GENERAL SETTINGS” section should also be modified.

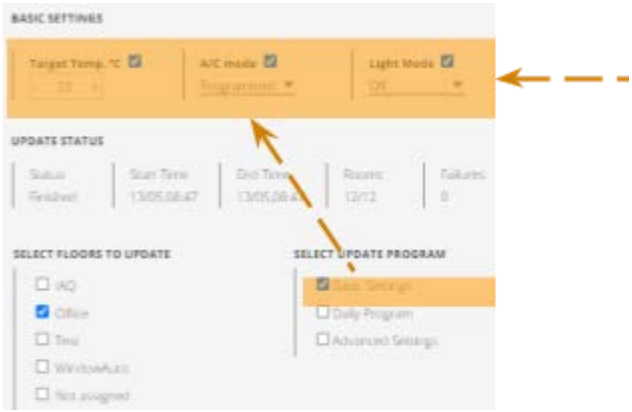


a. Select floors to update with current program:

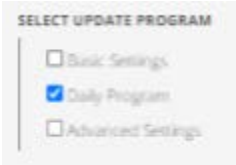


b. If only basic settings are required - select the “Basic Settings” checkbox in the “SELECT UPDATE PROGRAM” section and the requested parameters in the “BASIC SETTINGS”

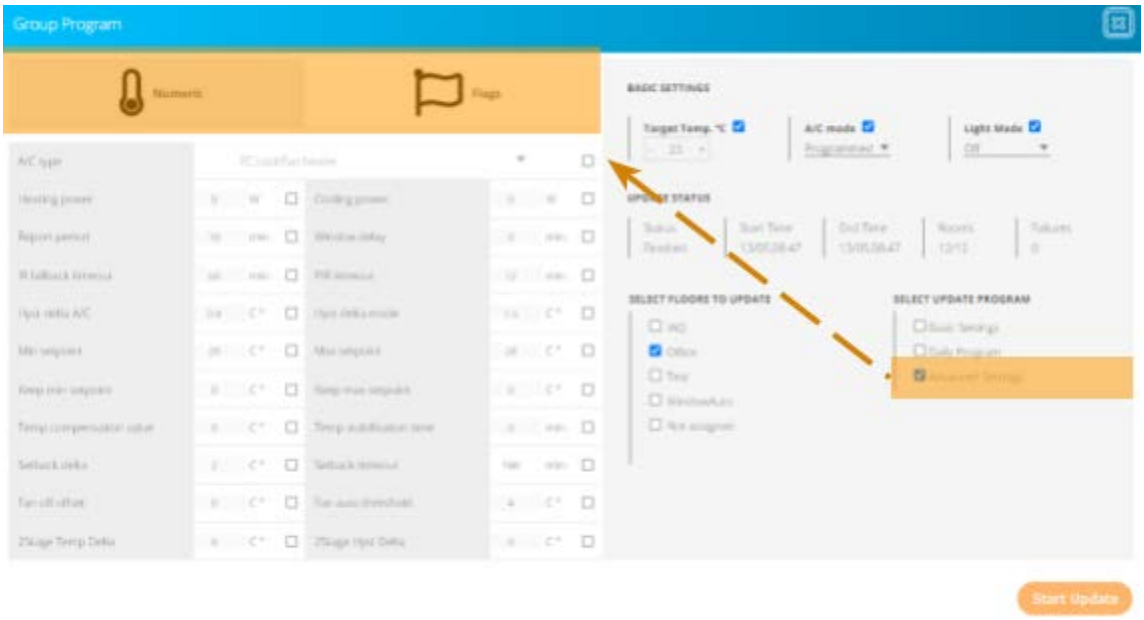
section.



c. If the Daily program is requested, select the “Daily Program” from the “SELECT UPDATE PROGRAM” section. The current loaded program selected will be activated for the selected floors.



