

## Room Unit for TEC, and ATEC

### Overview

This document explains the set up and operation of the Series 2200, and 3200 room units. It explains the various operating modes available and describes the procedure for programming the display, according to user preferences.

These devices are used with BACnet Terminal Equipment Controllers (TEC), BACnet Actuator TEC (ATEC) Controllers, and BACnet Programmable Controllers (PTEC).

### Product Numbers

QAA2280.FWNC	QPA228x.FWSC
QAA2280.FWSC	QFA3280.FWNC
QPA228x.FWNC	QFA3280.FWSC

### Accessories

Description	Product Number
Passkey	544-643A
25-foot (7.6 m) cable with connections	588-100A
50-foot (15.2 m) cable with connections	588-100B
100-foot (30.5 m) cable with connections	588-100C
Replacement Relative Humidity Sensing Element for QFA and QPA	AQF3060
Replacement Housing Base (QAA, QFA types)	563-102-01
Replacement Housing Base (QPA types)	563-120
Room Unit Backplate, 10-pack	AQM2200-INTL
Power Supply (QPA types)	AQM2200
Wall Gasket, 10-pack	563-102 GSKT KIT



### Operation

#### Operation modes

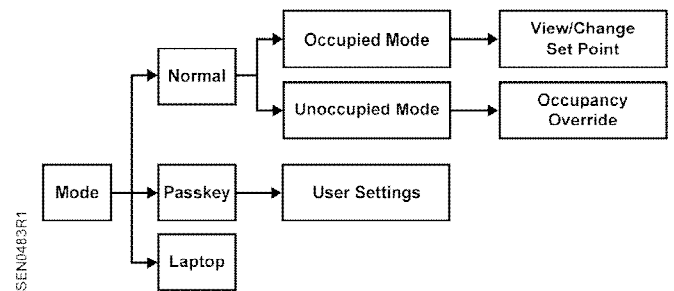


Figure 1. Operation Modes.

#### Normal Mode

In Normal Mode, the display is updated with temperature, humidity, carbon dioxide, and/or occupied status (all where applicable) on a set time cycle.

The display shows temperature in the desired units (as set by the clipable jumper on the PCA). Depending on the model, the humidity and/or carbon dioxide value(s) will be displayed as well. When multiple variables need to be displayed (temperature, relative humidity, and/or carbon dioxide) the display will cycle through the required values at a rate of one change every three to five seconds.

## Operation modes, Continued

### Occupied Mode

If the TEC is currently in Unoccupied Mode (display shows man outside of the house), pressing the override button (button designated by an image of a man inside a house) results in the display showing the word **OCCUPIED** and the request is sent to the TEC to override the unoccupied mode. If the TEC does not get overridden, and stays in unoccupied mode, the display on the sensor reverts back to the unoccupied symbol as soon as possible.

If the TEC is currently in occupied mode, pressing the override button flashes the word **OCCUPIED**, and does nothing else. This functionality is intended solely to let the user know that the button press was recognized.



**Occupied Mode Display**

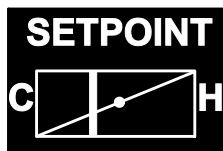


**Unoccupied Mode Display**

### Setpoint Adjustment Mode

The temperature setpoint is adjusted by using the plus and minus buttons. The resulting changes in setpoint are displayed on the display in 1.0°F or 0.5°C increments.

The setpoint adjustment will display for three seconds. If, during those three seconds, a setpoint button is pressed again, the setpoint will be adjusted accordingly and be displayed, and the three-second countdown will restart. If there is no user input for more than three seconds, the room unit will return to Normal Mode.

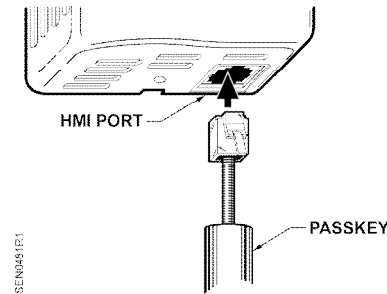


### Passkey Mode

Insert the passkey in the sensor HMI (Human-Machine Interface) port to setup all of the user functionality listed below. For each parameter, use the following sequence:

- Press the occupancy override button to edit the parameter.

