VCCX2 Controller
Operator Interface SD
Technical Guide

VCCX2 Controller Code: SS1088 Version 1.0 & up
VAV/Zone Controller Code: SS8011
Requires Service Tool SD Code: SS1063
Requires System Manager SD Code: SS1068 Version 1.11
**IMPORTANT NOTICE**

This technical guide provides instructions for using the Modular Service Tool and Modular System Manager SD with the VCCX2 & VAV/Zone Controllers only. If you are using a different controller, you can download the applicable SD Technical Guide listed below from our website—aaon.com/controlsmanuals—where you can always find the latest updates to the literature, or you can access and print the operator interface technical guides from the SD card.

**SD CARD UPDATING INSTRUCTIONS**

The Modular Service Tool and Modular System Manager are equipped with an SD memory card. This SD card can be removed and easily updated through a computer by downloading updates, as they become available, from our website to your computer.

In order to perform any updates, your computer needs an SD card drive or you will need to purchase an SD card adapter.

Download instructions are found in Appendix B on page 94 of this manual.
# TABLE OF CONTENTS

## OVERVIEW & SYSTEM CONNECTION

- Modular Service Tool ................................................................. 4
- Modular System Manager SD ........................................................ 4
- Modular System Manager SD .......................................................... 6

## MODULAR SERVICE TOOL SD

- Display Screens and Data Entry Keys ........................................... 8
- Initialization & Setting the Time & Date .......................................... 8
- Setting the Operating Mode & Energy Timer .................................. 10
- Alarm Search & Override Search ...................................................... 11
- BACnet® Overrides ........................................................................ 12
- Schedules & Holidays .................................................................... 12
- Schedule Override ......................................................................... 13

## SYSTEM MANAGER SD

- Display Screens and Data Entry Keys ........................................... 14
- Initialization & Setting the Time & Date .......................................... 15
- Setting the Operating Mode ............................................................. 16
- Changing Passcodes ...................................................................... 17
- Loop Search and System Alarm Search ........................................... 18
- Unit Alarm Search & Override Search ............................................. 19
- Schedules & Holidays .................................................................... 20
- Schedule Override ......................................................................... 21

## PROGRAMMING

- VCCX2 Configuration Screen Index ............................................. 22
- VCCX2 Configuration .................................................................... 23
- VCCX2 Setpoint Screen Index ....................................................... 39
- VCCX2 Setpoint Screens ............................................................... 40
- VCCX2 Status Screen Index ............................................................ 56
- VCCX2 Status Screens .................................................................. 57
- RSM Configuration Screen Instructions ........................................ 65
- RSMV Configuration Screens ....................................................... 66
- RSMV Configuration Screens ....................................................... 67
- RSMV Status Screens .................................................................... 68
- RSMV Status Screens .................................................................... 71
- RSMV Status Screens .................................................................... 73
- VAV/Zone Configuration Screens ................................................ 77
- VAV/Zone Setpoint Screens .......................................................... 77
- VAV/Zone Status Screens ............................................................... 83
- VAV/Zone Schedule Screens ........................................................ 86
- VAV/Zone Damper Force Modes ................................................... 87
- MiniLink PD Configuration Screens ............................................. 88
- MiniLink PD Status Screens .......................................................... 89

## TROUBLESHOOTING - VCCX2 OUTPUTS FORCE

## APPENDIX A - SAVING, LOADING, AND COPYING SETPOINTS

## APPENDIX B - UPDATING YOUR SD MEMORY CARD

## APPENDIX C - UPDATING CONTROLLERS & E-BUS MODULE SOFTWARE

## INDEX

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*VCCX2 Operator Interface SD*
Modular Service Tool SD

The ASM01895 Modular Service Tool is a system operator interface that provides a direct link to enable the system operator to view the status, configure, and adjust the setpoints of the VCCX2, VCC-X, VBC-X, VCM, VCM-X, VCM-X E-BUS, RNE, SA E-BUS, VAV/CAV, MUA II, or VAV/Zone Controller on the control system communications loop. However, this manual only applies to VCCX2 and VAV/Zone Controllers. See note in the inside front cover for the list of manuals that pertain to other controllers.

The Modular Service Tool is housed in an attractive black plastic enclosure. The display area is covered with a clear plastic bezel for protection of the display screen. The Modular Service Tool has a 4-line-by-20-character display panel with adjustable contrast control and a 27-key membrane keypad for data selection and entry. All keypad operations are simple and straightforward, utilizing non-cryptic plain English language messages. Menu-driven programming allows for easy setup and operation without the need for specialized training. The Modular Service Tool is supplied with a programmable 4 Gigabyte SD memory card, (4) AA 1.5 V batteries, a wall mount, a DC power supply, a mini-Din communication cable, and an E-BUS communication cable. The mini-Din cable allows you to connect the Modular Service Tool to any Orion controller which has a mini-Din connector socket for programming, monitoring, and troubleshooting purposes. It also has an RS-485 terminal block for connecting to the VAV/Zone Controller or other controllers that do not have a mini-Din connector.

The Modular Service Tool is also equipped with an EBC E-BUS port and an RS-485 three conductor terminal block port. The E-BUS port and included E-BUS cable are used for updating E-BUS Module software (described in Appendix C).

The Modular Service Tool is designed to be hand-carried. Its rugged plastic housing provides superior protection for the electronic components housed inside. The Modular Service Tool is a top-quality service tool that will stand up to the demands of the typical job site environment for many years.

Figure 1: Modular Service Tool SD Dimensions
Modular Service Tool

Whether you have a Stand Alone, Interconnected, or Networked VCCX2 Control System, the Modular Service Tool always connects to the controller via a prefabricated cable that is supplied with the service tool. The Modular Service Tool cable is terminated on both ends with a mini-DIN connector. Attach one end to the Modular Service Tool and the other end to the mini-DIN connector on the controller. If attaching to a VAV/Zone Controller or other controllers that do not have a mini-Din connector, use 18-gauge, 2-conductor, twisted pair with shield cable and wire from the RS-485 terminal block on the Modular Service Tool to the VAV/Zone Controller’s communication terminal block. If this is an Interconnected System, all controllers that are interconnected with communications cable can be programmed from any controller on the loop. If this is a Networked System, all controllers on the entire Networked System can be programmed from one controller.

Be sure that the Modular Service Tool has fresh batteries installed or that it is connected to a power source using the supplied power pack before attempting any programming of the controller. See Figure 2 for connection details.
The ASM01901 Modular System Manager SD provides a direct link to enable you to view the status and adjust the setpoints of the VCCX2, VCC-X, VCB-X, VCM-X, VCM-X E-BUS, RNE, SA E-BUS, VCM, VAV/CATV, MUA II or VAV/Zone Controller on the control system communications loop. The System Manager SD is housed in a beige-colored plastic enclosure. The System Manager has a programmable 4 Gigabyte SD card and is equipped with a 4-line-by-20-character backlit display panel and a 24-key membrane keypad for data selection and entry. All keypad operations are simple and straightforward, utilizing non-cryptic plain English language messages. Menu-driven programming allows for easy setup and operation without the need for specialized training. The System Manager also has 2 integral LEDs for user notification of system alarm conditions and override initiations. Protection from unauthorized users is provided by the System Manager’s integral multi-level passcode authorization programming.

For a Stand-Alone system, a power/comm cable with modular connectors on one end and stripped wire ends on the other end is provided to facilitate connecting communications and power to the Modular System Manager from the 24 VAC power source and the HVAC unit controller communication wiring terminals. Alternatively, 2-conductor, twisted pair with shield cable can be used to wire from the RS-485 terminal block on the back of the Modular System Manager to the Controller’s communication terminal. If this is an Interconnected System, all controllers that are interconnected with communications cable can be programmed from any controller on the loop. If this is a Networked System, all controllers on the entire Networked System can be programmed from one controller.

The Modular System Manager is designed for wall mounting. Mounting holes are provided to attach the Modular System Manager to a standard handy box. It is recommended that the System Manager be mounted at approximately eye level to allow for ease of programming and reading of the display. The System Manager is typically mounted in the building manager’s or superintendent’s office or in an equipment room. The attractive enclosure is quite suitable for mounting in any location.
**Stand Alone and Network Connection**

As previously described, when the System Manager is to be connected to a Stand Alone system, a 12-foot cable with modular connectors on one end and stripped wire ends on the other end is provided for this purpose. This is used to facilitate connecting communications and power wiring to the Modular System Manager from a 24 VAC power source and to the HVAC unit controller communication wiring terminals. If the supplied cable wire is not long enough for your installation, a standard modular cable of the correct length can be purchased through AAON and one of the modular connectors can be cut off to allow for the transformer and communication terminal wiring connections. It is recommended that you do not splice the communications wire if at all possible. The transformer should be rated at 6 VA minimum power output.

Alternatively, 2-conductor, twisted pair with shield cable can be used to wire from the RS-485 terminal block on the back of the Modular System Manager to the Controller’s communication terminal. All controllers on the entire Networked System can be programmed from one controller.

See Figure 4 below for typical connection information.

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**Figure 4: Modular System Manager SD Connection and Wiring Details**
Operator Interfaces

In order to configure and program the VCCX2 Controller, you must have an Operator’s Interface or a personal computer with the Prism 2 computer front-end software installed. Three different Operator Interfaces are available for programming of the VCCX2 Controls System—the Modular Service Tool SD, the Modular System Manager SD, and/or the System Manager TS-L (Limited Access). These devices allow you to access the status and setpoints of any controller on your communications loop. This manual describes the Modular Service Tool SD. If using the System Manager TS-L, please see the System Manager TS-L Technical Guide. If using Prism 2, please see the Prism 2 Technical Guide.

The Modular Service Tool and Modular System Manager SD allow you to view any input or output status and change any setpoint to fine-tune the operations of the total system. All keypad operations are simple and straightforward, utilizing non-cryptic plain English messages.

Display Screens & Data Entry Keys

See the chart below for a list of the keypad descriptions and functions.

<table>
<thead>
<tr>
<th>Keypad Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESC</td>
<td>Use this key to exit from screens or from data entry or to return to the Main Screen from any screen in the system.</td>
</tr>
<tr>
<td>ENTER</td>
<td>Use this key to enter a new value.</td>
</tr>
<tr>
<td>Clear</td>
<td>If a data entry mistake is made, press this key to clear the data entry field and start over. This key also turns off the power to the Service Tool when on the Main Screen.</td>
</tr>
<tr>
<td>Minus</td>
<td>If a setpoint with a negative value is required, press this key for the minus sign.</td>
</tr>
<tr>
<td>DEC</td>
<td>Press this key when entering data that requires a decimal point.</td>
</tr>
<tr>
<td>← →</td>
<td>Use these keys to change values in the Configuration Screens as prompted.</td>
</tr>
<tr>
<td>← →</td>
<td>Use these keys to step backward or forward through the screens.</td>
</tr>
</tbody>
</table>

Table 1: Keypad Descriptions

Mode Selection Buttons

The Modular Service Tool is provided with “Mode Selection Buttons.” These buttons give you instant access to the specific mode desired without having to scroll through several menu screens to get there.

<table>
<thead>
<tr>
<th>Button Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATUS</td>
<td>Pressing this button takes you directly to the controller “Status” screens.</td>
</tr>
<tr>
<td>SETPOINTS</td>
<td>Pressing this button takes you directly to the controller “Setpoints” screens.</td>
</tr>
<tr>
<td>SCHEDULES</td>
<td>Pressing this button takes you directly to the controller “Schedules” screens.</td>
</tr>
<tr>
<td>OVERRIDES</td>
<td>Pressing this button takes you directly to the controller “Over-rides” screen. See the “Override Button” section on page 11 for a description of this function. See Note 1 below.</td>
</tr>
<tr>
<td>ALARMS</td>
<td>Pressing this button takes you directly to the controller “Alarms” screen. See the “Alarms Button” section on page 18 for a description of this function.</td>
</tr>
<tr>
<td>CONFIGURATION</td>
<td>Pressing this button takes you directly to the controller “Configuration” screens.</td>
</tr>
<tr>
<td>BALANCE-TEST</td>
<td>Pressing this button takes you directly to the controller “Balance-Test” screens.</td>
</tr>
</tbody>
</table>

NOTE:

(1) The Modular Service Tool will only search the Overrides one loop at a time. You must enter the Loop number and the MiniLink PD unit ID (60).
Modular Service Tool Initialization

Modular Service Tool Initialization Screen and Setup Screens
After connecting the Service Tool to the controller with the supplied cable, press <ON>. The Initialization Screen will appear followed by the Setup Screens as shown below. If there is no SD card installed, the second screen will display, “No SD Card Connected! Powering Down!”

Although the times are displayed on the Main Screen in a standard 12-hour format, you must program them using the 24-hour military format. If you configured the VCCX2 Controller to use its own Internal Schedules, the Occupied/Unoccupied modes are calculated on the basis of the current real time clock reading.

The two screens that follow will appear. To scroll through the fields, press < or > or <ENTER>. In order to save a new value, you must press <ENTER>.

### Programming the Time & Date

To scroll through the fields, press < or > or <ENTER>. In order to save a new value, you must press <ENTER>.

When you have finished programming the time and date, press <ESC> to return to the Setup Screen shown below.

### Setting The Time & Date

The Modular Service Tool is equipped with a real time clock chip allowing it to maintain the correct time. Once you have programmed the correct time and date, the information is broadcast globally to all controllers on the entire system.

#### Programming the Time

From the Setup Screen shown below, press <1> on your keypad to access the Set Time & Date Screens. (You may have to press <NEXT> to access this screen).

**NOTE:** Once you press <ESC> while at the Setup Screens shown above, you can access them again by pressing <NEXT> or cycling power.

#### Setting The Time & Date

The Modular Service Tool is equipped with a real time clock chip allowing it to maintain the correct time. Once you have programmed the correct time and date, the information is broadcast globally to all controllers on the entire system.

**NOTE:** If you are in a time zone that has daylight savings, you will need to manually adjust the time twice a year.
Setting the Operating Mode

The Operating Mode is displayed on the last line of the Main Screen as shown below. The factory default setting for the Service Tool is LS (Low Speed) Stand Alone Mode. LS Stand Alone Mode is the correct configuration for the VCCX2 Controller when in Stand Alone Mode.

If you are using this Service Tool on a communications loop and have an installed MiniLink PD or CommLink, you will need to change the setting to LS (Low Speed) Network Mode.

If you are using a VCCX2 Controller that is set for high speed, you will need to change the setting to HS (High Speed) Stand Alone Mode or HS (High Speed) Network Mode.

If your display indicates a different mode than the one you need, press <2> at the Setup Screen shown below. You may have to press <NEXT> to access this screen.

The Communications Screen will appear as shown below.

Press <←> or <→> to select the proper mode of operation.

When you have made your selection, press <ENTER>. The following screen will appear.

Press any key to continue. The Setup Screen will appear as shown below.

Setting the Energy Saving Timer

The Modular Service Tool has a built-in timer that can be programmed to shut the Service Tool off after a specified period of time if no buttons are pressed. This is a very useful feature if you are powering the Service Tool from the internal batteries.

To set the Energy Saving Timer, press <NEXT> at the first Setup Screen and <3> at the second Setup Screen shown below. (You may have to press <NEXT> to access these screens).

The Energy Saving Screen will appear as shown below:

Enter the number of minutes you want the Service Tool to stay active before it automatically powers down and press <ENTER>. To cancel the automatic power down, enter <99> and press <ENTER>. After you have entered a number between 1 and 99 minutes, press <ESC> to exit the screen.

The Setup Screen will appear again as shown below:
Modular Service Tool Alarm Search

**NOTE:** When you press the <ALARMS> button on the Modular Service Tool, it will search only the unit ID that you have entered; therefore, you must search each unit individually to access all alarms for that controller.

To search for alarms, press <ALARMS> while on any screen but the Main Screen. The Unit Selection Screen will be displayed.

Enter the Unit ID of the controller the Service Tool is connected to and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen.

**NOTE:** If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

One of the following screens will appear:

- VCCX2 V.XXX
  - NO ALARMS

Press <↓> to scroll through all the alarms for the controller that the Modular Service Tool is connected to.

To clear any alarms that are found, you must fix the problem indicated in the alarm. Once the problem is fixed, the alarm will clear from the screen the next time the unit is polled.

Modular Service Tool Override Search

When a space sensor with override option is used with any VAV Zone or Unit Controller and the system is connected to a MiniLink Polling Device, the Modular Service Tool can determine and report any controllers that are currently operating in an override condition on a specific Loop by entering a Loop ID number and then doing a search.

**NOTE:** When you press the <OVERRIDES> button on the Modular Service Tool, it will search only the Loop number that you enter; therefore, you must search each loop individually to access all overrides.

To access the Overrides Screen, press <OVERRIDES> from the Modular Service Tool’s keypad. A screen will appear asking you to enter the unit ID.

Enter the Unit ID for the MiniLink PD (MLPD) of the loop you wish to search and press <ENTER>. The MLPD is always address 60 on each loop. So the unit ID of any particular MLPD would be the loop number followed by 60. Once communication is established, the words “Press Down” will appear at the bottom of the screen.

**NOTE:** If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

If communications are successful, one of the following screens will appear:

- VCCX2 V.XXX
  - NO OVERRIDES

- VCCX2 V.XXX
  - OVERRIDES PRESENT
  SCROLL DOWN TO VIEW

After the Service Tool completes its search, it will post a message to tell you if there are overrides present. If there are overrides, press <↓> and all units on the loop will be listed showing ‘Override: Yes or No.’ Press <OVERRIDES> again to access overrides on a different loop. Enter the Unit ID of the MLPD of that loop.
**BACnet® Overrides**

When you press the `<OVERRIDES>` button on the Modular Service Tool when directly connected to a VCCX2 Controller that is connected to BACnet®, the Service Tool will display values for BACnet® overrides.

The following screens will appear when you press the `<OVERRIDES>` button:

![BACnet Override Screens](image)

- HVAC Mode: 0
- Fan VFD: -1
- OA Damper: -1
- SAT Setpt: 0.0
- SPC Temp: 0.0
- SPC RH: -1.0
- Relief Fan VFD: -1
- Relief Pres: -1.00
- CO2: -1
- OA Temp: -100.0
- OA RH: -1.0

**NOTE:** The values shown are the default values when there isn’t an active override being used.

**Scheduling**

You can access the Unit Controller Scheduling Screens by pressing `<SCHEDULES>`. The Unit Selection Screen will be displayed.

![Scheduling Screen](image)

Enter the Unit ID of the controller you wish to access and press `<ENTER>`. Once communication is established, the words “Press Down” will appear at the bottom of the screen.

**NOTE:** If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

Press the `<Down>` button and then press `<ENTER>` to access the scheduling function you wish to view.

![Weekly Schedules](image)

**Week Schedules**

**Event #1**

- VCCX2 Schd ID #
- Sunday Event #1
- Start Time: XXXX
- Stop Time: XXXX

**Event #2**

- VCCX2 Schd ID #
- Sunday Event #2
- Start Time: XXXX
- Stop Time: XXXX

If you are using the internal scheduling capability of the Unit Controller, set the schedule hours and holiday periods from the menu shown above. You can also force the unit to operate continuously in occupied or unoccupied mode by selecting the Schedule Override menu item and entering the desired command.

If you are using an external contact closure to signal the occupied mode, you must access the Week Schedule Screens and set all start and stop times to zero to prevent the internal schedule from turning the equipment on when you don’t want it to operate.
The screens will step through the **Start Time** and then the **Stop Time** for each day of the week. You can quit at any point in the process by pressing `<ESC>`. There are two Start/Stop events available per day, so the screen will show which event is being programmed. If you need only one event, keep Event #2’s times set at ZERO.

All times are in 24-hour military format, so 5:00 PM would be entered as 1700.

If both the Start and Stop Times are ZERO, the schedule is in a continuous OFF mode. (*Also, use for Remote Forced Occupied applications using the Forced Occupied Binary Input.*)

If both the Start and Stop Times are 2359, the schedule is in a continuous ON mode.

**NOTE:** The second line displays which day of the week is currently being programmed. The day of the week automatically increments as you exit the Event #2 screen for the day and continue to the next day’s Event #1 screen.

**CAUTION:** The controller ships with all schedules set to zero so that the controller will not attempt to heat or cool before you have configured the system.

<table>
<thead>
<tr>
<th>Holiday Start/Stop Day Selection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VCCX2 Schd</strong></td>
</tr>
<tr>
<td>Holiday # 1</td>
</tr>
<tr>
<td><strong>VCCX2 Schd</strong></td>
</tr>
<tr>
<td>Holiday # 1</td>
</tr>
</tbody>
</table>

The screens will step through the fourteen possible holidays, one period at a time. Line 2 shows which holiday is currently being programmed. Since a holiday period can encompass more than one day, you need to program the day the holiday starts and the day the holiday ends. If your holiday only lasts one day, simply set both the Start Day and the Stop Day to the same value. Remember to combine the month and day into a single four-digit value.

**EXAMPLES:**
- 704 = July 4th *(NOTE: Leading zero not required)*
- 1225 = December 25th

**Holiday Start/Stop Times**

<table>
<thead>
<tr>
<th>VCCX2 Schd</th>
<th>ID #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holiday Schedule</td>
<td></td>
</tr>
<tr>
<td>Start Event #1: XXXX</td>
<td></td>
</tr>
<tr>
<td>Stop Event #1: XXXX</td>
<td></td>
</tr>
</tbody>
</table>

The fourteen holidays all use the same Start and Stop times which you program on this screen and the next. You must enter the time in 24-hour military format, the same as a regular week schedule.

Normally, the holidays will operate in an unoccupied mode or a reduced schedule mode. There are two start/stop events available on holidays to match the standard schedule number of events.

**Schedule Override**

<table>
<thead>
<tr>
<th>VCCX2 Ovrd</th>
<th>ID #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule Override</td>
<td></td>
</tr>
<tr>
<td>Enter Override: X [0=Auto 1=ON 2=OFF]</td>
<td></td>
</tr>
</tbody>
</table>

If you want to force the unit to operate in a continuous Occupied or Unoccupied mode, select this menu item to activate the desired method. If a Schedule Override is active, all other methods of schedule control are ignored (Push-Button, Internal, and Remote).

As you can see on the last line of the display, enter `<1>` to run continuously in the Occupied Mode or `<2>` to run continuously in the Unoccupied Mode. To restore normal schedule operations, enter `<0>`.

This override remains in effect until canceled and does not time-out like the Output Overrides do after 10 minutes of no communications.

**NOTE:** Do not use the Force OFF mode in place of setting all the week schedules to ZERO if you are using a Remote Signal for your scheduling since the Override has priority over the Remote Signal.
MODULAR SYSTEM MANAGER SD

System Manager SD Keys and Buttons

Operator Interfaces

In order to configure and program the Orion System controllers, you must have an Operator’s Interface or a personal computer with the Prism 2 computer front-end software installed. Three different Operator Interfaces are available for programming of the Orion Controls System—the Modular Service Tool SD, the Modular System Manager SD, and/or the System Manager TS-L (Limited Access). These devices allow you to access the status and setpoints of the controllers on your communications loop. This manual describes the Modular System Manager SD. If using the System Manager TS-L, please see the System Manager TS II Technical Guide. If using Prism 2, please see the Prism 2 Technical Guide.

The Modular System Manager SD allows you to view any input or output status and change any setpoint to fine-tune the operations of the total system. All keypad operations are simple and straightforward, utilizing non-cryptic plain English messages.

Display Screens & Data Entry Keys

See the chart below for a list of the keypad descriptions and functions.

<table>
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<tr>
<th>Keypad Description</th>
<th>Function</th>
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<td>ESC</td>
<td>Use this key to exit from screens or from data entry or to return to the Main Screen from any screen in the system.</td>
</tr>
<tr>
<td>ENTER</td>
<td>Use this key to enter a new value.</td>
</tr>
<tr>
<td>Clear</td>
<td>If a data entry mistake is made, press this key to clear the data entry field and start over.</td>
</tr>
<tr>
<td>Minus</td>
<td>If a setpoint with a negative value is required, press this key for the minus sign.</td>
</tr>
<tr>
<td>DEC</td>
<td>Press this key when entering data that requires a decimal point.</td>
</tr>
<tr>
<td>← →</td>
<td>Use these keys to change values in the Configuration Screens as prompted.</td>
</tr>
<tr>
<td>↑ ↓</td>
<td>Use these keys to step backward or forward through the screens.</td>
</tr>
</tbody>
</table>

Mode Selection Buttons

The Modular System Manager is provided with “Mode Selection Buttons.” These buttons give you instant access to the specific mode desired without having to scroll through several menu screens to get there.

<table>
<thead>
<tr>
<th>Button Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATUS</td>
<td>Pressing this button takes you directly to the controller “Status” screens.</td>
</tr>
<tr>
<td>SETPOINTS</td>
<td>Pressing this button takes you directly to the controller “Setpoints” screens and “Configuration” menu.</td>
</tr>
<tr>
<td>SCHEDULES</td>
<td>Pressing this button takes you directly to the controller “Schedules” screens.</td>
</tr>
<tr>
<td>OVERRIDES</td>
<td>Pressing this button takes you directly to the controller “Overrides” screen. See the “Override Button” section on page 19 for a description of this function. See Notes 1 &amp; 2 below.</td>
</tr>
<tr>
<td>ALARMS</td>
<td>Pressing this button takes you directly to the controller “Alarms” screen. See the “Alarms Button” section on page 18 for a description of this function. See Notes 1 &amp; 2 below.</td>
</tr>
</tbody>
</table>

NOTES:

1. This button only functions when the system is configured for “Network Mode” or “Multiple MGRS Mode.” It will not function in “Stand Alone Mode.”

2. The “Search for Units” function must be performed on the System Manager upon initial system setup before this function will be available. See the “Network Mode & Multiple Managers Loop Search” on page 18 of this manual for complete instructions on performing a loop search.

Table 3: Keypad Descriptions

Table 4: Button Descriptions
System Manager SD Initialization

System Manager SD Initialization Screen and Setup Screens

After connecting the System Manager to the controller with the supplied cable, press <ON>. The Initialization Screen will appear followed by the Setup Screens as shown below. If there is no SD card installed, the second screen will display, “No SD Card Connected! Powering Down!”

NOTE: After exiting these screens, you can access them again by pressing <ESC> and then < gauche > or by cycling power.

Setting The Time & Date

The System Manager SD is equipped with a real time clock chip allowing it to maintain the correct time. Once you have programmed the correct time and date, the information is broadcast globally to all controllers on the entire system.

NOTE: A Level 1 or Level 2 User can set the time and date.

NOTE: If you are in a time zone that has daylight savings, you will need to manually adjust the time twice a year.

Programming the Time

From the Setup Screen shown below, press <1> on your keypad to access the Set Time & Date Screens.

虽然时间被显示在主屏幕上以标准12小时格式，但是您必须使用24小时军事格式来编程它们。如果您设置了内部日程表，占用/未占用模式是根据当前实时时钟读数计算的。

The two screens that follow will appear. To scroll through the fields, press < gauche > or < ENTER >. In order to save a new value, you must press < ENTER >.

Programming the Date

To scroll through the fields, press < gauche > or < ENTER >. In order to save a new value, you must press < ENTER >.

When you have finished programming the time and date, press <ESC> to return to the Setup Screen.
Setting the Operating Mode

The Operating Mode is displayed on the last line of the Main Screen as shown below. The factory default setting for the System Manager is LS (Low Speed) Stand Alone Mode.

The System Manager must be configured for the correct mode of operation for your system. There are 5 modes of operation available for the Orion System—LS (Low Speed) Stand-Alone, HS (High Speed) Stand-Alone, LS (Low Speed) Network, HS (High Speed) Network, and LS (Low Speed) & HS (High Speed) Multiple MGRS.

If you are using this System Manager on a communications loop that doesn’t have a MiniLink PD or CommLink connected to it and you have a single System Manager on your system, then you need to operate in LS (Low Speed) Stand-Alone Mode. If you are using a VCCX2 Controller or GPC-XP Controller that is set for high speed, and you don’t have a MiniLink PD or CommLink connected to the loop, then you will need to change the setting to HS (High Speed) Stand Alone Mode.

If you are using the System Manager on a communications loop and have an installed MiniLink PD or CommLink, you will need to change the setting to LS (Low Speed) Network Mode. If you are using a VCCX2 Controller or GPC-XP Controller that is set for high speed, and are using a MiniLink PD or CommLink, then you will need to change the setting to HS (High Speed) Network Mode.

If you are using this System Manager on a communications loop, have a MiniLink PD or CommLink installed, and have multiple System Managers, then you need to operate in Multiple MGRS Mode.

If your display indicates a different mode than the one you need, press <2> at the Setup Screen shown below. You will have to cycle power to get to this screen or by pressing <ESC> and <PREV>.

The Passcode Clearance Screen will appear as shown below.

Enter the seven digit passcode <2337377> to access the next screen.

You will then see the screen below displayed.

Press <←> or <→> if you need to change the mode of operation to LS (Low Speed) Stand-Alone, HS (High Speed Stand-Alone, LS (Low Speed) Network, HS (High Speed Network, LS (Low Speed) Multiple Manager or HS (High Speed) Multiple Manager and then press <ENTER> to save your selection. If you are not using Multiple Manager Mode, press <ESC> at the screen below and continue scrolling right and left.

For Multiple MGRS Mode, enter the address at which you want this particular System Manager to be set.

When multiple System Managers are used on a local loop, each must be set with a unique address different from any other device on that loop. You must perform this same operation again for each System Manager installed. If you want one of these System Managers to be able to indicate alarms and overrides for the entire system, you must select either LS or HS Network Mode on that particular System Manager.

Once you have the correct number per the display above displayed, press <ENTER>. The following screen will appear telling you that you have changed the system mode:

Press any key on the keyboard to exit this screen.
System Manager Passcodes

Changing the mode of operation, updating software, changing schedules, and changing setpoints and configurations require passcode clearance. The screen below will appear if this action requires passcode clearance.

The System Manager has three levels of user access. All users can view Status Screens. Level 1 users are limited to changing the Time and Date and Operating Schedules. Level 2 users have complete system access. Any status or setpoint field can be read or reset from the System Manager.

These two levels of passcodes are programmable by any Level 2 user. The default Level 1 passcode is “1111” and the default Level 2 passcode is “2222.”

If you wish to change either Level 1 or Level 2 passcodes, please see the instructions that follow.

From the Main Status Screen, press <ESC> and then press <PREV>. The following screen will appear:

Press <→> for the Next Menu. The following screen will be displayed:

Press <3> for Change Passcodes. The following screen will be displayed:

Passcodes can only be changed by a Level 2 user. Enter the passcode and press <ENTER>. The following screen will appear:

Enter New Passcode
Level 1......: XXXX
Level 2......: XXXX
[Must Be 4 Digits]

This screen allows you to enter new Level 1 and/or Level 2 passcodes. Passcodes must always be four digits in length, so the usable range of numbers is 1000 to 9999.

CAUTION: If you change the Level 2 passcode and cannot remember what it is, you will be locked out of your system!
Network Mode & Multiple Managers Loop Search

When the System Manager is configured for Network Mode, a loop search must initially be performed for the System Manager to recognize alarms or overrides. Also, when you have a system that has multiple System Managers and you have one of the System Managers set to (63) Network Mode for alarm and override indication, you must also perform a loop search for that System Manager. This allows the System Manager to be aware of all alarms and overrides for all local loops on the entire system.

To access the Loop Search Screen, from the Setup Screen, press <ESC> and then press <PREV>.

Press <→> for Next Menu. The following screen will be displayed:

Press <4> for Loop Search. The following screen will be displayed:

The System Manager will now proceed to search all loops to find the MiniLink PDs that are connected to the system. The screen will display the current loop being searched and the number of loops currently found.

Once the search is completed, the following screen will be displayed:

The screen will display the number of loops found on your system. The information will be saved into the System Manager’s memory. No further loop searches will be required unless you add an additional MiniLink PD to the Network System.

System Alarm Search

The System Manager can be used to search for all active alarms on the system. You must configure the MiniLink PD to allow for “Alarm Polling” for each controller you want polled for alarms. See the MiniLink PD programming section on page 88 of this manual for setting information.

This option will alert you of the number of alarms present on individual units, but will not tell you what type of alarm are present. You will have to perform and individual unit alarm search for detailed alarm information.

To access the Alarm Search Screen, from the Setup Screen, press <ESC> and then press <PREV>.

Press <5> for Alarm Search. The entire system is searched from this point. The following screen will be displayed:

Once the Alarm Search is complete, one of the following screens will display:
To check controllers individually for alarms, use the <ALARMS> button on the Main Display.

### Unit Alarm Search

The System Manager can be used to search for all active alarms one controller at a time.

**Press** <ALARMS>. The Unit Selection Screen below will be displayed.

Enter Unit Address
Then Press Enter
Selected Unit#: XXXX

Enter the Unit ID of the controller you wish to search and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen.

**NOTE:** If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

The following screen will appear. The System Manager will search for any active alarms on the unit and one of the following screens will appear:

```
CONTROLLER V.XXX
NO ALARMS
```

```
CONTROLLER V.XXX
ALARMS PRESENT
SCROLL DOWN TO VIEW
```

**Press** <◊> to scroll through all the alarms for the controller that the Modular Service Tool is connected to.

To clear any alarms that are found, you must fix the problem indicated in the alarm. Once the problem is fixed, the alarm will clear from the screen the next time the unit is polled.

### System Manager Override Search

**NOTE:** In order for the Override Search to work, a Loop Search must be performed first. See page 18 for details.

When a space sensor with override option is used with any VAV/Zone Controller or Unit Controller, the System Manager can determine and report any controllers that are currently operating in an override condition. This function requires that a MiniLink PD is installed on each loop where the controllers may be located. The MiniLink PD must be configured to allow for “Alarm Polling” for each controller that Override Polling Enabled is desired for this function to work. See the MiniLink PD programming section on page 88 of this manual for setting information.

To access the Space Sensor Overrides Screen, press <OVER-RIDES>. The following screen will appear.

```
Overrides Screen
SEARCHING!
```

After the System Manager completes its search, it will list the first unit on the system that is currently in the override mode. **Press** the <◊> button to scroll through all units that are in the Override Mode.

```
Overrides Screen
Loop = 1 Unit = 59
OVERRIDE FOUND
```
Schedules and Holidays

Scheduling

You can access the Controller Scheduling Screens by pressing <SCHEDULES>. The screen below will appear because Scheduling requires passcode clearance. A Level 1 or 2 passcode can change schedules.

![Scheduling Screen]

If the correct passcode was entered, the Unit Selection Screen will be displayed.

