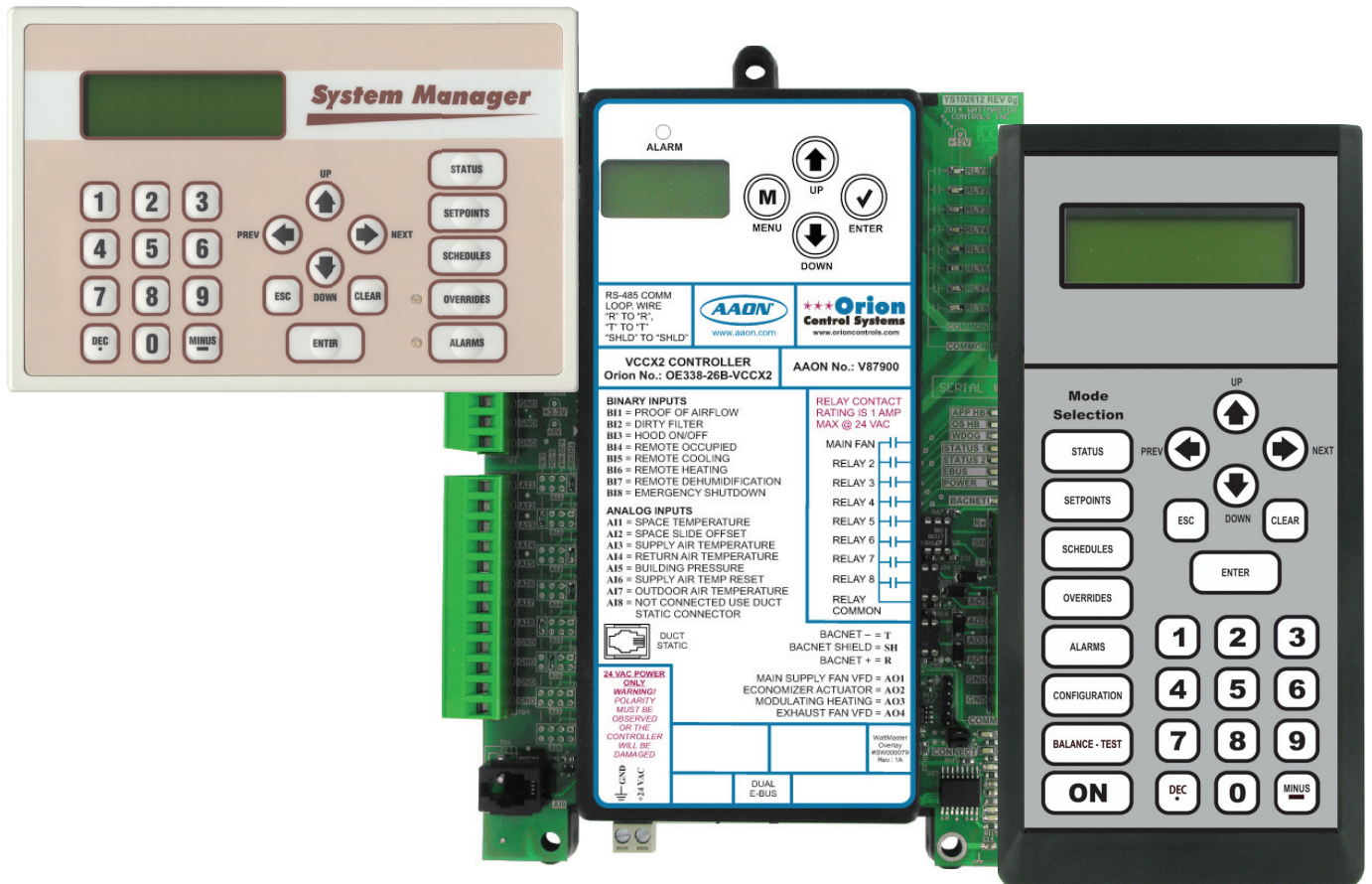




VCCX2 Controller Operator Interface SD Technical Guide

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—orioncontrols.com. The technical guides can also be printed from the SD card.

VCC-X Controller - AA-VCCXOISD-TGD

VCB-X Controller - AA-VCBXIOSD-TGD

VCM-X & VCM-X E-BUS Controller - AA-VCMXRNEOISD-TGD

RNE Controller - AA-VCMXRNEOISD-TGD

SA E-BUS Controller - AA-SAOISD-TGD

VCM Controller - AA-VCMOISD-TGD

VAV/CAV and MUA II Controllers - AA-VAVCAVMUAOISD-TGD

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 93 of this manual.



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Modular Service Tool SD

Modular Service Tool SD

The OE391-12 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 straight forward, 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.

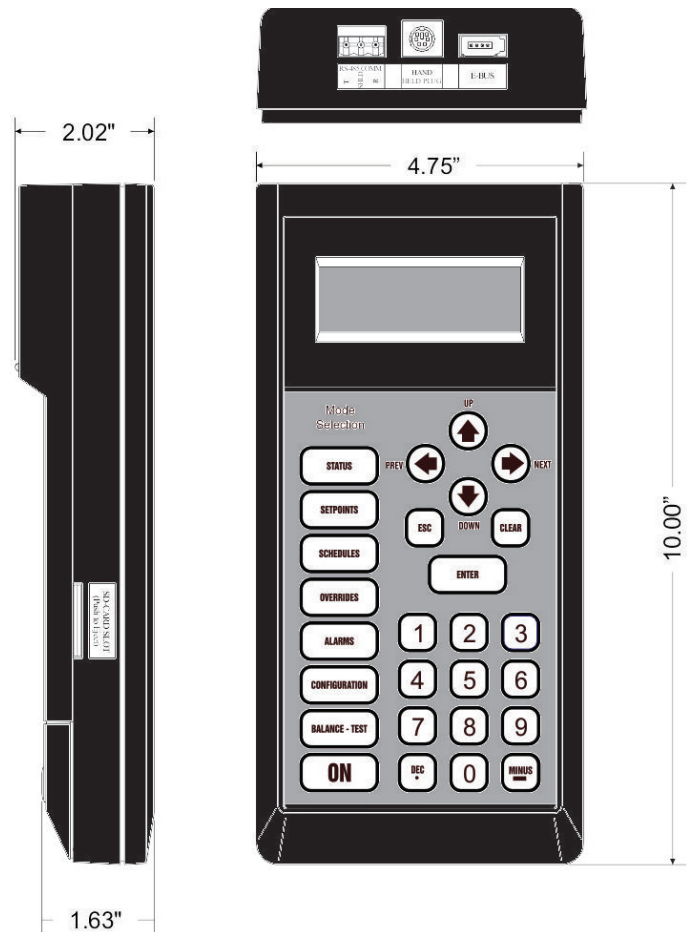


Figure 1: Modular Service Tool SD Dimensions

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.