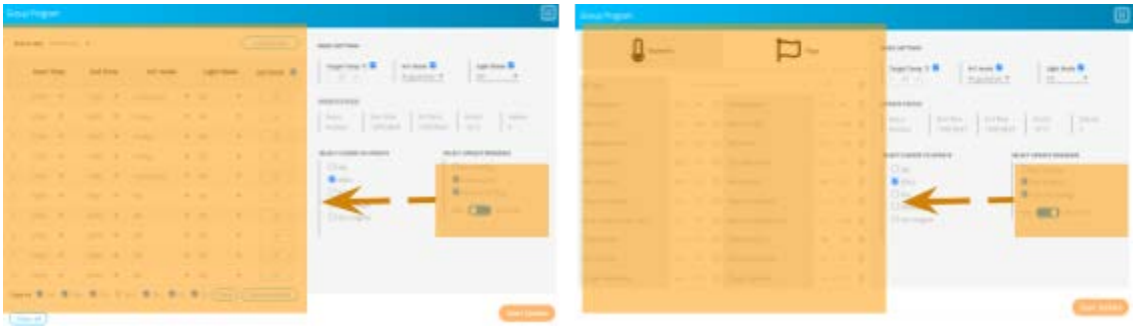
d. Selection of “Advanced Settings” from the “SELECT UPDATE PROGRAM” allows calibration of all “Numeric” and “Flags” settings:



For each parameter to be “group programmed” the checkbox needs to be highlighted in

order to perform the calibration

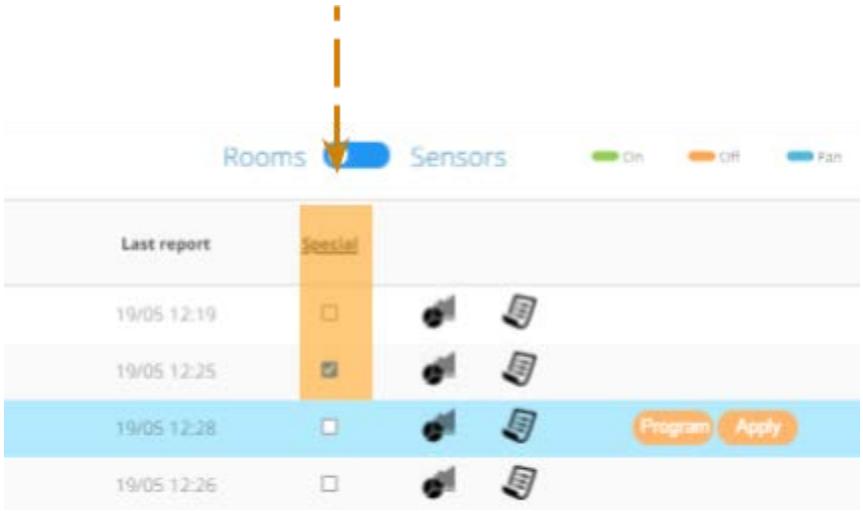
e. When both the “Daily Program” and “Advanced Settings” are checked, a dongle icon will appear to allow selection between the “Numeric”/”Flags” setting and the “Daily Program” calibration.



9. Once all requested changes have been made, press “Apply” to activate the program in the room or “Start Update” for a group program.

Be Advised! When selecting the “Start Update” icon, both the program and the general settings will be updated with any changes made.

Remember! For “Group Programming”, rooms that have been checked with the “special” checkbox will not be included in the update.



OakGate

OakGate

Overview

The OakGate is the Communication server that connects all controllers and sensors within the site to the cloud and enables the management of the system online. Typically, a single OakGate is assigned to each zone/floor.

There are two communication platforms concerning the OakGate:

1. It is connected to the controllers and sensors via the Zigbee network
2. It is connected to the cloud via Internet connection.

ZNP - Zigbee Network Processor: Connects OakGate to SetPoint controllers and sensors on defined Zigbee network (PAN ID & CH)

Internet Connection
Connects OakGate to SetPoint allowing user management via MONITOR and Dashboard

The OakGate requires an electrical connection and an internet connection to function. Verify that the following lights are showing on the device:

1. A steady red light indicates a sufficient electric connection.

2. A blinking green light indicates a stable internet connection.

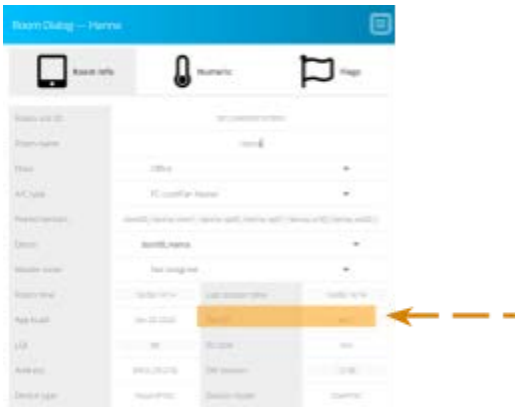
Troubleshooting

Loss of connection with the OakGate will be identified by a large number of alerts on the "Building snapshot". When entering the relevant floor (or zone), all rooms will display the "Communication problem" icon and "last report" at approximately the same time.