Enter the Unit ID of the controller you wish to search and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen.

**NOTE:** If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

The Unit Schedule Menu will be displayed.

![Schedule Menu]

Press the <↓> button until the cursor is on the desired option and then press <ENTER>.

Week Schedules

From the Unit Schedule Menu, select Week Schedules. The following two screens will appear in order:

**Event #1**

![Event #1 Schedule]

**Event #2**

![Event #2 Schedule]

If you are using the internal scheduling capability of the Controller, set the schedule hours and holiday periods from the menu shown above. You can also force the unit to operate continuously in occupied or unoccupied mode by selecting the Schedule Override menu item and entering the desired command.

If you are using an external contact closure to signal the occupied mode, you must access the Week Schedule Screens and set all start and stop times to zero to prevent the internal schedule from turning the equipment on when you don’t want it to operate.

The screens will step through the Start Time and then the Stop Time for each day of the week. You can quit at any point in the process by pressing <ESC>. There are two Start/Stop events available per day, so the screen will show which event is being programmed. If you need only one event, keep Event #2’s times set at ZERO.

All times are in 24-hour military format, so 5:00 PM would be entered as 1700.

If both the Start and Stop Times are ZERO, the schedule is in a continuous OFF mode. (Use for Remote Signal Contact.)

If both the Start and Stop Times are 2359, the schedule is in a continuous ON mode.

**NOTE:** The second line displays which day of the week is currently being programmed. The day of the week automatically increments as you exit the Event #2 screen for the day and continue to the next day’s Event #1 screen.

**CAUTION:** The controller ships with all schedules set to zero so that the controller will not attempt to heat or cool before you have configured the system.
Holiday Start/Stop Day Selection

From the Unit Schedule Menu, select Holiday Schedules. The following four screens will appear in order:

- **Holiday # 1**
  - **Start Mon/Day:** XXXX
  - **Stop Mon/Day:** XXXX

The screens will step through the fourteen possible holidays, one period at a time. Line 2 shows which holiday is currently being programmed. Since a holiday period can encompass more than one day, you need to program the day the holiday starts and the day the holiday ends. If your holiday only lasts one day, simply set both the Start Day and the Stop Day to the same value. Remember to combine the *month and day* into a single four-digit value.

**EXAMPLE:**
- **704** = July 4th (NOTE: Leading zero not required)
- **1225** = December 25th

Holiday Start/Stop Times

The fourteen holidays all use the same Start and Stop times which you program on this screen and the next. You must enter the time in 24-hour military format, the same as a regular week schedule.

Normally, the holidays will operate in an unoccupied mode or a reduced schedule mode. There are two start/stop events available on holidays to match the standard schedule number of events.

Schedule Override

From the Unit Schedule Menu, select Schedule Override. The following screen will appear:

- **Schedule Override**
  - **Enter Override...:** X
    - [0=Auto 1=ON 2=OFF]

If you want to force the unit to operate in a continuous Occupied or Unoccupied mode, select this menu item to activate the desired method. If a Schedule Override is active, all other methods of schedule control are ignored (Push-Button, Internal, and Remote).

As you can see on the last line of the display, enter <1> to run continuously in the Occupied Mode or <2> to run continuously in the Unoccupied Mode. To restore normal schedule operations, enter <0>.

This override remains in effect until canceled and does not time-out like the Output Overrides do after 10 minutes of no communications.

**NOTE:** Do not use the Force OFF mode in place of setting all the week schedules to ZERO if you are using a Remote Signal for your scheduling since the Override has priority over the Remote Signal.
VCCX2 Configuration Screen Index

The available Configuration Screens for the VCCX2 Controller are listed on the next few pages by sequential screen number. When each VCCX2 Controller is configured for the first time, it is best to start with screen #1 and proceed to each screen in numerical order until you have viewed all available Configuration Screens.

Once the unit is configured and you decide to change one of the screen options, it is helpful to know what screen number contains the configuration you wish to change. With this in mind, the following is a list of all the VCCX2 Configuration Screens in numerical order with a brief listing of the configuration feature available on each screen.

<table>
<thead>
<tr>
<th>Screen #</th>
<th>Configuration Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen #1</td>
<td>Sensor Scaling (Fahrenheit / Celsius)</td>
</tr>
<tr>
<td>Screen #2</td>
<td>RSM 1 &amp; RSM 2 Installed</td>
</tr>
<tr>
<td>Screen #3</td>
<td>RSM 3 &amp; RSM 4 Installed</td>
</tr>
<tr>
<td>Screen #4</td>
<td>RSMSD Installed &amp; RSM Type</td>
</tr>
<tr>
<td>Screen #5</td>
<td>EM1 &amp; 12 Relay Expansion Module Installed</td>
</tr>
<tr>
<td>Screen #6</td>
<td>MHGRV-X &amp; Expansion Module Installed</td>
</tr>
<tr>
<td>Screen #7</td>
<td>MODGAS-X &amp; XWR #2 Installed</td>
</tr>
<tr>
<td>Screen #8</td>
<td>Preheat-X Controller Installed</td>
</tr>
<tr>
<td>Screen #9</td>
<td>HVAC Mode Enable Source</td>
</tr>
<tr>
<td>Screen #10</td>
<td>HVAC Mode Set By Remote Contact</td>
</tr>
<tr>
<td>Screen #11</td>
<td>SAT Reset Source</td>
</tr>
<tr>
<td>Screen #12</td>
<td>Reset Interval Rate</td>
</tr>
<tr>
<td>Screen #13</td>
<td>Space Sensor Type</td>
</tr>
<tr>
<td>Screen #14</td>
<td>Read Space Humidity Global Broadcast</td>
</tr>
<tr>
<td>Screen #15</td>
<td>Remote Space Sensor Board Address</td>
</tr>
<tr>
<td>Screen #16</td>
<td>E-BUS SPC/RH Sensor Alarm LED Enable</td>
</tr>
<tr>
<td>Screen #17</td>
<td>Outdoor Sensor Type</td>
</tr>
<tr>
<td>Screen #18</td>
<td>Return Sensor Type</td>
</tr>
<tr>
<td>Screen #19</td>
<td>Static Pressure Control</td>
</tr>
<tr>
<td>Screen #20</td>
<td>Static/Fan Control Rate</td>
</tr>
<tr>
<td>Screen #21</td>
<td>Static Pressure Control Max Adjust</td>
</tr>
<tr>
<td>Screen #22</td>
<td>Fan Voltage Output - Min/Max</td>
</tr>
<tr>
<td>Screen #23</td>
<td>Supply Fan Cycle Mode</td>
</tr>
<tr>
<td>Screen #24</td>
<td>Fan Runs During Unoccupied</td>
</tr>
<tr>
<td>Screen #25</td>
<td>Fan Proving</td>
</tr>
<tr>
<td>Screen #26</td>
<td>Fan Starting Delay</td>
</tr>
<tr>
<td>Screen #27</td>
<td>Purge Mode Delay</td>
</tr>
<tr>
<td>Screen #28</td>
<td>Heat Type</td>
</tr>
<tr>
<td>Screen #29</td>
<td>Modulating Heat Output Signal - Min/Max</td>
</tr>
<tr>
<td>Screen #30</td>
<td>Cool Type</td>
</tr>
<tr>
<td>Screen #31</td>
<td>Chilled Water Valve</td>
</tr>
<tr>
<td>Screen #32</td>
<td>Mech Heat/Cool Alarm Delay</td>
</tr>
<tr>
<td>Screen #33</td>
<td>Economizer Control Type</td>
</tr>
<tr>
<td>Screen #34</td>
<td>Title 24 Economizer</td>
</tr>
<tr>
<td>Screen #35</td>
<td>Economizer in Unoccupied Mode</td>
</tr>
<tr>
<td>Screen #36</td>
<td>Economizer Enable Source</td>
</tr>
<tr>
<td>Screen #37</td>
<td>Economizer Control Loop Rate/Prop Window</td>
</tr>
<tr>
<td>Screen #38</td>
<td>Economizer Voltage Output - Min/Max</td>
</tr>
<tr>
<td>Screen #39</td>
<td>CO\textsubscript{2} Sensor Installed</td>
</tr>
<tr>
<td>Screen #40</td>
<td>Building Pressure Sensor Installed</td>
</tr>
<tr>
<td>Screen #41</td>
<td>Building Pressure Control</td>
</tr>
<tr>
<td>Screen #42</td>
<td>Building Pressure Control Rate</td>
</tr>
<tr>
<td>Screen #43</td>
<td>Building Pressure Control Max Adjust</td>
</tr>
<tr>
<td>Screen #44</td>
<td>Exhaust Fan Output</td>
</tr>
<tr>
<td>Screen #45</td>
<td>Heat Pump Configuration</td>
</tr>
<tr>
<td>Screen #46</td>
<td>WSHP Glycol Percentage</td>
</tr>
<tr>
<td>Screen #47</td>
<td>Aux Heat Type</td>
</tr>
<tr>
<td>Screen #48</td>
<td>Dehumidification Control</td>
</tr>
<tr>
<td>Screen #49</td>
<td>Humidity Control E-BUS Sensor Type</td>
</tr>
<tr>
<td>Screen #50</td>
<td>Reheat Control</td>
</tr>
<tr>
<td>Screen #51</td>
<td>Type of Airflow Station</td>
</tr>
<tr>
<td>Screen #52</td>
<td>Monitor Outdoor Airflow</td>
</tr>
<tr>
<td>Screen #53</td>
<td>Control Outdoor Air CFM with Damper</td>
</tr>
<tr>
<td>Screen #54</td>
<td>Control Outdoor Air CFM with VFD</td>
</tr>
<tr>
<td>Screen #55</td>
<td>Outdoor Airflow Duct Size</td>
</tr>
<tr>
<td>Screen #56</td>
<td>Monitor Supply Airflow</td>
</tr>
<tr>
<td>Screen #57</td>
<td>Supply Airflow Duct Size</td>
</tr>
<tr>
<td>Screen #58</td>
<td>Monitor Return Airflow</td>
</tr>
<tr>
<td>Screen #59</td>
<td>Return Airflow Duct Size</td>
</tr>
<tr>
<td>Screen #60</td>
<td>Monitor Exhaust Airflow</td>
</tr>
<tr>
<td>Screen #61</td>
<td>Exhaust Airflow Duct Size</td>
</tr>
<tr>
<td>Screen #62</td>
<td>Morning Warm Up Type</td>
</tr>
<tr>
<td>Screen #63</td>
<td>AHU Uses Schedule Number</td>
</tr>
<tr>
<td>Screen #64</td>
<td>Daylight Adjustment Start/Stop Date</td>
</tr>
<tr>
<td>Screen #65</td>
<td>Trend Log Rate</td>
</tr>
<tr>
<td>Screen #66</td>
<td>Emergency Shutdown</td>
</tr>
<tr>
<td>Screen #67</td>
<td>Dirty Filter</td>
</tr>
<tr>
<td>Screen #68</td>
<td>Broadcast Outdoor Air Temperature</td>
</tr>
<tr>
<td>Screen #69</td>
<td>Broadcast Outdoor RH</td>
</tr>
<tr>
<td>Screen #70</td>
<td>Broadcast Space Temperature</td>
</tr>
<tr>
<td>Screen #71</td>
<td>Broadcast Space Humidity</td>
</tr>
<tr>
<td>Screen #72</td>
<td>Broadcast CO\textsubscript{2}</td>
</tr>
<tr>
<td>Screen #73</td>
<td>Broadcast Building Pressure</td>
</tr>
<tr>
<td>Screen #74</td>
<td>Broadcast to Boxes</td>
</tr>
<tr>
<td>Screen #75</td>
<td>Cool Stage Up and Down Delays</td>
</tr>
<tr>
<td>Screen #76</td>
<td>Cool Stage Min Run and Min Off Delays</td>
</tr>
<tr>
<td>Screen #77</td>
<td>Heat Stage Up and Down Delays</td>
</tr>
<tr>
<td>Screen #78</td>
<td>Heat Stage Min Run and Min Off Delays</td>
</tr>
<tr>
<td>Screen #79</td>
<td>Heat Pump Delays</td>
</tr>
<tr>
<td>Screen #80</td>
<td>Heat/Cool Changeover Delay</td>
</tr>
<tr>
<td>Screen #81</td>
<td>Return Air Bypass Control</td>
</tr>
<tr>
<td>Screen #82</td>
<td>Morning Cool Down Type</td>
</tr>
<tr>
<td>Screen #83</td>
<td>Evaporator Condenser Control</td>
</tr>
<tr>
<td>Screens #84-90</td>
<td>VCCX2 Relays 1-8 Configuration Screens</td>
</tr>
<tr>
<td>Screens #91-95</td>
<td>EM1 Relays 1-5 Configuration Screens</td>
</tr>
<tr>
<td>Screens #96-107</td>
<td>12 Relay Configuration Screens</td>
</tr>
</tbody>
</table>
Configuration Screens

In order to correctly set up the VCCX2 Controller, you must first configure several parameters in regard to the type of HVAC unit and system you have installed. Most of these values and operating parameters are only set once at the initial system setup and are never changed.

Modular Service Tool Instructions

No matter what screen or menu you’re in, press <CONFIGURATION>. The Unit Selection Screen will appear, shown below, requesting that you enter the unit ID number.

```
Enter Unit Address
Then Press Enter
Selected Unit#: XXXX
```

Enter the Unit ID of the controller you wish to search and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen. Then press <8>. Select VCCX2 Configuration and then press <ENTER> to save entered data and press <4> to scroll through the screens.

**NOTE:** If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

System Manager SD Instructions

From any Main screen, press <SETPOINTS>. The screen below will appear because this option requires passcode clearance. Only a Level 2 passcode can change setpoints.

```
THIS ACTION Requires
PASSCODE CLEARANCE
Enter Passcode: XXXX
```

If the correct passcode was entered, the Unit Selection Screen will be displayed.

```
Enter Unit Address
Then Press Enter
Selected Unit#: XXXX
```

On the first screen, scroll down to the ‘Configure Unit’ option and press <ENTER>. On the second screen, select VCCX2 Configuration and then press <ENTER>. This will take you to the first Configuration Screen shown below.

Configuration Screen #1 - Sensor Scaling

```
VCCX2 Cnfg  ID #
Sensor Scaling
Fahrenheit
USE < or > TO CHANGE
```

Options are Fahrenheit or Celsius. If you make a change to this screen, after you press <ENTER> to have the system accept the change, you must return to the Unit Selection Screen to re-establish communications with the Controller. Default is Fahrenheit.

Configuration Screen #2 - RSM #1 & #2 Module Installed

```
VCCX2 Cnfg  ID #
RSM#1 Installed: NO
RSM#2 Installed: NO
USE < or > TO CHANGE
```

If you have a one RSM Module installed, the 1st configuration option should be configured as YES. If you have a 2nd RSM Module installed, the 2nd configuration option should be configured as YES. Default is NO.
VCCX2 CONFIGURATION

VCCX2 Configuration Screens

Configuration Screen #3 - RSM #3 & #4 Modules Installed

VCCX2 Cnfg ID #
RSM#3 Installed: NO
RSM#4 Installed: NO
USE < or > TO CHANGE

If you have a 3rd RSM Module installed, the 1st configuration option should be configured as YES. If you have a 4th RSM Module installed, the 2nd configuration option should be configured as YES. Default is NO.

Configuration Screen #4 - RSMSD Module Installed & RSM Type

VCCX2 Cnfg ID #
RSMSD Installed: NO
RSM Type: VFD
USE < or > TO CHANGE

If you have a RSM-Single Digital installed (future), select YES. Default is NO. If you have RSM Module(s) installed, select the type of module - VFD or Digital. Default is VFD.

Configuration Screen #5 - EM1 Expansion Module & E-BUS 12 Relay Module Installed

VCCX2 Cnfg ID #
EM1 Installed: NO
12RLY Installed: NO
USE < or > TO CHANGE

If you have Expansion Module EM1 installed, this configuration option should be configured as YES. Default is NO. If your unit utilizes the following, an EM1 Module is required:

- Modulating Chilled Water
- Return Air Bypass Control
- Title 24 Economizer Actuator Feedback

If you have a 12 Relay E-BUS Expansion Module installed, the 2nd configuration option should be configured as YES. Default is NO.

Configuration Screen #6 - MHGRV-X & Reheat Expansion Module Installed

VCCX2 Cnfg ID #
MHGRV Installed: NO
EXP Installed: NO
USE < or > TO CHANGE

If you have an MHGRV-X Controller installed, the 1st configuration option should be configured as YES. If you also have a MHGRV-X Expansion Module installed, the 2nd configuration option should be configured as YES. Defaults are NO.

Configuration Screen #7 - MODGAS-X & MODGAS-XWR#2 Installed

VCCX2 Cnfg ID #
MODGS Installed: NO
XWR#2 Installed: NO
USE < or > TO CHANGE

If you have a MODGAS-X or MODGAS-XWR Controller installed, the 1st configuration option should be configured as YES. If using a second MODGAS-XWR Controller, the 2nd configuration option should be configured as YES. Defaults are NO.

Configuration Screen #8 - PREHEAT-X Controller Installed

VCCX2 Cnfg ID #
Preheat-X Installed: NO
USE < or > TO CHANGE

If you have a PREHEAT-X Controller installed, this configuration option should be configured as YES. Default is NO.

Configuration Screen #9 - HVAC Mode Enable Source

VCCX2 Cnfg ID #
HVAC Source
Supply Air
USE < or > TO CHANGE

This selects which sensor will determine the mode of operation of the unit and how it will operate. Default is Supply Air. Available options are:

- Supply Air — This is for a standard Cooling Only VAV unit with optional Morning Warm Up. In the Occupied Mode, the unit will be in the Cooling Mode controlling to the Cooling Supply Air Setpoint.
- Supply Air/Tempering — This selection is for VAV “cooling only” applications where because of cold outdoor temperatures, heat may need to be added in order to maintain the “Cooling” Supply Air Setpoint. This application requires Outdoor Air Enable Setpoints to be configured in order to initiate Cooling and Heating Modes.
- Outdoor Air — This is for a 100% OA Unit (MUA) using the OA Temperature Sensor to determine the Heating, Cooling, and Vent Modes of operation. Dehumidification utilizes an Outdoor Air Dewpoint Setpoint. Also use this
configuration if the next screen will be configured for Modes Set By Remote Contact.
- **Return Air**—Optional recirculating unit configuration using the Return Temperature Sensor to determine the Heating, Cooling, and Vent Modes of operation.
- **Space Temperature**—Typical recirculating unit using a Space Temperature Sensor to determine the Heating, Cooling, and Vent Modes of operation.
- **Space Temperature with High % OA**—If it is preferable to use Space conditions (instead of Outside Air) to control a 100% or high percentage outdoor air unit, this option allows tempering of the outdoor air in the Space Vent Mode of operation to prevent dumping of hot or cold air into the space. See the Sequence of Operations for details. **NOTE:** If this option is selected, the Economizer must be set to Standard Economizer.
- **Single Zone VAV**—Recirculating unit using the Space Temperature Sensor to determine the mode of operation. Heating and Cooling are controlled to a Leaving Air Setpoint. Space Temperature resets the Supply Fan VFD speed to maintain the Space Temperature. Modulating Heating and Cooling must be used for this operation. Can be configured for CAV Heating using staged Heat.

### Configuration Screen #10 - HVAC Mode Set By Remote Contact

This option allows separate 24 VAC wet contact closures on the VCCX2 to force the unit into Heating, Cooling, and Dehumidification modes. If this option is selected, it applies to all three modes, and all three modes will only be initiated by these contact closures. If this is configured for YES, set the previous screen to Outdoor Air. See the VCCX2 Remote Contact Control section of the Sequence of Operations in the VCCX2 Controller Technical Guide for more details. **Default** is NO.

### Configuration Screen #11 - SAT Reset Source

This configuration option is not available if Single Zone VAV was selected as the HVAC source. The Supply Air Setpoint can be “automatically” adjusted based on a selected reset source. This screen allows you to choose this source. **Default** is No Reset. The available selections are as follows:
- **No Reset**—No SAT Setpoint Reset will occur. The SAT Setpoints remain fixed.
- **Space Temperature**—The SAT Setpoints will be adjusted based on the Space Temperature.
- **Outdoor Temperature**—The SAT Setpoints will be adjusted based on the Outdoor Air Temperature.
- **Return Air Temperature**—The SAT Setpoints will be adjusted based on the Return Air Temperature.
- **Fan VFD Signal**—The SAT Setpoints will be adjusted based on the VFD Signal. This is good for Adjusting the Setpoints based on the building’s load by looking at the VFD speed.
- **Remote Voltage**—The SAT Setpoints will be adjusted based on the Remote Supply Air Temperature Voltage Reset Signal.

If the HVAC Source was set Single Zone VAV in **Configuration Screen #9**, then line 3 on this screen will read No SAT Rst Allowed and the line 4 will be blank.

### Configuration Screen #12 - Reset Rate Interval

If you selected a Reset Source in **Configuration Screen #11**, enter a value in seconds between 1-255. This value determines how fast the Supply Air Temperature Setpoint is adjusted as the Reset Source changes. **Default** is 30 seconds.

### Configuration Screen #13 - Space Sensor Type

**Default** is None. If this unit has a Space Sensor installed, select from the following:
- **Analog**—Wired Thermistor temperature sensor.
- **E-bus Temp/RH**—Combination communicating temperature and humidity sensor.
- **Receive Broadcast**—Space Sensor is attached to a separate device that will broadcast the reading, e.g., GPC-XP Controller.
- **Remote Sensor**—Sensor is connected to a separate Unit Controller on the same loop (sharing a sensor). You can select the Unit Controller that will have the Remote Space Sensor on **Configuration Screen #15**.
- **Use BACnet® Temp/RH**—If the BACnet® front end will be writing the Space Temperature and Humidity values to the VCCX2 Controller, select this option.
**VCCX2 Configuration**

**VCCX2 Configuration Screens**

**Configuration Screen #14 - Read Space Humidity Global Broadcast**

If broadcasting a Space Humidity Sensor reading from another device such as a GPC-XP Controller, choose Yes to read the Broadcast. Default is No.

**Configuration Screen #15 - Remote Space Sensor Board Address**

If using a Remote Space Sensor (must be chosen in Configuration Screen #13), enter the address of the board it is located on. This Unit Controller has to be on the same loop as the Controller that will be sharing the sensor.

**Configuration Screen #16 - E-BUS Space/Humidity Sensor Alarm LED Enable/Disable**

If using an E-BUS Space/Humidity Sensor (must be chosen in Configuration Screen #13), choose whether you want to enable or disable the Alarm LED, located under the front cover. Default is Enable.

**Configuration Screen #17 - Outdoor Sensor Type**

Default is None. If this unit has an Outdoor Air Sensor installed, select from the following:

- **Analog** — Wired Thermistor temperature sensor.
- **E-bus OAT/RH** — Combination communicating temperature and humidity sensor.
- **Receive Broadcast** — Outdoor Sensor is attached to a separate device that will broadcast the reading, e.g., GPC-XP Controller.
- **Use BACnet® OAT/RH** — If the BACnet® front end will be writing the Outdoor Air Temperature and Humidity values to the VCCX2 Controller, select this option.

**Configuration Screen #18 - Return Sensor Type**

If this unit has a Return Air Sensor installed, select Analog if it is a wired Thermistor temperature sensor. Select E-bus Temp/RH if it is a combination communicating temperature and humidity sensor. Default is None.

**Configuration Screen #19 - Static Pressure Control**

Select what type of Duct Static Pressure is being controlled, if any. Default is Fan VFD/SZ VAV. The options are:

- **None** — This unit is not controlling Duct Static Pressure.
- **Fan VFD / SZ VAV** — This unit has a Supply Fan VFD that modulates to control the Duct Static Pressure or this is a Single Zone VAV application.
- **Bypass Damper** — This unit uses a Bypass Damper to control the Duct Static Pressure.

**Configuration Screen #20 - Static/Fan Control Rate**

This value determines the time interval between changes to the Supply Fan Speed or the Bypass Damper Position during Duct Static Pressure Control. It also determines the time interval between changes to the Fan Speed during Single Zone VAV Reset of the Supply Fan VFD Speed. Default is 10 seconds.

**Configuration Screen #21 - Static Pressure Control Rate Max Adjust**

This is the maximum amount that the Static Pressure Control output can adjust to when it needs to. Default is 5 percent.
Configuration Screen #22 - Fan Voltage Output

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Fan Voltage</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Maximum Fan Voltage</td>
<td>0</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Enter a value between 0.0 and 10.0 VDC for the main fan’s minimum and maximum output voltage. The Duct Static Pressure Output Status Screen will display 0% to 100%, but the output will range from the minimum value set on this screen to the maximum value set on this screen.

The VCCX2 will reverse the logic of the output signal when a Zoning Bypass Damper is used. Default are 0 VDC Min and 10 VDC Max.

Configuration Screen #23 - Fan Cycle Mode

Select YES if you want the HVAC unit’s Supply Fan to only run during Heating or Cooling Mode. If you want the HVAC unit’s Supply Fan to run continuously while in the Occupied Mode, regardless of the Heating or Cooling Mode, select NO. Default is NO.

Configuration Screen #24 - Fan Runs During Unoccupied Mode

Select YES if you want the HVAC unit’s Supply Fan to run continuously during Unoccupied Mode. Default is NO.

Configuration Screen #25 - Fan Proving

Select YES if the unit is equipped with a Proof of Flow Switch and it is connected to the VCCX2. If selected as YES and the Proof of Flow Switch is open, only the Supply Fan Relay will be active. If any other relays such as Heating Stages or Cooling Stages are active, they will be deactivated when the Proof of Flow Switch input is lost. Default is NO.

Configuration Screen #26 - Fan Starting Delay

Enter the number of seconds you want the fan to delay starting. This is the Supply Fan Starting Delay initiated whenever the VCCX2 initiates Supply Fan operation upon going occupied or after power-up. This is useful when you are using multiple VCCX2-controlled HVAC units and want to be sure that all the units do not start at exactly the same time when the Occupied schedule occurs. Each VCCX2 should be set with staggered Fan Starting Delay Setpoint values. When the -1 value is used, it multiplies each VCCX2 Controller’s address by 5 and uses this value in seconds as the Fan Starting Delay. This provides a staggered start for each VCCX2 Controller on the system without having to individually set each VCCX2 Controller for its own time delay. For an MUA unit, this should be set to a minimum of 60 seconds to let the OA Damper open. Default is -1 second.

Configuration Screen #27 - Purge Mode Delay

Enter the number of seconds you want the unit to stay in Purge Mode before going into Occupied Mode. In Purge Mode, the fan runs with the Economizer closed and all Cooling and Heating is de-energized. For an MUA unit, this should be set to 0 seconds to prevent a Purge Mode (which is a damper closed operation). Default is 30 seconds.
**VCCX2 CONFIGURATION**

**VCCX2 Configuration Screens**

### Configuration Screen #28 - Heat Type

![VCCX2 Cnfg ID #

Heat Type

No Heat

USE < or > TO CHANGE](image)

Default is No Heat. Available options are:
- **No Heat**—The unit has no Heat.
- **Staged Only**—On/Off Hot Water or fixed stage(s) of Heat.
- **Mod Heat Only**—Only fully modulating forms of Heat which would be Modulating Hot Water or Steam Heat or Modulating SCR Electric Heat. Does not include Modulating Gas using the AAON® MODGAS-X Controller.
- **Modgas-x then Staged**—Modulating Gas Heat controlled by the AAON® MODGAS-X Controller as 1st form of Heat and Stage(s) of Heat as the 2nd form of Heat.
- **Mod Heat then Staged**—Fully modulating Heat as the 1st form of Heat and Stage(s) of Heat as the 2nd form of Heat.

See the VCCX2 Controller Technical Guide for more information.

### Configuration Screen #29 - Modulating Heat Output Signal

![VCCX2 Cnfg ID #

Mod Heat Volt Output

Min Pos Volts: 0.0

Max Pos Volts: 10.0](image)

Enter a value between 0.0 and 10.0 VDC for the Modulating Heat minimum and maximum output voltage. When performing reverse acting heating, the minimum position volts will be the highest value. Defaults are 0 VDC Min and 10 VDC Max.

### Configuration Screen #30 - Cool Type

![VCCX2 Cnfg ID #

Cool Type

Refrigeration Module

USE < or > TO CHANGE](image)

Default is Refrigeration Module. Available options are:
- **Refrigeration Module**—A Refrigeration Module is installed and configured.
- **Staged Only**—On/Off Chilled Water or fixed stage(s) DX Cooling only and no Compressor Dehumidification.
- **Mod Only**—Modulating Chilled Water

### Configuration Screen #31 - Chilled Water Valve

![VCCX2 Cnfg ID #

Chilled Water Valve:

0-10VDC

USE < or > TO CHANGE](image)

If using Chilled Water Valve operation, choose 0-10 or 2-10 VDC. Default is 0-10 VDC.

### Configuration Screen #32 - Mechanical Heat/ Cool Alarm Delay

![VCCX2 Cnfg ID #

Mech Heat/Cool Alarm Delay: 15Min](image)

Enter a time delay between 0-240 minutes for a delay in the time that it takes an alarm to be generated. When Heating or Cooling Mode is initiated and staging is activated, if the Supply Air Temperature does not rise or fall 5°F within this time period, a Mechanical Heating or Cooling failure alarm will be generated. The Alarm is for Status Reporting only. The HVAC unit will continue to run. This alarm does not apply if Modulating Cooling or Heating is configured. Default is 15 minutes.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Heat/Cool Failure Alarm Delay</td>
<td>0 Min</td>
<td>15 Min</td>
<td>240 Min</td>
</tr>
</tbody>
</table>

### Configuration Screen #33 - Economizer Control Type

![VCCX2 Cnfg ID #

Econo Control Type

No Economizer

USE < or > TO CHANGE](image)

Default is No Economizer. Available options are:
- **No Economizer**
- **Standard Economizer**
- **IAQ Economizer (Economizer with CO₂ Override)**

Select Standard Economizer if the HVAC Mode Enable Source is set to Space Temperature with High Percentage OA.

**NOTE:** For Water Side Economizer control, this screen should be configured for Standard Economizer and the Refrigerant System Module (RSM) should be configured for WSE operation.
Configuration Screen #34 - Title 24 Economizer

If this unit has Title 24 Economizer operation, this option should be configured as YES. Default is NO.

Configuration Screen #35 - Economizer in Unoccupied Mode

Select YES for the Economizer to operate in the Unoccupied Cooling Mode. Default is NO.

- **NO**—You want the Economizer to always remain fully Closed in the Unoccupied mode.
- **YES**—You want to use the Economizer as necessary during Unoccupied Night Setback cooling calls. It will be utilized just as it would be in the Occupied mode with the same outdoor enable temperature. If not being used for Night Setback Free Cooling, the Economizer will be closed.

Configuration Screen #36 - Econo Enable Source

This configuration option is available if the unit was configured for Economizer Control. Default is Drybulb. Available options are:

- **Drybulb**—If the Outdoor Air Drybulb temperature is below the Economizer Enable Setpoint, the Economizer can be used as the first stage of cooling.
- **Wetbulb (OA RH Sensor needed)**—If the Outside Air Wetbulb temperature is below the Economizer Enable Setpoint, the Economizer can be used as the first stage of cooling.
- **Dewpoint (OA RH Sensor needed)**—If the Outdoor Air Dewpoint temperature is below the Economizer Enable Setpoint, the Economizer can be used as the first stage of cooling.
- **Comparative Enthalpy (E-BUS OA RH Sensor & E-BUS RA RH Sensor needed)**—If Comparative Enthalpy Economizer operation is required, select this option.

Configuration Screen #37 - Economizer Control Loop Rate & Proportional Window

The Economizer Control rate is the time period between changes to the Economizer position. Default is 10 seconds. The Economizer Control Proportional Window is the control range of the Modulating Signal above and below the Active Supply Air Temperature Setpoint. The size of the Proportional Window will determine how much of a signal change the controller will make per Time Period for every 1°F the Supply Air Temperature is from setpoint. The maximum signal change per time period is 10% which occurs when the Supply Air Temperature is the full Proportional Window amount from setpoint. So, with a 5°F Proportional Window, if the Supply Air Temperature is 5°F or more from setpoint, the signal change will be 10% per time period. At 4°F difference, the signal change will be 8% per time period. By the time the difference is 1°F, the signal change will be 2% per time period. With a Proportional Window of 2°F, if you are 2°F or more from setpoint, the amount of signal change will be 10% per time period, and at 1°F from setpoint the change would be 5% per time period. So, a larger proportional window allows for finer tuning of the control signal to prevent overshooting. Default is 10.0°F/5.5°C.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economizer Control Rate</td>
<td>1 sec</td>
<td>10 sec</td>
<td>30 sec</td>
</tr>
<tr>
<td>Proportional Window</td>
<td>1.0°F</td>
<td>0.6°C</td>
<td>10.0°F</td>
</tr>
</tbody>
</table>

Configuration Screen #38 - Economizer Voltage Output

Enter a value between 0.0 and 10.0 VDC for the Economizer minimum and maximum output voltage. Defaults are 2 VDC Min and 10 VDC Max.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min Economizer Voltage</td>
<td>0</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Max Economizer Voltage</td>
<td>0</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>
VCCX2 Configuration Screens

Configuration Screen #39 - CO₂ Sensor Installed

VCCX2 Cnfg  ID #
CO₂ Sensor Installed
None
USE < or > TO CHANGE

Default is None. If you have a CO₂ Sensor installed, select from the following:

- None — No CO₂ Sensor.
- E-bus CO₂ — Communicating CO₂ Sensor. temperature and humidity sensor.
- Receive Broadcast — CO₂ Sensor is attached to a separate device that will broadcast the reading, e.g., another VCCX2 Controller or GPC-XP Controller.
- Future Use
- Use BACnet® CO₂ — Select if the BACnet® front end will be writing the CO₂ value to the VCCX2 Controller.

Configuration Screen #40 - Building Pressure Sensor Installed

VCCX2 Cnfg  ID #
Building Pr. Sensor
None
USE < or > TO CHANGE

Default is None. If this unit has a Building Pressure Sensor installed, select from the following:

- None — Select this for Exhaust Duct Static Control Operation.
- Analog — Wired sensor.
- Receive Broadcast — Building Pressure Sensor is attached to a separate device that will broadcast the reading, e.g., another VCCX2 or GPC-XP Controller.
- Use BACnet® Reading — Select if BACnet® front end will be writing the Building Pressure value to the VCCX2.