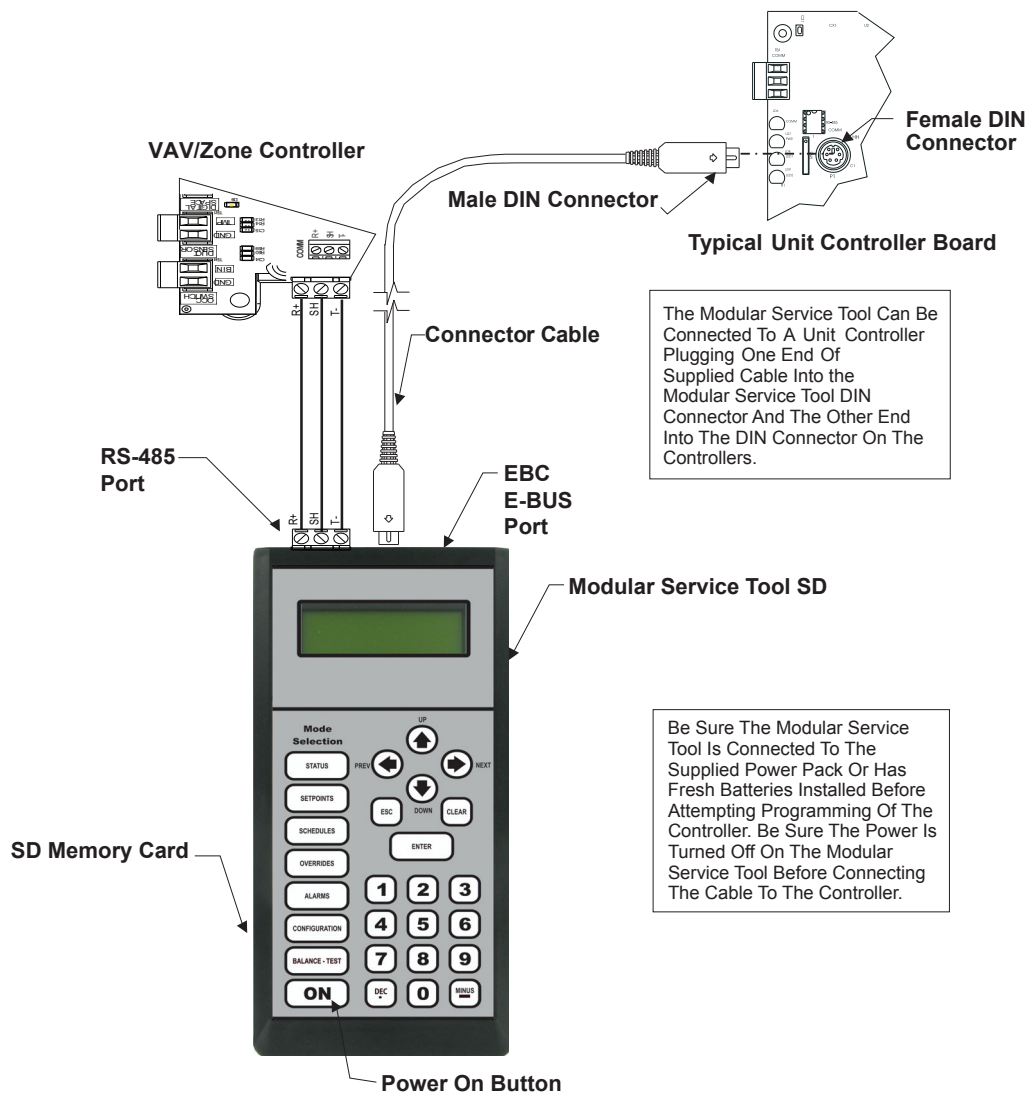


Figure 2: Modular Service Tool SD

Modular System Manager SD

Modular System Manager SD

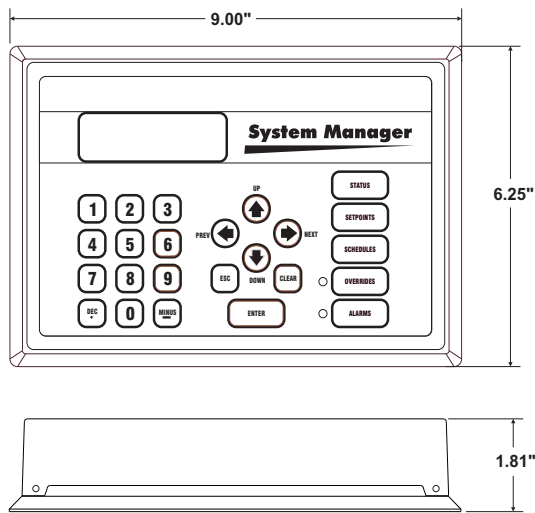


Figure 3: Modular System Manager SD Dimensions

The OE392-12 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/CAV, 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 straight forward, 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.

Modular System Manager SD Connection

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/WattMaster 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.

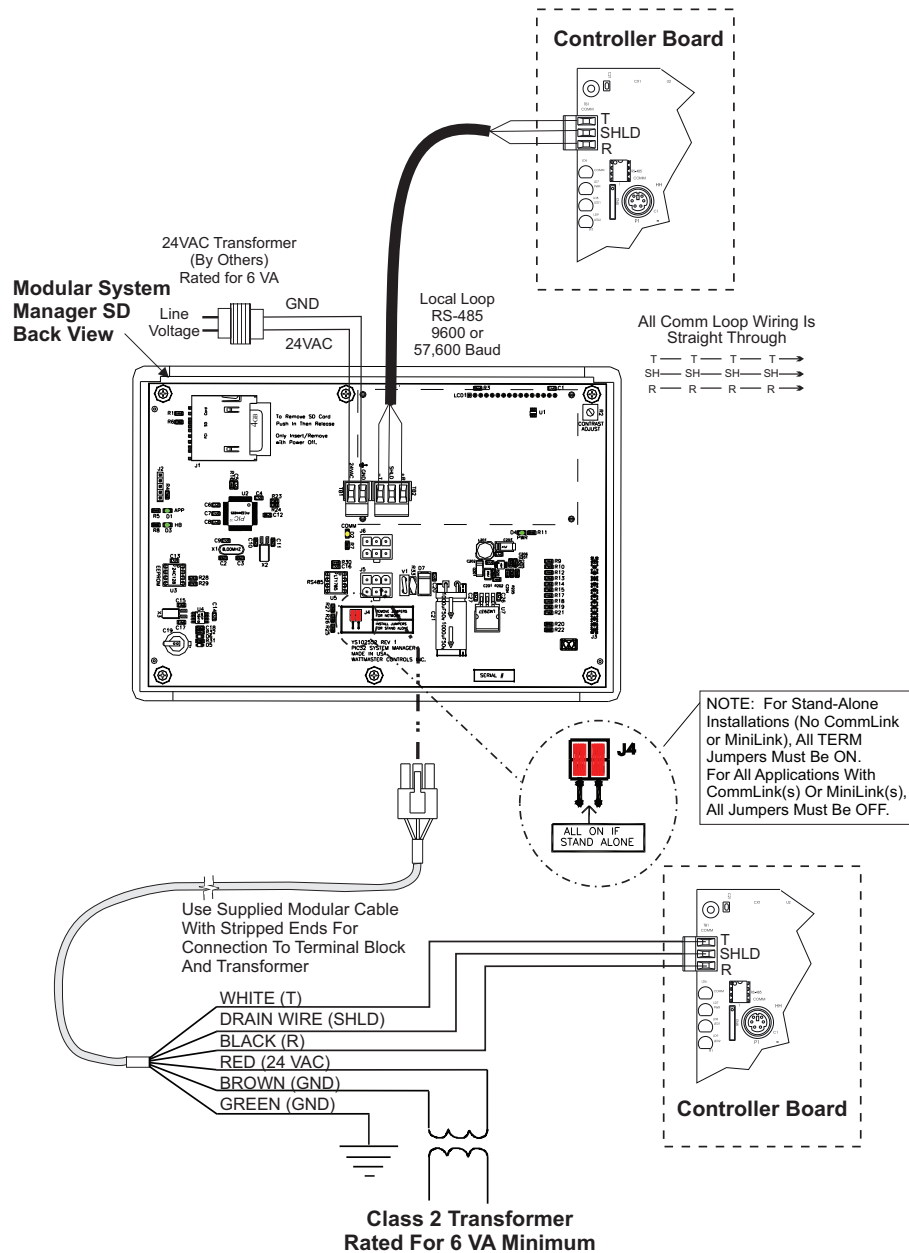


Figure 4: Modular System Manager SD Connection and Wiring Details

Modular Service Tool Keys

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 Manger 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.

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

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.

Button Description	Function
STATUS	Pressing this button takes you directly to the controller “Status” screens.
SETPOINTS	Pressing this button takes you directly to the controller “Setpoints” screens.
SCHEDULES	Pressing this button takes you directly to the controller “Schedules” screens.
OVERRIDES	Pressing this button takes you directly to the controller “Overrides” screen. See the “Override Button” section on page 11 for a description of this function. See Note 1 below.
ALARMS	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.
CONFIGURATION	Pressing this button takes you directly to the controller “Configuration” screens.
BALANCE-TEST	Pressing this button takes you directly to the controller “Balance-Test” screens.
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).	

Table 2: Button Descriptions

Initialization & Setting the Time & Date

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!"

```
Initializing
Service Tool vX.XX
WattMaster Controls
```

```
1) Set Time & Date
2) Communications
NEXT) More Options
ESC) Exit Menu
```

```
3) Energy Saving
4) Update Software
NEXT) More Options
ESC) Exit Menu
```

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.

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).

```
1) Set Time & Date
2) Communications
NEXT) More Options
ESC) Exit Menu
```

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 **<ENTER>**. In order to save a new value, you must press **<ENTER>**.

```
Program Time/Date
Day (Sunday=0): X
Enter Hr. (0-23): XX
Enter Minutes : XX
```

Day - Enter the Day of the Week (0 to 6)
Sunday = 0

Hours (Hr) - Enter Hours in 24-Hour Military Format
(1700 = 5:00 PM)

Minutes - Enter the Minutes
(0 to 59)

Programming the Date

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

```
Program Time/Date
Month (1-12): XX
Day (1-31): XX
Year (00-99): XX
```

Month - Enter the Month (1 to 12)

Day - Enter the Day of the Month (1 to 31)

Year - Enter the current Year with two digits
(00 to 99)

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

```
1) Set Time & Date
2) Communications
NEXT) More Options
ESC) Exit Menu
```

Setting the Operating Mode and Energy Saving Timer

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.

```
Service Tool SD vX.XX
01/16/17 02:21 PM
LS Stand Alone
No Communication
```

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.

```
1) Set Time & Date
2) Communications
NEXT) More Options
ESC) Exit Menu
```

The *Communications Screen* will appear as shown below.

```
Stand Alone Mode
Lo Speed Connection
Use Left/Right Arrow
To Change Selections
```

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

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

```
You Have Changed The
System Mode
Press Any Key To
Continue
```

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

```
1) Set Time & Date
2) Communications
NEXT) More Options
ESC) Exit Menu
```

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).

```
1) Set Time & Date
2) Communications
NEXT) More Options
ESC) Exit Menu
```

```
3) Energy Saving
4) Update Software
NEXT) More Options
ESC) Exit Menu
```

The *Energy Saving Screen* will appear as shown below:

```
Energy Saving
Automatic Power Down
Minutes: xx
Press ESC to Exit
```

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:

```
1) Set Time & Date
2) Communications
NEXT) More Options
ESC) Exit Menu
```

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 Unit Address
Then Press Enter
Selected Unit#: XXXX

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

VCCX2 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.

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 Unit Address
Then Press Enter
Selected Unit#: XXXX

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, Schedules, and Holidays

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:

```
The Following
Screens Show Values
For BACnet Overrides
```

```
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.
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.

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

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 **<↓>** button and then *press* **<ENTER>** to access the scheduling function you wish to view.

```
VCCX2 Schedule Menu
Schedule Override
Week Schedules
Holidays
```

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.

Holiday Scheduling and Schedule Override

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.

Holiday Start/Stop Day Selection

```
VCCX2 Schd  ID #
Holiday #   1
Start Mon/Day: XXXX
[ July 4th = 704 ]
```

```
VCCX2 Schd  ID #
Holiday #   1
Stop Mon/Day: XXXX
[ July 5th = 705 ]
```

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

```
VCCX2 Schd  ID #
Holiday Schedule
Start Event #1: XXXX
Stop Event #1: XXXX
```

```
VCCX2 Schd  ID #
Holiday Schedule
Start Event #2: XXXX
Stop Event #2: XXXX
```

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

```
VCCX2 OvrD  ID #
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.

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.

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

Table 3: Keypad Descriptions

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.

Button Description	Function
STATUS	Pressing this button takes you directly to the controller “Status” screens.
SETPOINTS	Pressing this button takes you directly to the controller “Setpoints” screens and “Configuration” menu.
SCHEDULES	Pressing this button takes you directly to the controller “Schedules” screens.
OVERRIDES	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 & 2 below.
ALARMS	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 & 2 below.
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 20 of this manual for complete instructions on performing a loop search.	