A disconnected OakGate will not allow control and monitoring of the respective area/floor via Dashboard.

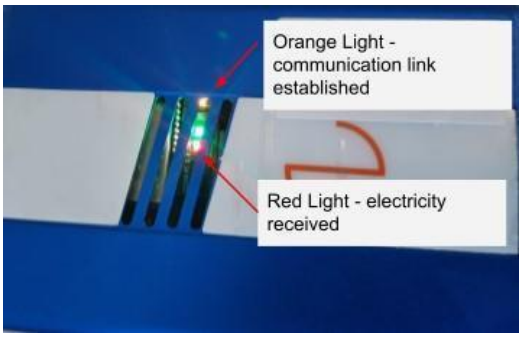
Actions:

1. Verify PAN ID of disconnected OakGate - open a "Room Dialog Box" from the floor and identify the unit.



2. Locate the disconnected OakGate using the "OakGate Service Coverage" table.
3. Verify OakGate is physically present at the designated location

4. Confirm the OakGate's indication lights:
    a. Power - steady red light.
    b. Internet connection - blinking green light.



5. Verify the OakGate's antenna is raised properly

OakWall


MON
AM
8:00
DAYS
°F
Room
78
SYSTEM
EM Heat
FAN
Fan Auto
Aux Heat on
SETPOINT
EXPERIENCE CLIMATE INTELLIGENCE

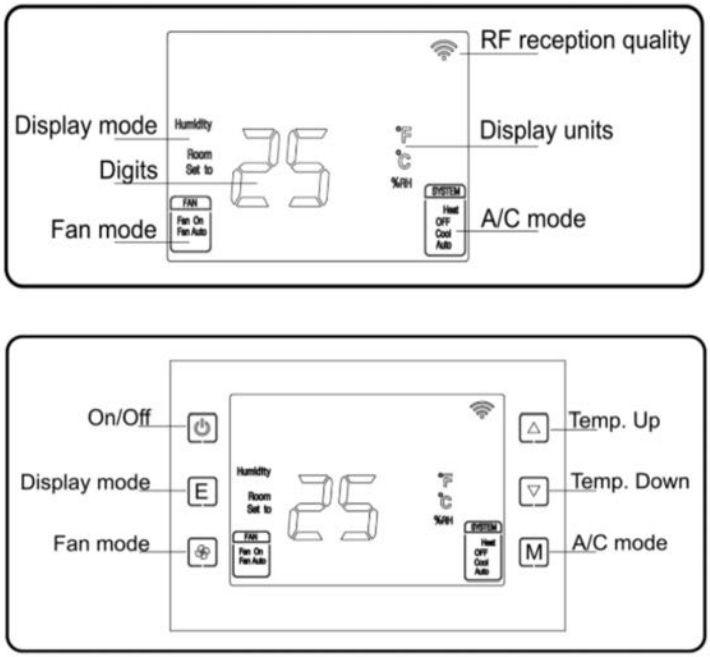
OakWall

Overview

The OakWall is a system controller featuring a LCD display and buttons which enable the end user to personally control the A/C unit. Temperature and humidity sensors are integrated within the device. The OakWall is hardwired to the A/C unit and connects to the OakSensors and OakGate via the Zigbee network.

Changing the setpoint via the screen display to a different setting from the programmed temperature will not affect the speed in which the room will achieve the requested temperature (this is dependent solely on the Air Conditioning hardware operating on site). The system is designed to return to the programmed settings after a defined time period from the selection made on the display.

General Display and Functions:



Troubleshooting

Operation issues or alerts such as “Communication Problem” on the Dashboard might arise during the unit’s operation. Complete the following:

1. Verify the OakWall is mounted properly and fastened to the backplate securely.
2. Confirm wire is terminated properly.
3. Check for power:

a. If the OakWall has a blank display, remove it from the back plate and check for power at the RC/RH and C terminals using a multimeter.

b. Under normal conditions the Oakwall should be supplied with 24V AC.

4. If the above steps are not successful, contact customer support.

   Be advised: a malfunctioning unit could be the cause of several system elements. As a precaution, it is therefore advised not to power a malfunctioning unit before consulting with Setpoint Customer Support.