Configuration Screen #41 - Building Pressure Control or Exhaust Duct Static Control

VCCX2 Cnfg  ID #
Building Pr. Control
None
USE < or > TO CHANGE

Default is None. Available options are:

- None — No Building Pressure Control by this controller.
- On/Off Exh Relay — If an On/Off Exhaust Fan is being used, select this option and configure a relay output as Exhaust Fan. If the building pressure rises above setpoint, this relay will energize. This is Direct-Acting control.
- Modulating Exh — If the building pressure rises above setpoint, a modulating signal will be used to control an exhaust fan VFD or a modulating damper to maintain setpoint. A relay configured as Exhaust damper can be used to enable this device so that the modulating signal can control it. This is Direct Acting control.
- OA Damper — Select if reverse acting Building Pressure Control using the Outdoor Air Damper is required. If the building pressure falls below setpoint, the OA Damper (Economizer) signal will be used to modulate the OA Damper to maintain setpoint. This is Reverse Acting control.
- Supply Fan — Contact the AAON Factory regarding this reverse acting Building Control option. This should not be used in most applications. This is Reverse Acting control.
- Duct Static Control — Select this if controlling the Exhaust Fan based on Exhaust Duct Static.

Configuration Screen #42 - Building Pressure Control Rate

VCCX2 Cnfg  ID #
Building Pr. Control
Rate: 10 Sec
[ 1 - 30 Seconds ]

Default is 10 seconds. The Building Pressure Control Rate is the time period between changes to the Building Pressure Control signal.

Configuration Screen #43 - Building Pressure Control Max Adjust

VCCX2 Cnfg  ID #
Building Pr. Control
Max Adjust: 5%
[ 1 - 30% ]

This is the maximum amount that the Building Pressure Control output can adjust to when it needs to. Default is 5 percent.

Configuration Screen #44 - Exhaust Fan Output

VCCX2 Cnfg  ID #
Exh Fan Volts
Min Volts: 0.0VDC
Max Volts: 10.0VDC

This configuration option is available if Modulating Building Pressure Control was configured on a previous screen. The following will set the output voltage range for both Direct and Reverse Acting Building Pressure Control. Defaults are 0 VDC Min Volts and 10 VDC Max Volts.
Available options are:

- **Min Volts**—Voltage at which the signal to exhaust fan, exhaust damper, or OA damper will be at 0% for either Direct or Reverse Acting Building Pressure control.
- **Max Volts**—Voltage at which the signal to exhaust fan, exhaust damper, or OA damper will be at 100% for either Direct or Reverse Acting Building Pressure control.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Position Volts</td>
<td>0.0</td>
<td>0.0</td>
<td>10.0</td>
</tr>
<tr>
<td>Maximum Position Volts</td>
<td>0.0</td>
<td>10.0</td>
<td>10.0</td>
</tr>
</tbody>
</table>

**Configuration Screen #45 - Heat Pump Config**

Default is **No Heat Pump**. Available options are:

- **No Heat Pump**—Unit is not a Heat Pump.
- **Air/Air Fail to Heat**—Heat Pump unit activates its Reversing Valve during Cooling operation.
- **Air/Air Fail to Cool**—Heat Pump unit activates its Reversing Valve during Heating operation.
- **WSHP Fail to Heat**—Water Source Heat Pump unit activates its Reversing Valve during Cooling operation.
- **WSHP Fail to Cool**—Water Source Heat Pump unit activates its Reversing Valve during Heating operation.
- **Waterside Condenser**—Unit has Waterside Condenser instead of Air to Air Condenser.

**Configuration Screen #46 - WSHP Glycol %**

If this is a Water Source Heat Pump Unit, this screen allows you to configure the percentage of glycol in your unit. Options are 0% to 40% in 5% increments. **Default is 0%**.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSHP Glycol Percentage</td>
<td>0%</td>
<td>0%</td>
<td>40%</td>
</tr>
</tbody>
</table>

**Configuration Screen #47 - Aux Heat Type Value**

If this is a Heat Pump, choose the appropriate Aux Heat option. **Default is No Aux Heat**. Available options are:

- **No Aux Heat**—This unit does not have Heat Pump Auxiliary Heat.
- **Staged Only**—This unit has a stage(s) of Auxiliary Heat. Multiple relays can be configured as Aux Heat in which case the relays will stage up as required.
- **Modulating Heat Only**—This unit has a form of modulating heat being used as Auxiliary Heat. ModGas cannot be used as the modulating heat source.
- **Modgas-x then Staged**—This unit has modulating gas heat that will be used as the 1st form of Aux Heat followed by a stage(s) of Aux Heat if applicable.
- **Mod Heat then Staged**—Fully modulating Heat as the 1st form of Aux Heat and Stage(s) of Heat as the 2nd form of Heat.

**Configuration Screen #48 - Dehumidification Control**

If using Dehumidification choose the appropriate Dehumidification option. **Default is None**. Available options are:

- **None**—The unit does not have a Dehumidification Mode.
- **Only Occupied Vent**—The unit can only enter Dehumidification during the Occupied Vent Mode (when there is no call for Cooling or Heating).
- **Only Vent Anytime**—The unit can only enter Dehumidification during the Vent Mode (when there is no call for Cooling or Heating) in both the Occupied and Unoccupied operation.
- **All Modes Occupied**—This is Occupied Mode Dehumidification Priority. The unit can enter Dehumidification during Cooling, Heating, or Vent Modes, but only while in Occupied operation.
- **All Modes Anytime**—This is Occupied and Unoccupied Dehumidification Priority. The unit can enter Dehumidification during Cooling, Heating, or Vent Modes while in Occupied or Unoccupied operation.
For units controlled by space humidity sensors, Dehumidification is initiated based on an Indoor Humidity Setpoint. For 100% OA units (MUA), Occupied Dehumidification is initiated based on an Outdoor Air Dewpoint Setpoint. For MUA units, Unoccupied Dehumidification can only occur if the unit is configured for Night Setback recirculating operation and has a Space Humidity sensor and a Space Humidity Setpoint.

**Configuration Screen #49 - Humidity Control E-BUS Sensor Type**

If an E-BUS Humidity Sensor is installed, choose from the options below. **Default is Space.**

- **Space**
- **Return**

**Configuration Screen #50 - Reheat Type**

This configuration option is available if Dehumidification has been configured. If you need Reheat in the Dehumidification mode, this screen allows you to configure what kind of reheat will be used.

The output(s) will be staged or modulated to maintain the Active Supply Air Setpoint. **Default is None.** Select the type of reheat that will be used during dehumidification.

- **None**—No reheat.
- **On/Off HGR Relay**—Single On/Off Reheat stage (Reheat Relay).
- **Mod HGR**—Modulating Hot Gas Reheat (MHGR)
- **Unit Heat**—Using the unit’s heat as Reheat when Hot Gas Reheat is not available.
- **Mod HGR + Unit Heat**—Using MHGR as the 1st form of Reheat, supplemented by unit Heat if necessary.
- **On/Off HGR + Unit Heat**—Using “Reheat Relay” stage as the 1st form of Reheat, supplemented by unit Heat if necessary.
- **Mod HGR + Aux Heat**—Modulating Hot Gas Reheat (MHGR), supplemented by Auxiliary Heat on a Heat Pump unit.

**Configuration Screen #51 - Type of Airflow Station**

Select the type of Airflow Monitoring Station you are using, if any. **Selections are Ebtron or Paragon. Default is Paragon.**

**Configuration Screen #52 - Monitor Outdoor Air Airflow**

Select **YES** if you have an Airflow Monitoring station measuring the CFM of the Outdoor Air airflow stream of this unit. **Default is NO.**

**Configuration Screen #53 - Control Outdoor Air CFM with Damper**

Select **YES** if you have an Outdoor Airflow Monitoring station and are controlling the Outdoor Air Damper to maintain an Outdoor Air airflow (CFM) Setpoint. **Default is NO.**

**Configuration Screen #54 - Control Outdoor Air CFM with VFD**

Select **YES** if you have an Outdoor Airflow Monitoring station and are controlling the Supply Fan VFD to maintain an Outdoor Air airflow (CFM) Setpoint. **Default is NO.**
Configuration Screen #55 - Outdoor Airflow Duct Size

VCCX2 Cnfg ID #
Outdoor Airflow Duct Size: 0.00
[ In Square Feet ]

For the controller to properly calculate the Outdoor Air CFM, you need to enter the area in square feet of the Outdoor Air duct/damper. When measuring the Outdoor Air duct damper area, be sure to measure the inside dimensions of the damper. The duct size needs to be accurate to two decimal places. The more accurate the measurements, the more accurate the CFM reading will be. Default is 0. This screen does not apply for Paragon Airflow Stations.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Airflow Duct Size</td>
<td>0</td>
<td>0</td>
<td>200.00</td>
</tr>
</tbody>
</table>

Configuration Screen #56 - Monitor Supply Air Airflow

VCCX2 Cnfg ID #
Monitor SA Airflow
NO
USE < or > TO CHANGE

Select YES if you have an Airflow Monitoring station measuring the CFM of the Supply Air airflow stream of this unit. Default is NO. This screen does not apply for Paragon Airflow Stations.

Configuration Screen #57 - Supply Airflow Duct Size

VCCX2 Cnfg ID #
Supply Airflow Duct Size: 0.00
[ In Square Feet ]

For the controller to properly calculate the Supply Air CFM, you need to enter the area in square feet of the Supply Air duct/damper. When measuring the Supply Air duct damper area, be sure to measure the inside dimensions of the damper. The duct size needs to be accurate to two decimal places. The more accurate the measurements, the more accurate the CFM reading will be. Default is 0. This screen does not apply for Paragon Airflow Stations.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Airflow Duct Size</td>
<td>0</td>
<td>0</td>
<td>200.00</td>
</tr>
</tbody>
</table>

Configuration Screen #58 - Monitor Return Air Airflow

VCCX2 Cnfg ID #
Monitor RA Airflow
NO
USE < or > TO CHANGE

Select YES if you have an Airflow Monitoring station measuring the CFM of the Return Air airflow stream of this unit. Default is NO.

Configuration Screen #59 - Return Airflow Duct Size

VCCX2 Cnfg ID #
Return Airflow Duct Size: 0.00
[ In Square Feet ]

For the controller to properly calculate the Return Air CFM, you need to enter the area in square feet of the Return Air duct/damper. When measuring the Return Air duct damper area, be sure to measure the inside dimensions of the damper. The duct size needs to be accurate to two decimal places. The more accurate the measurements, the more accurate the CFM reading will be. Default is 0. This screen does not apply for Paragon Airflow Stations.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return Airflow Duct Size</td>
<td>0</td>
<td>0</td>
<td>200.00</td>
</tr>
</tbody>
</table>

Configuration Screen #60 - Monitor Exhaust Airflow

VCCX2 Cnfg ID #
Monitor Exh Airflow
NO
USE < or > TO CHANGE

Select YES if you have an Airflow Monitoring station measuring the CFM of the Exhaust Air airflow stream of this unit. Default is NO.
For the controller to properly calculate the Exhaust Air CFM, you need to enter the inside area in square feet of the Exhaust Air duct/damper. When measuring the Exhaust Air damper area, be sure to measure the inside dimensions of the damper. The duct size needs to be accurate to two decimal places. The more accurate the measurements, the more accurate the CFM reading will be. Default is 0. This screen does not apply for Paragon Airflow Stations.

You can choose between the following Morning Warm Up options. Default is None. Available options are:

- **None** — There is no Morning Warm Up required.
- **Stand Alone** — The VCCX2 Controller is not communicating to Orion VAV Box controls, but a Morning Warm Up Relay can be configured to signal boxes by others to open.
- **Bcast Fixed to Boxes** — The VCCX2 Controller is communicating to Orion VAV Boxes and will broadcast a command to the boxes to go to a Fixed Percentage Position or Airflow while in Morning Warm Up. This fixed position is configured in the VAV Box Controller.
- **Bcast Max to Boxes** — The VCCX2 Controller is communicating to Orion VAV Boxes and will broadcast a command to the boxes to go to a Maximum Percentage Position or Airflow while in Morning Warm Up. This maximum position is configured in the VAV Box Controller.

An internal Trend Log is constantly updated at a rate equal to this value. Trend Logs can only be accessed with Prism 2 software. Default is 15 minutes.

Select YES if a Smoke Detector/Firestat or other Emergency Shutdown input is connected to the Emergency Shutdown binary input.
If a Shutdown condition occurs and the 24V signal is removed from this input, the Supply Fan and Heating and Cooling Relay Outputs will be de-energized and an alarm will be generated. Default is NO.

Configuration Screen #67 - Dirty Filter

Select YES if a Dirty Filter switch is connected to the Dirty Filter binary input. If the Dirty Filter input is active, an alarm will be generated. Default is NO.

Configuration Screen #68 - Broadcast OA Temp

The VCCX2 can broadcast its Outdoor Air Temperature Reading to other HVAC units if they are not equipped with their own Outdoor Air Temperature sensors. A network communications device (MiniLink PD or CommLink) is needed in order for this feature to operate. Select YES for Broadcast Outdoor Temperature. Default is NO.

Configuration Screen #69 - Broadcast OA RH

The VCCX2 can broadcast its Outdoor Air Humidity Reading to other HVAC units if they are not equipped with their own Outdoor Air RH sensors. A network communications device (MiniLink PD or CommLink) is needed in order for this feature to operate. Select YES for Broadcast Outdoor RH. Default is NO.

Configuration Screen #70 - Broadcast Space Temperature

The VCCX2 can broadcast its Space Temperature Reading to other HVAC units if they are not equipped with their own Space Temperature sensors. A network communications device (MiniLink PD or CommLink) is needed in order for this feature to operate. Select YES for Broadcast Space Temperature. Default is NO.

Configuration Screen #71 - Broadcast Space Humidity

The VCCX2 can broadcast its Space Humidity Reading to other HVAC units if they are not equipped with their own Space Humidity sensors. A network communications device (MiniLink PD or CommLink) is needed in order for this feature to operate. Select YES for Broadcast Space Humidity. Default is NO.

Configuration Screen #72 - Broadcast CO₂

The VCCX2 can broadcast its CO₂ Reading to other HVAC units if they are not equipped with their own CO₂ sensors. A network communications device (MiniLink PD or CommLink) is needed in order for this feature to operate. Select YES for Broadcast CO₂. Default is NO.

Configuration Screen #73 - Broadcast Building Pressure

The VCCX2 can broadcast Building Pressure from this unit to any other unit requiring this value. Select YES for Broadcast Building Pressure. Default is NO.

Configuration Screen #74 - Broadcast to Boxes

The VCCX2 can broadcast all applicable information and commands to the VAV Boxes. Select YES for Broadcast to Boxes. Default is NO.
VCCX2 Configuration Screens

Configuration Screen #75-#78 - Cool/Heat Stage Delays

Both the Heating Stages and the DX Cooling Stages utilize Staging Up and Down Delay Periods between stages and Minimum Run Times and Off Times.

See the VCCX2 Controller Technical Guide for information on how these Delays and Run Times are used.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling Stage Up</td>
<td>3 Min</td>
<td>3 Min</td>
<td>15 Min</td>
</tr>
<tr>
<td>Cooling Stage Down</td>
<td>1 Min</td>
<td>1 Min</td>
<td>15 Min</td>
</tr>
<tr>
<td>Cooling Min Run Time</td>
<td>5 Min</td>
<td>5 Min</td>
<td>15 Min</td>
</tr>
<tr>
<td>Cooling Min Off Time</td>
<td>3 Min</td>
<td>3 Min</td>
<td>15 Min</td>
</tr>
<tr>
<td>Heating Stage Up</td>
<td>3 Min</td>
<td>3 Min</td>
<td>15 Min</td>
</tr>
<tr>
<td>Heating Stage Down</td>
<td>1 Min</td>
<td>1 Min</td>
<td>15 Min</td>
</tr>
<tr>
<td>Heating Min Run Time</td>
<td>2 Min</td>
<td>5 Min</td>
<td>15 Min</td>
</tr>
<tr>
<td>Heating Min Off Time</td>
<td>1 Min</td>
<td>1 Min</td>
<td>15 Min</td>
</tr>
</tbody>
</table>

Configuration Screen #79 - Heat Pump Delays - Aux Heat

If your VCCX2 is configured to operate as a Heat Pump, the Heat Pump Auxiliary Heating Delay Setpoint can be configured to provide a time delay period before Auxiliary Heating Stages can be activated once activation of the Compressor Heating Stages have been initiated. Default is 3 minutes.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aux Heat Delay</td>
<td>0 Min</td>
<td>3 Min</td>
<td>60 Min</td>
</tr>
</tbody>
</table>

Configuration Screen #80 - Heat/Cool Changeover Delay

Enter the time in minutes for the time delay when the unit changes over from a call to heating to a call to cooling and vice versa. Default is 5 minutes.

Configuration Screen #81 - Return Air Bypass Control

Select Yes if your HVAC unit requires Return Air Bypass Control for Dehumidification Reheat. Default is NO. You must have the EM1 Expansion Module installed and configured for this feature.

Configuration Screen #82 - Morning Cool-Down Type

You can choose between the following Morning Cool-Down options. Default is None. Available options are:

- **None** — There is no Cool-Down required.
- **Stand Alone** — The VCCX2 Controller is not communicating to Orion VAV Box controls, but a Cool-Down Relay can be configured to signal boxes by others to open.
- **Bcast Fixed to Boxes** — The VCCX2 Controller is communicating to Orion VAV Boxes and will broadcast
a command to the boxes to go to a Fixed Percentage Position or Airflow while in Cool-Down. This fixed position is configured in the VAV Box Controller.

- **Bcast Max to Boxes**—The VCCX2 Controller is communicating to Orion VAV Boxes and will broadcast a command to the boxes to go to a Maximum Percentage Position or Airflow while in Cool-Down. This maximum position is configured in the VAV Box Controller.

### Configuration Screen #83 - Evaporator Condenser Control

Select Yes if your HVAC unit requires Evaporator Condenser Control to control Head Pressure. **Default is No.** You must have the RSMV or RSMD Module installed and configured for this feature.

### Configuration Screes #84-90 - VCCX2 Relay Configuration Screens

Relay #1 is not configurable as it is reserved for the Supply Air Fan. Relays #2-#8 are configurable for the following options (See Table 5, page 38 for Relay descriptions):

- Not Used (Default)
- Heat Stage
- HP Emer Heat
- Mod Cool Enable
- ReHeat
- Low Ambient
- Economizer
- Occupied Mode
- Alarm Active
- LL Solenoid 2
- LL Solenoid 4
- Sump Heater
- Cool Stage
- HP Aux Heat
- Mod Heat Enable
- Warmup / Cooldown
- PreHeat
- Exhaust Fan
- Heat Wheel
- Override Mode
- LL Solenoid 1
- LL Solenoid 3
- Condenser Pump
- Sump Pump Drain

Relays #2 through #8 can be individually configured. Only forms of Heating and Cooling can be configured with multiple relays for staging. If any other option is selected more than once, it will simply activate redundant relays, but no multiple staging will occur. **Default is Not Used.**

### Configuration Screes #91-95 - EM1 Relay Configuration Screes

EM1 Relays #1-#5 are configurable for the following options (See Table 5, page 38 for Relay descriptions):

- Not Used (Default)
- Cool Stage
- HP Aux Heat
- Mod Heat Enable
- Warmup / Cooldown
- PreHeat
- Exhaust Fan
- Heat Wheel
- Override Mode
- LL Solenoid 1
- LL Solenoid 3
- Condenser Pump
- Sump Pump Drain

Relays #1 through #5 can be individually configured. Only forms of Heating and Cooling can be configured with multiple relays for staging. If any other option is selected more than once, it will simply activate redundant relays, but no multiple staging will occur. **Default is Not Used.**
VCCX2 CONFIGURATION

VCCX2 Configuration Screens

Configuration Screens #96-107 - E-BUS
12 Relay Configuration Screens

The E-BUS 12 Relay Expansion Board Relays #1-#12 are configurable for the following options (See Table 5, below for Relay descriptions):

- Not Used (Default)
- Cool Stage
- Heat Stage
- HP Aux Heat
- Mod Cool Enable
- Warmup / Cooldown
- ReHeat
- Low Ambient
- Economy
- Occupied Mode
- Alarm Active
- LL Solenoid 1
- LL Solenoid 2
- LL Solenoid 3
- LL Solenoid 4
- Condenser Pump
- Sump Heater
- Sump Pump Drain

Relays #1 through #12 can be individually configured. Only forms of Heating and Cooling can be configured with multiple relays for staging. If any other option is selected more than once, it will simply activate redundant relays, but no multiple staging will occur. Default is Not Used.

<table>
<thead>
<tr>
<th>NO.</th>
<th>RELAY DESCRIPTION</th>
<th>DETAILS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cooling Stage</td>
<td>Configured for each fixed stage of cooling (except heat pump compressor).</td>
</tr>
<tr>
<td>2</td>
<td>Heating Stage</td>
<td>Configured for each fixed stage of heating.</td>
</tr>
<tr>
<td>3</td>
<td>Aux Heat</td>
<td>Configured for a fixed stage of Aux Heat in a heat pump unit.</td>
</tr>
<tr>
<td>4</td>
<td>Emergency Heat</td>
<td>Configured for a fixed stage Emergency Heat in a heat pump unit.</td>
</tr>
<tr>
<td>5</td>
<td>Mod Heat Enable</td>
<td>Configure if a 0-10 VDC Modulating Heat source needs a relay to enable it.</td>
</tr>
<tr>
<td>6</td>
<td>Mod Cool Enable</td>
<td>Configure if a 0-10 VDC Modulating Cool source needs a relay to enable it.</td>
</tr>
<tr>
<td>7</td>
<td>Morning Warm-Up/ Cool-Down (VAV Boxes)</td>
<td>Configure (1) Relay for Morning Warm-Up/Cool-Down when Non-Orion VAV/Zone Controllers are used.</td>
</tr>
<tr>
<td>8</td>
<td>Reheat</td>
<td>Configure (1) Relay for On/Off Reheat when used.</td>
</tr>
<tr>
<td>9</td>
<td>Pre-Heat</td>
<td>Configure for Pre-Heat operation.</td>
</tr>
<tr>
<td>10</td>
<td>Low Ambient</td>
<td>Configure for Low Ambient operation.</td>
</tr>
<tr>
<td>11</td>
<td>Exhaust Fan</td>
<td>Configure (1) Relay for enabling exhaust fan when Building Pressure Control is used.</td>
</tr>
<tr>
<td>12</td>
<td>Economizer Active</td>
<td>If configured, this relay will energize if unit is in Economizer mode and the damper has moved 5% above its Economizer Minimum Setpoint position or if the damper moves above a user-adjustable position setpoint.</td>
</tr>
<tr>
<td>13</td>
<td>Heat Wheel</td>
<td>Configure (1) Relay that turns heat wheel on when in occupied operation and turns heat wheel off when in Economizer Mode.</td>
</tr>
<tr>
<td>14</td>
<td>Occupied Active</td>
<td>If configured, this relay will energize whenever the unit is in the Occupied Mode.</td>
</tr>
<tr>
<td>15</td>
<td>Override Active</td>
<td>If configured, this relay will energize anytime the space sensor Push-button override is active.</td>
</tr>
<tr>
<td>16</td>
<td>Alarm Active</td>
<td>If configured, this relay will energize anytime a VCCX2 alarm is active.</td>
</tr>
<tr>
<td>17</td>
<td>Liquid Line 1 Solenoid</td>
<td>Will enable when the RSM A1 compressor activates.</td>
</tr>
<tr>
<td>18</td>
<td>Liquid Line 2 Solenoid</td>
<td>Will enable when the RSM A2 compressor activates.</td>
</tr>
<tr>
<td>19</td>
<td>Liquid Line 3 Solenoid</td>
<td>Will enable when the RSM B1 compressor activates.</td>
</tr>
<tr>
<td>20</td>
<td>Liquid Line 4 Solenoid</td>
<td>Will enable when the RSM B2 compressor activates.</td>
</tr>
<tr>
<td>21</td>
<td>Condenser Pump</td>
<td>If configured, this relay will energize when the unit requires the Evaporative Condenser to be enabled.</td>
</tr>
<tr>
<td>22</td>
<td>Sump Heater</td>
<td>If configured, this relay will energize when the unit requires the Sump Heater to be enabled.</td>
</tr>
<tr>
<td>23</td>
<td>Sump Pump Drain</td>
<td>If configured, this relay will energize when the unit requires the Sump Pump Drain to be enabled.</td>
</tr>
</tbody>
</table>

Table 5: User-Configurable Relay Outputs
Setpoint Screen Index

The available Setpoint Screens for the VCCX2 Controller are listed on the next few pages by sequential screen number. When each VCCX2 Controller is configured for the first time, it is best to start with screen #1 and proceed to each Setpoint Screen in numerical order until you have viewed all available Setpoint Screens. This ensures that you have seen all of the available VCCX2 Controller Setpoint possibilities and have the opportunity to change or accept the defaults for each screen. Once the unit Setpoints are configured and you decide to change one of the screen options, it is helpful to know what screen number contains the configuration you wish to change. With this in mind, the following is a list of all the VCCX2 Setpoint Screens in numerical order with a brief listing of the Setpoint feature available on each screen:

- Screen #1: Occupied HVAC Cool/Heat
- Screen #2: Hood On HVAC Setpoints
- Screen #3: Unoccupied Offsets
- Screen #4: Mode Deadband Setpoint
- Screen #5: Space Sensor Slide Adjust
- Screen #6: Calibrate Slide Adjust at Up Position
- Screen #7: Calibrate Slide Adjust at Middle Position
- Screen #8: Calibrate Slide Adjust at Down Position
- Screen #9: Space Sensor Push-Button Override Duration
- Screen #10: Controlling Sensor High Alarm Offset
- Screen #11: Controlling Sensor Low Alarm Offset
- Screen #12: Outdoor Dewpoint Setpoint
- Screen #13: Indoor RH Setpoints - Disable/Lo Reset & Enable/High Reset
- Screen #14: Coil (Saturation) Temperature Setpoints
- Screen #15: Static Pressure Setpoint and Deadband
- Screen #16: Static Pressure Reset - Max/Min Limits
- Screen #17: Static Pressure Reset Interval
- Screen #18: VFD Speed Limits - Min Cool/Min Vent
- Screen #19: VFD Speed Limits - Min/Max Heat
- Screen #20: Supply Air Cooling Setpoint and High Reset Limit
- Screen #21: Cool Reset Source Setpoints - High / Low Reset
- Screen #22: Supply Air Heating Setpoint and High Reset Limit
- Screen #23: Heat Reset Source Setpoints - High / Low Reset
- Screen #24: Stage Off Window Cooling/Heating
- Screen #25: Mod Heat Proportional Window / Time Period
- Screen #26: Mod Cool Proportional Window / Time Period
- Screen #27: Head Pressure Setpoints - Cooling and Reheat
- Screen #28: WSHP Head Pressure Setpoints - Cooling and Reheat
- Screen #29: Condenser Water Valve Minimum Position
- Screen #30: Condenser Fan Cycle - Enable & Deadband
- Screen #31: Condenser Fan Cycle Reheat Offset Enable
- Screen #32: Use Evaporator Condenser as 1st Stage Below This Outdoor Air Temperature
- Screen #33: Evaporator Head Pressure Setpoint Deadband
- Screen #34: Sump Enable Temperatures Heater / Drain
- Screen #35: Economizer Enable Setpoint
- Screen #36: Comparative Enthalpy Economizer Enable Setpoint and Deadband
- Screen #37: Waterside Economizer Entering H₂O Control Deadband
- Screen #38: Economizer Minimum Damper Position
- Screen #39: Maximum Economizer Position in Heat Mode
- Screen #40: Min Outdoor Airflow Setpoint and Deadband
- Screen #41: Max Damper Position or CFM Value in High CO₂
- Screen #42: CO₂ Setpoints Min/Max
- Screen #43: CO₂ Altitude Setpoint
- Screen #44: Building Pressure Setpoint and Deadband
- Screen #45: OAT Lockouts - Comp Cool / Comp Heat
- Screen #46: OAT Lockouts Heat
- Screen #47: Supply Air Cutoffs - Cooling/Heating
- Screen #48: Hot Water Valve Protection Position
- Screen #49: Preheat Relay Setpoint
- Screen #50: Low Ambient Setpoint
- Screen #51: Heat Pump Defrost Interval
- Screen #52: Adaptive Defrost Interval
- Screen #53: Heat Wheel Defrost Temperature Setpoint
- Screen #54: Morning Warmup SAT Setpt and Target Temp
- Screen #55: Morning Cooldown SAT Setpt and Target Temp
- Screen #56: Warmup and Cooldown Max Length
- Screen #57: SZ VAV Integral Constant
- Screen #58: Return Air Bypass Damper Factor Setpoint
- Screen #59: Preheat-X/EXT Setpoints - Cool & Heat Mode
- Screen #60: Preheat-X/EXT Setpoint - Vent Mode
- Screen #61: Superheat Setpoint
- Screen #62: Space Sensor Calibration - Current and Offset
- Screen #63: RAT Sensor Calibration - Current and Offset
- Screen #64: SAT Sensor Calibration - Current and Offset
- Screen #65: OAT Sensor Calibration - Current and Offset
- Screen #66: Entering H₂O Sensor Calibration - Current and Offset
- Screen #67: CO₂ Sensor Calibration - Current and Offset
VCCX2 SETPOINTS

VCCX2 Setpoint Screens

Setpoints - General Procedures

Modular Service Tool Instructions
From any menu screen, press <SETPOINTS>. The Unit Selection Screen, shown below, will appear requesting that you enter the unit ID number.

Enter the correct unit ID number of the VCCX2 Controller you want to change Setpoints for and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen. Then press <↓>. You will then see Setpoint Screen #1. Press <ENTER> to save entered data and press <↓> to scroll through the screens.

NOTE: If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

System Manager SD Instructions
From any Main screen, press <SETPOINTS>. The screen below will appear because this option requires passcode clearance. Only a Level 2 passcode can change setpoints.

Enter Unit Address
Then Press Enter
Selected Unit#: XXXX

If the correct passcode was entered, the Unit Selection Screen will be displayed.

Enter Unit Address
Then Press Enter
Selected Unit#: XXXX

Enter the Unit ID of the controller you wish to search and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen. Then press <↓>.

NOTE: If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

The following screen will be displayed:

Setpoint Screen #1 - Occupied HVAC Cool/Heat Setpoints

VCCX2 Spts ID: #
Occupied HVAC Spts
Cooling: 75.0°F
Heating: 70.0°F

These Setpoints are used to determine the Heating, Cooling, or Vent Mode of operation in CAV applications using the Space or Return Air Temperature Sensor as the Mode Enable Sensor (HVAC Source) or in Make Up Air (MUA) applications using the Outdoor Air Temperature Sensor as the Mode Enable Sensor (HVAC Source).

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>HVAC Mode Setpoints Cooling</td>
<td>1°F (-17.2°C)</td>
<td>75°F (24°C)</td>
<td>110°F (43.3°C)</td>
</tr>
<tr>
<td>HVAC Mode Setpoints Heating</td>
<td>1°F (-17.2°C)</td>
<td>70°F (21°C)</td>
<td>110°F (43.3°C)</td>
</tr>
</tbody>
</table>

Setpoint Screen #2 - Hood On HVAC Setpoints - OAT Cool, OAT Heat

VCCX2 Spts ID: #
Hood On HVAC Spts
OAT Cool: 75.0°F
OAT Heat: 70.0°F

These setpoints are used for three different applications.

CAV/MUA Dual Mode (Hood On/Off)—In CAV (Hood Off) operation, the unit will use the Occupied HVAC Setpoints from Setpoint Screen #1 in reference to a Space or Return Air Temperature Sensor. When exhaust hoods are turned on and the Hood On contact closes, the unit switches from CAV Space Temperature Control to MUA Outdoor Air Temperature control operation (Hood On). At this point the Outdoor Damper modulates to full open, and these Hood On setpoints become the Outdoor Air Temperature Mode Enable Setpoints. When the exhaust hoods are turned off and the Hood On contact opens, the unit reverts back to Space or Return Air Temperature Control and uses the Occupied HVAC Setpoints from the previous screen.
Space Temperature Control of High Percentage Outside Air Units—This option allows for Space Temperature control of 100% Outside Air MUA Units or units with a high percentage of Outdoor Air (normally 50% or greater). For this application you would configure “Space Temperature w/High OA %” for the Controlling Sensor option. The intent of this sequence is to allow Space Temperature control of the unit while preventing the dumping of hot or cold outside air into the space during the Space Vent Mode of operation.

Once the Space Temperature is satisfied, before switching to Vent Mode, the controller compares the Outside Air Temperature to these Hood On HVAC setpoints to determine if a continued demand for heating or cooling is required to prevent dumping. If there is no demand, the VCCX2 Controller switches to Vent Mode. If the Outside Air Temperature is greater than the Hood On HVAC Cooling Setpoint or less than the Hood On HVAC Heating Setpoint, plus the Occupied Deadband, the VCCX2 Controller will continue mechanical cooling or heating operation and stage it as necessary to maintain the Vent Mode Supply Air Setpoint (Calculated to be halfway between the Mode Enable Setpoints). A call for Heating or Cooling from the Space Sensor will cancel this tempering operation.

Supply Air Tempering—In the VAV Supply Air Tempering application (see the VCCX2 Controller Technical Guide for full details), the unit will enter the Cooling and Heating Modes based on the outdoor temperature. The outdoor Heating and Cooling Setpoints are configured using the Hood On OAT Cooling and Heating Setpoints on this screen. In this application, the economizer can operate in any mode, if necessary, to achieve the supply air setpoint. Night Setback Heating and Morning Warm Up are both controlled to the Warm Up Supply Air Setpoint.

**NOTE:** For this Supply Air Tempering application, the Heating Supply Air Setpoint on Setpoint Screen #22 should be set at least 2°F below the Cooling Supply Air Setpoint.

### Setpoint Screen #4 - Mode Deadband

This Setpoint is added to and subtracted from the HVAC Mode Setpoints to determine when the unit enters and leaves a mode of operation.

### Setpoint Screen #5 - Space Sensor Slide Adjust

If the VCCX2 has a Space Temperature Sensor with the Slide Adjust option installed, the HVAC Mode Enable Heating and Cooling Setpoints can be offset by the HVAC Mode Sensor Slide Offset Setpoint value. When the Slide Adjust bar is in the middle, no offset will occur. If the Slide Adjust bar is moved all the way to the top of the Sensor, the Heating and Cooling Setpoints will be raised by the Setpoint value you have entered. If the Slide Adjust bar is moved all the way to the bottom of the Sensor, the Heating and Cooling Setpoints will be lowered by the Setpoint value you have entered.