Table 4: Button Descriptions

Initialization & Setting the Time & Date

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 **<↔>** or by cycling power.

```
INITIALIZING
System Manager SD
vX.XX
WattMaster Controls
```

```
1) Set Time & Date
2) Communications
NEXT) More Options
ESC) Exit Menu
```

```
3) Change Passcodes
4) Loop Search
NEXT) More Options
ESC) Exit Menu
```

```
5) Alarm Search

NEXT) More Options
ESC) Exit Menu
```

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*.

```
1) Set Time & Date
2) Communications
NEXT) More Options
ESC) Exit Menu
```

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 Unit 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 **<ENTER>**. In order to save a new value, you must press **<ENTER>**.

```
Program Time/Date
Day (Sunday=0): X
Enter Hr. (0-23): XX
Enter Minutes : XX
```

Day - Enter the Day of the Week (0 to 6)
Sunday = 0

Hours (Hr) - Enter the Hour (0-23) in
24-Hour Military Format
(13 = 1:00 PM)

Minutes - Enter the Minutes
(0 to 59)

Programming the Date

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

```
Program Time/Date
Month (1-12): XX
Day (1-31): XX
Year (0-99): XX
```

Month - Enter the Month (1 to 12)

Day - Enter the Day of the Month (1 to 31)

Year - Enter the current Year (0 to 99)

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

Setting the Operating Mode

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**.

```
System Manager SD
01/16/17 02:21 PM
LS Stand Alone
```

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>**.

```
1) Set Time & Date
2) Communications
NEXT) More Options
ESC) Exit Menu
```

The *Passcode Clearance Screen* will appear as shown below.

```
THIS ACTION REQUIRES
A SPECIAL HIGH LEVEL
PASSCODE CLEARANCE
Enter: XXXXXXX
```

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

You will then see the screen below displayed.

```
Stand Alone Mode
Lo Speed Connection
Use Left/Right Arrow
To Change Selections
```

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.

```
Multiple Manager
Unit Address: 0

Press ESC to Exit
```

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:

```
You Have Changed The
System Manager Mode
Press Any Key To
Continue
```

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.

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

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:

```
1) Set Time & Date  
2) Communications  
NEXT) More Options  
ESC) Exit Menu
```

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

```
3) Change Passcodes  
4) Loop Search  
NEXT) More Options  
ESC) Exit Menu
```

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

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

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!

Loop Search and System Alarm Search

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>**.

```
1) Set Time & Date
2) Communications
NEXT) More Options
ESC) Exit Menu
```

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

```
3) Change Passcodes
4) Loop Search
NEXT) More Options
ESC) Exit Menu
```

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

```
Loop Search
Current Loop = XX
Loops Found = XX
Searching
```

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:

```
Loop Search
Finished
Loops Found = XX
Press ESC to Exit
```

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 87** 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 an individual unit alarm search for detailed alarm information.

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

```
1) Set Time & Date
2) Communications
NEXT) More Options
ESC) Exit Menu
```

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

```
3) Change Passcodes
4) Loop Search
NEXT) More Options
ESC) Exit Menu
```

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

```
5) Alarm Search
NEXT) More Options
ESC) Exit Menu
```

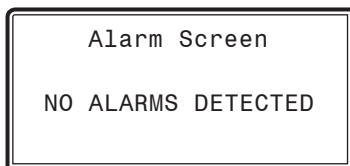
Press **<5>** for Alarm Search. The entire system is searched from this point. The following screen will be displayed:

```
Alarm Screen
SEARCHING!
```

Once the Alarm Search is complete, one of the following screens will display:

```
Alarm Screen
XX ALARMS ON UNIT XX
```

Unit Alarm Search and Override Search

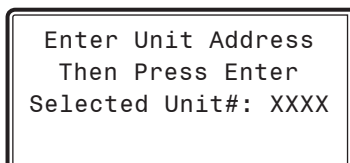


To check controllers individually for alarms, use the **<ALARMS>** button on the Main Display.

Unit Alarm Search

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

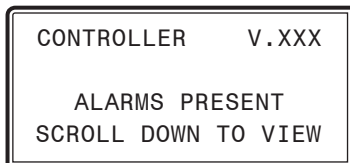
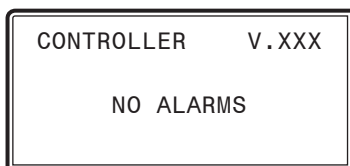
Press **<ALARMS>**. The *Unit Selection Screen* below will be displayed.



Enter 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:



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

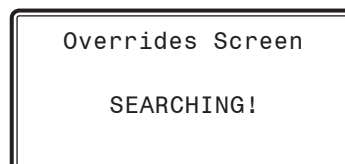
To clear any alarms that are found, you must fix the problem indicated in the alarm. Once the problem is fixed, the alarm will clear from the screen the next time the unit is polled.

System Manager Override Search

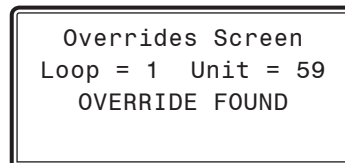
NOTE: In order for the Override Search to work, a Loop Search must be performed first. See **page 18** for details.

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 87** of this manual for setting information.

To access the *Space Sensor Overrides Screen*, press **<OVERRIDES>**. The following screen will appear.



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.



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.

```
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 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
Schedule Override
Week Schedules
Holiday Schedules
```

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

```
Schd
Sunday   Event #1
Start Time..: XXXX
Stop Time...: XXXX
```

Event #2

```
Schd
Sunday   Event #2
Start Time..: XXXX
Stop Time...: XXXX
```

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 Scheduling and Schedule Override

Holiday Start/Stop Day Selection

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

```

Hldy
Holiday # 1
Start Mon/Day.: XXXX
[ July 4th = 704 ]
    
```

```

Hldy
Holiday # 1
Stop Mon/Day.: XXXX
[ July 5th = 705 ]
    
```

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

```

Hldy
Holiday Schedule
Start Event #1: XXXX
Stop Event #1: XXXX
    
```

```

Hldy
Holiday Schedule
Start Event #2: XXXX
Stop Event #2: XXXX
    
```

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:

```

OvrD
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.

Screen #1	Sensor Scaling (Fahrenheit / Celsius)	Screen #39	Building Pressure Sensor Installed
Screen #2	RSM 1 & RSM 2 Installed	Screen #40	Building Pressure Control
Screen #3	RSM 3 & RSM 4 Installed	Screen #41	Building Pressure Control Rate
Screen #4	RSMSD Installed & RSM Type	Screen #42	Building Pressure Control Max Adjust
Screen #5	EM1 & 12 Relay Expansion Module Installed	Screen #43	Exhaust Fan Output
Screen #6	MHGRV-X & Expansion Module Installed	Screen #44	Heat Pump Configuration
Screen #7	MODGAS-X & XWR #2 Installed	Screen #45	WSHP Glycol Percentage
Screen #8	Preheat-X Controller Installed	Screen #46	Aux Heat Type
Screen #9	HVAC Mode Enable Source	Screen #47	Dehumidification Control
Screen #10	HVAC Mode Set By Remote Contact	Screen #48	Humidity Control E-BUS Sensor Type
Screen #11	SAT Reset Source	Screen #49	Reheat Control
Screen #12	Reset Interval Rate	Screen #50	Type of Airflow Station
Screen #13	Space Sensor Type	Screen #51	Monitor Outdoor Air Airflow
Screen #14	Read Space Humidity Global Broadcast	Screen #52	Control Outdoor Air Airflow
Screen #15	Remote Space Sensor Board Address	Screen #53	Outdoor Airflow Duct Size
Screen #16	E-BUS SPC/RH Sensor Alarm LED Enable	Screen #54	Monitor Supply Air Airflow
Screen #17	Outdoor Sensor Type	Screen #55	Supply Airflow Duct Size
Screen #18	Return Sensor Type	Screen #56	Monitor Return Air Airflow
Screen #19	Static Pressure Control	Screen #57	Return Airflow Duct Size
Screen #20	Static/Fan Control Rate	Screen #58	Monitor Exhaust Airflow
Screen #21	Static Pressure Control Max Adjust	Screen #59	Exhaust Airflow Duct Size
Screen #22	Fan Voltage Output - Min/Max	Screen #60	Morning Warm Up Type
Screen #23	Supply Fan Cycle Mode	Screen #61	AHU Uses Schedule Number
Screen #24	Fan Proving	Screen #62	Daylight Adjustment Start/Stop Date
Screen #25	Fan Starting Delay	Screen #63	Trend Log Rate
Screen #26	Purge Mode Delay	Screen #64	Emergency Shutdown
Screen #27	Heat Type	Screen #65	Dirty Filter
Screen #28	Modulating Heat Output Signal - Min/Max	Screen #66	Broadcast Outdoor Air Temperature
Screen #29	Cool Type	Screen #67	Broadcast Outdoor RH
Screen #30	Chilled Water Valve	Screen #68	Broadcast Space Temperature
Screen #31	Mech Heat/Cool Alarm Delay	Screen #69	Broadcast Space Humidity
Screen #32	Economizer Control Type	Screen #70	Broadcast CO ₂
Screen #33	Title 24 Economizer	Screen #71	Broadcast Building Pressure
Screen #34	Economizer in Unoccupied Mode	Screen #72	Broadcast to Boxes
Screen #35	Economizer Enable Source	Screen #73	Cool Stage Up and Down Delays
Screen #36	Economizer Control Loop Rate/Prop Window	Screen #74	Cool Stage Min Run and Min Off Delays
Screen #37	Economizer Voltage Output - Min/Max	Screen #75	Heat Stage Up and Down Delays
Screen #38	CO ₂ Sensor Installed	Screen #76	Heat Stage Min Run and Min Off Delays
		Screen #77	Heat Pump Delays
		Screen #78	Heat/Cool Changeover Delay
		Screen #79	Return Air Bypass Control
		Screen #80	Morning Cool Down Type
		Screen #81	Evaporator Condenser Control
		Screens #82-88	VCCX2 Relays 1-8 Configuration Screens
		Screens #89-93	EM1 Relays 1-5 Configuration Screens
		Screens #94-105	12 Relay Configuration Screens

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
    
```

```

VCCX2 CONFIGURATION
RSM CONFIGURATION

Select & Press Enter
    
```

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* **<↓>**. *Select* VCCX2 Configuration and then *press* **<ENTER>**. *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 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 be displayed:

```

Change Setpoints
Configure Unit
Save/Copy/Restore
    
```

```

VCCX2 CONFIGURATION
RSM CONFIGURATION

Select & Press Enter
    
```

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

```
VCCX2 Cnfg ID #
HVAC Mode Set By
Remote Contact: NO
USE < or > TO CHANGE
```

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

```
VCCX2 Cnfg ID #
SAT Reset Source
No Reset
USE < or > TO CHANGE
```

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

```
VCCX2 Cnfg ID #
Reset Interval
Rate...: 30 s
[1 - 255 Seconds]
```

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

```
VCCX2 Cnfg ID #
Space Sensor Type
None
USE < or > TO CHANGE
```

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.