Note: When replacing an OakWall call customer support. You will require the following:

1. Last 4 digits of the serial number from the new OakWall unit.
2. Installation location - room number & floor level.

Oak Room

Oak Room

Overview

The OakRoom enables SetPoint control over HVAC units. It is connected via the Zigbee network to room sensors, gathering data, and to the OakGate. It is a system controller.

The commands for operating the A/C are received from the Dashboard interface or an OakRemote.

It is connected to the A/C unit via wiring/via IR (necessitating an additional installment of an IR receptor)while the unit itself is placed in a designated location.

Troubleshooting

A disconnected controller is a rare occurrence with undesirable effects on the overall operation of the system. It means that the SetPoint system is not controlling the A/C unit. Data will be able to be transferred directly from the sensors to the relevant OakGate but no control over the operation of the A/C is available.

This should be solved as quickly as possible.

1. Identify disconnected controller

2. Verify electricity connection - might require physically checking the unit.
3. Check light flashing sequence:

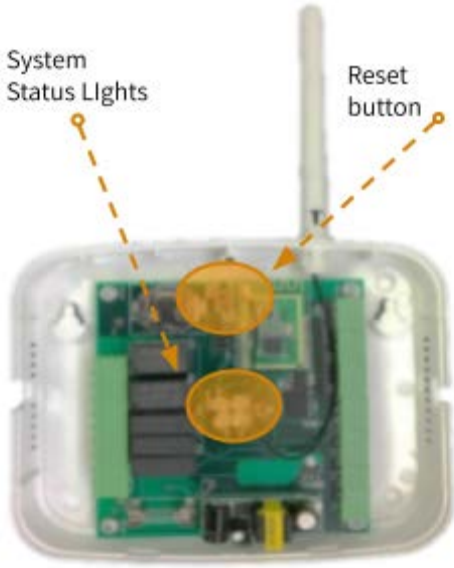
   a. Single flash - connection activated and temperature reading available.
   b. Double flash - searching for connection.
   c. Triple flash - connected to Zigbee network but no temperature reading (meaning transmission is not received from OakRemote).

4. Check for burned fuses.

For system operations (e.g. pairing or establishing communication) a reset is needed. This is performed by:

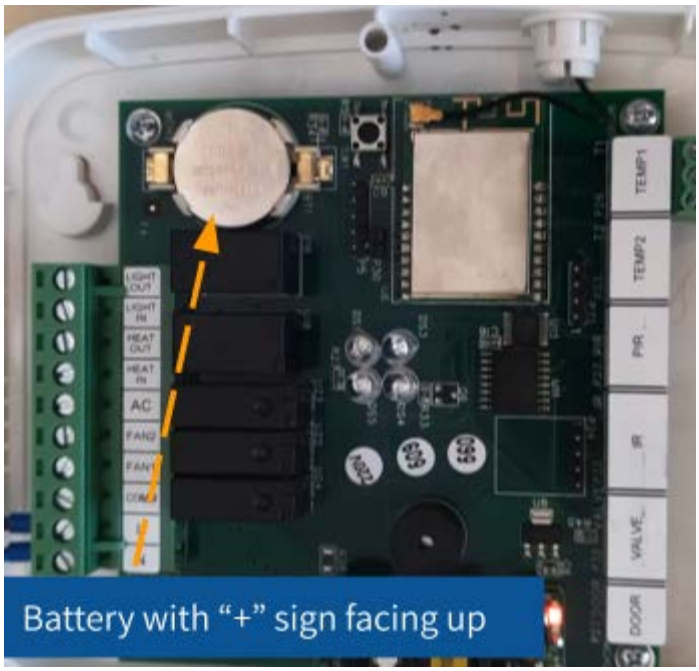
1. Disconnecting the unit from the power supply.
2. Wait for approximately 15 seconds.
3. Re-connect unit to power supply.

4. For a Zegbee network reset only:
    a. Press and hold black reset button for 5 seconds
    Observe light sequence and double-bip sound.



The OakRoom works on power supply from an outside electricity source. The battery inside the unit is for backup power and data storage. The expected lifetime of the battery is 3-5 years and it is charged when the unit is connected to the power supply.
A “Low battery” alert will indicate the need for battery replacement.