If the Space Temperature is the SAT Reset Source, then the Slide Adjust will adjust the HVAC Mode Enable Setpoints and the SAT Reset Source Setpoints simultaneously.

For VCCX2 software versions 1.15 and older, this value can use a decimal. For VCCX2 software version 1.16 and newer, this value cannot use a decimal and the screen will not display °F or °C.

### Setpoint Screen #3 - Unoccupied Offsets - Cooling & Heating

During the Unoccupied Mode of Operation, these Setpoints spread the HVAC Mode Setpoints out by this user-adjustable amount. Use only positive numbers for these Setpoints. If you do not want Cooling or Heating to operate during the Unoccupied Mode, use the default setting of 30°F for these setpoints.
Setpoint Screens #6, #7 & #8 - Flush Mount Space Sensor Calibrate Slide Adjust

VCCX Spts ID 101
Calibrate Slide Adj
put at Up Pos: XXX
Enter # Shown: XXX

The use of this screen is optional and is not required for the sensor to function. Once the slide adjust value is configured on Setpoint Screen #5, this screen is used to calibrate the slider to accurately provide that offset adjustment in the up position. The value on line 3 will change when the slider moves. Once the slider is in the up position, wait for the value on line 3 to stop changing. Once it stops changing, enter this value on line 4.

VCCX Spts ID 101
Calibrate Slide Adj
at Middle Pos: XXX
Enter # Shown: XXX

This screen is used to calibrate the value for the slider when it is in the middle position. The value on line 3 will change when the slider moves. Once the slider is in the middle position, wait for the value on line 3 to stop changing. Once it stops changing, enter this value on line 4.

VCCX Spts ID 101
Calibrate Slide Adj
at Down Pos: XXX
Enter # Shown: XXX

This screen is used to calibrate the value for the slider when it is in the down position. The value on line 3 will change when the slider moves. Once the slider is in the down position, wait for the value on line 3 to stop changing. Once it stops changing, enter this value on line 4.

Setpoint Screen #9 - Space Sensor Push-Button Override Duration

VCCX2 Spts ID:#
Space Sensor Push Button Override Duration: 2.0Hr

If using a Digital Space Sensor, pushing the Override Button momentarily will initiate the Override Mode.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space Sensor Push-Button Override Duration</td>
<td>0.0 Hr</td>
<td>2.0 Hr</td>
<td>8.0 Hr</td>
</tr>
</tbody>
</table>

Setpoint Screen #10 - Controlling Sensor High Alarm Offset

VCCX2 Spts ID:#
Controlling Sensor High Alarm Offset
Setpoint: 30.0°F

If the Temperature of the controlling sensor rises above the Occupied Cooling Setpoint by this amount during the Cooling Mode, the controller will generate a High Control Temp Alarm. The unit must be configured for Space Temperature Control, Return Air Temperature Control, or as a Single Zone VAV unit for this alarm to be generated.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlling Sensor High Alarm Offset</td>
<td>0°F</td>
<td>30°F</td>
<td>50°F</td>
</tr>
<tr>
<td>(0°C)</td>
<td>(16.6°C)</td>
<td></td>
<td>(27.7°C)</td>
</tr>
</tbody>
</table>

Setpoint Screen #11 - Controlling Sensor Low Alarm Offset

VCCX2 Spts ID:#
Controlling Sensor Low Alarm Offset
Setpoint: 30.0°F

If the Temperature of the controlling sensor falls below the Occupied Heating Setpoint by this amount during the Heating Mode, the controller will generate a Low Control Temp Alarm. The unit must be configured for Space Temperature Control, Return Air Temperature Control, or as a Single Zone VAV unit for this alarm to be generated.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlling Sensor Low Alarm Offset</td>
<td>0°F</td>
<td>30°F</td>
<td>50°F</td>
</tr>
<tr>
<td>(0°C)</td>
<td>(16.6°C)</td>
<td></td>
<td>(27.7°C)</td>
</tr>
</tbody>
</table>

Setpoint Screen #12 - Outdoor Dewpoint Setpoint

VCCX2 Spts ID:#
Outdoor Dewpoint Setpoint: 55.0°F

If the VCCX2 has a Space Temperature Sensor installed and it has the Override Button option, the HVAC unit will initiate Override Mode any time the Override Button is pressed and held for less than 3 seconds. This puts the unit into Occupied operation. The Push-Button Override Duration Setpoint allows you to adjust the amount of time the Override will remain in effect when the Override Button is pressed. To cancel the Override before the Override Duration time period expires, press the Override Button for 5 to 10 seconds.
On MUA configured units (100% or high percentage Outdoor Air units), or if this is a unit in Hood On MUA operation, Dehumidification will be initiated if the Outdoor Air Dewpoint rises 2°F above this setpoint. If the humidity falls 2°F below this setpoint, the unit will leave the Dehumidification Mode.

### Outdoor Dewpoint Setpoint

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outdoor Dewpoint</td>
<td>35°F</td>
<td>55°F</td>
<td>80°F</td>
</tr>
<tr>
<td></td>
<td>(1.7°C)</td>
<td>(12.8°C)</td>
<td>(26.6°C)</td>
</tr>
</tbody>
</table>

### Setpoint Screen #13 - Indoor RH Setpoint Disable/Low Reset and Enable/High Reset Source

This screen is used to set the Indoor Humidity Setpoints and the Space Humidity Reset range used to reset the Coil Suction Temperature Setpoint.

On units where Indoor Humidity is used to initiate Dehumidification (non MUA units), the unit will enter Dehumidification as the Indoor Humidity rises above the Enable/High Reset Source (Hi Rst Src) Setpoint and will leave Dehumidification as the Indoor Humidity falls below the Disable/Low Reset Source (Lo Rst Src) Setpoint.

The Indoor Humidity Setpoint range configured on this screen also establishes the Indoor Humidity range that will be used to reset the Coil Suction (Saturation) Temperature Setpoint between the High Reset Limit (Hi Rst Lmt) and Low Reset Limit (Lo Rst Lmt) configured on the next screen. If not reset is desired the Coil Temperature Setpoints on the following screen should both be set to the same value.

The following two paragraphs will describe the reset function.

If no reset of the Coil Suction (Saturation) Temperature Setpoint is desired, then on Setpoint Screen #14 set the Coil Temperature High Reset Limit the same as the Coil Temperature Low Reset Limit.

On MUA units, where the Outdoor Dewpoint Setpoint is used to initiate Dehumidification, this screen is only used to set the Indoor Humidity values that will reset the Coil Suction (Saturation) Temperature Setpoint – if reset is desired. See the 3rd paragraph above for the description of how to set this up.

### Setpoint Screen #14 - Coil (Saturation) Temperature Low & High Reset Limits

Based on the Indoor Humidity Reset Range configured on the previous screen, the Coil Suction (Saturation) Temperature Setpoint can be reset between the High Reset Limit (Hi Rst Lmt) and Low Reset Limit (Lo Rst Lmt) configured on this screen during the Dehumidification Mode. See the description of this reset function on the previous screen. If the High Reset Limit and the Low Reset Limit are set at the same value, no Coil Temperature Reset will occur.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coil Temp Setpoint Hi Rst Lmt</td>
<td>35°F</td>
<td>45°F</td>
<td>70°F</td>
</tr>
<tr>
<td></td>
<td>(1.7°C)</td>
<td>(7.2°C)</td>
<td>(21.1°C)</td>
</tr>
<tr>
<td>Coil Temp Setpoint Lo Rst Lmt</td>
<td>35°F</td>
<td>40°F</td>
<td>70°F</td>
</tr>
<tr>
<td></td>
<td>(1.7°C)</td>
<td>(4.5°C)</td>
<td>(21.1°C)</td>
</tr>
</tbody>
</table>

### Setpoint Screen #15 - Static Pressure Setpoint & Deadband

For VAV units, a Supply Fan VFD or Bypass Damper Actuator is used to maintain the Duct Static Pressure Setpoint. The Static Pressure Output Signal varies to control to the Static Pressure Setpoint. The Duct Static Pressure is maintained at this setpoint anytime the Main Fan is running.

The Duct Static Setpoint accuracy is controlled by this value. No Main Fan VFD changes are made if the static is within this range of this setpoint.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static Pressure Spt</td>
<td>0.10” WG</td>
<td>1.50” WG</td>
<td>3.0” WG</td>
</tr>
<tr>
<td>Deadband</td>
<td>0.01” WG</td>
<td>0.10” WG</td>
<td>0.50” WG</td>
</tr>
</tbody>
</table>
VCCX2 SETPOINTS

VCCX2 Setpoint Screens

Setpoint Screen #16 - Static Pressure Reset - Max/Min Limits

If the VCCX2 Controller is being used with AAON VAV box controllers in a VAV system, the Duct Static Pressure Setpoint can be dynamically reset based on the most-open VAV box associated with that unit. As long as the most-open box is less than 80% open, the Duct Static Setpoint will be reset downward at a user-adjustable Reset Rate Interval from the Maximum Static Pressure Reset Limit Setpoint down to the Minimum Static Pressure Reset Limit. Once the most-open box exceeds 80%, the setpoint will begin to be reset back up toward the Maximum Static Pressure Reset Limit Setpoint. If the Min and Max Setpoints are left at the default values, no reset will occur. A MiniLink PD 5 is required in order to poll the VAV boxes for their damper position.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Limit</td>
<td>0.10” WG</td>
<td>1.50” WG</td>
<td>3.00” WG</td>
</tr>
<tr>
<td>Minimum Limit</td>
<td>0.10” WG</td>
<td>1.50” WG</td>
<td>3.00” WG</td>
</tr>
</tbody>
</table>

Setpoint Screen #17 - Static Pressure Reset Interval

For VAV units using the Duct Static Reset function described in Setpoint Screen #16, the Static Pressure Reset Interval is how often the Static Pressure Reset calculation occurs.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Static Pressure Reset Interval</td>
<td>10 Min</td>
<td>15 Min</td>
<td>60 Min</td>
</tr>
</tbody>
</table>

Setpoint Screen #18 - VFD Speed Minimums Cool/Vent Modes

If this unit is configured for Single Zone VAV operation, the Min Cool Percentage will be the fan speed at which the VFD will start operating at when cooling is initiated. It can then modulate up to 100% as the space temperature rises within the range created by the Cool Low Reset Source and the Cool High Reset Source Setpoints entered in Setpoint Screen #21. On a standard VAV unit, this will be the lowest fan speed the VFD will operate at in the Cooling Mode as it controls to the Duct Static Pressure Setpoint.

The Min Vent Percentage is the speed at which the fan will operate during the Vent Mode.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Cool</td>
<td>0%</td>
<td>30%</td>
<td>100%</td>
</tr>
<tr>
<td>Minimum Vent</td>
<td>0%</td>
<td>20%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Setpoint Screen #19 - VFD Speed Limits Min/Max Heat

If this unit is configured for Single Zone VAV operation, and you have a modulating heat source that will allow VAV heating, then the Min Heat Percentage will be the fan speed at which the VFD will start operating at when heating is initiated. It can then modulate up to the Max Heat Percentage as the Space Temperature falls within the range created by the Heat High Reset Source and the Heat Low Reset Source created in Setpoint Screen #23.

If configured for Reverse Acting Building Pressure Control using the Supply Fan, the Fan can modulate from 0 to 100% to maintain the Building Pressure Setpoint, but Heat will be locked out below this Min Heat VFD Setpoint.

On a standard VAV unit, these setpoints will be the Min and Max fan speeds the unit will operate at in the Heating Mode as it controls to the Duct Static Pressure Setpoint.

If doing reverse Building Pressure Control using the Supply Fan VFD, the fan can modulate over its full range, but Heating will be locked out below the Min Heat VFD Setpoint.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Heat</td>
<td>0%</td>
<td>50%</td>
<td>100%</td>
</tr>
<tr>
<td>Maximum Heat</td>
<td>0%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Setpoint Screen #20 - Supply Air Cooling Setpoint and High Reset Limit

If this unit is configured for Single Zone VAV operation, the Min Cool Percentage will be the fan speed at which the VFD will start operating at when cooling is initiated. It can then modulate up to
If no Reset Source has been configured in Configuration Screen #11, then the Setpoint value will be the Supply Air Temperature Cooling Setpoint. Line 4 will not be used. If a Reset Source has been configured in Configuration Screen #11, then Line 4 will be used. Reset is always upward from the SAT setpoint to the Reset Limit setpoint. So, the SAT will be the lowest temperature the Supply Air Setpoint can be reset to and Hi Reset Limit will be the highest temperature the Supply Air Setpoint can be reset to. The Cooling Supply Air Temperature Setpoint will automatically be reset warmer or colder within this range as the Reset Source moves within its range (created in the next screen).

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAT Cooling Setpoint</td>
<td>30°F (-1.1°C)</td>
<td>55°F (12.8°C)</td>
<td>80°F (26.6°C)</td>
</tr>
<tr>
<td>Cool High Reset Limit</td>
<td>0°F (-17.7°C)</td>
<td>55°F (12.8°C)</td>
<td>100°F (37.7°C)</td>
</tr>
</tbody>
</table>

**Setpoint Screen #21 - Cool Reset Source Setpoints - High Reset/Low Reset**

If no SAT Reset Source has been configured in Configuration Screen #11, you can disregard this screen.

If a temperature Reset Source (Space, Return Air, or Outdoor Air) has been configured in Configuration Screen #11, then this screen will allow you to set the range of Reset Source temperatures that will reset the Supply Air Temperature Setpoint between the limits that were configured in Setpoint Screen #20. At the Cool High Reset Source Temperature or above, the Supply Air Setpoint will be set to the Supply Air Cooling Setpoint configured in Setpoint Screen #20. At the Cool Low Reset Source Temperature, the Supply Air Setpoint will be reset to the Cool Supply Air High Reset Limit configured in Setpoint Screen #20. As the Reset Source temperature moves between the Low and High Reset Source values (set in this screen), the Supply Air Temperature Setpoint will be proportionally reset between the Supply Air Cooling Setpoint and the Cooling High Reset Limit values set in Setpoint Screen #20.

If this unit is configured for SZ VAV operation in the Cooling Mode, the setpoints (Space Temperature only) on this screen will reset the VFD fan speed in order to maintain the Space Temperature Cooling Setpoint. So, if the Space Temperature is at or below the Low Reset Source value on this screen, the VFD Fan Speed will set at the Min Cool VFD Speed set in Setpoint Screen #18. If the Space Temperature is at or above the High Reset Source value on this screen, the VFD Fan Speed will be at 100%. As the Space Temperature moves between the values set on this screen, the VFD Fan speed will be proportionally reset between the Min Cool VFD Speed (Setpoint Screen #18) and 100%. The max fan speed in Cooling is fixed at 100% and cannot be changed.

If the Reset Source is the Fan VFD Signal or a Remote Voltage Reset Signal, then the Cool High Reset value will be the VFD Signal Percentage or the Voltage Signal that will reset the Supply Air Setpoint to the Supply Air Cooling Setpoint in Setpoint Screen #20. The Cool Low Reset value will be the VFD Signal Percentage or the Voltage Signal that will reset the Supply Air Setpoint to the Supply Air Cool High Reset Limit Setpoint in Setpoint Screen #20. Note that for a Voltage Reset, for example, either 0 or 10 volts can be used for the Cooling Low Reset value based on which voltage you want to correspond to the Supply Air Cooling High Reset Limit Setpoint. The opposite voltage would then be used for the Cooling High Reset value corresponding to the Supply Air Cooling Setpoint.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Reset Limit</td>
<td>0°F (-17.7°C)</td>
<td>75°F (24°C)</td>
<td>150°F (65.5°C)</td>
</tr>
<tr>
<td>Low Reset Limit</td>
<td>-30°F (-34.4°C)</td>
<td>70°F (21°C)</td>
<td>150°F (65.5°C)</td>
</tr>
</tbody>
</table>

**Setpoint Screen #22 - Supply Air Heating Setpoint and High Reset Limit**

If no Reset Source has been configured in Configuration Screen #11, then the Setpoint value will be the Supply Air Temperature Heating Setpoint. Line 4 will not be used. If a Reset Source has been configured in Configuration Screen #11, then Line 4 will be used. Reset is always upward from the SAT setpoint to the Hi Reset Limit setpoint. So, the SAT will be the lowest temperature the Supply Air Setpoint can be reset to and Reset Limit will be the highest temperature the Supply Air Setpoint can be reset to. The Heating Supply Air Temperature Setpoint will automatically be reset warmer or colder within this range as the Reset Source moves within its range (created in the next screen).

**NOTE:** For a Supply Air Tempering application, the Heating Supply Air Setpoint should be set at least 2°F below the Cooling Supply Air Setpoint.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAT Heating Spt</td>
<td>40°F (4.5°C)</td>
<td>120°F (48°C)</td>
<td>240°F (115.5°C)</td>
</tr>
<tr>
<td>Reset High Limit</td>
<td>0°F (-17.7°C)</td>
<td>120°F (48°C)</td>
<td>250°F (121.1°C)</td>
</tr>
</tbody>
</table>
If no SAT Reset Source has been configured in Configuration Screen #11, you can disregard this screen.

If a temperature Reset Source (Space, Return Air, Outdoor Air) has been configured in Configuration Screen #11, then this screen will allow you to set the range of Reset Source temperatures that will reset the Supply Air Temperature between the limits that were configured in Setpoint Screen #22. At the High Reset Source Temperature, the Supply Air Setpoint will be reset to the Supply Air Heating Setpoint configured in Setpoint Screen #22. At the Low Reset Source Temperature and below, the Supply Air Setpoint will be reset to the Heating Supply Air Hi Reset Limit configured in Setpoint Screen #22. As the Reset Source temperature moves between the Low and High Reset Source values (set in this screen), the Supply Air Temperature Setpoint will be proportionally reset between the Supply Cooling Setpoint and the High Reset Limit values set in Setpoint Screen #22.

If this unit is configured for SZ VAV operation in the Heating Mode, the setpoints (Space Temperature only) on this screen will reset the VFD fan speed in order to maintain the Space Temperature Heating Setpoint. So, if the Space Temperature is at or below the Low Reset Source value on this screen, the VFD Fan Speed will set at the Max Heat VFD Speed set in Setpoint Screen #19. If the Space Temperature is at or above the High Reset Source value on this screen, the VFD Fan Speed will be at the Min Heat VFD Speed from Setpoint Screen #19. As the Space Temperature moves between the High and Low values set on this screen, the VFD Fan speed will be proportionally reset between the Min and Max Heat VFD Speeds on Setpoint Screen #19.

If the Reset Source is the Fan VFD Signal or a Remote Voltage Reset Signal, then the Heat High Reset value will be the VFD Signal Percentage or the Voltage Signal that will reset the Supply Air Setpoint to the Supply Air Heating Setpoint in Setpoint Screen #22. The Heat Low Reset value will be the VFD Signal Percentage or the Voltage Signal that will reset the Supply Air Setpoint to the Supply Air Heating High Reset Limit Setpoint in Setpoint Screen #22. Note that for a Voltage Reset, for example, either 0 or 10 volts can be used for the Heating Low Reset value based on which voltage you want to correspond to the Supply Air Heating High Reset Limit Setpoint. The opposite voltage would then be used for the Supply Air Heating High Reset value corresponding to the Supply Air Heating Setpoint.

When the VCCX2 Controller is in Cooling Mode, if the Supply Air Temperature drops below the Active Supply Air Cooling Setpoint minus the Cooling Stage Off Window value, a Cooling Stage will be deactivated after its Minimum Run Time. In the Heating Mode, if the Supply Air Temperature rises above the Active Supply Air Heating Setpoint plus the Heating Stage Off Window value, a Heating stage will be deactivated after its Minimum Run Time.

The Modulating Heating Proportional Window is the control range of the Modulating Signal above and below the Active Supply Air Temperature Setpoint. The size of the Proportional Window will determine how much of a signal change the controller will make per Time Period for every 1°F the Supply Air Temperature is from setpoint. The maximum signal change per time period is 10% which occurs when the Supply Air Temperature is the full Proportional Window amount from setpoint. So, with a 5°F Proportional Window, if the Supply Air Temperature is 5°F or more from setpoint, the signal change will be 10% per time period. At 4°F difference, the signal change will be 8% per time period. By the time the difference is 1°F, the signal change will be 2% per time period. With a Proportional Window of 2°F, if you are 2°F or more from setpoint, the amount of signal change will be 2% per time period, and at 1°F from setpoint the change would be 1% per time period. So, a larger proportional window allows for finer tuning of the control signal to prevent overshooting.

The Time Period is the length of time between Modulating Signal adjustments. Short Time Periods may cause hunting of the Modulating Signal.
**Setpoint Screen #26 - Mod Cool Proportional Window and Time Period**

VCCX2 Spts ID: #
Mod Cool Prop Window: 10.0°F
Time Period: 30s

This screen only applies to Modulating Chilled Water applications. The Modulating Cooling Proportional Window is the control range of the Modulating Signal above and below the Active Supply Air Temperature Setpoint. The size of the Proportional Window will determine how much of a signal change the controller will make per Time Period for every 1°F the Supply Air Temperature is from setpoint. The maximum signal change per time period is 10% when the Supply Air Temperature is the full Proportional Window amount from setpoint. So, with a 5°F Proportional Window, if the Supply Air Temperature is 5°F or more from setpoint, the signal change will be 10% per time period. At 4°F difference, the signal change will be 8% per time period. By the time the difference is 1°F, the signal change will be 2% per time period. With a Proportional Window of 2°F, if you are 2°F or more from setpoint, the amount of signal change will be 10% per time period, and at 1°F from setpoint the change would be 5% per time period. So, a larger proportional window allows for finer tuning of the control signal to prevent overshooting.

The Time Period is the length of time between Modulating Signal adjustments. Short Time Periods may cause hunting of the Modulating Signal.

**Description** | **Minimum** | **Default** | **Maximum**
---|---|---|---
Mod Cool Proportional Window | .1°F (.1°C) | 10°F (5.5°C) | 30°F (16.6°C)
Mod Cool Time Period | 5 sec | 30 sec | 240 sec

**Setpoint Screen #28 - WSHP Head Pressure Setpoints - Cooling and Reheat**

VCCX2 Spts ID: #
WSHP Head Pres Spts
Cooling: 235psi
Reheat: 350psi

If configured for WSHP, you can control a Condenser Fan or a Condenser Water Valve to maintain these Head Pressure Setpoints in the Cooling and Dehumidification Reheat Modes.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSHP Cooling Head Pressure Setpoint</td>
<td>200 PSI</td>
<td>235 PSI</td>
<td>400 PSI</td>
</tr>
<tr>
<td>WSHP Reheat Head Pressure Setpoint</td>
<td>200 PSI</td>
<td>350 PSI</td>
<td>400 PSI</td>
</tr>
</tbody>
</table>

**Setpoint Screen #29 - Condenser Water Valve Minimum Position**

VCCX2 Spts ID: #
Condenser H2O Valve Minimum Pos: 25%

If configured for WSHP or Waterside Condenser, the Condenser Water Valve Minimum Position Setpoint is the minimum position this valve can go to.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condenser H2O Valve Minimum Position</td>
<td>25%</td>
<td>25%</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Setpoint Screen #30 - Condenser Fan Cycle - Enable & Deadband**

VCCX2 Spts ID: #
Condenser Fan Cycle Enable: 310psi
Deadband: 50psi

If a Head Pressure Transducer is connected to the RSM Module, you can control an On/Off Condenser Fan to control Head Pressure in the Cooling Mode. The Fan will turn on when the Head Pressure is above the Enable Setpoint. The Deadband is subtracted from the Condenser Fan Cycle Enable Setpoint. The Fan turns off when below this value.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condenser Fan Cycle On/Off Enable</td>
<td>245 PSI</td>
<td>310 PSI</td>
<td>470 PSI</td>
</tr>
<tr>
<td>Condenser Fan Cycle Deadband</td>
<td>35 PSI</td>
<td>50 PSI</td>
<td>100 PSI</td>
</tr>
</tbody>
</table>
**VCCX2 SETPOINTS**

**VCCX2 Setpoint Screens**

**Setpoint Screen #31 - Condenser Fan Cycle - Reheat Offset Enable**

This value is added to Condenser Fan Cycle Enable to enable the Condenser Fan during Dehumidification Mode.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condenser Fan Cycle</td>
<td>50 PSI</td>
<td>50 PSI</td>
<td>150 PSI</td>
</tr>
<tr>
<td>Reheat Offset Enable</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Setpoint Screen #32 - Use Evaporator Condenser As 1st Stage Above This OA Temp**

If the unit has been configured for Evaporative Condenser Control and the Outdoor Air Temperature is above this setpoint, the Evaporative Condenser will be used as the 1st stage of Head Pressure Control when compressors are active.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Evaporator Condenser as 1st Stage Above This OA Temperature</td>
<td>50ºF (10.0ºC)</td>
<td>70ºF (21.1ºC)</td>
<td>80ºF (26.6ºC)</td>
</tr>
</tbody>
</table>

**Setpoint Screen #33 - Evaporator Head Pressure Setpoint Deadband**

If the unit has been configured for Evaporative Condenser Control, it will use this deadband to determine when the 2nd stage of Head Pressure Control is enabled and disabled.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaporator Head Pressure Setpoint Deadband</td>
<td>1 PSI</td>
<td>10 PSI</td>
<td>100 PSI</td>
</tr>
</tbody>
</table>

**Setpoint Screen #34 - Sump Enable Temperatures**

If the unit has been configured for Evaporative Condenser Control and the Sump Temperature is below the Heater Enable Temperature, the VCCX2 will turn on the Sump Heater Relay. If the Sump Temperature is below the Drain Enable Temperature for 1 minute, the VCCX2 will turn on the Sump Pump Drain Relay for 1 hour.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heater Enable Temperature Setpoints</td>
<td>30ºF (-1.1ºC)</td>
<td>40ºF (4.4ºC)</td>
<td>60ºF (15.5ºC)</td>
</tr>
<tr>
<td>Drain Enable Setpoints</td>
<td>32ºF (0.0ºC)</td>
<td>32ºF (0.0ºC)</td>
<td>40ºF (4.4ºC)</td>
</tr>
</tbody>
</table>

**Setpoint Screen #35 - Economizer Enable Setpoint**

If this unit has been configured for Economizer control and an Outdoor Humidity Sensor is not connected to the VCCX2 Controller, if the Outdoor Temperature falls below this setpoint, the Economizer can be used for free cooling. If a combination Outdoor Air Temperature/Humidity Sensor is connected to the VCCX2 Controller and the Wetbulb or Dewpoint Temperature falls below this setpoint, the Economizer can be used for free cooling.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economizer Enable Setpoint</td>
<td>-30ºF (-34.4ºC)</td>
<td>55ºF (12.8ºC)</td>
<td>80ºF (26.6ºC)</td>
</tr>
</tbody>
</table>

**Setpoint Screen #36 - Comparative Enthalpy Economizer Enable Setpoint & Deadband**

For this screen, the unit must be configured for Comparative Enthalpy control and equipped with both an E-BUS Outdoor Temperature/Humidity Sensor and E-BUS Return Air Temperature/Humidity Sensor. If the Outdoor Enthalpy is below the Comparative Economizer Enable Setpoint by the Comparative Economizer Enable Deadband amount, and the Outdoor Enthalpy is less than the Return Air Enthalpy by the Comparative Economizer Enable Deadband amount, then Economizer Operation will be enabled to
act as first stage of Cooling. If the Outdoor Enthalpy rises above the Comparative Economizer Enable Setpoint by the Comparative Economizer Enable Deadband amount or if the Outdoor Enthalpy rises above the Return Air Enthalpy, then Economizer Operation will be disabled.

This Setpoint allows you to set the Maximum Position the Outdoor Air Damper will open to while Heating is operating. This takes priority over the Economizer Maximum Position in High CO\(_2\) Setpoint.

### Setpoint Screen #37 - Waterside Economizer Entering H\(_2\)O Control Deadband

If the unit is configured for Waterside Economizer (WSE), the WSE will be enabled if the entering water temperature falls the deadband value below the entering air temperature. (sensor must be connected to the Outdoor Air Temperature input).

### Setpoint Screen #38 - Economizer Minimum Damper Position

The Economizer (OA Damper) Minimum Position Setpoint is maintained during the Occupied Mode even if the Economizer is disabled due to the OA Temperature being above the Economizer Enable Setpoint.

### Setpoint Screen #39 - Maximum Economizer Position in Heat Mode

This Setpoint allows you to set the Maximum Position the Outdoor Air Damper will open to while Heating is operating. This takes priority over the Economizer Maximum Position in High CO\(_2\) Setpoint.

This Setpoint allows you to set the Maximum Position the Outdoor Air Damper will open to while Heating is operating. This takes priority over the Economizer Maximum Position in High CO\(_2\) Setpoint.

### Setpoint Screen #40 - Minimum Outdoor Airflow Setpoint & Deadband

If controlling the Outdoor Air Damper to an airflow setpoint, this screen allows you to set the design Minimum Outdoor Air CFM Setpoint. The Deadband controls the rate of change for the damper signal. As OA CFM moves further from setpoint within this window, the damper makes a larger change.

### Setpoint Screen #41 - Max Damper Position or CFM Value in High CO\(_2\) Level

If doing airflow control of the outside air (OA) damper, the Max OA KCFM Setpoint (K = 1000) is the maximum airflow that the unit will provide during IAQ CO\(_2\) override operation when the CO\(_2\) level is equal to or greater than the Max CO\(_2\) Setpoint.

Under this control, the OA damper will not open more than the Max Econo Position, so that should be set to 100% so as not to limit the CFM control. If not doing airflow control, only use the Max Econo Position to limit the damper during high CO\(_2\) operation.
VCCX2 SETPOINTS

VCCX2 Setpoint Screens

Setpoint Screen #42 - CO2 Setpoints Min/Max

The Min CO2 Setpoint is the threshold CO2 level at which the Economizer Min Damper Position (Setpoint Screen #38) will begin to be reset higher. The Max CO2 Setpoint is the CO2 level at which the Economizer Min Damper Position will be reset to the Econo Max Pos In High CO2 (Setpoint Screen #41). In between those CO2 levels, the Economizer Minimum Position will be proportionally reset between the values set in Setpoint Screens #38 and #41.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum CO2 Level</td>
<td>0 PPM</td>
<td>900 PPM</td>
<td>2000 PPM</td>
</tr>
<tr>
<td>Maximum CO2 Level</td>
<td>0 PPM</td>
<td>1000 PPM</td>
<td>2000 PPM</td>
</tr>
</tbody>
</table>

Setpoint Screen #43 - CO2 Altitude Setpoint

Enter the distance above sea level for the installed CO2 Sensor. Altitude correction is required for valid readings if you are above 500 feet. High limit = 15,000 feet; Low limit = 0 feet.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altitude Setpoint</td>
<td>0 Feet</td>
<td>1000 Ft.</td>
<td>15,000 Ft</td>
</tr>
</tbody>
</table>

Setpoint Screen #44 - Building Pressure Setpoint & Deadband

This setpoint screen is used for Direct and Reverse Acting Building Pressure control as well as for Exhaust Duct Static Pressure Control of the Exhaust Fan.

The VCCX2 can maintain Building Static Pressure anytime the Supply Fan VFD is operating. A Building Pressure Transducer must be connected to the VCCX2. The following are the available control options.

Direct Acting Building Pressure Control

- **On/Off Exhaust Fan**—If an On/Off Exhaust Fan is being used, a relay output must be configured for “Exhaust Fan”. This relay will energize whenever the Building Pressure rises above the Building Pressure Setpoint by the Deadband amount. The relay will de-energize when the Building Pressure falls below the Building Pressure Setpoint by the Deadband amount.

- **Exhaust Fan VFD or Modulating Exhaust Damper**—If configured for Modulating Exhaust, a user-adjustable voltage output (AOUT4 – Building Pressure Output on the VCCX2) will be used to control this fan or damper. An Exhaust Relay can be configured if necessary to enable the fan or damper. Whenever the Building Pressure rises above the Building Pressure Setpoint by the Deadband amount, the Exhaust Fan Relay will energize and the Modulating Signal will activate to control to the Building Pressure Setpoint. If the Building Pressure falls below the Building Pressure Setpoint by the Deadband amount, the Modulating Signal will modulate towards 0% as it attempts to maintain the Building Pressure Setpoint. The Exhaust Fan Relay remains energized as long as the Modulating Signal is above 0%.

Reverse Acting Building Pressure Control

- **Outdoor Air Damper**—If this option is configured, the VCCX2 will use the user-adjustable Economizer/Outdoor Air Damper output signal (AOUT2 – Economizer Control Signal) to maintain the Building Pressure Setpoint. Whenever the Building Pressure falls below the Building Pressure Setpoint by the Deadband amount, the modulating Economizer Output Signal will modulate the damper open to control to the Building Pressure Setpoint. If the Building Pressure rises above the Building Pressure Setpoint by the Deadband amount, the damper will modulate towards closed as it attempts to maintain the Building Pressure Setpoint. When this option is selected, no Economizer free cooling or CO2 IAQ operation will be available.

- **Supply Fan VFD** – Contact AAON regarding this Reverse Acting Building Pressure Control option. It should not be used in most applications. If this option is selected, the user-adjustable Supply Fan VFD Output (AOUT1 on the VCCX2) will be used to control the Supply Fan VFD to maintain the Building Pressure Setpoint in similar fashion to the Outdoor Air Damper control described above.

Exhaust Duct Static Control of the Exhaust Fan

If controlling the Exhaust Fan based on an Exhaust Duct Static Pressure Sensor and Setpoint (instead of Building Pressure), use the table below, although the setpoint screen will still display the term “Building Pressure” for the Exhaust Setpoint and Deadband ranges. See the VCCX2 Controller Technical Guide for details of this application.

The Building Pressure Output on the VCCX2 Controller will be used to control the Exhaust Fan when using this option.