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Configuration Screen #14 - Read Space Humidity Global Broadcast

```
VCCX2 Cnfg ID #
Read Space RH
Broadcast: No
USE < or > TO CHANGE
```

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

```
VCCX2 Cnfg ID #
Remote Space Sensor
Board Address: 0
```

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

```
VCCX2 Cnfg ID #
E-Bus SPC/RH Sensor
Enable Alarm LED
USE < or > TO CHANGE
```

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

```
VCCX2 Cnfg ID #
Outdoor Sensor Type
None
USE < or > TO CHANGE
```

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

```
VCCX2 Cnfg ID #
Return Sensor Type
None
USE < or > TO CHANGE
```

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

```
VCCX2 Cnfg ID #
Static Pr Control
Fan VFD / SZ VAV
USE < or > TO CHANGE
```

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

```
VCCX2 Cnfg ID #
Static/Fan Control
Rate: 10s
[ 1 - 30 Seconds ]
```

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

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

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

```
VCCX2 Cnfg ID #
Fan Voltage Output
Min Volts: 0.0VDC
Max Volts: 10.0VDC
```

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. **Defaults are 0 VDC Min and 10 VDC Max.**

Description	Minimum	Default	Maximum
Minimum Fan Voltage	0	0	10
Maximum Fan Voltage	0	10	10

Configuration Screen #23 - Fan Cycle Mode

```
VCCX2 Cnfg ID #
Fan Cycle Mode
NO
USE < or > TO CHANGE
```

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 Proving

```
VCCX2 Cnfg ID #
Fan Proving
NO
USE < or > TO CHANGE
```

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 #25 - Fan Starting Delay

```
VCCX2 Cnfg ID #
Fan Starting
Delay: -1s
[-1 = Unit Addr x 5]
```

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.**

Description	Minimum	Default	Maximum
Fan Start Delay Timer	-1 Sec	-1 Sec	240 Sec

Configuration Screen #26 - Purge Mode Delay

```
VCCX2 Cnfg ID #
Purge Mode
Delay: 30s
[ 0 - 900 Seconds ]
```

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.**

Configuration Screen #27 - Heat Type

```
VCCX2 Cnfg ID #
Heat Type
No Heat
USE < or > TO CHANGE
```

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.

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Configuration Screen #28 - Modulating Heat Output Signal

```
VCCX2 Cnfg ID #
Mod Heat Volt Output
Min Pos Volts: 0.0
Max Pos Volts: 10.0
```

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.

Description	Minimum	Default	Maximum
Minimum Position Volts	0	0	10
Maximum Position Volts	0	10	10

Configuration Screen #29 - Cool Type

```
VCCX2 Cnfg ID #
Cool Type
Refrigeration Module
USE < or > TO CHANGE
```

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 #30 - Chilled Water Valve

```
VCCX2 Cnfg ID #
Chilled Water Valve:
0-10VDC
USE < or > TO CHANGE
```

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

Configuration Screen #31 - Mechanical Heat/Cool Alarm Delay

```
VCCX2 Cnfg ID #
Mech Heat/Cool
Alarm Delay: 15Min
```

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.

Description	Minimum	Default	Maximum
Mechanical Heat/Cool Failure Alarm Delay	0 Min	15 Min	240 Min

Configuration Screen #32 - Economizer Control Type

```
VCCX2 Cnfg ID #
Econo Control Type
No Economizer
USE < or > TO CHANGE
```

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 #33 - Title 24 Economizer

```
VCCX2 Cnfg ID #
Title 24
Economizer: NO
USE < or > TO CHANGE
```

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

Configuration Screen #34 - Economizer in Unoccupied Mode

```
VCCX2 Cnfg ID #
Econo Control In
Unoc Mode: NO
USE < or > TO CHANGE
```

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 #35 - Economizer Enable Source

```
VCCX2 Cnfg ID #
Econo Enable Source
Drybulb
USE < or > TO CHANGE
```

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.

Configuration Screen #36 - Economizer Control Loop Rate & Proportional Window

```
VCCX2 Cnfg ID #
Economizer Control
Rate: 10 s
Prop Window: 10.0°F
```

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° Proportional Window, if the Supply Air Temperature is 5° or more from setpoint, the signal change will be 10% per time period. At 4° difference, the signal change will be 8% per time period. By the time the difference is 1°, the signal change will be 2% per time period. With a Proportional Window of 2°, if you are 2° or more from setpoint, the amount of signal change will be 10% per

time period, and at 1° 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/5.55°C.**

Description	Minimum	Default	Maximum
Economizer Control Rate	1 sec	10 sec	30 sec
Proportional Window	1.0°F 0.6°C	10.0°F 5.5°C	30.0°F 16.6°C

Configuration Screen #37 - Economizer Voltage Output

```
VCCX2 Cnfg ID #
Econo Voltage Output
Min Volts: 2.0VDC
Max Volts: 10.0VDC
```

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.**

Description	Minimum	Default	Maximum
Min Economizer Voltage	0	2	10
Max Economizer Voltage	0	10	10

Configuration Screen #38 - 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.

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Configuration Screen #39 - 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 #40 - 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 Fan 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 AAON/WattMaster 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 #41 - 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 #42 - 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 #43 - 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.

Description	Minimum	Default	Maximum
Minimum Position Volts	0.0	0.0	10.0
Maximum Position Volts	0.0	10.0	10.0

Configuration Screen #44 - Heat Pump Config

VCCX Cnfg ID 101
Heat Pump Config
No Heat Pump
Use < Or > To Change

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 #45 - WSHP Glycol %

VCCX Cnfg ID 101
WSHP Glycol
Percentage: 0%
Use < Or > To Change

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%.**

Description	Minimum	Default	Maximum
WSHP Glycol Percentage	0%	0%	40%

Configuration Screen #46 - Aux Heat Type Value

VCCX Cnfg ID 101
Aux Heat Type
No Aux Heat
Use < Or > To Change

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 #47 - Dehumidification Control

VCCX2 Cnfg ID #
Dehum. Control:
None
USE < or > TO CHANGE

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.

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Configuration Screen #48 - Humidity Control E-BUS Sensor Type

```
VCCX2 Cnfg ID #
Humidity Control
Sensor: Space
USE < or > TO CHANGE
```

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

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

Configuration Screen #49 - Reheat Type

```
VCCX2 Cnfg ID #
Reheat Control
None
USE < or > TO CHANGE
```

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 #50 - Type of Airflow Station

```
VCCX2 Cnfg ID #
Airflow
Station: Paragon
USE < or > TO CHANGE
```

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

Configuration Screen #51 - Monitor Outdoor Air Airflow

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

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 #52 - Control Outdoor Air CFM

```
VCCX2 Cnfg ID #
Control Outdoor Air
CFM: NO
USE < or > TO CHANGE
```

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

Configuration Screen #53 - 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.**

Description	Minimum	Default	Maximum
Outdoor Air Airflow Duct Size	0	0	200.00

Configuration Screen #54 - 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.**

VCCX2 CONFIGURATION

VCCX2 Configuration Screens

Configuration Screen #55 - 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.**

Description	Minimum	Default	Maximum
Supply Air Airflow Duct Size	0	0	200.00

Configuration Screen #56 - 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 #57 - 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.**

Description	Minimum	Default	Maximum
Return Air Airflow Duct Size	0	0	200.00

Configuration Screen #58 - 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.**

Configuration Screen #59 - Exhaust Airflow Duct Size

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

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.**

Description	Minimum	Default	Maximum
Exhaust Airflow Duct Size	0	0	200.00

Configuration Screen #60 - Morning Warm Up

```
VCCX2 Cnfg ID #
Morning Warm Up
None
USE < or > TO CHANGE
```

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.

VCCX2 CONFIGURATION

VCCX2 Configuration Screens

Schedule Number

```
VCCX2 Cnfg ID #
AHU Uses Schedule
Number: 0
['0' For Internal]
```

The VCCX2 has an internal schedule. If you want the VCCX2 to use its own internal schedule, *enter <0>* for Internal.

External Schedules are available by using one of the GPC-X family of General Purpose Controllers. Depending on which generation of GPC-X Controller you have, you may have up to 5 or up to 8 schedules available to use. To use the schedules on one of these controllers, enter the number of the schedule on that controller (either 1 through 5 or 1 through 8) you will be using. **Default is 0.**

Description	Minimum	Default	Maximum
AHU Uses Schedule	0	0	8

Configuration Screen #62 - Daylight Savings Adjustment

```
VCCX2 Cnfg ID #
Daylight Adjustment
Start Date: 0
Stop Date: 0
```

If you are in a time zone that does not have daylight savings time or if you do not want to use this feature, leave these fields blank. Otherwise, *enter* the starting date for Daylight Savings time in the Start Date field and the ending date in the Stop Date field. For example, March 11 = 311 (DDMM). **Default is 0000.**

Description	Minimum	Default	Maximum
Start Date	0	0	1231
Stop Date	0	0	1231

NOTE: The U.S. government has the authority to determine the switch-over dates each year. Currently, the time changes the second Sunday in March and then switches back the first Sunday in November.