1. Disconnect the unit from the power supply.
2. Open the unit.
3. Replace battery with the “+” sign facing up.



4. Close the unit.
5. Confirm unit is integrated back to the Zigbee network.

Oak PTAC

Oak PTAC

Overview

The OakPTAC enables SetPoint control over PTAC units. It is connected via the Zigbee network to room sensors, gathering data, and to the OakGate. It is a system controller.
The commands for operating the A/C are received from the Dashboard interface or an OakRemote.

The OakPTAC is installed for PTAC devices via wiring within the A/C unit itself.

Troubleshooting

A disconnected controller is a rare occurrence with undesirable effects on the overall operation of the system. It means that the SetPoint system is not controlling the A/C unit. Data will be able to be transferred directly from the sensors to the relevant OakGate but no control over the operation of the A/C is available via the Dashboard (local unit control will still be available).
This should be solved as quickly as possible.

1. Identify disconnected controller

2. Verify electricity connection - might require physically checking the unit.
3. Check light flashing sequence:

   a. Single flash - connection activated and temperature reading available.
   b. Double flash - searching for connection.
   c. Triple flash - connected to Zigbee network but no temperature reading (meaning transmission is not received from OakRemote).
4. Check for burned fuses.

A “Low battery” alert will indicate the need for battery replacement.

1. Disconnect the unit from the power supply.
2. Open the unit.

3. Replace battery with the “+” sign facing up.
4. Close the unit.
5. Confirm unit is integrated back to the Zigbee network.

Oak Socket

Oak Socket

Overview

The OakSocket controller analyzes data from AC units and various types of sensors, and controls them to create comprehensive climate automation in any given space. With a simple Plug & Play installation, the OakSocket is the ideal solution to digitizing old PTAC units, and uniting them into one centralized platform.

The device is easily deployed as an intermediate connector between the electrical outlet [C,H and M] and the HVAC unit (Split units, PTAC units, and more). It interacts with the unit via IR transmission or wired communication, as well as on a variety of fields and frequencies. It can also initiate a full unit activation or shutdown via dry electrical contact.

Sensors

Sensors

Overview

Sensors provide the Setpoint system with actual data concerning local climate conditions. Each sensor is paired with a single controller (each controller may be paired to multiple sensors).

Temperature/Humidity

The OakSense Temperature/Humidity is a key component of the SetPoint system, providing temperature and humidity data.

This unit is sensitive, therefore the location within the controlled zone during installation is an important parameter (1.00-1.50 meters above the floor, not near a window or in the vicinity of A/C) for overall system performance.

Window/Door

Window/Door

The OakSense Window/Door detects opened/closed windows and doors. When enabling the relevant feature in the Dashboard interface, this will allow the system to operate efficiently according window/door status, thus contribute to the energy saving effort.

There are two types of Window/Door sensors: A and B. Their technology is essentially the same, only the coding within the device is different: type A acknowledges “closed” while B acknowledges “open”. This is significant for standardization and setup definitions within a specific site.

PIR

PIR

The OakSense PIR (Passive-Infra-Red) provides motion detection in controlled zones and enables features linked to occupancy via the Dashboard.

IAQ

IAQ

The OakIAQ (Indoor Air Quality) monitors high levels of CO2, of Fine Particles and VOCs (Volatile Organic Compounds) capable of hosting and spreading viral threats.

Remote

Remote

The OakRemote allows the end user to adjust the room climate control. It is equipped with an IR transmitter and Temperature and Humidity sensors.

It features a screen and push-buttons for monitoring and user settings. As with all SetPoint components it requires pairing and definitions via the Dashboard.

This unit acts as a sensor within the SetPoint system - it has built in sensors but does not control the A/C directly. It is unique in that it can send commands via the user interface. These commands are received by a SetPoint controller (OakPTAC) that operates the relevant A/C.

The customer may block its use by the end user.

The device is powered by two batteries, it can hold four batteries, but this is a contingency option only (**inserting more than two batteries must be coordinated with the Setpoint team**).

Sensor Pairing

Each sensor must be “paired” to its relevant controller.