- Press the plus/minus buttons to scroll through the various options available for each parameter to display the desired option.
- Press the occupancy override button again to move to the next user adjustable parameter.
- When finished, remove the passkey from the HMI port. User setting changes will be saved when the passkey is removed.



**Figure 2. Inserting the Passkey.**

**NOTE:** When the passkey is plugged in, communication between the room unit and the TEC is disabled. See note in *Laptop Pass-thru Mode* section for more information.

### Settings

- Set Pt Disp** - determines how the user views the temperature setpoint adjustment. The default setting is **NUMERIC**, and displays in degrees. The user can select between a **NUMERIC** and a **GRAPHIC** setpoint display.
- Set Pt Min** - determines the minimum temperature setpoint value. The default setting is 55°F (12.5°C). The user selects the minimum setpoint the room unit should request. The setpoint limit is ultimately defined in the controller. If the setpoint is displayed graphically as a sliding bar, this sets the left end of the slider bar. The limits are 55°F to the Set Pt Max value. The adjustment step size is 1°F (0.5°C).
- Set Pt Max** - determines the maximum temperature setpoint value. The default setting is 95°F (35°C). The user selects the maximum setpoint the sensor should request. The setpoint limit is ultimately defined in the controller. If the setpoint is displayed graphically as a sliding bar, this sets the right end of the slider bar. The limits are Set Pt Min to 95°F (35°C). The adjustment step size is 1°F (0.5°C).

- **Disp Temp?** – determines whether the temperature value should be displayed. The default value is **YES**.
- **Disp RH?** – determines whether the humidity value should be displayed. The default value is **YES**, if the device is a combination temperature/humidity or temperature/humidity, CO<sub>2</sub> room unit. (This option is conditional based on the presence of humidity measurement capability, and only offered with QFA3x80.F or QPA2x84.F types.)
- **Disp CO2?** – determines whether the carbon dioxide value should be displayed. The default value is **YES**, if the device is a CO<sub>2</sub> Room Unit. (This option is conditional based on the presence of CO<sub>2</sub> measurement capability, and only offered with QPA2x84.F types.)
- **Disp Occ?** – determines whether the occupancy status should be displayed. The default value is **YES** if the device offers occupancy override capability.  
**NOTE:** This does not enable/disable the Occupancy override button functionality, just the display of the occupancy status.
- **T Cal** – allows the user to field calibrate the temperature display and output through a bias adjustment. The default value is + 0°F. Adjustments can be made between -5°F and + 5°F, in 0.5°F increments.
- **RH Cal** – allows the user to field calibrate the humidity display and output through a bias adjustment. The default value is + 0%. Adjustments can be made between -5% and + 5%, in 0.5% increments. (This option is conditional based on the presence of humidity measurement capability, and only offered with QFA3x80.F or QPA2x84.F types.)
- **CO2 Cal** – allows the user to field calibrate the carbon dioxide display and output through a bias adjustment. The default value is +0 parts per million (PPM). Adjustments can be made between -175 and + 50 PPM, in 5 PPM increments. (This option is conditional based on the presence of CO<sub>2</sub> measurement capability, and only offered with QPA2x84.F types.)
- **Brightness** – allows the user to adjust the display brightness. Valid values are 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10, with 1 being dimmest and 10 being brightest. The default setting is **5**.

- **Scr Saver** – allows the user to activate or deactivate the display screen saver. Available options are: **NONE**, **OFF**, and **FADING**. The default value is **NONE**.
  - **NONE** – The display operates at the programmed brightness level without any interruption.
  - **Off** – The display will turn off after 30 seconds. Any button press will wake it up (without doing anything else), and then the device will operate in Normal Mode for 30 seconds until the display turns off again.
  - **Fading** – Within 30 seconds of no operator interaction, the entire display will fade to a display brightness of 1. The display will operate at this brightness until the user presses a button. At that time, the programmed display brightness will be restored.
- **Factory Defaults** - allows the user to reset all parameters to factory defaults. The default is **NO**. Available options for this parameter are **YES** and **NO**.