Configuration Screen #63 - Trend Log Rate

```
VCCX2 Cnfg ID #
Trend Log
Rate: 15Min
[ 1 - 120 Minutes ]
```

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.**

Configuration Screen #64 - Emergency Shutdown

```
VCCX2 Cnfg ID #
Emergency Shutdown
NO
USE < or > TO CHANGE
```

Select YES if a Smoke Detector/Firestat or other Emergency Shutdown input is connected to the Emergency Shutdown 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 #65 - Dirty Filter

```
VCCX2 Cnfg ID #
Dirty Filter
NO
USE < or > TO CHANGE
```

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 #66 - Broadcast OA Temp

```
VCCX2 Cnfg ID #
Broadcast OA Temp
NO
USE < or > TO CHANGE
```

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 #67 - Broadcast OA RH

```
VCCX2 Cnfg ID #
Broadcast OA RH
NO
USE < or > TO CHANGE
```

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.**

VCCX2 CONFIGURATION

VCCX2 Configuration Screens

Configuration Screen #68 - Broadcast Space Temperature

```
VCCX2 Cnfg ID #
Broadcast SPC Temp
NO
USE < or > TO CHANGE
```

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 #69 - Broadcast Space Humidity

```
VCCX2 Cnfg ID #
Broadcast SPC RH
NO
USE < or > TO CHANGE
```

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 #70 - Broadcast CO₂

```
VCCX2 Cnfg ID #
Broadcast CO2
NO
USE < or > TO CHANGE
```

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 #71 - Broadcast Building Pressure

```
VCCX2 Cnfg ID #
Broadcast Build. Pr.
NO
USE < or > TO CHANGE
```

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 #72 - Broadcast to Boxes

```
VCCX2 Cnfg ID #
Broadcast to Boxes
NO
USE < or > TO CHANGE
```

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

Configuration Screen #73-#76 - Cool/Heat Stage Delays

```
VCCX2 Cnfg ID #
Cool Stage Delays
Stage Up: 3 Min
Stage Down: 1 Min
```

```
VCCX2 Cnfg ID #
Cool Stage Delays
Min Run: 5 Min
Min Off: 3 Min
```

```
VCCX2 Cnfg ID #
Heat Stage Delays
Stage Up: 3 Min
Stage Down: 1 Min
```

```
VCCX2 Cnfg ID #
Heat Stage Delays
Min Run: 5 Min
Min Off: 1 Min
```

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.

Description	Minimum	Default	Maximum
Cooling Stage Up	3 Min	3 Min	15 Min
Cooling Stage Down	1 Min	1 Min	15 Min
Cooling Min Run Time	5 Min	5 Min	15 Min
Cooling Min Off Time	3 Min	3 Min	15 Min
Heating Stage Up	3 Min	3 Min	15 Min
Heating Stage Down	1 Min	1 Min	15 Min
Heating Min Run Time	2 Min	5 Min	15 Min
Heating Min Off Time	1 Min	1 Min	15 Min

VCCX2 CONFIGURATION

VCCX2 Configuration Screens

Configuration Screen #77 - Heat Pump Delays - Aux Heat

```
VCCX Cnfg ID 101
Heat Pump Delays
Aux Heat.: 3 Min
[ 0 - 60 Minutes ]
```

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.**

Description	Minimum	Default	Maximum
Aux Heat Delay	0 Min	3 Min	60 Min

Configuration Screen #78 - Heat/Cool Changeover Delay

```
VCCX2 Cnfg ID #
Heat Cool Changeover
Delay: 5Min
[ 0 - 20 Minutes ]
```

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 #79 - Return Air Bypass Control

```
VCCX2 Cnfg ID #
Return Air Bypass
Control: NO
USE < or > TO CHANGE
```

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 #80 - Morning Cool-Down Type

```
VCCX2 Cnfg ID #
Morning Cool-Down
None
USE < or > TO CHANGE
```

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 #81 - Evaporator Condenser Control

```
VCCX2 Cnfg ID #
Evap Condenser
Control: No
USE < or > TO CHANGE
```

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 Screens #82-88 - VCCX2 Relay Configuration Screens

VCCX2 Cnfg ID #
 On-Board Relay (2-8)
 Not Used
 USE < or > TO CHANGE

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):

- | | |
|--|---|
| <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 Screens #89-93 - EM1 Relay Configuration Screens

VCCX2 Cnfg ID #
 EM1 Relay (1-5)
 Not Used
 USE < or > TO CHANGE

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

- | | |
|---|---|
| <ul style="list-style-type: none"> • Not Used (Default) • Heat Stage • HP Emer Heat • Mod Cool Enable | <ul style="list-style-type: none"> • Cool Stage • HP Aux Heat • Mod Heat Enable • Warmup / Cooldown |
|---|---|

- ReHeat
- Low Ambient
- Economizer
- Occupied Mode
- Alarm Active
- LL Solenoid 2
- LL Solenoid 4
- Sump Heater
- 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.

Configuration Screens #94-105 - E-BUS 12 Relay Configuration Screens

VCCX2 Cnfg ID #
 12 Rly Bd Relay (1-12)
 Not Used
 USE < or > TO CHANGE

The E-BUS 12 Relay Expansion Board Relays #1-#12 are configurable for the following options (See Table 5, page 38 for Relay descriptions):

- | | |
|--|---|
| <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 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 #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.

VCCX2 CONFIGURATION

VCCX2 Configuration Screens

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

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

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.

```
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 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:

```
Change Setpoints
Configure Unit
Save/Copy/Restore
```

Scroll to the ‘Change Setpoints’ option and *press* **<ENTER>**. This will take you to the first Setpoint Screen shown below.

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).

Description	Minimum	Default	Maximum
HVAC Mode Setpoints Cooling	1°F (-17.2°C)	75°F (24°C)	110°F (43.3°C)
HVAC Mode Setpoints Heating	1°F (-17.2°C)	70°F (21°C)	110°F (43.3°C)

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 two 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 #20* should be set at least 2°F below the Cooling Supply Air Setpoint.

Description	Minimum	Default	Maximum
Hood On OAT Cool	1°F (-17.2°C)	75°F (24°C)	110°F (43.3°C)
Hood On OAT Heat	1°F (-17.2°C)	70°F (21°C)	110°F (43.3°C)

Setpoint Screen #3 - Unoccupied Offsets - Cooling & Heating

VCCX2 Spts ID:#
Unoccupied Offsets
Cooling: 30.0°F
Heating: 30.0°F

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.

Description	Minimum	Default	Maximum
Unoccupied Offsets Cooling	0°F (0°C)	30°F (16.6°C)	30°F (16.6°C)
Unoccupied Offsets Heating	0°F (0°C)	30°F (16.6°C)	30°F (16.6°C)

Setpoint Screen #4 - Mode Deadband

VCCX2 Spts ID:#
Mode Deadband
Setpoint: 1.0°F

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

Description	Minimum	Default	Maximum
HVAC Mode Select Deadband	0°F (0°C)	1°F (.6°C)	10°F (5.5°C)

Setpoint Screen #5 - Space Sensor Slide Adjust

VCCX2 Spts ID:#
Space Slide Offset
v1.15&Older: 0.0°F
v1.16&Newer: 0

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 down 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.

Description	Minimum	Default	Maximum
v.1.15 & Older Space Sensor Slide Adjust	0.0°F (0°C)	0.0°F (0°C)	10.0°F (5.5°C)
v.1.16 & Newer Space Sensor Slide Adjust	0	0	10

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VCCX2 Setpoint Screens

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 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.

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

Description	Minimum	Default	Maximum
Space Sensor Push-Button Override Duration	0.0 Hr	2.0 Hr	8.0 Hr

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.

Description	Minimum	Default	Maximum
Controlling Sensor High Alarm Offset	0°F (0°C)	30°F (16.6°C)	50°F (27.7°C)

Setpoint Screen #11 - Controlling Sensor Low Alarm Offset

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

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.

Description	Minimum	Default	Maximum
Controlling Sensor Low Alarm Offset	0°F (0°C)	30°F (16.6°C)	50°F (27.7°C)

Setpoint Screen #12 - Outdoor Dewpoint Setpoint

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

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.

Description	Minimum	Default	Maximum
Outdoor Dewpoint Setpoint	35°F (1.7°C)	55°F (12.8°C)	80°F (26.6°C)

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

VCCX2 Spts ID:#
Indoor RH Setpoint
Disable/Lo Rst: 50%
Enable/Hi Rst: 60%

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 Scr) 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 (HiRst Lmt) and the 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.

Description	Minimum	Default	Maximum
Indoor RH Setpoint Disable/Low Reset Source	0%	50%	100%
Indoor RH Setpoint Enable/High Reset Source	0%	60%	100%

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

VCCX2 Spts ID:#
Coil Temp Setpoint
Hi Rst Lmt: 45°F
Lo Rst Lmt: 40°F

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.

Description	Minimum	Default	Maximum
Coil Temp Setpoint High Reset Limit	35°F (1.7°C)	45°F (7.2°C)	70°F (21.1°C)
Coil Temp Setpoint Lo Reset Limit	35°F (1.7°C)	40°F (4.5°C)	70°F (21.1°C)

Setpoint Screen #15 - Static Pressure Setpoint & Deadband

VCCX2 Spts ID:#
Static Pressure
Setpoint: 1.50"
Deadband: 0.10"

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.

Description	Minimum	Default	Maximum
Static Pressure Spt	0.10" WG	1.50" WG	3.0" WG
Deadband	0.01" WG	0.10" WG	0.50" WG

VCCX2 SETPOINTS

VCCX2 Setpoint Screens

Setpoint Screen #16 - VFD Speed Minimums Cool/Vent Modes

VCCX2 Spts ID:#
 VFD Speed Limits
 Min Cool: 30%
 Min Vent: 20%

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 #19*. 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.

Description	Minimum	Default	Maximum
Minimum Cool	0%	30%	100%
Minimum Vent	0%	20%	100%

Setpoint Screen #17 - VFD Speed Limits Min/Max Heat

VCCX2 Spts ID:#
 VFD Speed Limits
 Min Heat: 50%
 Max Heat: 100%

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 #21*.

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.

Description	Minimum	Default	Maximum
Minimum Heat	0%	50%	100%
Maximum Heat	0%	100%	100%

Setpoint Screen #18 - Supply Air Cooling Setpoint and High Reset Limit

VCCX2 Spts ID:#
 Supply Air Cooling
 Setpoint....: 55.0°F
 Hi Rst Limit: 55.0°F

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 be 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).

Description	Minimum	Default	Maximum
SAT Cooling Setpoint	30°F (-1.1°C)	55°F (12.8°C)	80°F (26.6°C)
Cool High Reset Limit	0°F (-17.7°C)	55°F (12.8°C)	100°F (37.7°C)

Setpoint Screen #19 - Cool Reset Source Setpoints - High Reset/Low Reset

VCCX2 Spts ID:#
 Cool Rst Source Spts
 High Reset: 75.0°F
 Low Reset: 70.0°F

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 #18*. 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 #18*. 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 #18*. 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 #18*.

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 #16*. 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 #16*) 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 #18*. 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 #18*. 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.

Description	Minimum	Default	Maximum
High Reset Limit	0°F (-17.7°C)	75°F (24°C)	150°F (65.5°C)
Low Reset Limit	-30°F (-34.4°C)	70°F (21°C)	150°F (65.5°C)

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

VCCX2 Spts ID:#
Supply Air Heating
Setpoint: 120.0°F
Hi Rst Lmt: 120.0°F

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.

Description	Minimum	Default	Maximum
SAT Heating Spt	40°F (4.5°C)	120°F (48°C)	240°F (115.5°C)
Reset High Limit	0°F (-17.7°C)	120°F (48°C)	250°F (121.1°C)

Setpoint Screen #21 - Heat Reset Source Setpoints - High Reset/Low Reset

VCCX2 Spts ID:#
Heat Rst Source Spts
High Reset: 75.0°F
Low Reset: 70.0°F

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 #20*. At the High Reset Source Temperature, the Supply Air Setpoint will be reset to the Supply Air Heating Setpoint configured in *Setpoint Screen #20*. 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 #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 High Reset Limit values set in *Setpoint Screen #20*.

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 #17*. 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 #17*. 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 #17*.

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 #20*. 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 #20*. 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.

Description	Minimum	Default	Maximum
High Reset Limit	0°F (-17.7°C)	75°F (24°C)	150°F (65.5°C)
Low Reset Limit	-30°F (-34.4°C)	70°F (21°C)	150°F (65.5°C)

VCCX2 SETPOINTS

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Setpoint Screen #22 - Stage Off Window - Cooling/Heating