Connecting Sensors via Zigbee to relevant room/controller requires two steps:

1. Assigning the unit to the correct floor.
2. Pairing the unit to the correct room/controller.

There are two conditions for a successful Pairing procedure:

1. Permit Join
2. Proximity

Actions:

1. Go to “Room dialog”

2. Select “Permit join” and press “Apply”

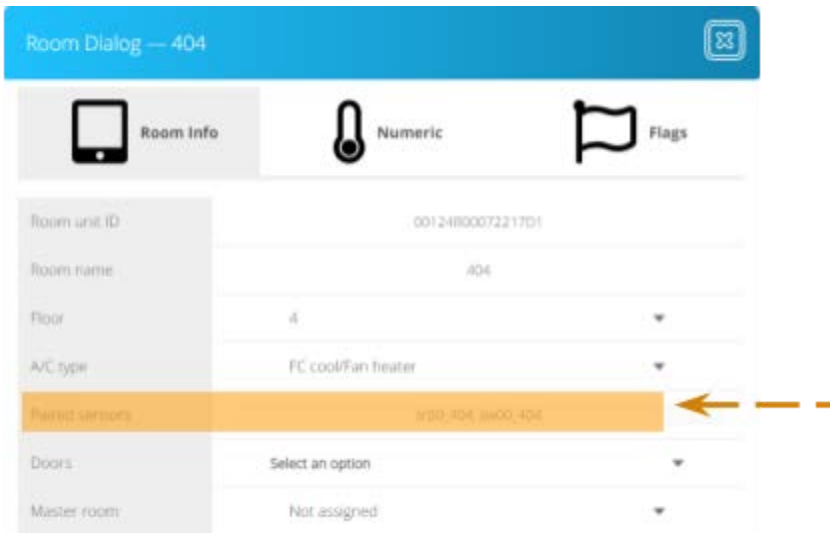
3. Go to the “Not assigned” floor:

4. Identify and select requested unit using the QR code (“Sensor ID”)

5. Go to the “Sensor dialog” box
    a. Assign to correct floor
    b. Pair (“Associated with room”) to correct room/controller
    c. Execute by pressing “Apply”

6. If communication problem exists, it could be due to “Proximity” issue:
    a. Place Sensor within close proximity (as close as possible) to the controller.
    b. Click the black reset button (short press) once and verify connection via Dashboard.

7. After successful pairing of all relevant sensors to the room/controller:



Block join by de-selecting the “Permit join” check-box and press “Apply”.

Pairing between OakRemote and controller is needed

Actions:

1. Verify unit FW has been updated as needed.

2. Stand within close proximity of relevant controller.

3. Insert batteries (See Battery Replacement below).
4. Pairing process is initiated automatically and should be completed within 60 seconds.

5. If pairing was unsuccessful perform following steps (check to see if pairing complete after each step):
    a. Permit join/block join from site (block then permit).
    b. Power cycle OakPTAC, then perform block/permit join cycle again.
    c. Complete sniffer recording for 1 minute.
    Verify correct channel is set.

d. If above steps unsuccessful - perform network reset/reprogramming sequence.

Troubleshooting

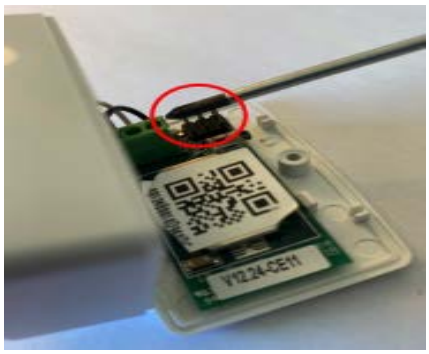
Battery replacement

If battery replacement needed, this icon will appear on the dashboard next to the relevant sensor:

Actions:

1. Open sensor
2. Insert battery “+” sign facing up

3. Hard Reset the PIR by jumping out all leads with a screwdriver



4. Press and Hold the Pair Button for 10 seconds

5. Close PIR Sensor

Sensor Reset

A reset is needed for sensor operation (e.g. during pairing and communication establishing).

Actions:

1. Open sensor and verify battery inserted correctly.
2. Press the black reset button and release after at least 5 seconds.
    a. This action may need to be performed 3 or 4 times.

3. For manual reset:
    a. Place a metal conductor (such as a screwdriver) touching two outer pins or use a "jumper".

    b. Release after at least 5 seconds.
    c. This action may need to be performed 3 or 4 times.

4. If after 3 or 4 resets the unit is still not able to align with the communication network - replace the battery.
5. A communications reset is done by placing a metal conductor such as a screwdriver on the outer 3 pins (usually performed by R&D or technical crews).