<table>
<thead>
<tr>
<th>Description</th>
<th>Min.</th>
<th>Default</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Pressure Spt</td>
<td>-0.20&quot;</td>
<td>0.02&quot;</td>
<td>0.20&quot;</td>
</tr>
<tr>
<td>Building Pressure Deadband</td>
<td>0.01&quot;</td>
<td>0.01&quot;</td>
<td>0.10&quot;</td>
</tr>
<tr>
<td>Exhaust Static Pressure Spt</td>
<td>0.10&quot;</td>
<td>1.50&quot;</td>
<td>3.0&quot;</td>
</tr>
<tr>
<td>Exhaust Pressure Deadband</td>
<td>0.01&quot;</td>
<td>0.10&quot;</td>
<td>0.50&quot;</td>
</tr>
</tbody>
</table>
The VCCX2 will Lockout Compressor (Mechanical) Cooling and Heat Pump Compressor Heating when the Outdoor Air Temperature is below these Compressor Cool and Heat Lockout Setpoints.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>OAT Lockout Compressor Cooling</td>
<td>-30°F (-34.4°C)</td>
<td>50°F (10°C)</td>
<td>100°F (37.7°C)</td>
</tr>
<tr>
<td>OAT Lockout Compressor Heating</td>
<td>-30°F (-34.4°C)</td>
<td>35°F (1.6°C)</td>
<td>100°F (37.7°C)</td>
</tr>
</tbody>
</table>

The VCCX2 will Lockout Mechanical Heating when the Outdoor Air Temperature is above this Setpoint.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>OAT Lockouts Heating</td>
<td>-30°F (-34.4°C)</td>
<td>90°F (32.2°C)</td>
<td>150°F (65.6°C)</td>
</tr>
</tbody>
</table>

The VCCX2 controller will temporarily disable Heating or Cooling if while in Heating or Cooling Mode the Supply Air Temperature rises above the SAT Heating Cutoff Setpoint or falls below the SAT Cooling Cutoff Setpoint. See the VCCX2 Controller Technical Guide for detailed information on the Low and High Supply Air Temperature Cutoff sequence of operation.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling SAT Cutoff</td>
<td>0°F (-17.7°C)</td>
<td>40°F (4.5°C)</td>
<td>100°F (37.7°C)</td>
</tr>
<tr>
<td>Heating SAT Cutoff</td>
<td>0°F (-17.7°C)</td>
<td>150°F (65.5°C)</td>
<td>250°F (121.1°C)</td>
</tr>
</tbody>
</table>

If the Supply Fan is on and the Supply Air Temperature (SAT) falls below the Low SAT Cutoff Setpoint for 1 minute, the Hot Water Valve will move to this position. If the SAT rises 5°F above the Low SAT Cutoff, the valve will return to normal operation. If the SAT remains below the Low SAT Cutoff Setpoint for 10 minutes, the unit will shut down and a Low SAT Cutoff Alarm will be generated.

If the Supply Fan is off or during Emergency Shutdown and the Outdoor Air Temperature (OAT) falls below the Low Ambient Setpoint, the Hot Water Valve will move to this position. If the OAT rises back above the Low Ambient Setpoint, the valve will return to its normal position.

If this setpoint is left at the default value of 0%, then the controller will not initiate this protection sequence. For SCR heat this should be left at 0%.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot Water Valve Protection Position</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

For cold climates where freezing temperatures may be experienced, a Pre-Heater relay output can be activated to control a preheat coil based on the Outdoor Air Temperature to prevent freezing of Water Coils. One of the VCCX2 Relay Outputs must be configured for the Pre-Heater control. When configured, any time the Outdoor Air Temperature falls below the Preheat Setpoint during Occupied Mode and the HVAC unit’s fan is running, the Pre-Heater relay will activate. This setpoint will also be used to enable the PREHEAT-X Controller if it is being used in conjunction with the VCCX2 Controller. If the PREHEAT-X Controller is being used with the VCCX2 Controller, a relay on the VCCX2 cannot also be configured as Preheat and energize for Preheat function.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preheat Setpoint</td>
<td>-30°F (-34.4°C)</td>
<td>30°F (-1.1°C)</td>
<td>70°F (21.1°C)</td>
</tr>
</tbody>
</table>
VCCX2 Setpoint Screens

Setpoint Screen #50 - Low Ambient Setpoint

VCCX2 Spts ID: #
Low Ambient
Setpoint: 30.0°F

Similar to the Pre-Heat Relay, a Low Ambient Relay can be configured to energize anytime (during Occupied or Unoccupied Mode) the Outdoor Air Temperature falls below this setpoint. The Low Ambient Relay, though, can energize whether the fan is running or not. This could be used to energize a boiler, for instance.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Ambient Setpoint</td>
<td>-30°F</td>
<td>30°F</td>
<td>70°F</td>
</tr>
<tr>
<td></td>
<td>(-34.4°C)</td>
<td>(-1.1°C)</td>
<td>(21.1°C)</td>
</tr>
</tbody>
</table>

Table: Setpoint Screen #50 - Low Ambient Setpoint

Setpoint Screen #51 - Heat Pump Defrost Interval

VCCX2 Spts ID 102
Heat Pump Defrost Interval: 30 Min

If this is a heat pump unit with a Defrost Coil Temperature Switch installed and configured, a Heat Pump Defrost Mode is available. If the Defrost Coil Temperature Switch closes during Heat Pump Heating operation, the unit will enter the Defrost Mode for 10 minutes or until the Defrost Coil Temperature Switch opens. The Heat Pump Defrost Interval is the length of time that must be met between Defrost Modes. The length of this Defrost Interval can be automatically adjusted by the Adaptive Defrost Interval Adjustment described in Setpoint Screen #52.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Pump Defrost</td>
<td>10 Min</td>
<td>30 Min</td>
<td>120 Min</td>
</tr>
</tbody>
</table>

Table: Setpoint Screen #51 - Heat Pump Defrost Interval

Setpoint Screen #52 - Adaptive Defrost Interval Adjustment

VCCX Spts ID 101
Adaptive Defrost Interval Adj: 0 Min

Once initiated, the Defrost Mode is active until the Defrost Coil Temperature Switch opens or until a 10 minute timer has expired. Enter a value greater than zero to enable the Adaptive Defrost Adjustment of the Heat Pump Defrost Interval (Setpoint Screen #51). This adjustment value will be subtracted from the Heat Pump Defrost Interval if the Defrost Mode lasts the entire 10 minutes. A proportion of this adjustment value will be added to the Heat Pump Defrost Interval if the Defrost Mode only lasts between 8 minutes and 0 minutes.

Table: Setpoint Screen #52 - Adaptive Defrost Interval Adjustment

Setpoint Screen #53 - Heat Wheel Defrost Temperature Setpoint

VCCX2 Spts ID: #
Heat Wheel Defrost Temp Setpoint: 30.0°F

The unit will go into Heat Wheel Defrost Mode when the Outdoor Air is below this setpoint.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Wheel Defrost</td>
<td>0°F</td>
<td>30°F</td>
<td>50°F</td>
</tr>
<tr>
<td></td>
<td>(-17.7°C)</td>
<td>(-1.1°C)</td>
<td>(10°C)</td>
</tr>
</tbody>
</table>

Table: Setpoint Screen #53 - Heat Wheel Defrost Temperature Setpoint

Setpoint Screen #54 - Morning Warmup SAT Setpoint & Target Temp

VCCX2 Spts ID: #
Morning WarmUp SAT Setpt: 100.0°F
Target Temp: 70.0°F

When the VCCX2 is configured for Morning Warmup and the controller enters the Occupied Mode, the VCCX2 looks at the Return Air Temperature to determine if the unit should initiate Morning Warmup.

If the Return Air Temperature is below the Morning Warmup Target Temperature and the Max Length is greater than “0,” the VCCX2 will initiate Heating. This is considered Morning Warm-up and will run until the Return Air Temperature rises above the Morning Warm-up Target Temperature or until the Max Length Setpoint time expires (Setpoint Screen #56).

Heating will be controlled to the Morning Warmup Supply Air Temperature Setpoint during Morning Warmup.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warmup SAT Setpoint</td>
<td>40°F</td>
<td>100°F</td>
<td>240°F</td>
</tr>
<tr>
<td></td>
<td>(4.5°C)</td>
<td>(37.7°C)</td>
<td>(115.5°C)</td>
</tr>
<tr>
<td>Morning Warmup Target Temp</td>
<td>50°F</td>
<td>70°F</td>
<td>90°F</td>
</tr>
<tr>
<td></td>
<td>(10°C)</td>
<td>(21°C)</td>
<td>(32.2°C)</td>
</tr>
</tbody>
</table>
Setpoint Screen #55 - Morning Cooldown
SAT Setpoint & Target Temp

VCCX2 Spts ID: #
Morning Cooldown
SAT Setpt: 55.0°F
Target Temp: 68.0°F

When the VCCX2 is configured for Morning Cooldown and the controller enters the Occupied Mode, the VCCX2 looks at the Return Air Temperature to determine if the unit should initiate Cooldown Mode.

If the Return Air Temperature is above the Morning Cooldown Target Temperature and the Max Length is greater than “0,” the VCCX2 will initiate Cooling. This is considered Morning Cooldown and will run until the Return Air Temperature falls below the Morning Cooldown Target Temperature or until the Max Length Setpoint time expires (Setpoint Screen #56).

Cooling will be controlled to the Cooldown Supply Air Temperature Setpoint.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooldown SAT Setpoint</td>
<td>30°F (-1.1°C)</td>
<td>55°F (12.7°C)</td>
<td>80°F (26.6°C)</td>
</tr>
<tr>
<td>Cooldown Target Temp</td>
<td>50°F (10°C)</td>
<td>68°F (20°C)</td>
<td>80°F (26.6°C)</td>
</tr>
</tbody>
</table>

Setpoint Screen #56 - Morning Warmup and Cooldown Max Length

VCCX2 Spts ID: #
Warmup and Cooldown Max Length: 60 Min

When the Max Length is greater than “0” and the Return Air Temperature is below the Warmup Target Temperature or above the Cooldown Target Temperature set in Setpoint Screens #54 & #55, Heating or Cooling will be initiated. Heating or Cooling and will run until the Return Air Temperature is below the Morning Warmup Temperature or above the Morning Cooldown Target Temperature or until the Max Length Setpoint time expires.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning Warm Up / Cool Down Max Length</td>
<td>0 Min</td>
<td>60 Min</td>
<td>240 Min</td>
</tr>
</tbody>
</table>

Setpoint Screen #57 - SZ VAV Integral Constant

VCCX2 Spts ID: #
SZ VAV Integral Constant: 0

If the SZ VAV Fan Speed Control requires Integral control, enter the Integral constant here.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>SZ VAV Integral Constant</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

Setpoint Screen #58 - Return Air Bypass Damper Factor Setpoint

VCCX2 Spts ID: #
Return Air Bypass Damper Factor Setpoint: 40%

This setpoint is used when you have an EM1 Expansion Module installed and configured for Return Air Bypass Damper control. The Return Air Bypass Damper Factor Setpoint is a percentage value that is used to calculate the Return Air Damper position in relation to the Return Air Bypass Damper position. This provides a method for adjusting the airflow through the Return Air Bypass Damper.

Increasing this percentage increases the airflow through the Return Air Bypass Damper by causing the Return Air Damper to move further towards its closed position in relation to the Return Air Bypass Damper moving towards its open position.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damper Factor</td>
<td>0%</td>
<td>40%</td>
<td>100%</td>
</tr>
</tbody>
</table>
VCCX2 Setpoint Screens

Setpoint Screen #59 - PREHEAT-X / PREHEAT-EXT Cool Mode and Heat Mode Setpoints

If using the Preheat-X or Preheat-EXT Controller with the VCCX2, this screen allows you to set the Preheat setpoint you want to control to during the Cooling and the Heating Modes.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preheat-X Cool Mode Setpoint</td>
<td>35°F(1.67°C)</td>
<td>40.0°F(4.5°C)</td>
<td>90.0°F(32.2°C)</td>
</tr>
<tr>
<td>Preheat-X Heat Mode Setpoint</td>
<td>35°F(1.67°C)</td>
<td>60.0°F(15.5°C)</td>
<td>90.0°F(32.2°C)</td>
</tr>
<tr>
<td>Preheat-EXT Cool Mode Setpoint</td>
<td>0°F(-17.7°C)</td>
<td>40.0°F(4.5°C)</td>
<td>90.0°F(32.2°C)</td>
</tr>
<tr>
<td>Preheat-EXT Heat Mode Setpoint</td>
<td>0°F(-17.7°C)</td>
<td>60.0°F(15.5°C)</td>
<td>90.0°F(32.2°C)</td>
</tr>
</tbody>
</table>

Setpoint Screen #60 - PREHEAT-X / PREHEAT-EXT Vent Mode Setpoint

If using the Preheat-X or Preheat-EXT Controller with the VCCX2, this screen allows you to set the Preheat setpoint you want to control to during the Vent Mode.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preheat-X Vent Mode Setpoint</td>
<td>35°F(1.67°C)</td>
<td>50.0°F(10.0°C)</td>
<td>90.0°F(32.2°C)</td>
</tr>
<tr>
<td>Preheat-EXT Vent Mode Setpoint</td>
<td>0°F(-17.7°C)</td>
<td>50.0°F(10.0°C)</td>
<td>90.0°F(32.2°C)</td>
</tr>
</tbody>
</table>

Setpoint Screen #61 - Superheat Setpoint

The Superheat Setpoint is the target Superheat used by the Refrigerant Module to correctly drive the EXV valves.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superheat Setpoint</td>
<td>1</td>
<td>15</td>
<td>30</td>
</tr>
</tbody>
</table>

Setpoint Screen #62 - Space Sensor Calibration - Current and Offset

If the Space Air Temperature Sensor is reading incorrectly, you can use this option to enter an offset temperature to adjust the Sensor’s Temperature. Line 3 will display the current Space Air Temperature reading. Enter a positive Sensor Calibration value in Line 4 to raise the Space Temperature Sensor reading or a negative value in Line 4 to lower the Sensor reading.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space Sensor Calibration Offset</td>
<td>-100.0°F(-55.5°C)</td>
<td>0.0°F(0°C)</td>
<td>100.0°F(55.5°C)</td>
</tr>
</tbody>
</table>

Setpoint Screen #63 - Return Air Temperature Sensor Calibration - Current and Offset

If the Return Air Temperature Sensor is reading incorrectly, you can use this option to enter an offset temperature to adjust the Sensor’s Temperature. Line 3 will display the current Return Air Temperature reading. Enter a positive Sensor Calibration value in Line 4 to raise the Return Temperature Sensor reading or a negative value in Line 4 to lower the Sensor reading.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return Air Sensor Calibration Offset</td>
<td>-100.0°F(-55.5°C)</td>
<td>0.0°F(0°C)</td>
<td>100.0°F(55.5°C)</td>
</tr>
</tbody>
</table>
If the Supply Air Temperature Sensor is reading incorrectly, you can use this option to enter an offset temperature to adjust the Sensor’s Temperature. Line 3 will display the current Supply Air Temperature Sensor reading. Enter a positive Sensor Calibration value in Line 4 to raise the Supply Air Temperature Sensor reading or a negative value in Line 4 to lower the Sensor reading.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor Calibration SAT</td>
<td>-100.0°F (-55.5°C)</td>
<td>0.0°F (0°C)</td>
<td>100.0°F (55.5°C)</td>
</tr>
</tbody>
</table>

If the Outdoor Air Temperature Sensor is reading incorrectly, you can use this option to enter an offset temperature to adjust the Sensor’s Temperature. Line 3 will display the current Outdoor Air Temperature Sensor Reading. Enter a positive Sensor Calibration value in Line 4 to raise the Outdoor Air Temperature Sensor reading or a negative value in Line 4 to lower the Sensor reading.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>OAT Sensor Calibration Offset</td>
<td>-100.0°F (-55.5°C)</td>
<td>0.0°F (0°C)</td>
<td>100.0°F (55.5°C)</td>
</tr>
</tbody>
</table>

If the Entering Water Temperature Sensor is reading incorrectly, you can use this option to enter an offset temperature to adjust the Sensor’s Temperature. Line 3 will display the current Entering Water Temperature Sensor Reading. Enter a positive Sensor Calibration value in Line 4 to raise the Entering Water Temperature Sensor reading or a negative value in Line 4 to lower the Sensor reading.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entering H2O Sensor Calibration Offset</td>
<td>-100.0°F (-55.5°C)</td>
<td>0.0°F (0°C)</td>
<td>100.0°F (55.5°C)</td>
</tr>
</tbody>
</table>

If the CO₂ Sensor is reading incorrectly, you can use this option to enter an offset reading to adjust the Sensor’s Sensitivity. Line 3 will display the current CO₂ Sensor reading. Enter a positive Sensor Calibration value in Line 4 to increase the CO₂ Sensor reading or a negative value in Line 4 to lower the Sensor reading.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor Calibration CO₂</td>
<td>-500.0 PPM</td>
<td>0.0 PPM</td>
<td>500.0 PPM</td>
</tr>
</tbody>
</table>
VCCX2 Status Screen Index

The available Status Screens for the VCCX2 Controller are listed on the next few pages by sequential screen number. The following is a list of all the VCCX2 Status Screens in numerical order with a brief listing of the Status features available on each screen:

Screen #1  Date & Time
Screen #2  Application Type, Schedule Mode & HVAC Mode
Screen #3  Controlling Temperature, Cooling & Heating Setpoints
Screen #4  Space & Return Air Temperature & Slide Adjust
Screen #5  Supply Air Temperature & Active Setpoint
Screen #6  Cooling Enabled: Yes/No
Screen #7  Cooling Outputs - Active Stages & Mod Cooling Position
Screen #8  Heating Enabled Yes/No
Screen #9  Heating Outputs - Active Stages & Mod Heat Position
Screen #10 MODGAS-X Enabled or Disabled and / MODGAS-X Heating Output Signal
Screen #11 Current Space RH & Indoor RH Setpoint & Return RH
Screen #12 MHGRV-X Enabled or Disabled and MHGRV-X Reheat Valve Output Signal Percentage
Screen #13 Preheat-X Enabled and Leaving Air Temperature Setpoint
Screen #14 Current Preheat-X Leaving Air Temperature and Entering Air Temperature
Screen #15 Current Preheat-X Modulating Position and Active Stages
Screen #16 Current Outdoor Air Drybulb and Current Outdoor Air Relative Humidity
Screen #17 Current Wetbulb Temperature and Current Calculated Outdoor Air Dewpoint Temperature
Screen #18 Outdoor Air and Return Air Enthalpy
Screen #19 Economizer Enabled or Disabled and Current Economizer Open Percentage
Screen #20 Economizer Feedback Percentage for Title 24 Economizer
Screen #21 Economizer in IAQ Mode Yes/No and Economizer Minimum Percentage
Screen #22 Current CO₂ Level, Minimum Setpoint, and Maximum Setpoint
Screen #23 Outdoor Air CFM and Supply Air CFM
Screen #24 Return Air CFM and Exhaust Air CFM
Screen #25 Current Duct Static Pressure, Current Duct Static Pressure Setpoint and Output Percentage
Screen #26 Current Building Pressure and Setpoint
Screen #27 Building Pressure Exhaust Fan Status and Output Signal Percentage
Screen #28 Return Air Damper Signal & Return Air Bypass Damper Signal
Screen #29 Reset Voltage Signal
Screen #30 Entering Water Temperature

VCCX2 Status Screens - General Procedures

From any menu screen, press <STATUS>. The Unit Selection Screen, shown below, will appear requesting that you enter the unit ID number.

Enter Unit Address
Then Press Enter
Selected Unit#: XXXX

Enter the correct unit ID number of the Controller you want to view and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen. Then press <↓>. You will then see the Status Selection Screen(s) below:

VCCX2 Status
RSM-VFD & HP Status
RSM DIGITAL Status
Select & Press Enter

Select VCCX2 Status. Then press <ENTER>.

The first VCCX2 Status Screen will appear. Press <↓> to scroll through the screens.

NOTE: If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.
**Status Screen #1 - Date and Time**

VCCX2 v1.19 ID #
Controller Date/Time
01/16/2017 05:00 PM

Line 2  Controller Date/Time
Line 3  MM/DD/YYYY HH:MM XX
(Month, Day, Year) (Hour, Minutes, AM or PM)

**Status Screen #2 - Application Type, Schedule Mode & HVAC Mode**

VCCX2 v1.19 ID #
App Type
Schedule Mode
HVAC Mode

Line 2  App Type:
Constant Volume  Single Zone VAV
VAV  VAV w/Trapping
Make Up Air  Space w/High OA%

Line 3  Schedule Mode:
Unoccupied  Holiday Occupied
Occupied  Forced Occupied
Override  Forced Unoccupied
Holiday Unoccupied  Remote Occupied

Line 4  HVAC Mode:
Off  Dehum Vent
Vent Mode  Dehum Cool
Cool Mode  Dehum Heat
Heat Mode  Warm Up
Defrost  Cool Down
Remote Cool  Remote Heat
Remote Vent RH  Remote Cool RH
Remote Heat RH

**Status Screen #3 - Controlling Temperature, Cooling & Heating Setpoints**

VCCX2 v1.19 ID #
Ctrl Temp: 0.0°F
Cool Spt: 0.0°F
Heat Spt: 0.0°F

Line 2  Controlling Temperature
This is the temperature of the sensor that is configured as the HVAC Source (Mode Enable) Sensor. This can be the Supply Air, Return Air, Outdoor Air, or Space Temperature Sensor.

Line 3  Cooling Setpoint
Based on the current Occupied/Unoccupied Mode of operation. (Reflects any active resets.)

Line 4  Heating Setpoint
Based on the current Occupied/Unoccupied Mode of operation. (Reflects any active resets.)

**Status Screen #4 - Space and Return Temperature & Slide Adjust**

VCCX2 v1.19 ID #
Space Temp: 0.0°F
Return Temp: 0.0°F
Slide Adj: 0.0°F

Line 2  Space Temperature
If you are using a Space Temperature Sensor, this line will display the current Space Temperature during the Occupied or Unoccupied Mode. If a Space Temperature sensor is not used, it will display 0°F.

Line 3  Return Air Temperature
If you are using a Return Air Temperature Sensor, this line will display the current Return Air Temperature during the Occupied or Unoccupied Mode. If a Return Air Temperature Sensor is not used, it will display 0°F.

Line 4  Slide Adjust
This is the current value of the Space Temperature offset based on the position of the slide adjust switch on the Space Sensor.
Status Screen #5 - Supply Air Temperature & Active Setpoint

VCCX2 v1.19 ID #
Supply Temp: 0.0°F
Active Spt: 0.0°F

Line 2 Current Supply Air Temperature
The Supply Air Temperature is always required. If a Supply Air Temperature Sensor is not installed, the VCCX2 Controller will not operate correctly and will display 0°F.

Line 3 Current Active Supply Air Setpoint
This is the Supply Air Setpoint for the mode that the unit is currently operating in. If the Supply Air Reset is configured, this is the calculated setpoint based on the current Reset Source conditions.

Status Screen #6 - Cooling Enabled

VCCX2 v1.19 ID #
Cooling Enabled YES/NO

Line 3 Cooling Enabled YES/NO
This line will display YES if Cooling is enabled and NO if the Cooling is not enabled. Cooling is enabled if the Outdoor Air Temperature is above the Compressor Cooling Lockout.

Status Screen #7 - Cooling Outputs - Active Stages and Mod Heat Position

VCCX2 v1.19 ID #
Cooling Outputs
Active Stages: XX
Mod Heat Pos.: XXX%

Line 3 Cooling Active Stages
This line will display the number of stages of Cooling that are currently active.

Line 4 Current Modulating Heating Output Signal Percentage
Indicates the percentage output signal being supplied to a Modulating Heating device when you have configured this option for your HVAC unit.

Status Screen #8 - Heating Enabled

VCCX2 v1.19 ID #
Heating Enabled YES/NO

Line 3 Heating Enabled YES/NO
This line will display YES if Heating is enabled and NO if Heating is not enabled. Heating is enabled if the Outdoor Air Temperature is below the Heating Lockout.

Status Screen #9 - Heating Outputs - Active Stages and Mod Heat Position

VCCX2 v1.19 ID #
Heating Outputs
Active Stages: XX
Mod Heat Pos.: XXX%

Line 3 Heating Active Stages
This line will display the number of stages of Heating that are currently active.

Line 4 Current Modulating Heating Output Signal Percentage
Indicates the percentage output signal being supplied to a Modulating Heating device when you have configured this option for your HVAC unit.

Status Screen #10 - MODGAS-X Enabled and Output %

VCCX2 v1.19 ID #
MODGAS-X Enabled: YES/NO
Position: XXX%

Line 3 MODGAS-X Enabled or Disabled
This indicates whether the VCCX2 Controller has enabled the MODGAS-X Controller to begin to operate. If you do not have a MODGAS-X Controller connected to the VCCX2 Controller, this line will indicate “NO”.

Line 4 Current MODGAS-X Heating Output Signal
Indicates the percentage output signal being supplied by the MODGAS-X controller when you have one connected to the VCCX2 Controller.
### Status Screen #11 - Space RH & Indoor RH Setpoint

<table>
<thead>
<tr>
<th>VCCX2 v1.19  ID #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Space RH: XXX.X%</td>
</tr>
<tr>
<td>Return RH: XXX.X%</td>
</tr>
<tr>
<td>RH Setpoint: XXX.X%</td>
</tr>
</tbody>
</table>

- **Line 2** Current Space Relative Humidity Percentage
  - If an E-BUS Space Temperature/Humidity Sensor has been installed and configured on the unit, the current Space Air Relative Humidity Percentage will appear on this line. If this combination Temperature/Humidity Sensor is not installed, this line will display 0%.

- **Line 3** Current Return Air Relative Humidity Percentage
  - If an E-BUS Return Air Temperature/Humidity Sensor has been installed and configured on the unit, the current Return Air Relative Humidity Percentage will appear on this line. If this combination Temperature/Humidity Sensor is not installed, this line will display 0%.

- **Line 4** Current Indoor Relative Humidity Setpoint Percentage
  - This is the adjustable Indoor Air Relative Humidity Setpoint Percentage that has been set by the user.

### Status Screen #12 - MHGRV-X Enabled and Output %

<table>
<thead>
<tr>
<th>VCCX2 v1.19  ID #</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHGRV-X</td>
</tr>
<tr>
<td>Enabled: YES/NO</td>
</tr>
<tr>
<td>Position: XXX%</td>
</tr>
</tbody>
</table>

- **Line 3** MHGRV-X Enabled or Disabled
  - This indicates whether the VCCX2 Controller has enabled the MHGRV-X Controller to begin to operate. If you do not have a MHGRV-X Controller connected to the VCCX2 Controller, this line will indicate “NO”.

- **Line 4** Leaving Air Temperature Setpoint
  - This is the configured Leaving Air Temperature Setpoint.

### Status Screen #13 - PREHEAT-X Controller Status and Leaving Air Temperature Setpoint

<table>
<thead>
<tr>
<th>VCCX2 v1.19  ID #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preheat-X</td>
</tr>
<tr>
<td>Enabled: YES/NO</td>
</tr>
<tr>
<td>Lvg Air Spt: 0.0°F</td>
</tr>
</tbody>
</table>

- **Line 3** PREHEAT-X Enabled or Disabled
  - This indicates whether the VCCX2 Controller has enabled the PREHEAT-X Controller to begin to operate. If you do not have a PREHEAT-X Controller connected to the VCCX2 Controller, this line will indicate “NO”.

- **Line 4** Leaving Air Temperature Setpoint
  - This is the configured Leaving Air Temperature Setpoint.

### Status Screen #14 - PREHEAT-X Controller Current Leaving Air and Entering Air Temperature

<table>
<thead>
<tr>
<th>VCCX2 v1.19  ID #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preheat-X Temps</td>
</tr>
<tr>
<td>Leaving Air: 0.0°F</td>
</tr>
<tr>
<td>Entring Air: 0.0°F</td>
</tr>
</tbody>
</table>

- **Line 3** Current PREHEAT-X Leaving Air Temperature
  - If the Preheat-X Controller (and the associated Leaving Air Temperature Sensors) is installed and configured, this line will display the current Preheat-X Leaving Air Temperature.

- **Line 4** Current PREHEAT-X Entering Air Temperature
  - If the Preheat-X Controller (and the associated Entering Air Temperature Sensor) is installed and configured, this line will display the current Preheat-X Entering Air Temperature.
VCCX2 STATUS

VCCX2 Status Screens

Status Screen #15 - PREHEAT-X Controller Modulating Position and Active Stages

<table>
<thead>
<tr>
<th>Line 3</th>
<th>Current PREHEAT-X Modulating Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you have a PREHEAT-X Controller connected to the VCCX2 Controller and are using Modulating Heat, this is the current modulating heat signal.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 4</th>
<th>Current PREHEAT-X Active Stages</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you have a PREHEAT-X Controller connected to the VCCX2 Controller, and are using staged heat, this is the number of stages currently active.</td>
<td></td>
</tr>
</tbody>
</table>

Status Screen #16 - OA Drybulb and Humidity

<table>
<thead>
<tr>
<th>Line 3</th>
<th>Current Outdoor Air Drybulb</th>
</tr>
</thead>
<tbody>
<tr>
<td>If an E-BUS Outdoor Air Temperature/Humidity Sensor has been installed and configured on the VCCX2, the current Outdoor Air Temperature will display on this line. If the sensor fails, this line will display a temperature that is half way between the Cooling and Heating Lockout Setpoints.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 4</th>
<th>Current Outdoor Air Relative Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>If an E-BUS Outdoor Air Temperature/Humidity Sensor has been installed and configured on the VCCX2, the Outdoor Air Relative Humidity Percentage will appear on this line. If not, this line will display 0%.</td>
<td></td>
</tr>
</tbody>
</table>

Status Screen #17 - OA Wetbulb and Dewpoint

<table>
<thead>
<tr>
<th>Line 3</th>
<th>Current Wetbulb Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>If an E-BUS Outdoor Air Temperature/Humidity Sensor has been installed and configured on the unit, this line will display the calculated Outdoor Air Wetbulb Temperature. If not, it will display 0°F.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 4</th>
<th>Current Calculated Outdoor Air Dewpoint Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>If an E-BUS Outdoor Air Temperature/Humidity Sensor has been installed and configured on the unit, the calculated Outdoor Air Dewpoint Temperature will appear on this line. If not, this screen displays 0°F.</td>
<td></td>
</tr>
</tbody>
</table>

Status Screen #18 - Outdoor Air and Return Air Enthalpy

<table>
<thead>
<tr>
<th>Line 3</th>
<th>Outdoor Air Enthalpy</th>
</tr>
</thead>
<tbody>
<tr>
<td>If an E-BUS Outdoor Air Temperature/Humidity Sensor has been installed and configured on the unit, the calculated Outdoor Air Enthalpy will appear on this line. If not, this screen displays 0.0.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 4</th>
<th>Return Air Enthalpy</th>
</tr>
</thead>
<tbody>
<tr>
<td>If an E-BUS Return Air Temperature/Humidity Sensor has been installed and configured on the unit, the calculated Return Air Enthalpy will appear on this line. If not, this screen displays 0.0.</td>
<td></td>
</tr>
</tbody>
</table>

Status Screen #19 - Economizer Enabled/WSE Enabled and Economizer Position

<table>
<thead>
<tr>
<th>Line 3</th>
<th>Economizer Enabled or Water Side Economizer Enabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>This line will display YES if the Economizer is enabled and NO if the Economizer is not enabled. The Economizer is enabled whenever the Economizer Enable Temperature (options: Drybulb, Wetbulb or Dewpoint) is below the Economizer Enable Setpoint. This line will display WSE Flush if the unit is configured for Water Side Economizer and a flush is occurring.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 4</th>
<th>Current Economizer Open Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>This shows the percentage signal currently being sent to the Economizer (Outdoor Air Damper), whether the unit is configured for Economizer Control or simply has a Minimum Outdoor Air Damper position configured. If Economizer Control is not configured, it will display 0%.</td>
<td></td>
</tr>
</tbody>
</table>
### Status Screen #20 - Title 24 Economizer Feedback

**VCCX2 v1.19 ID #**
Economizer Feedback: XXX%
[Only For Title 24]

**Line 3** Title 24 Economizer Open Percentage
If configured for Title 24 Economizer operation, this shows the Outdoor Air Damper Feedback Signal percentage. If Title 24 Economizer Control is not configured, it will display 0%.

### Status Screen #21 - Economizer in IAQ Mode and Minimum Economizer Position

**VCCX2 v1.19 ID #**
Econo in IAQ Mode YES/NO
Econo Min Pos: XXX%

**Line 3** Economizer in IAQ Mode
This line will display YES if the Economizer (OA) Minimum Damper Position has been overridden based on CO₂ IAQ operation.

**Line 4** Economizer Minimum Percentage
This shows the current Economizer (OA) Minimum Damper Position. If the unit is not in IAQ Mode, this will be the regular configured Minimum Damper Position. If the unit is in IAQ Mode, this will show the re-calculated Minimum Damper Position.

### Status Screen #22 - CO₂ Level and Setpoints

**VCCX2 v1.19 ID #**
CO₂ Level: XXXXppm
Min Setpt: XXXXppm
Max Setpt: XXXXppm

**Line 2** Current CO₂ Level
Indicates the CO₂ Level. You must install and configure a CO₂ Sensor to display the CO₂ Level. If a CO₂ Sensor is not installed and configured, this line will display 0 PPM.

**Line 3** Minimum CO₂ Setpoint
This is the Minimum CO₂ Setpoint that was configured in Setpoint Screen #42.

**Line 4** Maximum CO₂ Setpoint
This is the Maximum CO₂ Setpoint that was configured in Setpoint Screen #42.

### Status Screen #23 - Outdoor Air CFM & Supply Air CFM

**VCCX2 v1.19 ID #**
Outdoor kCFM: XXX.XX
Supply kCFM: XXX.XX

**Line 2** Outdoor Air CFM
If an Outdoor Air airflow monitoring station is being used, this is the current CFM reading of that device. K = 1000

**Line 3** Supply Air CFM
If a Supply Air airflow monitoring station is being used, this is the current CFM reading of that device. K = 1000

### Status Screen #24 - Return Air CFM & Exhaust Air CFM

**VCCX2 v1.19 ID #**
Return kCFM: XXX.XX
Exhaust kCFM: XXX.XX

**Line 2** Return Air CFM
If a Return Air airflow monitoring station is being used, this is the current CFM reading of that device. K = 1000

**Line 3** Exhaust Air CFM
If an Exhaust Air airflow monitoring station is being used, this is the current CFM reading of that device. K = 1000
### Status Screen #25 - Duct Static Pressure Setpoint & Output %

**VCCX2 v1.19  ID #**  
Static Pr: X.XX"  
Setpoint: X.XX"  
Output: XXX%

**Line 2** Current Duct Static Pressure  
Requires the installation and wiring of a Duct Static Pressure Sensor. If you do not have a Duct Static Pressure Sensor correctly installed and wired to the controller, this line will display “0.0”.

**Line 3** Duct Static Pressure Setpoint  
This is the Duct Static Pressure Setpoint configured in Setpoint Screen #15.

**Line 4** Current Duct Static Pressure Output Signal Percentage  
Indicates the output signal percentage being supplied to the VFD Supply Fan or Bypass Damper Actuator when you have configured one of these options for your HVAC unit.