```
VCCX2 Spts ID:#
Stage Off Window
Cooling: 5.0°F
Heating: 5.0°F
```

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.

Description	Minimum	Default	Maximum
Stage Off Window Cooling	1°F (.6°C)	5°F (2.8°C)	30°F (16.6°C)
Stage Off Window Heating	1°F (.6°C)	5°F (2.8°C)	50°F (27.7°C)

Setpoint Screen #23 - Mod Heat Proportional Window and Time Period

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

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° Proportional Window, if the Supply Air Temperature is 5° or more from setpoint, the signal change will be 10% per time period. At 4° difference, the signal change will be 8% per time period. By the time the difference is 1°, the signal change will be 2% per time period. With a Proportional Window of 2°, if you are 2° or more from setpoint, the amount of signal change will be 10% per time period, and at 1° 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 Heat Proportional Window	.1°F (.1°C)	10°F (5.5°C)	30°F (16.6°C)
Mod Heat Time Period	5 sec	30 sec	240 sec

Setpoint Screen #24 - Mod Cool Proportional Window and Time Period

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

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° Proportional Window, if the Supply Air Temperature is 5° or more from setpoint, the signal change will be 10% per time period. At 4° difference, the signal change will be 8% per time period. By the time the difference is 1°, the signal change will be 2% per time period. With a Proportional Window of 2°, if you are 2° or more from setpoint, the amount of signal change will be 10% per time period, and at 1° 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 #25 - Head Pressure Setpoints - Cooling and Reheat

```
VCCX2 Spts ID:#
Head Pressure Spts
Cooling: 315psi
Reheat: 400psi
```

If a Head Pressure Transducer is connected to the RSM Module you can control a Condenser Fan or a Condenser Water Valve to maintain these Head Pressure Setpoints in the Cooling and Dehumidification Reheat Modes.

Description	Minimum	Default	Maximum
Cooling Head Pressure Setpoint	240 PSI	315 PSI	420 PSI
Reheat Head Pressure Setpoint	240 PSI	400 PSI	420 PSI

Setpoint Screen #26 - 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.

Description	Minimum	Default	Maximum
WSHP Cooling Head Pressure Setpoint	200 PSI	235 PSI	350 PSI
WSHP Reheat Head Pressure Setpoint	200 PSI	350 PSI	350 PSI

Setpoint Screen #27 - 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.

Description	Minimum	Default	Maximum
Condenser H2O Valve Minimum Position	25%	25%	100%

Setpoint Screen #28 - 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.

Description	Minimum	Default	Maximum
Condenser Fan Cycle On/Off Enable	245 PSI	310 PSI	470 PSI
Condenser Fan Cycle Deadband	35 PSI	50 PSI	100 PSI

Setpoint Screen #29 - Condenser Fan Cycle - Reheat Offset Enable

VCCX2 Spts ID:#
 Condenser Fan Cycle
 Reheat Offset
 Enable: 50psi

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

Description	Minimum	Default	Maximum
Condenser Fan Cycle Reheat Offset Enable	50 PSI	50 PSI	150 PSI

Setpoint Screen #30 - Use Evaporator Condenser As 1st Stage Below This OA Temp

VCCX2 Spts ID:#
 Use Evap Cond as 1st
 Stage Below This OA
 Temp: 70.0°F

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

Description	Minimum	Default	Maximum
Use Evaporator Condenser as 1st Stage Below This OA Temperature	50°F (10.0°C)	70°F (21.1°C)	80°F (26.6°C)

Setpoint Screen #31 - Evaporator Head Pressure Setpoint Deadband

VCCX2 Spts ID:#
 Evap Head Pres Setpt
 Deadband: 10psi

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.

Description	Minimum	Default	Maximum
Evaporator Head Pressure Setpoint Deadband	1 PSI	10 PSI	100 PSI

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Setpoint Screen #32 - Sump Enable Temperatures

VCCX2 Spts ID:#
Sump Enable Temps
Heater: 40.0°F
Drain: 32.0°F

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.

Description	Minimum	Default	Maximum
Heater Enable Temperature Setpoints	30°F (-1.1°C)	40°F (4.4°C)	60°F (15.5°C)
Drain Enable Setpoints	32°F (0.0°C)	32°F (0.0°C)	40°F (4.4°C)

Setpoint Screen #33 - Economizer Enable Setpoint

VCCX2 Spts ID:#
Economizer Enable
Setpoint: 55.0°F

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.

Description	Minimum	Default	Maximum
Economizer Enable	-30°F (-34.4°C)	55°F (12.8°C)	80°F (26.6°C)

Setpoint Screen #34 - Waterside Economizer Entering H2O Control Deadband

VCCX2 Spts ID:#
WSE Entering H2O
Control DB: 3.0°F

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).

Description	Minimum	Default	Maximum
Waterside Economizer Entering H2O Control Deadband	0.0°F (0.0°C)	3.0°F (1.67°C)	20.0°F (11.1°C)

Setpoint Screen #35 - Economizer Minimum Damper Position

VCCX2 Spts ID:#
Economizer Min
Damper Pos: 10%

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.

Description	Minimum	Default	Maximum
Economizer Min Position	0%	10%	100%

Setpoint Screen #36 - Maximum Economizer Position in Heat Mode

VCCX2 Spts ID:#
Max Econo Pos In
Heat Mode: 50%

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 CO₂ Setpoint.

Description	Minimum	Default	Maximum
Maximum Economizer Position in Heat Mode	0%	50%	100%

Setpoint Screen #37 - Minimum Outdoor Airflow Setpoint & Deadband

VCCX2 Spts ID:#
Min. Outdoor Airflow
Setpoint.: 2.00KCFM
Deadband.: 200CFM

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.

Description	Minimum	Default	Maximum
Minimum Outdoor Airflow Setpoint	0.10 kCFM	2.00 kCFM	200 kCFM
Deadband	10 CFM	200 CFM	9999 CFM

Setpoint Screen #38 - Max Damper Position or CFM Value in High CO₂ Level

VCCX2 Spts ID:#
High CO₂
Max OA kCFM: 2.0
Max Econo Pos.: 50%

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 CO₂ override operation when the CO₂ level is equal to or greater than the Max CO₂ 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 CO₂ operation.

Description	Minimum	Default	Maximum
Max OA kCFM	.10 kCFM	2.0 kCFM	200 kCFM
Maximum Economizer Position In High CO ₂	Economizer Min Position	50%	100%

Setpoint Screen #39 - CO₂ Setpoints Min/Max

VCCX2 Spts ID:#
CO₂ Setpoints
Min CO₂: 900ppm
Max CO₂: 1000ppm

The Min CO₂ Setpoint is the threshold CO₂ level at which the Economizer Min Damper Position (*Setpoint Screen #35*) 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 #38*). In between those CO₂ levels, the Economizer Minimum Position will be proportionally reset between the values set in *Setpoint Screens #35 and #38*.

Description	Minimum	Default	Maximum
Minimum CO ₂ Level	0 PPM	900 PPM	2000 PPM
Maximum CO ₂ Level	0 PPM	1000 PPM	2000 PPM

Setpoint Screen #40 - CO₂ Altitude Setpoint

VCCX2 Spts ID:#
Altitude
Setpoint: 1000ft

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.

Description	Minimum	Default	Maximum
Altitude Setpoint	0 Feet	1000 Ft.	15,000 Ft.

Setpoint Screen #41 - Building Pressure Setpoint & Deadband

VCCX2 Spts ID:#
Building Pressure
Setpoint: 0.02"
Deadband: 0.01"

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 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.

VCCX2 SETPOINTS

VCCX2 Setpoint Screens

- **Supply Fan VFD** – Contact AAON/WattMaster 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.

Description	Min.	Default	Max.
Building Pressure Spt	-0.20" WG	0.02" WG	0.20" WG
Building Pressure Deadband	0.01" WG	0.01" WG	0.10" WG
Exhaust Static Pressure Spt	0.10" WG	1.50" WG	3.0" WG
Exhaust Pressure Deadband	0.01" WG	0.10" WG	0.50" WG

Setpoint Screen #42 - OAT Lockouts - Comp Cool/Comp Heat

VCCX2 Spts ID:#
 OAT Lockouts
 Comp Cool: 50.0°F
 Comp Heat: 35.0°F

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.

Description	Minimum	Default	Maximum
OAT Lockout Compressor Cooling	-30°F (-34.4°C)	50°F (10°C)	100°F (37.7°C)
OAT Lockout Compressor Heating	-30°F (-34.4°C)	35°F (1.6°C)	100°F (37.7°C)

Setpoint Screen #43 - OAT Lockouts - Heat

VCCX2 Spts ID:#
 OAT Lockouts
 Heat: 90.0°F

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

Description	Minimum	Default	Maximum
OAT Lockouts Heating	-30°F (-34.4°C)	90°F (32.2°C)	150°F (65.5°C)

Setpoint Screen #44 - Supply Air Cutoffs - Cooling/Heating

VCCX2 Spts ID:#
 Supply Air Cutoffs
 Cooling: 40.0°F
 Heating: 150.0°F

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.

Description	Minimum	Default	Maximum
Cooling SAT Cutoff	0°F (-17.7°C)	40°F (4.5°C)	100°F (37.7°C)
Heating SAT Cutoff	0°F (-17.7°C)	150°F (65.5°C)	250°F (121.1°C)

Setpoint Screen #45 - Hot Water Valve Protection Position

VCCX2 Spts ID:#
 Hot Water Valve
 Protection Pos: 0%

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%.**

Description	Minimum	Default	Maximum
Hot Water Valve Protection Position	0%	0%	100%

Setpoint Screen #46 - Preheat Relay Setpoint

VCCX2 Spts ID:#
Preheat Relay
Setpoint: 30.0°F

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.

Description	Minimum	Default	Maximum
Preheat Setpoint	-30°F (-34.4°C)	30°F (-1.1°C)	70°F (21.1°C)

Setpoint Screen #47 - 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.

Description	Minimum	Default	Maximum
Low Ambient Setpoint	-30°F (-34.4°C)	30°F (-1.1°C)	70°F (21.1°C)

Setpoint Screen #48 - 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 #49*.

Description	Minimum	Default	Maximum
Heat Pump Defrost Interval	10 Min	30 Min	120 Min

Setpoint Screen #49 - 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 #48*). 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.

Description	Minimum	Default	Maximum
Adaptive Defrost Adj.	0 Min	0 Min	30 Min

Setpoint Screen #50 - 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.

Description	Minimum	Default	Maximum
Heat Wheel Defrost	0°F (-17.7°C)	30°F (-1.1°C)	50°F (10°C)

VCCX2 SETPOINTS

VCCX2 Setpoint Screens

Setpoint Screen #51 - Morning Warm Up / Cool Down Max Length & Target Temp

VCCX2 Spts ID:#
 Morning WarmUp
 Max Length: 60 Min
 Target Temp: 70.0° F

When the VCCX2 is configured for Morning Warm-up and/or Morning Cool Down and the controller enters the Occupied Mode, the VCCX2 looks at the Return Air Temperature to determine if the unit should initiate Morning Warm-up or Cool Down Mode.

If the Return Air Temperature is below the Morning Warm-up / Cool Down 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 / Cool Down Target Temperature or until the Max Length Setpoint time expires.

If the Return Air Temperature is above the Morning Warm-up / Cool Down Target Temperature and the Max Length is greater than “0,” the VCCX2 will initiate Cooling. This is considered Morning Cool Down and will run until the Return Air Temperature falls below the Morning Warm-up / Cool Down Target Temperature or until the Max Length Setpoint time expires.

Description	Minimum	Default	Maximum
Morning Warm Up / Cool Down Max Length	0 Min	60 Min	240 Min
Morning Warm Up / Cool Down Target Temp	50°F (10°C)	70°F (21°C)	90°F (32.2°C)

Setpoint Screen #52 - 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.

Description	Minimum	Default	Maximum
SZ VAV Integral Constant	0	0	10

Setpoint Screen #53 - 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.

Description	Minimum	Default	Maximum
Damper Factor	0%	40%	100%

Setpoint Screen #54 - Warm-Up Supply Air Temperature Setpoint

VCCX2 Spts ID:#
 Warmup Supply Air
 Setpoint: 100.0°F

Heating will be controlled to this Supply Air Setpoint during Morning Warm-Up.

Description	Minimum	Default	Maximum
Warm-Up SAT Setpoint	40°F (4.5°C)	100°F (37.7°C)	240°F (115.5°C)

Setpoint Screen #55 - Cool-Down Supply Air Temperature Setpoint

VCCX2 Spts ID:#
 Cooldown Supply Air
 Setpoint: 55.0°F

Cooling will be controlled to this Supply Air Setpoint during Cool-Down.

Description	Minimum	Default	Maximum
Cool-Down SAT Setpoint	30°F (-1.1°C)	55°F (12.7°C)	80°F (26.6°C)

Setpoint Screen #56 - PREHEAT-X / PREHEAT-EXT Cool Mode and Heat Mode Setpoints