Parameter	Default Value
Set Pt Disp	NUMERIC
Set Pt Min	55°F (13°C)
Set Pt Max	95°F (35°C)
DISP Temp?	YES
Disp RH?	YES
Disp CO2?	YES
Disp Occ?	YES
T Cal	+ 0°F (0°C)
RH Cal	+ 0%
CO2 Cal	+0 PPM
Brightness	5
Scr Saver	NONE
Factory Defaults	NO

### Laptop Pass-thru Mode

To communicate with the TEC using Datamate Base, Datamate Advanced, or Microsoft Windows™ Controller Interface Software (WCIS), connect a PC-compatible cable (see *Accessories*) from a laptop to the sensor HMI port at the bottom of the room unit. This puts the room unit in laptop mode, which deactivates all buttons and displays **LAPTOP** on the display. In this mode, the controller communicates only with the laptop and still allows the temperature, humidity, or CO<sub>2</sub> values (where applicable) to be updated in the controller. The room unit controls communication, and updates values every 10 seconds. The room unit returns to Normal Mode once the cable is disconnected.

**NOTE:** The Room Unit (Firmware Revision 016 or lower) will stop updating ROOM TEMP, RM STPT, and OVRD if a passkey or laptop cable is connected to the Room Unit. This issue will affect the normal commissioning process, because the Specialist cannot leave the HMI cable connected to the Room Unit to monitor the TEC's control. This affects all Series 2200 and 3200 models.

Furthermore, if the TEC is initialized, power is cycled (which has the same effect as initializing the TEC) or the Application (subpoint 2) is commanded to another value, the following will occur:

- The RM TEMP will read and control to 57°F (12°C).
- The RM STPT will read and control to 98°F (37°C).

Once the passkey or HMI cable or passkey is disconnected, the ROOM TEMP will update within 10 seconds. The RM STPT will not update until the setpoint setting is changed on the Room Unit or until the Room Unit cycles power.

The Room Unit (Firmware Revision 029 or higher) in combination with new release TEC products ROOM TEMP, RM STPT, and OVRD will be updated if a passkey or laptop cable is connected to the Room Unit, but the buttons will not work. New release TEC Products Use a SENSOR SEL point that allows the TEC to see all inputs from the Digital Room Sensor, the default setting does not allow the TEC to see the points.

## Set-up of Displayed Temperature Units

The factory default for displayed temperature units is °F. To change the display to °C mode, snip the wire jumper on the back of the PCB (the visible side when the unit is taken off the wall).

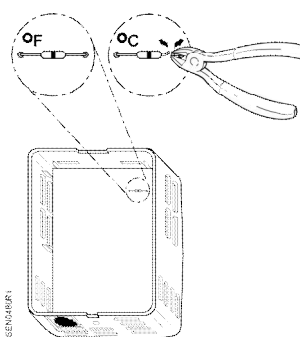


Figure 3. Jumper Location.

## Error Messages

Message	Meaning
NO TEC	No communication with TEC. This error will display on the lower right (icon) section of the display, and the upper portion of the display should continue to display temperature values (and/or humidity and CO <sub>2</sub> values where applicable).  Or a bad crimp on the RJ11 cable connection.  <b>NOTE:</b> This error will display whenever TEC subpoints are not available or when the TEC (or its subpoints) are not responding to commands. The default HMI baud rate on the TEC is 1200, but the room unit baud rate is self-adjusting.
NO SENSOR	No temperature (or humidity or CO <sub>2</sub> where applicable) sensor detected on the PCA. This error will display until the error is corrected. This message might also display if the wrong controller-to-room unit-cable is used or if the replacement sensor element is incorrectly installed on the PCA.
0xx	Room unit firmware revision, where X is a number between 0 and 9. For Room Units (Revision 016 and lower) this is visible upon power-up for a few seconds until communication is established with the TEC or ATEC. For Revision 029 and higher, this is visible for a few seconds upon power-up and when the laptop cable is disconnected.

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