If you have not configured Duct Static Pressure Control, this line will display [No Press Out Config].

### Status Screen #26 - Building Pressure & Setpoint

**VCCX2 v1.19  ID #**  
Building Pressure: XXX"  
Setpoint: X.XX”

**Line 2** Current Building Pressure  
Indicates the current Building Pressure. This display requires the installation of a Building Pressure Sensor.

If you don’t have a Building Pressure Sensor correctly installed and wired to the controller, this line will display “0.0”.

**Line 3** Building Pressure Setpoint  
This is the Building Static Pressure Setpoint configured in Setpoint Screen #44.

If you have not configured Building Pressure Control, this line will display [No Press Out Config].

### Status Screen #27 - Building Pressure Exhaust Fan and Output %

**VCCX2 v1.19  ID #**  
Building Pressure: ON/OFF  
Output: XXX%

**Line 3** Building Pressure Exhaust Fan Status  
Indicates whether the Exhaust Fan Relay is On or Off.

**Line 4** Current Building Pressure Output Signal Percentage  
Indicates the output signal percentage being supplied to the building pressure control fan or damper. For Direct Acting control, this would be to an Exhaust Fan VFD or a Modulating Exhaust Damper. For Reverse Acting control, this would be to the Outdoor Air Damper or Supply Fan VFD.

If you have not configured Building Pressure Control, this line will display [No Press Out Config].

### Status Screen #28 - Return Air Damper Signal & Return Air Bypass Damper Signal

**VCCX2 v2.00 ID 101**  
Return Dmper: XXX%  
Bypass Dmper: XXX%  
[Optional Outputs]

**Line 2** Current Return Air Damper Signal  
If configured for Return Air Bypass Control, this indicates the current Output Signal percentage being sent to the Return Air Damper Actuator. If you haven’t configured a Return Air Bypass Damper, [No Return Dmp Confg] will be displayed instead.

**Line 3** Current Return Air Bypass Damper Signal  
If configured for Return Air Bypass Control, this indicates the current Output Signal percentage being sent to the Return Air Bypass Damper Actuator. If you haven’t configured a Return Air Bypass Damper, [No Bypass Dmp Confg] will be displayed instead.

**Line 4** Indicates That These Are Optional Outputs  
This output may or may not have live data to display.
**Status Screen #29 - Reset Voltage Signal**

VCCX2 v2.00 ID 101
Reset Voltage Signal
0.0VDC

Line 2-3 Reset Voltage Signal
If using a Remote Voltage Signal to reset the Supply Air Temperature setpoint, this screen will display the current Reset Voltage Signal being sent to the Controller.

**Status Screen #30 - Entering Water Temperature**

VCCX2 v2.00 ID 101
Entering Water Temp: 0.0°F

Line 2-3 Entering Water Temperature
If configured for Water Side Economizer and using an Entering Water Temperature Sensor, this screen will display the current temperature of the water.

**Status Screens #31-#38 - VCCX2 Relays**

VCCX2 v1.19 ID #
On Board Rly 1-8
FAN
ON/OFF

Line 2 On Board Relays 1-8 Status
Line 3 Current description of what this Relay is configured for
On screen 31, this line will display FAN. On screens 32-38, this line will indicate the relay’s use. Possible options are:

- Not Used (Default)
- Cool Stage
- Heat Stage
- HP Aux Heat
- HP Emer Heat
- Mod Heat Enable
- Mod Cool Enable
- Warmup / Cooldown
- ReHeat
- PreHeat
- Low Ambient
- Exhaust Fan
- Economizer
- Heat Wheel
- Occupied Mode
- Override Mode
- Alarm Active
- LL Solenoid 1
- LL Solenoid 2
- LL Solenoid 3
- Condenser Pump
- LL Solenoid 4
- Sump Heater
- Sump Pump Drain

Line 4 Current Relay Status
This line will display the ON/OFF condition for that relay. FORCED ON or FORCED OFF will appear if this Relay is in a Force Mode.

**Status Screens #39-#43 - EM1 Relays**

VCCX2 v1.19 ID #
Main Exp Rly 1-5
Relay Name
ON/OFF

Line 2 On Board Relays 1-5 Status
Line 3 Current description of what this Relay is configured for
On screens 39-43, this line will indicate the relay’s use. Possible options are:

- Not Used (Default)
- Cool Stage
- Heat Stage
- HP Aux Heat
- HP Emer Heat
- Mod Heat Enable
- Warmup / Cooldown
- ReHeat
- PreHeat
- Low Ambient
- Exhaust Fan
- Economizer
- Heat Wheel
- Occupied Mode
- Override Mode
- Alarm Active
- LL Solenoid 1
- LL Solenoid 2
- LL Solenoid 3
- Condenser Pump
- LL Solenoid 4
- Sump Heater
- Sump Pump Drain

Line 4 Current Relay Status
This line will display the ON/OFF condition for that relay. FORCED ON or FORCED OFF will appear if this Relay is in a Force Mode.
## VCCX2 Status Screens

### Status Screens #44-#55 - 12 Relay Expansion Module Relays

| Line 2 | NO ALARMS OR ALARMS PRESENT |
| Line 3-4 | Push Alarms Button to View |

Press <ALARMS>. The Unit Selection Screen will be displayed.

Enter the Unit ID of the controller you wish to search. You must type in the number, even if it is “1” and press <ENTER>. Then press <↓>. The System Manager or Service Tool will search for any active alarms on the unit and one of the following screens will appear:

- Bad SAT Sensor
- Bad RAT Sensor
- Bad OAT Sensor
- Bad Space Sensor
- Bad CO₂ Sensor
- Bad Building Pressure Sensor
- Missing Outdoor Air CFM Sensor
- Missing Exhaust Air CFM Sensor
- Missing Supply Air CFM Sensor
- Missing Return Air CFM Sensor
- Mechanical Cooling Failure
- Mechanical Heating Failure
- Fan Proving Alarm
- Dirty Filter Alarm
- Emergency Shutdown
- Relay Runtime
- No Economizer Feedback
- Title 24 Economizer Air Temperature Sensor Failure
- Title 24 Economizer Damper Failure
- Title 24 Economizer Excess Outdoor Air
- Title 24 Economizer Not Economizing When It Should
- Title 24 Economizer Economizing, But It Shouldn’t
- High Supply Air Temperature Cutoff
- Low Supply Air Temperature Cutoff
- High Control Temperature
- Low Control Temperature
- Missing RSM #1
- Missing RSM #2
- Missing RSM #3
- Missing RSM #4
- Missing PREHEAT-X
- Missing MHGRV-X
- Missing MODGAS-X
- Missing EM1
- Missing 12RLY
- Sump Drain

Press <↓> to scroll through all active alarms.

For Alarm Definitions, see the VCCX2 Controller Technical Guide.
Modular Service Tool Instructions

No matter what screen or menu you’re in, press <CONFIGURATION>. The Unit Selection Screen will appear, shown below, requesting that you enter the unit ID number.

Enter the correct unit ID number of the Controller that the RSMV Module(s) are connected to and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen.

NOTE: If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

Then press <Enter>. You will then see the Configuration Selection Screen below:

Select RSM Configuration and then press <ENTER>. The following screen will appear:

UNIT HAS RSM-VFD
UNIT HAS RSM-DIGITAL

Select one of the options and press <ENTER>.

System Manager SD Instructions

From any Main screen, press <SETPOINTS>. The screen below will appear because this option requires passcode clearance. Only a Level 2 passcode can change setpoints.

Enter Unit Address
Then Press Enter
Selected Unit#: XXXX

Enter the correct unit ID number of the Controller that the RSMV Module(s) are connected to and then press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen.

NOTE: If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

The following screen will be displayed:

Change Setpoints
Configure Unit
Save/Copy/Restore

Scroll down to the ‘Configure Unit’ option and press <ENTER>.

Select RSM Configuration and then press <ENTER>. The following screen will appear:

UNIT HAS RSM-VFD
UNIT HAS RSM-DIGITAL

Select one of the options and press <ENTER>.

RSMV Configuration Screens

The available screens for the RSMV are listed on this page by sequential screen number. When each RSMV is configured for the first time, it is best to start with screen #1 and proceed to each screen in numerical order until you have viewed all available screens. This ensures that you have seen all the available RSMV configuration possibilities and have the opportunity to change or accept the defaults for each screen. Refer to the RSM Technical Guides for further details.

Once the RSMV is configured and you decide to change one of the screen options, it is helpful to know what screen number contains the configuration you wish to change. With this in mind, the following is a list of all RSMV Configuration Screens in numerical order with a brief listing of the configuration feature available on each screen.
RSMV Configuration Screens

RSMV #1, #2, #3, #4 Configuration Screen #1 - Compressor Option

Options are DUAL or SINGLE. Default is DUAL.

RSMV #1, #2, #3, #4 Configuration Screen #2 - Compressor Type

Options are 1ST VFD / 2ND Fixed or BOTH ARE FIXED. Default is 1ST VFD / 2ND Fixed.

RSMV #1, #2, #3, #4 Configuration Screen #3 - Evaporator Coil Expansion Valve

Options are Uses EXV-1 & EXV-2 or Uses EXV-1 Only. Default is Uses EXV-1 Only.

RSMV #1, #2, #3, #4 Configuration Screen #4 - Heat Pump Expansion Valve

Options are USES EXV-3 & EXV-4 or Uses EXV-3 Only. Default is Uses EXV-3 Only.

RSMV #1, #2, #3, #4 Configuration Screen #5 - Single Compressor Startup

Options are No or Yes. Default is NO.

RSMV Main Configuration Screens
Main Screen #1-#4 Condenser Options for all RSMVs
RSMV #1, #2, #3, #4 Subscreens
Screen #1  Compressor Option
Screen #2  Compressor Type
Screen #3  Evaporator Coil Expansion Valve
Screen #4  Heat Pump Condenser Expansion Valve

RSMV #1 - Condenser Options

Enter the Condenser(s)’s Configuration from the list below.

• 1 Condenser per RSMV
• 1 Condenser per 2 RSMV
• 1 Condenser for 3 RSMV
• Reserved
• 1 Condenser for 4 RSMV

RSMV #2, #3, #4 Condenser Options

Choose the same Condenser option you chose for RSMV #1 for RSMV #2, #3, and #4 from the list above, depending on how many RSMVs you are using. If you choose any other option than the one chosen for RSMV #1, the RSMV will not run properly.

RSMV #1, #2, #3, #4 Configuration Screen #1 - Compressor Option

Options are DUAL or SINGLE. Default is DUAL.
RSMD Configuration Screens

The available screens for the RSMD are listed on this page by sequential screen number. When each RSMD is configured for the first time, it is best to start with screen #1 and proceed to each screen in numerical order until you have viewed all available screens. This ensures that you have seen all the available RSMD configuration possibilities and have the opportunity to change or accept the defaults for each screen. Refer to the *RSM Technical Guides* for more details.

Once the RSMD is configured and you decide to change one of the screen options, it is helpful to know what screen number contains the configuration you wish to change. With this in mind, the following is a list of all RSMD Configuration Screens in numerical order with a brief listing of the configuration feature available on each screen.

**RSMD Main Configuration Screens**
- **Main Screen #1** Digital Compressor Safety Stage Off Position & Time Period
- **Main Screen #2-#5** Condenser Options for all RSMDs

**RSMD #1, #2, #3, #4 Subscreens**
- **Screen #1** Compressor Option - Dual/Single
- **Screen #2** Compressor #1 Type - Modulating/Fixed
- **Screen #3** Compressor #2 Type - Modulating/Fixed
- **Screen #4** Refrigeration Circuit - Split/Tandem
- **Screen #5** Fan Cycle Control - Yes/No
- **Screen #6** Fixed Condenser Fan - Yes/No
- **Screen #7** 2 Stage Compressor - Yes/No
- **Screen #8** Single Compressor Startup - Yes/No
- **Screen #9** WSE Operation - Yes/No

**RSMD Main Configuration Screen #1 - Compressor Safety Stage Off Position & Duration**

For the first value, enter the desired Digital Compressors’ Safety Stage Off minimum position. Range is 11-50%. **Default is 11%**.

For the second value, enter a time period in minutes. Range is 15-300 minutes. **Default is 120 minutes**.

The time period is the full amount of time the compressor can run at or below the safety shutoff minimum position before it shuts off. If the compressor is running at the safety stage off minimum position for this amount of time, it will shut off or if using two compressors, the second compressor will shut off.

**RSMD #1 Condenser Options**

Enter the Condenser(s)'s Configuration from the list below. Default is 2 Cond per RSMD.

- 2 Condensers per RSMD
- 1 Condenser for 1 RSMD
- 1 Condenser per 2 RSMDs
- 1 Condenser for 3 RSMDs
- 2 Condenser for 2 RSMDs
- 1 Condenser for 4 RSMDs

**RSMD #2, #3,#4 Condenser Options**

Choose the same Condenser option you chose for RSMD #1 for RSMD #2, #3, and #4 from the list above, depending on how many RSMDs you are using. If you choose any other option than the one chosen for RSMD #1, the RSMD will not run properly. Default is 2 Cond per RSMD.
RSMD Configuration Screens

**RSMD #1, #2, #3, #4 Configuration Subscreen**

### #1 - Compressor Option

**RSM#1-4 Configuration**

Compressor Option

DUAL

USE < or > TO CHANGE

Options are Dual or Single. **Default is Dual.**

### #2 - Compressor #1 Type

**RSM#1-4 Configuration**

Compressor #1 Type

MODULATING

USE < or > TO CHANGE

Options are Modulating or Fixed. **Default is Modulating.**

### #3 - Compressor #2 Type

**RSM#1-4 Configuration**

Compressor #2 Type

MODULATING

USE < or > TO CHANGE

Options are Modulating or Fixed. **Default is Modulating.**

### #4 - Refrigerant Circuit

**RSM#1-4 Configuration**

Refrigerant Circuit

Split

USE < or > TO CHANGE

Options are Split or Tandem. **Default is Split.**

### #5 - Fan Cycle Control

**RSM#1-4 Configuration**

Fan Cycle Control

No

USE < or > TO CHANGE

Options are Yes or No. **Default is No.**

### #6 - Fixed Condenser Fan

**RSM#1-4 Configuration**

Fixed Condenser Fan

No

USE < or > TO CHANGE

Options are Yes or No. **Default is No.**

### #7 - 2 Stage Compressor

**RSM#1-4 Configuration**

2 Stage Compressor

No

USE < or > TO CHANGE

Options are Yes or No. **Default is No.**

### #8 - Single Compressor Startup

**RSM#1-4 Configuration**

Single Comp Startup

No

USE < or > TO CHANGE

Options are Yes or No. **Default is No.**

### #9 - WSE Operation

**RSM#1-4 Configuration**

WSE Operation

No

USE < or > TO CHANGE

Options are Yes or No. **Default is No.**
RSM-VFD & HP #1-4 Status Screen Index

The available Status Screens for the RSM-VFD & HP Modules are listed by sequential screen number. The following is a list of all the RSM Status Screens in numerical order with a brief listing of the Status features available on each screen. The A1 & A2 notations will be B1 & B2 for RSM #2, C1 & C2 for RSM #3, and D1 & D2 for RSM #4.

- Screen #1: RSM Compressor A1 & A2
  - On/Off & Current Position

- Screen #2: RSM Coil Temperature, Coil Setpoint, and Suction Pressure

- Screen #3: RSM Coil Temperature 1, Superheat 1, Expansion Valve 1 Position

- Screen #4: RSM Coil Temperature 2, Superheat 2, Expansion Valve 2 Position

- Screen #5: RSM Head Pressure Reading, Head Pressure Setpoint, and Condenser Signal

- Screen #6: RSM HP Coil Temperature 3, Superheat 3, Expansion Valve 3 Position

- Screen #7: RSM HP Coil Temperature 4, Superheat 4, Expansion Valve 4 Position

- Screen #8: RSM HP Leaving Water Temperature, Proof of Flow

- Screen #9: RSM No Alarms / Active Alarms

Status Screens - General Procedures

From any menu screen, press <STATUS>. The Unit Selection Screen, shown below, will appear requesting that you enter the unit ID number.

Enter Unit Address
Then Press Enter
Selected Unit#: XXXX

Enter the correct unit ID number of the Controller that the RSM Module(s) are connected to and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen. Then press <↓>. You will then see the Status Selection Screen(s) below:

RSM #1-4 Status
Compressor 1: ON/OFF
Compressor 2: ON/OFF
Comp Position: 0%

Line 2 Compressor 1 Enabled or Disabled
Current status of the first Compressor.

Line 3 Compressor 2 Enabled or Disabled
Current status of the second Compressor.

Line 4 Compressor Position
Current position of the Modulating Compressor.

RSM Status Screen #1 - Compressor 1 & 2 Enable and Current Position

RSM Status Screen #2 - Coil (Saturation) Temp & Setpoint & Suction Pressure

Use the arrow keys to move the cursor to select which Module’s Status Screens you wish to view. Then press <ENTER>. The first Status Screen will appear. Press <↓> to scroll through the screens.

RSM VFD & RSMV-HP Status Screens

Use the arrow keys to move the cursor to select RSM-VFD Status. You will then see the Status Selection Screen(s) that follow:
### RSM Status Screens

#### RSM Status Screen #3 - Coil (Suction Line) Temperature 1, Superheat 1, and Expansion Valve 1 Position

<table>
<thead>
<tr>
<th>Line 2</th>
<th>Coil (Suction Line) Temperature 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current Coil (Suction Line) Temperature 1.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 3</th>
<th>Superheat 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current Superheat temperature for Expansion Valve 1.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 4</th>
<th>Expansion Valve 1 Position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Modulating position for Expansion Valve 1.</td>
</tr>
</tbody>
</table>

#### RSM Status Screen #4 - Coil (Suction Line) Temperature 2, Superheat 2, and Expansion Valve 2 Position

<table>
<thead>
<tr>
<th>Line 2</th>
<th>Coil (Suction Line) Temperature 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current Coil (Suction Line) Temperature 2.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 3</th>
<th>Superheat 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current Superheat temperature for Expansion Valve 2.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 4</th>
<th>Expansion Valve 2 Position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Modulating position for Expansion Valve 2.</td>
</tr>
</tbody>
</table>

#### RSM Status Screen #5 - Head Pressure Setpoint and Condenser Fan Signal

<table>
<thead>
<tr>
<th>Line 2</th>
<th>Head Pressure 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>If a Head Pressure Transducer is connected, this line indicates the current Head Pressure reading.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 3</th>
<th>Head Pressure Setpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The current Head Pressure Setpoint.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 4</th>
<th>Condenser Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The current percentage signal being sent to the Condenser Fan or Valve in order to maintain the Head Pressure Setpoint.</td>
</tr>
</tbody>
</table>

#### RSM HP Status Screen #6 - Coil (Suction Line) Temperature 3, Superheat 3, and Expansion Valve 3 Position

<table>
<thead>
<tr>
<th>Line 2</th>
<th>Coil (Suction Line) Temperature 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current Coil (Suction Line) Temperature 3.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 3</th>
<th>Superheat 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current Superheat temperature for Expansion Valve 3.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 4</th>
<th>Expansion Valve 3 Position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Modulating position for Expansion Valve 3.</td>
</tr>
</tbody>
</table>

#### RSM HP Status Screen #7 - Coil (Suction Line) Temperature 4, Superheat 4, and Expansion Valve 4 Position

<table>
<thead>
<tr>
<th>Line 2</th>
<th>Coil (Suction Line) Temperature 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current Coil (Suction Line) Temperature 4.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 3</th>
<th>Superheat 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current Superheat temperature for Expansion Valve 4.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 4</th>
<th>Expansion Valve 4 Position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Modulating position for Expansion Valve 4.</td>
</tr>
</tbody>
</table>

#### RSM HP Status Screen #8 - Leaving Water Temperature and Proof of Flow

<table>
<thead>
<tr>
<th>Line 2</th>
<th>Leaving Water Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current Leaving Water Temperature.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 3</th>
<th>Water Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current Status of Proof of Water Flow.</td>
</tr>
</tbody>
</table>

#### RSM Status Screen #9 - Alarms

<table>
<thead>
<tr>
<th>Line 2</th>
<th>Active Alarms: No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>See Active Alarms on the RSM LCD.</td>
</tr>
</tbody>
</table>
RSMD #1-#4 Status Screen Index

The available Status Screens for the RSMD Modules are listed by sequential screen number. The following is a list of all the RSMD Status Screens in numerical order with a brief listing of the Status features available on each screen. The A1 & A2 notations will be B1 & B2 for RSMD #2, C1 & C2 for RSMD #3, and D1 & D2 for RSMD #4.

Screen #1  A1 Compressor On/Off & Current Position
Screen #2  A1 Compressor Discharge Temperature
Screen #3  A1 Coil Temperature, Coil Setpoint, and Suction Pressure
Screen #4  A1 Head Pressure Reading, Head Pressure Setpoint, and Condenser Signal
Screen #5  A2 Compressor On/Off & Current Position
Screen #6  A2 Compressor Discharge Temperature
Screen #7  A2 Coil Temperature, Coil Setpoint, and Suction Pressure
Screen #8  A2 Head Pressure Reading, Head Pressure Setpoint, and Condenser Signal
Screen #9  Alarms

Status Screens - General Procedures

From any menu screen, press <STATUS>. The Unit Selection Screen, shown below, will appear requesting that you enter the unit ID number.

Enter Unit Address
Then Press Enter
Selected Unit#: XXXX

Enter the correct unit ID number of the Controller that the RSM Module(s) are connected to and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen. Then press <Down>. You will then see the Status Selection Screen(s) that follow:

VCCX2 Status
RSM-VFD & HP Status
RSM-DIGITAL Status
Select & Press Enter

Use the arrow keys to move the cursor to select RSM-DIGITAL Status. You will then see the Status Selection Screen(s) below:

RSMD #1 Status
RSMD #2 Status
RSMD #3 Status
Select & Press Enter

Use the arrow keys to move the cursor to select which Module’s Status Screens you wish to view. Then press <ENTER>. The first Status Screen will appear. Press <Down> to scroll through the screens.

RSMD Status Screen #1 - A1 Compressor Enable and Current Position

Line 2  Compressor 1 Enabled or Disabled
Current status of the first Compressor.

Line 2  Current Position
Current position of the Modulating Compressor.

RSMD Status Screen #2 - A1 Compressor Discharge Temperature

Line 2-3  Compressor Discharge Temperature
Current Average Discharge Temperature

RSMD Status Screen #3 - A1 Coil (Saturation) Temp & Setpoint & Suction Pressure

Line 2  Coil (Saturation) Temperature
If a Suction Pressure Transducer has been installed and configured on the unit, the calculated Evaporator Coil Suction (Saturation) Temperature will appear on this line. If not, this line will display 0°F.

Line 3  Coil (Saturation) Temperature Setpoint
During DX dehumidification, compressor(s) will be staged/modulated to maintain this Coil Suction (Saturation) Temperature Setpoint. If indoor humidity...
reset of the Coil Setpoint has been configured, this will be the current calculated setpoint.

---

**Line 4 Suction Pressure**
This is the current Suction Pressure.

---

**RSMD Status Screen #4 - A1 Head Pressure Setpoint and Condenser Fan Signal**

<table>
<thead>
<tr>
<th>Line 2</th>
<th>Head Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>If a Head Pressure Transducer is connected, this line indicates the current Head Pressure reading.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 3</th>
<th>Head Pressure Setpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>The current Head Pressure Setpoint.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 4</th>
<th>Condenser Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>The current percentage signal being sent to the Condenser Fan or Valve in order to maintain the Head Pressure Setpoint.</td>
<td></td>
</tr>
</tbody>
</table>

---

**RSMD Status Screen #5 - A2 Compressor Enable and Current Position**

<table>
<thead>
<tr>
<th>Line 2</th>
<th>Compressor A2 Enabled or Disabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current status of the first Compressor.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 2</th>
<th>Current Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current position of the Modulating Compressor.</td>
<td></td>
</tr>
</tbody>
</table>

---

**RSMD Status Screen #6 - A2 Compressor Discharge Temperature**

<table>
<thead>
<tr>
<th>Line 2-3</th>
<th>Compressor A2 Discharge Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Average Discharge Temperature</td>
<td></td>
</tr>
</tbody>
</table>

---

**RSMD Status Screen #7 - A2 Coil (Saturation) Temp & Setpoint & Suction Pressure**

<table>
<thead>
<tr>
<th>RSMD #1-4 A2 Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Pr: 0 psi</td>
</tr>
<tr>
<td>Setpoint: 0 psi</td>
</tr>
<tr>
<td>Cond Signal: 0.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 2</th>
<th>Coil (Saturation) Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>If a Suction Pressure Transducer has been installed and configured on the unit, the calculated Evaporator Coil Suction (Saturation) Temperature will appear on this line. If not, this line will display 0°F.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 3</th>
<th>Coil (Saturation) Temperature Setpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>During DX dehumidification, compressor(s) will be staged/modulated to maintain this Coil Suction (Saturation) Temperature Setpoint. If indoor humidity reset of the Coil Setpoint has been configured, this will be the current calculated setpoint.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 4</th>
<th>Suction Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is the current Suction Pressure.</td>
<td></td>
</tr>
</tbody>
</table>

---

**RSMD Status Screen #8 - A2 Head Pressure Setpoint and Condenser Fan Signal**

<table>
<thead>
<tr>
<th>RSMD #1-4 A2 Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head Pr: 0 psi</td>
</tr>
<tr>
<td>Setpoint: 0 psi</td>
</tr>
<tr>
<td>Cond Signal: 0.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 2</th>
<th>Head Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>If a Head Pressure Transducer is connected, this line indicates the current Head Pressure reading.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 3</th>
<th>Head Pressure Setpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>The current Head Pressure Setpoint.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 4</th>
<th>Condenser Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>The current percentage signal being sent to the Condenser Fan or Valve in order to maintain the Head Pressure Setpoint.</td>
<td></td>
</tr>
</tbody>
</table>

---

**RSMD Status Screen #9 - Alarms**

<table>
<thead>
<tr>
<th>RSM #1-4 Alarms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Alarms: No</td>
</tr>
<tr>
<td>See Active Alarms on the RSM LCD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Line 2</th>
<th>Active Alarms</th>
</tr>
</thead>
<tbody>
<tr>
<td>This screen will display Yes if there are active alarms. Active alarms can be viewed on the LCD display of the RSMD Module.</td>
<td></td>
</tr>
</tbody>
</table>
VAV/Zone Configuration Screens

In order to correctly set up the VAV/Zone Controller, you must first configure several parameters in regard to the type of system and operating parameters for the VAV/Zone Controller you have installed. Most of these values and operating parameters are only set once at the initial system setup and are never changed.

- Screen #1: Box Configuration
- Screen #2: Damper Operation
- Screen #3: Voting Zone
- Screen #4: Pressure Independent Airflow Constant
- Screen #5: Expansion Relays Heating Stages
- Screen #6: Proportional Heating Signal
- Screen #7: Box Heat Allow
- Screen #8: Main Fan Status
- Screen #9: Push-Button Override
- Screen #10: Dump Zone
- Screen #11: HVAC Unit is on Separate Loop
- Screen #12: Space Sensor Type
- Screen #13: Remote Space Sensor Address
- Screen #14: Type of Space Setpoints
- Screen #15: On-Board Relay Type
- Screen #16: Occupied Switch Type
- Screen #17: Occupied Switch Polarity
- Screen #18: Occupancy Time
- Screen #19: Box is Stand-Alone
- Screen #20: Stand-Alone Box Proof of Flow for Heat

Modular Service Tool Instructions

From any Menu Screen, press the <CONFIGURATION> button. The Unit Selection Screen, shown below, will appear requesting that you enter the unit ID number.

Enter the correct unit ID number of the VAV/Zone controller you want to configure, and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen. Then press <↓>. You will then see Unit Configuration Screen #1. Press <ENTER> to save entered data and press <↑> to scroll through the screens.

NOTE: If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

System Manager SD Instructions

From any Main screen, press <SETPOINTS>. The screen below will appear because this option requires passcode clearance. Only a Level 2 passcode can change setpoints.

This action requires passcode clearance
Enter Passcode: XXXX

If the correct passcode was entered, the Unit Selection Screen will be displayed.

Enter Unit Address
Then Press Enter
Selected Unit#: XXXX

Enter the Unit ID of the controller you want to configure and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen.

NOTE: If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

The following screen will be displayed:

Change Setpoints
Configure Unit
Save/Copy/Restore

Scroll down to the ‘Configure Unit’ option and press <ENTER>. This will take you to the first Configuration Screen shown below.

Configuration Screen #1 - Box Configuration

XX Box Cnfg  IDXXXX
Box Configuration
COOLING ONLY BOX
Use < Or > To Change

This Box Control Code will operate in one of four possible modes. The box designation will display on the top line of all screens.

0 = COOLING ONLY BOX (will display as CO Box)
1 = H/C CHANGEOVER BOX (will display as HC Box)
2 = SERIES FAN BOX (will display as SF Box)
3 = PARALLEL FAN BOX (will display as PF Box)
VAV/ZONE CONFIGURATION

VAV/Zone Configuration Screens

Configuration Screen #2 - Damper Operation

Select Direct Acting or Reverse Acting. If the damper opens in a clockwise direction, it is DIRECT ACTING. If the damper opens in a counter-clockwise direction, it is REVERSE ACTING.

NOTE: If you change this setting, the controller will go into calibration mode to re-calibrate the damper feedback positions for its new direction of control.

Configuration Screen #3 - Voting Zone

If this is a Zoned System, select YES so that the box can be included as a voting zone.

Configuration Screen #4 - Pressure Independent Airflow Constant

If this is a Pressure Independent Box, you must enter this airflow constant so that the CFM readings can be correctly calculated. This airflow constant is provided by the box manufacturer and depends on the diameter of the duct.

Configuration Screen #5 - Expansion Relays Heating Stages

If you require the VAV/Zone Controller to control reheat for the zone it is installed in, you must include a relay expansion board if more than one stage of reheat is needed and then configure the number of heating stages (1, 2, or 3) that it will be controlling whenever there is a heating demand in the space. Enter <0> if you don’t require this option.

Configuration Screen #6 - Proportional Heating Signal

Select 0-10 VDC or 2-10 VDC as the range of the proportional heat output.

Configuration Screen #7 - Box Heat Allow

Select YES to allow the Heating Relay’s Controlling Box Heat to remain on even when the HVAC unit is in Supply Air Heating Mode. This is used as a method to provide supplemental heat if for some reason the HVAC heat cannot satisfy the heating demand.

Configuration Screen #8 - Main Fan Status

This setting only applies to the unoccupied mode of operation. Select YES to activate the heating stages only when the main fan is operating on non-fan terminal units. For series fan terminal units, if this setting is set to YES, the series box fan will only run when the main HVAC unit fan is running or when a space heating demand is made. For series fan terminal units, if this setting is set to NO, the series box fan will only run when a space heating demand is made. For parallel fan terminal units, if this is set to YES and the main AHU Fan is on, the damper will go to the Night Minimum position. If you select NO, the damper will remain fully closed.
### Configuration Screen #9 - Push-Button Override

**XX Box Cnfg IDXXXX**
**Push-Button Override**
**Group ID #: 1**

During Unoccupied Mode, all zones with a corresponding Group ID # will resume Occupied operation whenever any of the zones in that group has its push-button depressed to initiate an override condition. This allows you to group zones in various areas of the building. For example, individual tenants with several offices could restore occupied mode for just their zones and not affect other zones in the building.

The default group ID number for all VAV/Zone Controllers is set at the factory to 1. If you don’t want a specific zone(s) to be part of that group, you must give each one a distinct Group ID number between 2 and 16. Setting a zone’s Group ID number to 0 will disable the Space Sensor Override Button function.

If you don’t want a specific zone to be a part of any group, enter <0> for its Group ID #.

### Configuration Screen #10 - Dump Zone

**XX Box Cnfg IDXXXX**
**Is This A Dump Zone**
**(No Actuator): NO**
**Use < Or > To Change**

A “Dump Zone” is used when you want to control a duct heater or baseboard heater independently. A VAV/Zone Controller board with a relay expansion board is used for this purpose. No damper or actuator is used. If you need to control an auxiliary heater, select YES; otherwise, be sure it is set to NO.

### Configuration Screen #11 - HVAC Unit is on Separate Loop

**XX Box Cnfg IDXXXX**
**HVAC Unit is on Separate Loop: NO**
**Use < Or > To Change**

If this system has 1 HVAC unit controlling boxes on multiple loops and the HVAC unit is on a different loop than this box, select YES; otherwise, be sure it is set to NO.

### Configuration Screen #12 - Space Sensor Type

**XX Box Cnfg IDXXXX**
**Space Sensor Type**
**Analog**
**Use < Or > To Change**

Default is Analog. Select the type of Space Sensor installed. Select from the following:

- **Analog** — Wired Thermistor temperature sensor.
- **Digital E-bus** — Combination communicating temperature and humidity sensor - only the Temperature is used.
- **Remote** — Sensor is connected to a separate VAV/Zone Controller on the same loop (sharing a sensor). You can select the address of the Controller that will have the Remote Space Sensor on Configuration Screen #13.

### Configuration Screen #13 - Remote Space Sensor Board Address

**XX Box Cnfg IDXXXX**
**Remote Space Sensor Board Address: 0**
**Use < Or > To Change**

Default is 0. The VAV/Zone Controller can use a space sensor reading from a sensor connected to another VAV/Zone Controller on the same loop (sharing a sensor). If this zone is using a Remote Space Sensor, enter the address of the VAV/Zone Controller that it is connected to. A Remote Sensor must be chosen as the value in Configuration Screen #12.

### Configuration Screen #14 - Type of Space Setpoints

**XX Box Cnfg IDXXXX**
**Type of Space Stpts**
**Standard Setpoints**
**Use < Or > To Change**

Default is Standard Setpoints. Select Standard Setpoints or Scheduled Setpoints. Scheduled Setpoints allow you to set up 5 schedules. The schedules are set-up in Setpoint Screens #19-#23.
VAV/Zone Configuration Screens

Configuration Screen #15 - On Board Relay Type

**Default is Aux Baseboard Heat.** Select Aux Baseboard Heat or BOX Re-heating.

**NOTE:** If multiple stages of Box Reheat will be used, all stages must be wired to the Reheat Expansion Module, and the on-board relay will not be used as one of the stages.