```
VCCX2 Spts ID:#
Preheat-X Spts
Cool Mode: 40.0°F
Heat Mode: 60.0°F
```

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.

Description	Minimum	Default	Maximum
Preheat-X Cool Mode Setpoint	35°F (1.67°C)	40.0°F (4.5°C)	90.0°F (32.2°C)
Preheat-X Heat Mode Setpoint	35°F (1.67°C)	60.0°F (15.5°C)	90.0°F (32.2°C)
Preheat-EXT Cool Mode Setpoint	0°F (-17.7°C)	40.0°F (4.5°C)	90.0°F (32.2°C)
Preheat-EXT Heat Mode Setpoint	0°F (-17.7°C)	60.0°F (15.5°C)	90.0°F (32.2°C)

Setpoint Screen #57 - PREHEAT-X / PREHEAT-EXT Vent Mode Setpoint

```
VCCX2 Spts ID:#
Preheat-X Spts
Vent Mode: 50.0°F
```

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.

Description	Minimum	Default	Maximum
Preheat-X Vent Mode Setpoint	35°F (1.67°C)	50.0°F (10.0°C)	90.0°F (32.2°C)
Preheat-EXT Vent Mode Setpoint	0°F (-17.7°C)	50.0°F (10.0°C)	90.0°F (32.2°C)

Setpoint Screen #58 - Superheat Setpoint

```
VCCX2 Spts ID:#
Superheat
Setpoint: 15
```

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

Description	Minimum	Default	Maximum
Superheat Setpoint	1	15	30

Setpoint Screen #59 - Space Sensor Calibration - Current and Offset

```
VCCX2 Spts ID:#
Space Sensor Cal
Current: 0.0°F
Offset.: 0.0°F
```

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.

Description	Minimum	Default	Maximum
Space Sensor Calibration Offset	-100.0°F (-55.5°C)	0.0°F (0°C)	100.0°F (55.5°C)

Setpoint Screen #60 - Return Air Temperature Sensor Calibration - Current and Offset

```
VCCX2 Spts ID:#
Return Sensor Cal
Current: 0.0°F
Offset.: 0.0°F
```

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.

Description	Minimum	Default	Maximum
Return Air Sensor Calibration Offset	-100.0°F (-55.5°C)	0.0°F (0°C)	100.0°F (55.5°C)

VCCX2 SETPOINTS

VCCX2 Setpoint Screens

Setpoint Screen #61 - SAT Sensor Calibration - Current and Offset

```
VCCX2 Spts ID:#  
SAT Sensor Cal  
Current: 0.0°F  
Offset.: 0.0°F
```

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.

Description	Minimum	Default	Maximum
Sensor Calibration SAT	-100.0°F (-55.5°C)	0.0°F (0°C)	100.0°F (55.5°C)

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

```
VCCX2 Spts ID:#  
OAT Sensor Cal  
Current: 0.0°F  
Offset.: 0.0°F
```

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.

Description	Minimum	Default	Maximum
OAT Sensor Calibration Offset	-100.0°F (-55.5°C)	0.0°F (0°C)	100.0°F (55.5°C)

Setpoint Screen #63 - Entering H2O Sensor Calibration - Current and Offset

```
VCCX2 Spts ID:#  
Entering H2O Cal  
Current: 0.0°F  
Offset.: 0.0°F
```

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.

Description	Minimum	Default	Maximum
Entering H2O Sensor Calibration Offset	-100.0°F (-55.5°C)	0.0°F (0°C)	100.0°F (55.5°C)

Setpoint Screen #64 - CO₂ Sensor Calibration - Current and Offset

```
VCCX2 Spts ID:#  
CO2 Sensor Cal  
Current: 0ppm  
Offset.: 0ppm
```

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.

Description	Minimum	Default	Maximum
Sensor Calibration CO ₂	-500.0 PPM	0.0 PPM	500.0 PPM

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 Economizer Enabled or Disabled and Current Economizer Open Percentage
- Screen #19 Economizer Feedback Percentage for Title 24 Economizer
- Screen #20 Economizer in IAQ Mode Yes/No and Economizer Minimum Percentage
- Screen #21 Current CO₂ Level, Minimum Setpoint, and Maximum Setpoint
- Screen #22 Outdoor Air CFM and Supply Air CFM
- Screen #23 Return Air CFM and Exhaust Air CFM

- Screen #24 Current Duct Static Pressure, Current Duct Static Pressure Setpoint and Output Percentage
- Screen #25 Current Building Pressure and Setpoint
- Screen #26 Building Pressure Exhaust Fan Status and Output Signal Percentage
- Screen #27 Return Air Damper Signal & Return Air Bypass Damper Signal
- Screen #28 Reset Voltage Signal
- Screen #29 Entering Water Temperature
- Screens #30-37 VCCX2 Relays
- Screens #38-42 VCCX2 EM1 Relays
- Screens #43-54 12 Relay Expansion Module Relays
- Screens #55-## Alarm Status Screens

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.

VCCX2 STATUS

VCCX2 Status Screens

Status Screen #1 - Date and Time

```
VCCX2 v1.02 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)

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 #2 - Application Type, Schedule Mode & HVAC Mode

```
VCCX2 v1.02 ID #  
App Type  
Schedule Mode  
HVAC Mode
```

Line 2 App Type:

Constant Volume	Single Zone VAV
VAV	VAV w/Tempering
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 #4 - Space and Return Temperature & Slide Adjust

```
VCCX2 v1.02 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 v1.02 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°.

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

```
VCCX2 v1.02 ID #  
Ctrl Temp: 0.0°F  
Cool Spt: 0.0°F  
Heat Spt: 0.0°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 v1.02 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 Cool Position

```
VCCX2 v1.02 ID #
Cooling Outputs
Active Stages: XX
Mod Cool Pos.: XXX%
```

Line 2 Cooling Active Stages

This line will display the number of stages of Cooling that are currently active.