Configuration Screen #16 - Occupied Switch Type

**Default is Not Used.** Select Not Used, Window Open Detect, or Motion Sensor Detect.

Configuration Screen #17 - Occupied Switch Polarity

**Default is Direct Contact.** Select Direct Contact (occupied when switch closes) or Reverse Contact (occupied when switch opens). This configuration will not register if Not Used is selected in Configuration Screen #16.

Configuration Screen #18 - Occupancy Time Detection and Duration

**Defaults are 0.** Determine the number of seconds for Occupancy Time selection and the number of hours for Occupancy Time duration. This configuration will not register if Not Used is selected in Configuration Screen #16.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupancy Time Detection</td>
<td>0 Sec</td>
<td>0 Sec</td>
<td>900 Sec</td>
</tr>
<tr>
<td>Occupancy Time Duration</td>
<td>0.0 Hr</td>
<td>0.0 Hr</td>
<td>8.0 Hr</td>
</tr>
</tbody>
</table>

Configuration Screen #19 - Box is Stand Alone

**Default is No.** Select Yes or No for whether this box is Stand Alone.

Configuration Screen #20 - Stand Alone Proof of Flow for Heat

**Default is No.** Select Yes or No for whether this Stand Alone box has Proof of Flow for Heat.


**VAV/Zone Controller Setpoint Screens**

- Screen #1: Occupied Setpoints
- Screen #2: Unoccupied Setbacks
- Screen #3: AHU Heat Call Space Temp
- Screen #4: Auxiliary Heat Setpoint
- Screen #5: Damper Airflow Integral
- Screen #6: Damper Airflow Max and Vent Min
- Screen #7: Damper Airflow Cool Min and Heat Min
- Screen #8: Damper Airflow Night Min and Fan On Min
- Screen #9: Damper Airflow Reheat Min
- Screen #10: Damper Airflow Fixed Position
- Screen #11: SAT HVAC Mode Deadband
- Screen #12: Zone Alarm Offsets
- Screen #13: Zone Alarm Delay
- Screen #14: Maximum Slide Offset
- Screen #15: Push-Button Override Duration
- Screen #16: Maximum EMS Offset
- Screen #17: Sensor Calibration for Space Temp and Supply Air Temp
- Screen #18: Scheduled Space Setpoints
- Screen #19: Scheduled Space Setpoints 1st to 2nd Event
- Screen #20: Scheduled Space Setpoints 2nd to 3rd Event
- Screen #21: Scheduled Space Setpoints 3rd to 4th Event
- Screen #22: Scheduled Space Setpoints 4th to 5th Event
- Screen #23: Scheduled Space Setpoints 5th to 1st Event
- Screen #24: Occupancy Setpoints - Cool Setup / Heat Setback
- Screen #25: Calibrate Slide Adjust at Up Position
- Screen #26: Calibrate Slide Adjust at Middle Position
- Screen #27: Calibrate Slide Adjust at Down Position

**Modular Service Tool Instructions**

From any menu screen, press `<SETPOINTS>`. The Unit Selection Screen, shown below, will appear requesting that you enter the unit ID number.

Enter the correct unit ID number of the Controller you want to change Setpoints for and press `<ENTER>`. Once communication is established, the words “Press Down” will appear at the bottom of the screen. You will then see Setpoint Screen #1. Press `<ENTER>` to save entered data and press `<↓>` to scroll through the screens.

**NOTE:** If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

**System Manager SD Instructions**

From any Main screen, press `<SETPOINTS>`. The screen below will appear because this option requires passcode clearance. Only a Level 2 passcode can change setpoints.

If the correct passcode was entered, the Unit Selection Screen will be displayed.

Enter the Unit ID of the controller you wish to change setpoints for and press `<ENTER>`. Once communication is established, the words “Press Down” will appear at the bottom of the screen.

**NOTE:** If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

The following screen will be displayed:

Scroll to the ‘Change Setpoints’ option and press `<ENTER>`. This will take you to the first Setpoints Screen shown below.
VAV/ZONE SETPOINTS

VAV/Zone Setpoint Screens

Setpoint Screen #1 - Occupied Setpoints

Enter the Occupied Cooling Setpoint as the maximum temperature you would like the zone to reach before modulating the damper open to bring in more cold air to cool the space. Enter the Occupied Heating Setpoint as the minimum temperature you would like the zone to reach before activating the Reheat Stages on the optional Expansion Relay board. If this is a Cooling Only box that doesn’t contain reheat, this setpoint will be ignored.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling Setpoint</td>
<td>50°F</td>
<td>74°F</td>
<td>90°F</td>
</tr>
<tr>
<td>Heating Setpoint</td>
<td>50°F</td>
<td>70°F</td>
<td>90°F</td>
</tr>
</tbody>
</table>

Setpoint Screen #2 - Unoccupied Setbacks

During unoccupied hours, the Occupied Cooling Setpoint is adjusted up by the amount entered for the Cooling SetUp. The Occupied Heating Setpoint is adjusted down by the amount entered for the Heating SetBk.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling SetUp</td>
<td>0°F</td>
<td>+10°F</td>
<td>+30°F</td>
</tr>
<tr>
<td>Heating SetBk</td>
<td>0°F</td>
<td>-10°F</td>
<td>-30°F</td>
</tr>
</tbody>
</table>

Setpoint Screen #3 - AHU Heat Call Space Temp

This setpoint allows you to set a Space Temperature that will cause the VAV/Zone Controller to send a call for heat to the HVAC unit. This only occurs in the Unoccupied Mode.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHU Heat Call Space Temp</td>
<td>50°F</td>
<td>70°F</td>
<td>90°F</td>
</tr>
</tbody>
</table>

Setpoint Screen #4 - Auxiliary Heat Setpoint

This setpoint allows you to set a Space Temperature that will enable the Auxiliary Heat Relay on the main board for heating options other than box heat, such as baseboard heat or an external duct heater. This could control a stage of electric heat or an on/off hot water valve. The Auxiliary Heat Relay will energize at .5°F below this setpoint and will de-energize at .5°F above this setpoint. The Auxiliary Heat will continue to function regardless of the HVAC Mode the unit is in and at any airflow condition.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auxiliary Heat Setpoint</td>
<td>50°F</td>
<td>70°F</td>
<td>90°F</td>
</tr>
</tbody>
</table>

Setpoint Screen #5 - Damper Airflow Integral

The VAV/Zone Controller normally opens its damper based on a Proportional Error from Setpoint. That means if the zone temperature is 1.5°F from setpoint, the damper would be 100% open, or it would be modulating to provide the Maximum CFM on Pressure Independent boxes. If the error is less than 1.5°F, the damper may stagnate at that position and never satisfy the zone. If you add Integral into the damper calculation process, this will cause the damper or airflow calculations to continue to increase as long as the zone temperature is still above the setpoint. That means it can provide 100% or Maximum CFM before the 1.5°F error is achieved, bringing the zone under control faster than it normally would. Start with a small (5 or 10) value, if you use this, and monitor the effect it has. If you enter too large a value, you can create “hunting” situations that can cause the damper actuator to prematurely wear out.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integral</td>
<td>0</td>
<td>0</td>
<td>100</td>
</tr>
</tbody>
</table>
Setpoint Screen #6 - Damper Airflow Max & Vent Min

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum</td>
<td>0% or 0 CFM</td>
<td>100% or 1000 CFM</td>
<td>100% or 30000 CFM</td>
</tr>
<tr>
<td>Vent Min.</td>
<td>0% or 0 CFM</td>
<td>25% or 250 CFM</td>
<td>100% or 30000 CFM</td>
</tr>
</tbody>
</table>

The VAV/Zone Controller will not allow the damper or airflow calculation to exceed the Maximum setpoint while it is allowing the damper to modulate. During Vent mode when there is no heating or cooling demand, the damper or airflow will maintain at least the Vent Min amount of airflow into the zone for ventilation.

Setpoint Screen #7 - Damper Airflow Cool/Heat Minimum

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cool Min.</td>
<td>0% or 0 CFM</td>
<td>10% or 1000 CFM</td>
<td>100% or 30000 CFM</td>
</tr>
<tr>
<td>Heat Min.</td>
<td>0% or 0 CFM</td>
<td>10% or 100 CFM</td>
<td>100% or 30000 CFM</td>
</tr>
</tbody>
</table>

During Supply Air Cooling Mode, if the space being served by this damper is satisfied and has no cooling demand, the damper will close to this Cool Min setting. This provides a minimum amount of airflow into the space for ventilation, even if the space does not require additional cooling. During Supply Air Heating Mode, if the space being served by this damper is satisfied and has no heating demand, the damper will close to this Heat Min setting. This provides a minimum amount of airflow into the space for ventilation, even if the space does not require additional heating.

Setpoint Screen #8 - Damper Airflow Night Min and Fan On Min

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Night Min.</td>
<td>0% or 0 CFM</td>
<td>25% or 250 CFM</td>
<td>100% or 9999 CFM</td>
</tr>
<tr>
<td>Fan On Min.</td>
<td>0% or 0 CFM</td>
<td>25% or 250 CFM</td>
<td>100% or 9999 CFM</td>
</tr>
</tbody>
</table>

The Night Min position is the position the damper will move to when the system is in Pushbutton Override Mode and this particular damper is not part of that Override Group or any time the fan is on for Night Setback Operation. When not in Pushbutton Override, pressure independent boxes will only go to the Night Min CFM setpoint position if it is set to 0. Pressure dependent boxes will always stay at the Night Min position. If this is set to 0, the damper will stay closed. For parallel fan terminal units in the unoccupied mode, if the main AHU fan is off, the damper will be fully closed. If the main AHU fan is on, the damper will be at the Night Min position. The Fan On Min is the minimum damper or airflow setting used to activate the parallel fan if installed. Pressure Independent = CFM. Pressure Dependent = %.

Setpoint Screen #9 - Damper Airflow Reheat Min

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reheat Min.</td>
<td>0% or 0 CFM</td>
<td>0% or 0 CFM</td>
<td>100% or 30000 CFM</td>
</tr>
</tbody>
</table>

The Reheat Min is the damper or airflow setting used during the Space Reheat Mode of operation.

Setpoint Screen #10 - Damper Airflow Fixed Position

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Pos.</td>
<td>0% or 0 CFM</td>
<td>0% or 0 CFM</td>
<td>100% or 9999 CFM</td>
</tr>
</tbody>
</table>

Many times while troubleshooting a system, it is useful to have the zone damper set to a specific damper position or airflow setting such as Morning Warmup. This setpoint can be used to determine where the damper/airflow will remain when the VAV/Zone Controller receives a Force to Fixed Position command.
If the supply air temperature is above the space temperature by this amount, the VAV/Zone controller enters the Supply Air Heating Mode. It will remain in the Supply Air Heating Mode until the supply air drops to 2°F above the space temperature. At that point the unit enters the Supply Air Vent Mode and remains there until the supply air drops this deadband below the space temperature. At that point the VAV/Zone Controller enters the Supply Air Cooling Mode and will remain there until the supply air temperature rises to 2°F below the space temperature.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAT HVAC Mode Deadband</td>
<td>0°F</td>
<td>10°F</td>
<td>20°F</td>
</tr>
</tbody>
</table>

If the Space Sensor has the optional Setpoint Slide Adjust, this is the maximum amount you can adjust the heating and cooling setpoints up or down as the slide is moved from the center position to its full up or down position.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effect on SP</td>
<td>0°F</td>
<td>0°F</td>
<td>6°F</td>
</tr>
</tbody>
</table>

As mentioned previously, if you configure the controller to generate zone temperature alarms, this is the amount of time after the box goes into the Occupied Mode that the temperature must be outside the alarm limits before an alarm is generated.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out of Limits</td>
<td>1 Min</td>
<td>30 Min</td>
<td>300 Min</td>
</tr>
</tbody>
</table>

If the Space Sensor has the optional Push-Button Override, this is the amount of the VAV/Zone Controller will resume using its Occupied Setpoints during unoccupied mode. This will generate a call for the Air Handler to start its fan and provide heating or cooling, depending on how you configure the Air Handler.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>0.0 Hr</td>
<td>0.0 Hr</td>
<td>8.0 Hr</td>
</tr>
</tbody>
</table>
VAV/ZONE SETPOINTS

Setpoint Screen #16 - Maximum EMS Offset

If the Energy Management System (EMS) is activated, the heat and cool setpoints can be spread apart by this amount.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum EMS Setpoint Offset</td>
<td>0°F</td>
<td>0°F</td>
<td>30°F</td>
</tr>
</tbody>
</table>

Setpoint Screen #17 - Sensor Calibration for Space Temp and Supply Air Temp

The Thermistor Type III sensor readings can be calibrated. Enter a Positive value to increase a reading and a Negative value to decrease a reading.

**Note:** The Supply Air Temperature calibration offset only operates on the reading when the VAV/Zone Controller has its own Supply Air Temperature sensor installed. If the supply temperature is received from a global broadcast, you will need to go to the air handler to calibrate the temperature reading.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPC (Space Temp)</td>
<td>-100°F</td>
<td>0°F</td>
<td>+100°F</td>
</tr>
<tr>
<td>SAT (Supply Air)</td>
<td>-100°F</td>
<td>0°F</td>
<td>+100°F</td>
</tr>
</tbody>
</table>

Setpoint Screen #18 - Scheduled Space Setpoints

If you are using Scheduled Space Setpoints, you will need to set the schedules using the next 5 screens. Scheduled Space Setpoints configuration must be set in Configuration Screen #14.

Setpoint Screens #19 - #23 - Scheduled Event Space Setpoints

Enter the Scheduled Space Cooling Setpoint and Heating Setpoint for one or more events. The Event start times are chosen in the Box Schedules Screens.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling Setpoint</td>
<td>50°F</td>
<td>74°F</td>
<td>90°F</td>
</tr>
<tr>
<td>Heating Setpoint</td>
<td>50°F</td>
<td>70°F</td>
<td>90°F</td>
</tr>
</tbody>
</table>
Setpoint Screen #24 - Occupancy Setpoints

If you have configured the Occupied Switch in Configuration Screen #16 and no motion is detected, the Occupied Cooling Setpoint is adjusted up by the amount entered for the Cooling SetUp. The Occupied Heating Setpoint is adjusted down by the amount entered for the Heating SetBk.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling SetUp</td>
<td>0°F</td>
<td>+10°F</td>
<td>+30°F</td>
</tr>
<tr>
<td>Heating SetBk</td>
<td>0°F</td>
<td>-10°F</td>
<td>-30°F</td>
</tr>
</tbody>
</table>

Setpoint Screens #25, #26 & #27 - Analog Space Sensor Calibrate Slide Adjust

This screen is used to calibrate the value for the slider when it is in the middle position. The value on line 3 will change when the slider moves. Once the slider is in the middle position, wait for the value on line 3 to stop changing. Once it stops changing, enter this value on line 4.

This screen is used to calibrate the value for the slider when it is in the down position. The value on line 3 will change when the slider moves. Once the slider is in the down position, wait for the value on line 3 to stop changing. Once it stops changing, enter this value on line 4.

The use of this screen is optional and is not required for the sensor to function. Once the slide adjust value is configured on Setpoint Screen #14, this screen is used to calibrate the slider to accurately provide that offset adjustment in the up position. The value on line 3 will change when the slider moves. Once the slider is in the up position, wait for the value on line 3 to stop changing. Once it stops changing, enter this value on line 4.
## VAV/Zone Status

### Status Screen #1 - Mode of Operation

<table>
<thead>
<tr>
<th>Screen #1</th>
<th>Mode of Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen #2</td>
<td>Zone Temperature and Cooling/Heating Setpoints</td>
</tr>
<tr>
<td>Screen #3</td>
<td>Slide Offset and H/C Demand</td>
</tr>
<tr>
<td>Screen #4</td>
<td>Supply Air Temperature and Box Air Temperature</td>
</tr>
<tr>
<td>Screen #5</td>
<td>Zone Damper Position, Airflow, and Desired CFM</td>
</tr>
<tr>
<td>Screen #6</td>
<td>Fan Status and Reheat Stages</td>
</tr>
<tr>
<td>Screen #7</td>
<td>Alarm Status</td>
</tr>
<tr>
<td>Screen #8</td>
<td>Bad Space Temperature, Bad Airflow, Damper Open Failure</td>
</tr>
<tr>
<td>Screen #9</td>
<td>Damper Close Failure, Hi Space Temperature, Low Space Temperature</td>
</tr>
<tr>
<td>Screen #10</td>
<td>Damper Feedback</td>
</tr>
</tbody>
</table>

### Status Screen #2 - Zone Temperature and Cooling/Heating Setpoints

<table>
<thead>
<tr>
<th>Screen #2</th>
<th>Zone Temperature and Cooling/Heating Setpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td>XX Box Vx.xx IDXXXX Zone Temp.: XX.X°F Cooling Spt: XX.X°F Heating Spt: XX.X°F</td>
<td></td>
</tr>
</tbody>
</table>

**Line 2** Current Zone Temperature

**Line 3** Currently active Cooling Setpoint based on the current Occupied / Unoccupied mode of operation.

**Line 4** Currently active Heating Setpoint based on the current Occupied / Unoccupied mode of operation.

### Status Screen #3 - Slide Offset & H/C Demand

<table>
<thead>
<tr>
<th>Screen #3</th>
<th>Slide Offset &amp; H/C Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>XX Box Vx.xx IDXXXX Slide Offset: XX°F H/C Demand: XX.X°F</td>
<td></td>
</tr>
</tbody>
</table>

**Line 2** If the optional Setpoint Slide Adjust is installed on the Flush Mount Wall Sensor, this line will display the current amount the Slide Offset is affecting the Heating and Cooling Setpoints.

**Line 3** Current Heating or Cooling Demand in the Zone based on the current Heating and Cooling Setpoints when compared to the current Zone Temperature.

**Line 4** Blank

### Status Screen #4 - Supply Air Temperature & Box Air Temperature

<table>
<thead>
<tr>
<th>Screen #4</th>
<th>Supply Air Temperature &amp; Box Air Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>XX Box Vx.xx IDXXXX Supply Air: XX.X°F Box Air..: XX.X°F</td>
<td></td>
</tr>
</tbody>
</table>

**Line 2** Current Supply Air Temperature received via broadcast from the DX Air Handler or from the Box Controller’s own installed Box Air Temperature Sensor connected to the AUX input of the VAV/Zone controller board.

**Line 3** Current Box Air Temperature

If you have configured the VCCX2 controller to broadcast the Supply Air Temperature to the VAV/Zone controller and don’t have a Box Air
Temperature Sensor attached to the AUX input on the VAV/Zone controller board, this line will display the Supply Air Temperature the same as line 2.

If you have a Box Air Temperature Sensor attached to the AUX input on the VAV/Zone controller board, this line will display the Box Air Temperature at the location where the Box Air Temperature Sensor is installed.

**Status Screen #5 - Zone Damper Position, Airflow, and Desired CFM**

<table>
<thead>
<tr>
<th>XX Box Vx.xx IDXXXX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damper FRC: XXX %</td>
</tr>
<tr>
<td>Airflow : XXXX CFM</td>
</tr>
<tr>
<td>Desired : XXXX CFM</td>
</tr>
</tbody>
</table>

**Line 2** Current Zone Damper Position
If you entered a FORCE command, the letters FRC will appear. If this is normal damper operation, the FRC will not be displayed.

**Line 3** If this is a Pressure Independent box, the current Airflow will be displayed. If not, this line will display the desired damper position.

**Line 4** If this is a Pressure Independent box, this line will display the Desired CFM the box would like to provide to the zone. If not, this line will display [Controls to +/- 3%] to indicate how accurately the damper will maintain the desired position.

**Status Screen #6 - Fan Status & Reheat Stages**

<table>
<thead>
<tr>
<th>XX Box v1.04 IDXXXX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fan Status : OFF</td>
</tr>
<tr>
<td>Heating Relay#1 : OFF</td>
</tr>
<tr>
<td>Heating Relay#2 : OFF</td>
</tr>
</tbody>
</table>

**Line 2** If this is a Fan Powered box, this line will display the Fan On/Off Status. On non-fan powered boxes, this line will display [Exp Relay 1 Not Used].

**Line 3** If your VAV/Zone Controller has been configured to control reheat stages, this line reflects the On/Off Status of the first stage of Reheat. If you have 3 stages of reheat, this line will display the total number of active heating stages.

**Examples:**
- “1 Reheat Stages On” or
- “2 Reheat Stages On” or
- “3 Reheat Stages On”

If proportional heating is used (you have no relays configured for heat), this line will display “Heating Signal: xxx %”.

**Line 4** If your VAV/Zone Controller has been configured to control reheat stages, this line reflects the On/Off Status of the second stage of Reheat. If you have 3 stages of reheat as explained on line 2, this line will be blank.

**Status Screen #7 - Alarm Status Screens**

<table>
<thead>
<tr>
<th>XX Box v1.04 IDXXXX</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO ALARMS!</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>XX Box v.104 IDXXXX</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALARMS PRESENT</td>
</tr>
<tr>
<td>SCROLL DOWN TO VIEW</td>
</tr>
</tbody>
</table>

**Line 2** Blank

**Line 3** NO ALARMS! OR ALARMS PRESENT
If there are one or more alarms active, the possible messages are shown below:
- SPACE SENSOR FAILURE
- CFM SENSOR FAILURE
- DAMPER OPENING ALARM
- DAMPER CLOSING ALARM
- HI SPACE TEMP ALARM
- LO SPACE TEMP ALARM
- DPR FEEDBACK FAILURE

Press <↓> to scroll through all active alarms.

For Alarm Definitions, see the VCCX2 Controller Technical Guide.
### Status Screen #8 - Bad Space Temperature, Bad Airflow, Damper Open Failure

- **XX Box vx.xx IDXXXX**
- Bad Space Tmp : No
- Bad Airflow : No
- Dmp Open Fail : No

**Line 2** Bad Space Temperature Sensor: Yes/No
Displays whether or not the Analog Space Temperature Sensor or E-BUS Digital Room Sensor is connected and/or operating correctly.

**Line 3** Bad Discharge Air Temperature Sensor: Yes/No
Displays whether or not the Discharge Air Temperature Sensor is connected and/or operating correctly.

**Line 4** Damper Open Fail: Yes/No
If Damper is sent signal to open and there is no change in the feedback signal from the actuator, then this alarm occurs.

### Status Screen #9 - Damper Close Failure, High Space Temperature, Low Space Temperature

- **XX Box vx.xx IDXXXX**
- Damp Close Fail : No
- Hi Space Tp : No
- Lo Space Tp : No

**Line 2** Damper Close Fail: Yes/No
If Damper is sent signal to close and there is no change in the feedback signal from the actuator, then this alarm occurs.

**Line 3** Hi Space Temperature: Yes/No
Displays whether the Space Temperature is above the maximum setpoint.

**Line 4** Lo Space Temperature: Yes/No
Displays whether the Space Temperature is below the minimum setpoint.

### Status Screen #10 - Damper Feedback

- **XX Box vx.xx IDXXXX**
- Dmp Feedback : No

**Line 2** Damper Feedback: Yes/No
If the feedback signal from the actuator is not detected, then this alarm occurs.
VAV/Zone Schedule Screens

Scheduling

You can access the Box Scheduling Screens by pressing <SCHEDULES>. The screen below will appear because Scheduling requires passcode clearance. A Level 1 or 2 passcode can change schedules.

This action requires passcode clearance
Enter passcode: XXXX

If the correct passcode was entered, the Unit Selection Screen will be displayed.

Enter unit address
Then press enter
Selected unit#: XXXX

Enter the Unit ID of the controller you wish to change setpoints for and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen.

NOTE: If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

The Box Schedule Menu will be displayed.

Schedule Control Screen - Day/Night Schedule

Press the <è> button until the cursor is on the Schedule Control option and then press <ENTER>.

Schedule Control
Day/Night Schedule
Control #: X
0=AHU 1-5=Scheduler

This screen allows you to set the VAV/Zone controller to operate on a remote schedule instead of the schedule that is contained in the VCCX2 controller. Enter <0> to operate on the AHU schedule. Enter <1-5> to use an external schedule. A GPC Plus is required for schedules 1-5.

<table>
<thead>
<tr>
<th>Description</th>
<th>Minimum</th>
<th>Default</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule Control Number</td>
<td>0</td>
<td>0</td>
<td>1 to 5</td>
</tr>
</tbody>
</table>

Daily Setpoint Events Screens

Press the <è> button until the cursor is on the Daily Setpt Events option and then press <ENTER>.

These screens allow you to set the Daily Schedule start times for Events 1 through 5. The default is all ZEROs which means there is no event time scheduled.

All times are in 24-hour military format, so 5:00 PM would be entered as 1700. 8:00 AM would be entered as 0800, and so on.
Damper Force Modes

Damper Force Modes are available for testing or balancing the system. These Force Modes can be accessed and programmed from the Modular Service Tool.

Modular Service Tool Instructions

When using the Modular Service Tool, simply press the <BALANCE-TEST> key. You will then see the Unit ID Screen. Enter the unit ID of the controller you wish to access and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen. Then press <↓>.

NOTE: If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

The following screen will be displayed:

```
Damper Force
Para Blocks
Save/ Copy /Restore
```

With the cursor on Damper Force, press <ENTER> to access the Damper Force Mode Screen.

Dampers Force Mode Screen

If the unit ID you entered is for a VCCX2 Controller that has VAV/Zone Controllers connected to its communication loop, the Damper Force Mode will act as a “Global” Damper Force Mode. That is, all VAV/Zone Controllers on that VCCX2 Controller’s communication loop will be forced to the same Damper Force Mode setting. If the unit ID you entered is for a VAV/Zone Controller, the Damper Force Mode setting will only apply to that VAV/Zone Controller.

```
Damper Force
Enter Force Mode: 0
0=Auto 1=Open 2=Clsd
3=Max 4=Min 5=Fixed
```

Set the appropriate Damper Force Mode by entering numbers 0 through 5. Following is a list of the force modes and their meaning:

- **0 = Auto**: This is the default setpoint. With this setting, the damper will operate normally and modulate according to the controller setpoints.
- **1 = Open**: This setting will force the dampers to their fully-open position.
- **2 = Clsd**: This setting will force the damper to its fully-closed position.
- **3 = Max**: This setting will force the damper to its Maximum Position Setpoint. See VAV/Zone Controller Setpoint Screen #5 on page 78 for complete setpoint information.
- **4 = Min**: This setting will force the damper to its Minimum Position Setpoint. See VAV/Zone Controller Setpoint Screen #5 on page 78 for complete setpoint information.
- **5 = Fixed**: This setting will force the damper to a fixed position based on the Fixed Position Setpoint. See VAV/Zone Controller Setpoint Screen #8 on page 79 for complete setpoint information.

CAUTION: The Damper Force Modes should only be used by qualified service personnel. Serious damage to the ductwork could result if the dampers are all forced closed and the HVAC unit fan is operating.
MiniLink PD Configuration Screens

MiniLink PD Configuration

<table>
<thead>
<tr>
<th>Screen #</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>System Type</td>
</tr>
<tr>
<td>#2</td>
<td>Last Polled Zone</td>
</tr>
<tr>
<td>#3</td>
<td>Mode Changeover Time</td>
</tr>
<tr>
<td>#4</td>
<td>Optimal Start Target Zone</td>
</tr>
<tr>
<td>#5</td>
<td>Maverick Testing</td>
</tr>
<tr>
<td>#6-65</td>
<td>Alarm Polling</td>
</tr>
</tbody>
</table>

**NOTE:** If this is not a voting system, the only screens you need to configure are Screens 6 through 65 if alarm polling pertains to your system.

In order to correctly setup the MiniLink PD, you must first configure several parameters in regard to the type of system and operating parameters for the system it is installed on. Most of these values and operating parameters are only set once at the initial system setup and are never changed.

**Modular Service Tool Instructions**

From any menu screen, press <SETPOINTS>. The Unit Selection Screen, shown below, will appear requesting that you enter the unit ID number.

Enter Unit Address
Then Press Enter
Selected Unit#: XXXX

All MiniLink PDs are set at address 60. Enter the correct unit loop number for the loop the MiniLink Polling Device is connected to (for Loop 1 you would enter <160>) and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen. Then press <↓>.

**NOTE:** If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

You will then see Setpoint Screen #1. Press <ENTER> to save entered data and press <↓> to scroll through the screens.

**System Manager SD Instructions**

From any Main screen, press <SETPOINTS>. The screen below will appear because this option requires passcode clearance. Only a Level 2 passcode can change setpoints.

Enter Passcode: XXXX

If the correct passcode was entered, the Unit Selection Screen will be displayed.

Enter Unit Address
Then Press Enter
Selected Unit#: XXXX

Enter the Unit ID of the controller you wish to change schedules for and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen. Then press <↓>.

**NOTE:** If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

The following screen will be displayed:

Change Setpoints
Configure Unit
Save/Copy/Restore

Scroll to the ‘Change Setpoints’ option and press <ENTER>. This will take you to the first Setpoints Screen shown below.

**Configuration Screen #1 - System Type**

Polling Unit Config
System Type
Selection: ZONING
Use < Or > To Change

This screen allows you to select whether you want the system to behave as a VAV system or a Zoning System. If you select VAV, this will allow tenant logging for your VAV system.
**MINILINK PD CONFIGURATION**

**MiniLink PD Configuration and Status Screens**

**Configuration Screen #2 - Last Polled Zone**

Polling Unit Config
Last Polled Zone
Address: XX
[Enter Last Zone]

This zone is the last zone on the local loop of your zoning system that is to be included in zone voting. The allowable range is 1-16.

**Configuration Screen #3 - Mode Changeover Time**

Polling Unit Config
Mode Changeover Time
Minutes: XX
[Enter Period Time]

This is the amount of time that you want to allow between changeover from heating to cooling modes.

**Configuration Screen #4 - Optimal Start Target Zone**

Polling Unit Config
Optimal Start Target Zone..: XXX
[Enter Target Zone]

This is the unit ID of the Zone that you want to be satisfied by the normally scheduled start time. If you enter “-1” into this box, it will average all zones instead of picking a specific zone. If you do not require Optimal Start, enter “0”.

**Configuration Screen #5 - Maverick Testing**

Polling Unit Config
Maverick Testing
 Disabled: YES
Use < Or > To Change

Disabling the Maverick Testing allows known troubled zone(s) to continue voting without causing a Maverick alarm. In other words, all zones are included in the voting regardless of whether they are more than four degrees from setpoint.

**Configuration Screens #6-65 - Alarm Polling**

Polling Unit Config
Enable Alarm Polling
Unit XX : YES
Use < Or > To Change

Enabling Alarm Polling allows any alarm from the loop to be polled. You must set this for each controller on the loop.

**MiniLink PD Status**

**Status Screen #1 - Schedule Mode, System Status, and Minutes Left**

Polling Device
System Occupied
Venting Mode
XXX Min Left in Mode

Line 2 Current Schedule Mode
Can be System Occupied or System Unoccupied.

Line 3 Currently System Status
Can be Vent Mode, Cooling Mode, or Heat Mode.

Line 4 Minutes Left In Mode
The number of minutes left in the current mode of operation before it can switch modes. This value is user-adjustable. See *Configuration Screen #3*.

**Status Screen #2 - Mode Priority, Cool Total, and Heat Total**

Polling Device
No Mode Priority
Cool Total.: XX.X°F
Heat Total.: XX.X°F

Line 2 Mode Priority
Can be Heat Priority or Cool Priority. This is based on the voting zones and their demand.

Line 3 Cool Total
Total cooling temperature demand from all zones.

Line 4 Heat Total
Total heating temperature demand from all zones.
Outputs Force

Outputs Force settings are available for testing or troubleshooting the system. These Force settings can only be accessed and programmed from the Modular Service Tool.

CAUTION: The Outputs Force settings should only be applied by qualified service personnel. Serious damage to the HVAC unit could result from improper use of these Outputs Force settings.

To access the Outputs Force settings, simply press the [BALANCE - TEST] button on the Modular Service Tool. You will then see the Unit ID Screen.

Enter Unit Address Then Press Enter
Selected Unit#: XXXX

Enter the unit ID of the VCCX2 Controller you wish to access and press [ENTER]. Once communication is established, the words “Press Down” will appear at the bottom of the screen. Then press [↓]. You will then see the screen shown below. Press [ENTER] to save entered data and press [↓] to scroll through the screens.

NOTE: If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

NOTE: The Outputs Force settings are only available for the VCCX2 Controller. They are not supported for the VAV/Zone Controllers or other Add-on controllers.

Outputs Force
Para Blocks
Save/ Copy /Restore

Place the cursor on Outputs Force and press [ENTER] to access the Outputs Force Screen.

The first Outputs Force Screen allows the AHU fan relay to be set for Auto, Force On, or Force Off. The default setting is Auto. After you complete all troubleshooting or testing procedures, all relays should be changed back to this setting. The Force On setting will force the relay to the ON (energized) position. The Force Off selection will force the relay to the OFF (de-energized) position.

The next screen displays the Relay Overrides for Relay 2. After pressing [ENTER] to save any changes, press [↓] to have the next relay displayed. All 23 Relay Override Screens (including the AHU fan relay) are available by pressing [↓] after each setting is saved by pressing [ENTER].

After the screen for relay 23 is displayed, the first Analog Output Override Screen will be displayed.

The default setting for normal operation is -1.0 volts. Voltages between 0 to 10.0 are valid entries. Press [ENTER] after making a setting change and then press [↓] and the next Analog Output Override Screen will be displayed.

The default setting for normal operation is -1.0 volts. Voltages between 0 to 10.0 are valid entries. Press [ENTER] after making a setting change and then press [↓] and the next Analog Output Override Screen will be displayed.
**TROUBLESHOOTING**

**VCCX2 Outputs Force**

**Analog Output 3 Screen**

```
Modulating Heat
Override %...: -10%
[-10 = Auto]
```

The default setting for normal operation is -10%. Percentages between 0 to 100 are valid entries. Press `<ENTER>` after making a setting change and then press `<↓>` and the next Analog Output Override Screen will be displayed.

**Analog Output 6 Screen**

```
Return Air Damper
Override Volts: -1.0
[-1.0 = Auto]
```

The default setting for normal operation is -1.0 volts. Voltages between 0 to 10.0 are valid entries. Press `<ENTER>` after making a setting change.

**Analog Output 4 Screen**

```
Exhaust Fan Signal
Override Volts: -1.0
[-1.0 = Auto]
```

The default setting for normal operation is -1.0 volts. Voltages between 0 to 10.0 are valid entries. Press `<ENTER>` after making a setting change and then press `<↓>` and the next Analog Output Override Screen will be displayed.

**Analog Output 7 Screen**

```
Return Air Bypass
Override Volts: -1.0
[-1.0 = Auto]
```

The default setting for normal operation is -1.0 volts. Voltages between 0 to 10.0 are valid entries. Press `<ENTER>` after making a setting change.

**Analog Output 5 Screen**

```
Modulating Cool
Override %...: -10%
[-10 = Auto]
```

The default setting for normal operation is -10%. Percentages between 0 to 100 are valid entries. Press `<ENTER>` after making a setting change and then press `<↓>` and the next Analog Output Override Screen will be displayed.
APPENDIX A - SAVE, LOAD, COPY SETPOINTS

Saving & Copying Setpoints

Modular Service Tool Instructions
From any menu screen, press <BALANCE-TEST>. The Unit Selection Screen will appear requesting that you enter the unit ID number.

Enter the network unit ID for the controller you want to save the setpoints from. Example, ‘102’ for Loop 1 / Unit 2. Then press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen. After a brief pause, press <↓> to get to the Balance - Test Screen shown below.

Scroll down to the ‘Save/Copy/Restore’ option and press <ENTER>. This will take you to the Save Setpoints screen.

System Manager SD Instructions
From any Main screen, press <SETPOINTS>. The screen below will appear because this option requires passcode clearance. Only a Level 2 passcode can change setpoints.

If the correct passcode was entered, the Unit Selection Screen will be displayed.

Enter the Unit ID of the controller you wish to save the setpoints from and press <ENTER>. Once communication is established, the words “Press Down” will appear at the bottom of the screen. Then press <↓>.

NOTE: If “Press Down” does not appear at the bottom of the screen, communication with the controller has not been established.

The following screen will be displayed:

Save Setpoints - Network Mode
From the Save Setpoints Screen shown below:

Press <ENTER> and a setpoint file will be saved to the SD card. You will receive a message that the save was successful. This file is specific to this controller on this loop.
**Copy Setpoints - Network Mode**

To copy a saved setpoints file to other controllers on the network do the following:

From the *Save Setpoints Screen* shown below:

```
Save Setpoints
Press Enter To Save
```

Press `<>` once to access the *Copy Setpoints Screen* shown below.

```
Copy Setpoints
From Loop  1
From Unit  2
Press Enter to Copy
```

In the ‘From Loop’ field, enter the Loop of the controller you want to copy the setpoints from. In this example it is ‘1’. Then press `<ENTER>`.

In the ‘From Unit’ field, enter the Unit ID of the controller you want to copy the setpoints from. In this example it is ‘2’. Then press `<ENTER>`.

Now your cursor will be on the last line, and you can press `<ENTER>` once more to copy the setpoint file from unit 102 to unit 103.

You will receive a confirmation that the copy was successful.

**Restore Setpoints - Network or Stand-Alone Mode**

The Restore Setpoints feature is used to reload a saved setpoints file from one controller back to itself. This could be useful if setpoints or configurations were changed and need to be reset.

You can perform this function on a networked system; however, the Modular Service Tool needs to be directly connected to the controller you wish to restore previously saved setpoints to.

From the *Save Setpoints Screen* shown below:

```
Save Setpoints
Press Enter To Save
```

Press `<>` four times to access the *Restore Setpoints Screen* shown below.

```
Restore Setpoints
Press Enter to Load
```

Press `<ENTER>`. This will reload the setpoints from the saved file. You will receive confirmation that the setpoints were loaded successfully.

**Save & Copy Setpoints - Stand-Alone Mode**

The instructions for Stand-Alone Mode are exactly the same as Network Mode, except that there is no need to enter a Loop number in the Unit ID number field and in the *Copy Setpoints Screen*, enter a zero in the ‘From Loop’ field.
APPENDIX B - UPDATING THE SD CARD

SD Memory Card Update

Updating Your SD Memory Card

You may need to update your SD memory card from time to time, either for a new software release or to add data for another Controller.

Follow the instructions below to download the update file from our tech support webpage:

1. Insert the SD memory card in your computer’s SD drive and open the drive’s window.

2. Open your browser and type in the address: http://wattmaster.com/techsupport.

3. On the Tech Support webpage, locate the file Modular_HH_Screens.zip and double-click on it.

4. Click <Save File> when asked to save or open the file and then click <OK>. This option will save the file to the “Downloads” folder on your PC.

5. Open the “Downloads” folder in Windows Explorer. You will find a folder labeled, “Modular_HH_Screens.zip.” Right-click on this folder and choose “Extract All” from the options list. NOTE: Any compression software can be used to extract the zip folder’s contents, for example, Winzip.

6. Once you unzip the file, you will see a window similar to the one below.

7. Press <CTRL> <A> to highlight the folders in the window—App, Manuals & Scr. Press <CTRL> <C> to copy the folders.

8. Paste the files into the SD memory card drive’s window by pressing <CTRL> <V>.

9. Remove the SD Memory Card from your computer and reinsert it in the Modular Hand Held Service Tool or Modular System Manager.
APPENDIX C - UPDATING CONTROLLERS & MODULES

Updating Controller & E-BUS Module Software Using the Modular Service Tool SD

To update the software for various AAON controllers and E-BUS modules, follow these simple steps.

1. Update your SD memory card with the new software file for the controller or module you need to update. Follow the steps on page 94 for Updating the SD memory card.

2. Connect the Modular Service Tool to the device you wish to update using the mini DIN communication cable or EBC E-BUS cable provided.

3. Power up the controller or E-BUS module you wish to update.

4. Apply power to the Modular Service Tool SD and press the <ON> button.

5. After initialization of the Modular Service Tool SD, press <NEXT> at the first Setup Screen and <4> at the second Setup Screen shown below.

   1) Set Time & Date
   2) Communications
   NEXT) More Options
   ESC) Exit Menu

   3) Energy Saving
   4) Update Software
   NEXT) More Options
   ESC) Exit Menu

6. The Update Software Screen will appear as shown below:

   Select Communication
   1) WattMaster Comm
   2) E-BUS Module
   ESC) Exit Menu

7. Follow the instructions for AAON Controllers or E-BUS Modules.

### AAON Controllers

1. Press <1> to update an AAON Controller. The following screen will appear:

   Enter Board Address
   0
   Esc) Exit Menu

2. Enter the address of the controller you are updating and then press <ENTER>.

3. The Software Version Screen will appear as shown below. Enter <0> for the latest software version or enter the number of an older version given to you by Technical Support. Then press <ENTER>.

   Software Version
   Enter 0 for Latest
   0
   Esc) Exit Menu

4. The screen will display the following messages:
   “Resetting Unit”
   “Load Sys Info”

5. If communications are successful, the screen will display the name of the HEX file on the top line, “Flash Memory Erased” on the second line, and the progress percentage on the third line.

   NOTE: If communications are not successful, the screen will display, “Press Any Key to Continue. Cannot Load Sys Info.” Make sure you have the right address and the right software version on your SD card. If these two items are correct and you still experience a problem, contact Technical Support.

6. When updating is complete, the screen will display, “Finish Download.”
Updating Controller & E-BUS Module Software

E-BUS Modules

1. Press <2> to update an E-BUS Module. The following screen will appear:

   ![Enter Board Address Screen]

2. Enter the address of the E-BUS module you are updating and then press <ENTER>. The following is the list of Module addresses:

   - MHGRV-X - address 132
   - MODGAS-X - address 138
   - MODGAS-XWR2 - address 138 - 2nd - 139
   - PREHEAT-X - address 157
   - PREHEAT-X-EXT - address 157
   - RSM #1 - address 152
   - RSM #2 - address 153
   - RSM #3 - address 154
   - RSM #4 - address 155
   - WSHP-X2 - address 17

3. The Software Version Screen will appear as shown below. Enter <0> for the latest software version or enter the number of an older version if given to you by Technical Support. Then press <ENTER>.

   ![Software Version Screen]

4. The screen will display the following messages:
   - “Resetting Unit”
   - “Load Sys Info”

5. If communications are successful, the screen will display, the name of the HEX file on the top line, “Flash Memory Erased” on the second line, and the progress percentage on the third line.

   **NOTE:** If communications are not successful, the screen will display, “Press Any Key to Continue. Cannot Load Sys Info.” Make sure you have the right address and the right software version on your SD card. If these two items are correct and you still experience a problem, contact Technical Support.

6. When updating is complete, the screen will display, “Finish Download.”
A
Adaptive Defrost Interval
Adjustment........52
AHU Heat Call Space Temperature
VAV/Zone Status........78
AHU Uses Schedule Number........34
Air/Air Fail to Cool / Heat........31
Airflow
VAV/Zone Status........84
Airflow Station Type Screen........32
Alarm Active Relay, Description........38
Alarm LED Enable/Disable........26
Alarm Offset........42
Alarms
Button........8,14
Clearing........11,19
MiniLink Polling........18,89
Modular Service Tool........11
VAV/Zone Status........84
Alarms for VCCX2........64
Alarm Status........64
Analog Output Override Screen........90
Application Type Status........57
Arrow Keys, Defined........8,10,14,16
Auto Damper Force Mode........87
Automatic Power Down........10
Aux Baseboard Heat........76
Aux Heat - Heat Pump Delays........36
Aux Heat Relay, Description........38
Aux Heat Type Value........31
B
Bad Airflow Status........85
Bad Space Temperature Status........85
Balance-Test Button, Defined........8
Box Air Temperature
VAV/Zone Status........83
Box Configuration - VAV/Zone........73
Boxes Broadcast To........35
Box Heat Allow VAV/Zone........74
Box is Stand Alone........76
BOX Re-heating........76
Broadcast Building Pressure........35
Broadcast CO₂ Screen........35
Broadcasting........34,36
Broadcast Outdoor Air RH........35
Broadcast Space Humidity........35
Broadcast Space Temperature........35
Broadcast to Boxes........35
Building Pressure Sensor Installed........30
Building Pressure Deadband
Setpoint........50
Building Pressure Broadcast........35
Building Pressure Control
OA Damper........30
Supply Fan........30
Building Pressure Control Rate........30
Building Pressure Control........30
Building Pressure Exhaust Fan........62
Building Pressure & Setpoint........62
Building Pressure Setpoint &
Deadband........50
Bypass Damper Signal........62
C
Calibrate Slide Adjust........82
Calibration
Space Sensor Calibration........54
Celsius........23
Change Passcodes........17
Chilled Water........28
Chilled Water Valve........28
Clear Alarms........11,19
Close Key, Defined........8,14
Closed Damper Force Mode........87
CO₂ Altitude Setpoint........50
CO₂ Broadcast........35
CO₂ Level........61
CO₂ Protection Limit Max Level........50
CO₂ Sensor Calibration........55
CO₂ Sensor Configuration........30
CO₂ Sensor Installed........30
CO₂ Setpoints Min/Max........50
CO₂ Setpoints Status........61
Coil (Saturation) Temp........69,71,72
Coil Setpoint........69,71,72
Coil (Suction Line) Temperatures........70
Coil Suction Pressure........69,71,72
Coil Temperature Setpoint........43
Communications Screen........10,16
Comparative Enthalpy........29,48
Compressor 1 & 2 Enable........69,71,72
Compressor Current
Position........69,71,72
Condenser Fan Cycle........47
Condenser Fan Signal........70,72
Condenser Water Valve Min
Position........47
Configuration........73
Button........8
EM1 Expansion Module........24
Fan Voltage Output........27
MHGRV-X........24
MODGAS-X........24
PREHEAT-X........24
RSM Module........23,24
RSM Type........24
Screen Index........22
Connection Diagram
Modular Service Tool........5
Continuous ON/OFF Mode........13,20
Controlling Sensor High/Low Alarm
Offset........42
Cool/Heat Stage Delays........36
Cooling Active Stages Status........58
Cooling Enabled Status........58
Cooling Min Off Time........36
Cooling Min Run Time........36
Cooling Only Box, VAV/Zone........73
Cooling Setpoints
VAV/Zone Status........83
Cooling Setpoints Status........57
Cooling Stage Relay, Description........38
Cooling Unoccupied Offsets........41
Cool Reset Source Setpoints - High
Reset/Low Reset........45
Cool Total
MiniLink PD Status........89
Copy Setpoints........93
Current Active Supply Air
Setpoint........58
Current Supply Air Temperature........58
D
Daily Setpoint Events Screens........86
Damper Airflow
Cool/Heat Minimum........79
Fan On Min........79
Fixed Position........79
Integral........78
Maximum........79
Night Minimum........79
Reheat Minimum........79,80
Vent Minimum........79
Damper Close Failure Status........85
Damper Feedback Status........85
Damper Force Modes........87
Damper Open Failure Status........85
Damper Operation, VAV/Zone........74
Data Entry Keys, Described........8,14
Date, Programming........9,15
INDEX

D-L

Date and Time Status Screen............57
Daylight Savings Adjustment............34
Day/Night Schedule.....................86
  VAV/Zone..........................86
Deadband, Static Pressure..............43
DEC Key, Defined.......................8,14
Defrost Heat Wheel Setpoint............52
Dehumidification Control Screen......31
Desired CFM VAV/Zone Status...........84
Dewpoint.....................29
Dewpoint Setpoint.....................42
Dimensions
  Modular Service Tool.................4
  System Manager.....................6
Direct Acting Building Pressure
  Control...........................31
Direct Acting Control...............50
Dirty Filter Screen..................35
Display Screen, Described............8,14
Drybulb...........................29
Duct Static Pressure Output Signal
  Percentage Status..................62
Duct Static Pressure Setpoint........62
Duct Static Pressure Status...........62
Dump Zone, VAV/Zone................75

E-BUS SPC/RH Sensor Alarm LED
  Enable/Disable.....................26
Economizer
  Maximum Position if High CO₂ Level
  Setpoint..........................49
  Overrides..........................90
  Economizer %....................60
  Economizer Active Relay,
    Description.....................38
  Economizer Control Loop Rate......29
  Economizer Control Type...........28
  Economizer Enabled...............60
  Economizer Enable Setpoint........48
  Economizer Enable Source..........29
  Economizer in IAQ Mode...........61
  Economizer in Unoccupied Mode.....29
  Economizer Minimum Damper
    Position.........................49
  Economizer Minimum Position.....61
  Economizer Voltage Output.........29
  EM1 Installed.......................24
  EM1 Relay Config Screens..........37
  EM1 Relays.........................63
  Emergency Heat Relay...............38
  Emergency Shutdown................34
  Energy Saving Timer...............10
  Enter
Key..............................8,14
  New Passcode.....................17
  Enthalpy Status...................60
  ESC Key, Defined..................8,14
  Evaporator Condenser as 1st
    Stage..................48
  Evaporator Condenser Control......37
  Evaporator Head Pressure Setpoint
    Deadband.........................48
  Exhaust Air CFM..........................61
  Exhaust Airflow Duct Size........34
  Exhaust Airflow Monitoring.......33
  Exhaust Fan Output Screen........30
  Exhaust Fan Relay..................38
  Exhaust Fan Status...............62
  Exhaust Fan VFD....................50
  Exhaust FVD Override.............91
  Expansion Relays Heating Stages
    VAV/Zone..........................74
  Expansion Valve 1 & 2 Positions...70

F
  Fahrenheit.......................23
  Fan Cycle Mode Screen...........27
  Fan On Min.........................79
  Fan Proving Screen...............27
  Fan Runs During Unoccupied
    Mode..........................27
  Fan Starting Delay Screen........27
  Fan Status.........................84
  Fan VFD Signal....................25
  Fan Voltage Output Screen.......27
  Fixed Damper Force Mode...........87
  Fixed Position Damper Airflow......79

H
  H/C Changeover Box VAV/Zone.......73
  Head Pressure Setpoint...........70,72
  Head Pressure Setpoints -
    Cooling and Reheat.............47
  Heat/Cool Changeover Delay........36
  Heating
    Min Off/Run Time...............36
    Setpoints.......................83
    Stage Up/Down...............36
  Heating Active Stages Status.....58
  Heating/Cooling Demand
    VAV/Zone Status................83
  Heating Enabled Status...........58
  Heating Outputs...................58
  Heating Setpoints Status..........57
  Heating Stage Relay.............38

Heating Unoccupied Offsets...........41
Heat Pump Delays - Aux Heat........36
Heat Pump Configuration Screen......31
Heat Pump Defrost Interval...........52
Heat Reset Source Setpoints - High/Low
  Reset..................46
Heat Total - MiniLink PD Status......89
Heat Type Screen....................28
Heat Wheel Defrost Temperature
  Setpoint..........................52
Heat Wheel Relay Description........38
High Space Temperature Status......85
Hi SAT Cutoff.........................51
Holidays Programming................13
  Start/Stop Times...............13,21
Hood On HVAC Setpoints.............40
Humidity Control Sensor Type.........32
HVAC Cool/Heat Setpoints...........40
HVAC Hood On Setpoints.............40
HVAC Mode
  Cooling Setpoints...............40,41
  Heating Setpoints...............40,41
  Unoccupied Offsets...............41
HVAC Mode Deadband...............41
HVAC Mode Set By Remote
  Contact..................25
HVAC Mode Status..................57
HVAC Source Screen.................24

I
  IAQ Economizer.....................28
  Indoor Relative Humidity Setpoint
    Percentage.................59
  Indoor RH.......................59
  Indoor RH Setpoint...............43
  Initialization Screen...........9,15

K
  Keys, Described...................8,14

L
  Last Polled Zone MiniLink PD.......89
  Leaving Air Temperature
    Setpoint.........................59
  Level 1 & 2 Users, Defined.......17
  Loop Search Screen...............18
  Low Ambient Relay
    Description.....................38
  Low Ambient Setpoint...............52
  Low Space Temperature Status......85
  Low Suction Pressure Alarm........70,72

98
VCCX2 Operator Interface SD
M
Main Fan Status, VAV/Zone...........74
Maverick Testing, MiniLink PD........89
Max Adjust Static Pressure Control
Rate.............26
Maximum
Damper Force Mode...........87
EMS Offset VAV/Zone...........81
Slide Offset VAV/Zone...........80
Maximum Economizer Position in Heat
Mode.............49
Maximum Outdoor Air CFM...........49
Mechanical Heat/Cool Alarm
Delay.............28
MHGRV-X Enabled Status...........59
MHGRV-X Installed.............24
MHGRV-X Reheat Valve Output Signal
Percentage Status...........59
Min Damper Force Mode...........87
MiniLink PD Configuration...........88
Alarm Polling.............89
Last Polled Zone...........89
Maverick Testing.............89
Mode Changeover Time...........89
Optimal Start Target Zone...........89
System Type.............88
MiniLink PD Status
Adding Additional...........18
Cool Total.............89
Heat Total.............89
Minutes Left...........89
Mode Priority...........89
Schedule Mode...........89
System Status...........89
Minimum Outdoor Air CFM...........49
Minimum Outdoor Airflow...........49
Minimum Run Times and Off
Times.............36
Minus Key, Defined...........8, 14
Minutes Left, MiniLink PD Status...........89
Mod
Cooling Override...........91
Heating Override...........91
Mod Cool Enable Relay...........38
Mod Cool Proportional Window and Time
Period.............47
Controlling Sensor High Alarm
Offset.............42
Mode
Changeover Time...........89
of Operation...........10, 16, 83
Priority...........89
Selection Buttons Defined...........8, 14
MODGAS-X Enabled Status...........58
MODGAS-X Heating Output Signal
Status.............58
MODGAS-X then Staged...........28
Mod Heat Enable Relay...........38
Mod Heat Output Position in
Off Mode...........51
Mod Heat Proportional Window and Time
Period.............46
Mod Then Staged...........31
Modular Service Tool
Alarms Button...........11, 12
Alarm Search...........11
Connection Diagram...........5
Defined.............4
Dimensions...........4
Energy Saving Timer...........10
Initialization Screen...........9, 15
Instructions...........40
Mode Selection Buttons...........8, 14
Override Search...........11, 12
Overrides Tool...........11, 12
VCCX2 Setpoints...........40
Modular System Manager
Connection Diagram...........7
Defined.............6
Dimensions...........6
Network Connection...........7
Modulating Chilled Water...........24, 28
Modulating Cooling Output Signal Status
Percentage...........58
Modulating Exhaust Damper...........50
Modulating Heating Output Signal
Percentage Status...........58
Modulating Heat Output Signal...........28
Modulating Hot Water...........28
Modulating Only...........31
Modulating SCR Electric Heat...........28
Monitor Exhaust Airflow...........33
Monitor Outdoor Airflow...........32
Month...........9, 15
Morning Cool-Down...........36
Morning Cooldown Max Length...........53
Morning Cooldown Setpoint...........53
Morning Warm Up...........34
Max Length...........53
Target Temp...........52
Morning Warm-Up Relay
Configuration...........38
Morning Warm Up Setpoint...........52, 53
Morning Warm-Up (VAV Boxes) Relay
Description...........38
Motion Sensor Detect...........76
Multiple MGRS...........16

N
Network Connection
Modular System Manager...........7
Night Minimum Damper Airflow...........79
No Aux Heat...........31, 32
No Reversing Valve...........31
OA Damper, Building Pressure
Control...........30
OA Drybulb and Humidity...........60
OAT Cool Setpoint...........40
OA Temp Broadcasting...........35
OAT Heat Setpoint...........40
OAT Lockouts - Comp Cool/Comp
Heat...........51
OAT Lockouts - Heat...........51
OAT Sensor Calibration...........55
OA Webbulb and Dewpoint...........60
Occupancy Setpoints...........82
Occupancy Time Detection...........76
Occupancy Time Duration...........76
Occupied
Mode...........13, 21
Setpoints...........78
Occupied Active Relay...........38
Occupied HVAC Cool/Heat
Setpoints...........40
Occupied Switch Polarity...........76
Occupied Switch Type...........76
OE391-12...........4
OE392-12...........6
OFF Mode, Continuous...........13, 20
On Board Relay Type...........76
ON Mode, Continuous...........13, 20
On/Off Exhaust Fan...........50
Open Damper Force Mode...........87
Optimal Start Target Zone
MiniLink PD...........89
Outdoor Air...........24
Outdoor Airflow...........61
Monitoring...........32
Outdoor Air CFM...........49, 61
Outdoor Air Damper...........50
Outdoor Air Dewpoint...........60
Outdoor Air Drybulb Status...........60
Outdoor Air Enthalpy Status...........60
Outdoor Airflow...........49
Outdoor Airflow Duct Size...........33
Outdoor Air Humidity Broadcast...........35
Outdoor Air Relative Humidity
Status...........60
INDEX

Coil Temperature Setpoint.........43
Communications Screen..........10,16
Condenser Water Valve Min Position..........47
Configuration Screens..........22
Controlling Sensor High Alarm & Low Alarm Offset..........42
Control Outdoor Air CFM..........32
Cool/Heat Stage Delays..........36
Cool Reset Source Setpoints - High/Low Reset..........45
Cool Type..........28
Cool Type Screen..........28
Daylight Savings Adjustment..........34
Dehumidification Control..........31
Dirty Filter Screen..........35
Economizer Control Loop Rate..........29
Economizer Control Type..........28
Economizer Enable Setpoint..........48
Economizer Enable Source..........29
Economizer in Unoccupied Mode..........29
Economizer Maximum Position if High CO2 Level..........49
Economizer Minimum Damper Position..........49
Economizer Overrides..........90
Economizer Voltage Output..........29
EM1 Relay Configuration..........37
Emergency Shutdown..........34
Evaporator Condenser Control..........37
Exhaust Airflow Duct Size..........34
Exhaust Airflow Monitoring..........33
Exhaust Fan Output..........30
Exhaust VFD Override..........91
Fahrenheit..........23
Fan Cycle Mode Screen..........27
Fan Proving Screen..........27
Fan Starting Delay Screen..........27
Fan Voltage Output..........27
Head Pressure Setpoints - Cooling and Reheat..........47
Heat/Cool Changeover Delay..........36
Heat Pump Configuration..........31
Heat Pump Defrost Interval..........52
Heat Pump Delays..........36
Heat Reset Source Setpoints - High/ Low Reset..........46
Heat Type..........28
Heat Wheel Defrost Temperature Setpoint..........52
High Alarm Offset..........42
Holiday Schedule..........13,21
Hood On HVAC Setpoints..........40
Hood On HVAC Setpoints - OAT Cool, OAT Heat..........40
Humidity Control Sensor Type..........32
HVAC Mode Set By Remote Contact..........25
HVAC Source..........24
Indoor RH Setpoint..........43
Initialization for Modular Service Tool..........9,15
Loop Search Screen..........18
Low Alarm Offset..........42
Low Ambient Setpoint..........52
Maximum Economizer Position in Heat Mode..........49
Mechanical Heat/Cool Alarm Delay Screen..........28
MiniLink PD Configuration..........88
Mod Cooling Override..........91
Mod Cool Proportional Window and Time Period..........47
Mode Deadband..........41
Mod Heating Override..........91
Mod Heat Output Position in Off Mode..........51
Mod Heat Proportional Window and Time Period..........46
Modulating Heat Output Signal..........28
Monitor Outdoor Air Airflow..........32
Morning Cool-Down Type..........36
Morning Warm Up..........34
OA Temp Broadcast..........35
OAT Lockouts - Comp Cool/Comp Heat..........51
OAT Lockouts - Heat..........51
OAT Sensor Calibration..........55
Occupied HVAC Cool/Heat Setpoints..........40
Outdoor Airflow Monitoring..........32
Outdoor Air CFM Control..........32
Outdoor Air CFM Setpoint..........49
Outdoor Airflow Duct Size..........33
Outdoor Dewpoint Setpoint..........42
Outdoor Sensor Type..........26
Outputs Force Screen..........90
Overrides Screen..........11,19
Preheat Relay Setpoint..........51
PREHEAT-X Vent Mode Settingpoint..........54
Purge Mode Delay..........27
Reheat Type..........32
Relay Configuration Screens..........37
Relay Overrides..........90
Reset Rate Interval..........25
Return Air Airflow Monitoring..........33
Return Air Bypass Control..........36
Return Air Bypass Damper Factor Setpoint..........53
Return Airflow Duct Size..........33
Return Air Temperature Sensor Calibration..........54
Return Sensor Type..........26
SAT Reset Source..........25
SAT Sensor Calibration..........55
Schedule Number..........34
Schedule Override..........13,21
Set Time & Date Screens..........9,15
Space Sensor Calibration..........54
Space Sensor Overrides Screen..........19
Space Sensor Push-Button Override Duration..........42
Space Sensor Slide Adjust..........41,42,82
Space Sensor Type..........25
Stage Off Window - Cooling/ Heating..........46
Static / Fan Control Rate..........26
Static Pressure Control..........26
Static Pressure Control Rate Max Adjust..........26
Static Pressure Setpoint..........43
Sump Enable Temperatures..........48
Superheat Setpoint..........54
Supply Air Airflow Monitoring..........33
Supply Air Cooling Setpoint and High Reset Limit..........44
Supply Air Cutoffs - Cooling/ Heating..........51
Supply Air Duct Size..........33
Supply Air Heating Setpoint and High Reset Limit..........45
Supply VFD Override..........90
SZ VAV Integral Constant..........53
Title 24 Economizer..........29
Trend Log Rate..........34
Unit Selection Screens..........73
Unoccupied Offsets - Cooling & Heating..........41
VAV/Zone Box Configuration..........73
VAV/Zone Controller Setpoints..........77
VAV/Zone Damper Operation..........74
VAV/Zone Status..........82
VCCX2 Configuration Screens..........23
VFD Speed Limits Min/Coil/ Vent..........44
VFD Speed Limits Min/Max Heat..........44
VFD Speed Minimums Cool/Vent Modes..........44
Week Schedules..........12,20
WSHP Glycol Percentage..........31
INDEX

S-V

Search
For Loops.......18
For Overrides.......19
Selection Buttons, Defined.......8,14
Sensor Calibration
Space Temperature.......81
Supply Air Temperature.......81
Sensor Scaling Screen.......23
Series Fan Box, VAV/Zone.......73
Setting
Date........9,15
Day of Week........9,15
Month........9,15
Year........9,15
Single Zone VAV.......25
Slide Adjust Status.......57
Slide Offset VAV/Zone Status.......83
Space Humidity Broadcast.......35
Space Relative Humidity Percentage.......59
Space RH.......59
Space Sensor Calibrate.......82
Space Sensor Calibration.......54
Space Sensor Overrides Screen.......19
Space Sensor Slide Adjust.......41,42,82
Space Sensor Type.......25,75
Space Temp Broadcast.......35
Space Temperature.......25
Configuration.......25
Space Temperature & Slide Adjust.......57
Space Temperature Status.......57
Space Temperature with High OA CFM.......25
Staged Only.......31,32
Stage Off Window - Cooling/ Heating.......46
Staging Up and Down Delay Periods.......36
Stand Alone Proof of Flow for Heat.......76
Stand Alone Selection.......76
Start and Stop Times
2359.......13,20
ZERO.......13,20
Static / Fan Control Rate Screen.......26
Static Pressure Control Rate Max Adjust Screen.......26,30
Static Pressure Control Screen.......26
Static Pressure Deadband.......43
Static Pressure Reset.......44
Static Pressure Reset Interval.......44
Static Pressure Setpoint.......43
Status Key.......8,14
Status Screen Index for RSM.......69,71
Steam Heat.......28
Sump Enable Temperatures.......48
Superheat 1.......70
Superheat 2.......70
Superheat Setpoint.......54
Supply Air.......24
  Temperature.......83
Supply Airflow Monitoring.......33
Supply Air CFM.......61
Supply Air Cooling Setpoint and High Reset Limit.......44
Supply Air Cutoffs - Cooling/ Heating.......51
Supply Airflow Duct Size.......33
Supply Air Heating
  Setpoint and High Reset Limit.......45
Supply Air Temperature Sensor.......55
Supply Air Temperature & Setpoint.......58
Supply Air Temperature Status.......58
Supply Air with Supply Air Tempering.......24
Supply Fan
  Building Pressure Control.......30
Supply Fan VFD.......50
Supply VFD Override.......90
System
  Status.......89
  Type.......88
System Manager
  Dimensions.......6
  Override Search.......19
Passcodes.......17
System Manager TS.......8,14
SZ VAV Integral Constant.......53

T
Testing the System
Outputs Force.......90
Time
  24-Hour Military Format.......13,20,86
Time & Date.......9,15
Title 24 Economizer %.......61
Title 24 Economizer Actuator Feedback.......24
Title 24 Economizer Configuration.......29
Touch Screen System Manager.......8,14
Trend Log Rate.......34
Troubleshooting the System
  Outputs Force.......90
Type of Space Setpoints.......75

U
Unit Selection Screen.......73
Unoccupied
  Mode.......13,21
  Setbacks.......78,82

V
VAV/Zone
AHU Heat Call Space Temperature.......78
Box Heat Allow.......74
Configuration.......73
Controllers.......73,87
Cooling Only Box.......73
Damper Airflow
  Cool/Heat Minimum.......79
  Integral.......78
  Maximum.......79
  Vent Minimum.......79
Damper Airflow Fixed
  Position.......79
Damper Airflow Night Minimum.......79
Damper Airflow Reheat Minimum.......79,80
Day/Night Schedule.......86
Dump Zone.......75
Expansion Relays Heating Stages.......74
H/C Changeover Box.......73
Main Fan Status.......74
Maximum EMS Offset.......81
Maximum Slide Offset.......80
Occupied Setpoints.......78
Parallel Fan Box.......73
Pressure Independent Airflow Constant.......74
Proportional Heating Signal.......74
Push-Button Override.......75
Push-Button Override Duration.......80
Sensor Calibration for Space Temperature.......81
Sensor Calibration for Supply Air Temperature.......81
Series Fan Box.......73
Unoccupied Setbacks.......78,82
Voting Zone.......74
Zone Alarm Delay.......80
Zone Alarm Offsets.......80
VAV/Zone Configuration
  Damper Operation.......74
VAV/Zone Controller
Scheduling...........86

VAV/Zone Setpoints
AHU Heat Call Space
Temperature............78
Damper Airflow
Cool Minimum........79
Heat Minimum........79
Integral..............78
Maximum.............79
Vent Minimum........79
Damper Airflow Fixed
Position..............79
Damper Airflow Night
Minimum..............79
Damper Airflow Reheat
Minimum.............79,80
Day/Night Schedule.....86
Fan On Min............79
Maximum EMS Offset.....81
Maximum Slide Offset.....80
Occupied Setpoints....78
Push-Button Override
Duration.............80
Sensor Calibration for Space
Temperature..........81
Sensor Calibration for Supply Air
Temperature..........81
Unoccupied Setbacks.....78,82
Zone Alarm Delay.....80
Zone Alarm Offsets....80

VAV/Zone Status
Airflow.............84
Alarm Status.........84
Box Air Temperature..83
Cooling Setpoints....83
Desired CFM..........84
Fan Status...........84
Heating/Cooling Demand....83
Heating Setpoints....83
Mode of Operation....83
Reheat Stages........84
Screens..............83
Slide Offset..........83
Supply Air Temperature..83
Zone Damper Position...84
Zone Temperature.....83

VCCX2 Controller
Alarm Conditions.....64
Analog Output Override...90
Configuration Screens...23
Damper Force Modes.....87
Date...........9,15
Economizer Overrides.....90
Exhaust VFD Override.....91
Holidays........13
Holiday Start/Stop Times.....13,21
Mod Cooling Override.....91
Mod Heating Override.....91
Occupied Mode........13,21
Outputs Force........90
Relay Overrides........90
Schedule Override.....13,21
Scheduling........12,20
Supply VFD Override.....90
Time & Date..........9,15
Unoccupied Mode.......13,21
Week Schedules........12,20

VCCX2 Relays.........63
VCCX2 Schedule Holidays.....13,20
VCCX2 Status Screen Index.....56
VFD Speed Limits Min/Cool/Vent.....44
VFD Speed Limits Min/Max Heat.....44
Voting Zone Configuration.....74

W
Water Side Condenser.....31
Week Schedules
VCCX2 Controller.....12,20
Wetbulb........29
Wetbulb Temperature.....60
Window Open Detect....76
WSHP Fail to Cool.....31
WSHP Fail to Heat......31
WSHP Glycol Percentage
Screen........31
WSHP Head Pressure Setpoints -
Cooling and Reheat.....47

Y
Year........9,15

Z
Zone Alarm
Delay........80
Offsets........80
Zone Damper Position
VAV/Zone Status.....84
Zone Temperature
VAV/Zone Status.....83
AAON Factory Technical Support:  918-382-6450
techsupport@aaon.com

AAON Controls Support:  866-918-1100
Monday through Friday, 7:00 AM to 5:00 PM
central standard time.

NOTE: Before calling Technical Support, please have the
model and serial number of the unit available.

PARTS: For replacement parts please contact your local
AAON Representative.