Line 3 Current Modulating Cooling Output Signal Percentage

Indicates the percentage output signal to the Modulating Compressor or Chilled Water Valve.

Status Screen #8 - Heating Enabled

```
VCCX2 v1.02 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 v1.02 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 v1.02 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

```
VCCX2 v1.02 ID #
Space RH: XXX.X%
Return RH: XXX.X%
RH Setpoint: XXX.X%
```

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%.

VCCX2 Status Screens

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 %

```
VCCX2 v1.02 ID #
      MHGRV-X
      Enabled: YES/NO
      Position: XXX%
```

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 Current MHGRV-X Reheat Valve Output Signal Percentage
Indicates the percentage output signal being supplied by the MHGRV-X Controller when you have one connected to the VCCX2 Controller.

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

```
VCCX2 v1.02 ID #
      Preheat-X
      Enabled: YES/NO
      Lvg Air Spt: 0.0°F
```

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

```
VCCX2 v1.02 ID #
      Preheat-X Temps
      Leaving Air: 0.0°F
      Entering Air: 0.0°F
```

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.

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

```
VCCX2 v1.02 ID #
      Preheat-X Status
      Mod Pos: XXX%
      Active Stages: X
```

Line 3 Current PREHEAT-X Modulating Position
If you have a PREHEAT-X Controller connected to the VCCX2 Controller and are using Modulating Heat, this is the current modulating heat signal.

Line 4 Current PREHEAT-X Active Stages
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.

Status Screen #16 - OA Drybulb and Humidity

```
VCCX2 v1.02 ID #
      Outdoor Conditions
      Drybulb: 0.0°F
      Humidity: XXX%
```

Line 3 Current Outdoor Air Drybulb
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.

Line 4 Current Outdoor Air Relative Humidity

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%.

Status Screen #17 - OA Wetbulb and Dewpoint

```
VCCX2 v1.02 ID #
Outdoor Conditions
Wetbulb: 0.0°F
Dewpoint: 0.0°F
```

Line 3 Current Wetbulb Temperature

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.

Line 4 Current Calculated Outdoor Air Dewpoint Temperature

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.

Status Screen #18 - Economizer Enabled/WSE Enabled and Economizer Position

```
VCCX2 v1.02 ID #
Economizer
Enabled: NO
Position: XXX%
```

Line 3 Economizer Enabled or Water Side Economizer Enabled

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.

Line 4 Current Economizer Open Percentage

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%.

Status Screen #19 - Title 24 Economizer Feedback

```
VCCX2 v1.02 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 #20 - Economizer in IAQ Mode and Minimum Economizer Position

```
VCCX2 v1.02 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 #21 - CO₂ Level and Setpoints

```
VCCX2 v1.02 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 #33*.

Line 4 Maximum CO₂ Setpoint

This is the Maximum CO₂ Setpoint that was configured in *Setpoint Screen #33*.

VCCX2 Status Screens

Status Screen #22 - Outdoor Air CFM & Supply Air CFM

```
VCCX2 v1.02 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 #23 - Return Air CFM & Exhaust Air CFM

```
VCCX2 v1.02 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 #24 - Duct Static Pressure Setpoint & Output %

```
VCCX2 v1.02 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 Confg].

Status Screen #25 - Building Pressure & Setpoint

```
VCCX2 v1.02 ID #  
Building Pressure  
Pressure: XXX"  
Setpoint: X.XX"
```

Line 3 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 4 Building Pressure Setpoint

This is the Building Static Pressure Setpoint configured in *Setpoint Screen #36*.

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

Status Screen #26 - Building Pressure Exhaust Fan and Output %

```
VCCX2 v1.02 ID #  
Building Pressure  
Exhaust Fan: 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 Confg].

Status Screen #27 - 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 Cnfg] 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 Cnfg] 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 #28 - 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 #29 - 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 #30-#37 - VCCX2 Relays

```
VCCX2 v1.02 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 29, this line will display FAN.
On screens 30-36, this line will indicate the relay's use. Possible options are:
 - 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
- 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. Possible options are as follows:

```
ON                OFF
FORCED ON        FORCED OFF
```

VCCX2 Status Screens

Status Screens #38-#42 - EM1 Relays

```
VCCX2 v1.02 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 37-41, this line will indicate the relay's use. Possible options are:

- 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

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. Possible options are as follows:

```
ON OFF  
FORCED ON FORCED OFF
```

Status Screens #43-#54 - 12 Relay Expansion Module Relays

```
VCCX2 v1.02 ID #  
12 Rly Bd Rly 1-12  
Relay Name  
ON/OFF
```

Line 2 On Board Relays 1-12 Status

Line 3 Current description of what this Relay is configured for

On screens 42-53, this line will indicate the relay's use. Possible options are:

- 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

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. Possible options are as follows:

```
ON OFF  
FORCED ON FORCED OFF
```

Status Screens #54-## - Alarm Status

```
VCCX2 v1.02 ID #
NO ALARMS PRESENT
```

```
VCCX2 v2.00 ID 101
ALARMS PRESENT
Push Alarms
Button to View
```

Line 2 NO ALARMS OR ALARMS PRESENT

Lines

3-4 Push Alarms Button to View

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

```
Enter Unit Address
Then Press Enter
Selected Unit #_1
Press Down
```

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*.

RSM Configuration Screens

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 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* **<↓>**. You will then see the *Configuration Selection Screen* below:

```
VCCX2 CONFIGURATION
RSM CONFIGURATION

Select & 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>**.

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 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>**.

```
VCCX2 CONFIGURATION
RSM CONFIGURATION

Select & 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.

RSM CONFIGURATION

RSMV Configuration Screens

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

RSM#1 CONFIGURATION
Condenser Options
Push > for options
USE < or > TO CHANGE

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

RSM#2-#4 Cond Options
Config Same as RSM 1
Push > for options
USE < or > TO CHANGE

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

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

RSM#1-4 CONFIGURATION
Compressor Option
DUAL
USE < or > TO CHANGE

Options are DUAL or SINGLE. Default is DUAL.

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

RSM#1-4 CONFIGURATION
Compressor Type
1ST VFD / 2ND FIXED
USE < or > TO CHANGE

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

RSM#1-4 CONFIGURATION
Evap Coil EXV
Uses EXV-1 Only
USE < or > TO CHANGE

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

RSM#1-4 CONFIGURATION
Heat Pump Cond EXV
Uses EXV-3 Only
USE < or > TO CHANGE

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

RSM#1-4 CONFIGURATION
Single Comp Startup
No
USE < or > TO CHANGE

Options are No or Yes. Default is NO.

RSM CONFIGURATION

RSMD Configuration Screens

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

RSM CONFIGURATION
Dig Comp Safety
Stage Off Pos: 11%
Period: 120Min

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

RSM#1 CONFIGURATION
Condenser Options
2 Cond per RSMD
USE < or > TO CHANGE

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

RSM#2-#4 Cond Options
Config Same as RSM 1
2 Cond per RSMD
USE < or > TO CHANGE

- 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

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.**

RSM Configuration Screens

RSM #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.**

RSM #1, #2, #3, #4 Configuration Subscreen #2 - Compressor #1 Type

RSM#1-4 Configuration
Compressor #1 Type
MODULATING
USE < or > TO CHANGE

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

RSM #1, #2, #3, #4 Configuration Subscreen #3 - Compressor #2 Type

RSM#1-4 Configuration
Compressor #2 Type
MODULATING
USE < or > TO CHANGE

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

RSM #1, #2, #3, #4 Configuration Subscreen #4 - Refrigerant Circuit

RSM#1-4 Configuration
Refrigerant Circuit
Split
USE < or > TO CHANGE

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

RSM #1, #2, #3, #4 Configuration Subscreen #5 - Fan Cycle Control

RSM#1-4 Configuration
Fan Cycle Control
No
USE < or > TO CHANGE

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

RSM #1, #2, #3, #4 Configuration Subscreen #6 - Fixed Condenser Fan

RSM#1-4 Configuration
Fixed Condenser Fan
No
USE < or > TO CHANGE

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

RSM #1, #2, #3, #4 Configuration Subscreen #7 - 2 Stage Compressor

RSM#1-4 Configuration
2 Stage Compressor
No
USE < or > TO CHANGE

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

RSM #1, #2, #3, #4 Configuration Subscreen #8 - Single Compressor Startup

RSM#1-4 Configuration
Single Comp Startup
No
USE < or > TO CHANGE

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

RSM #1, #2, #3, #4 Configuration Subscreen #9 - WSE Operation

RSM#1-4 Configuration
WSE Operation
No
USE < or > TO CHANGE

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

RSMV & RSMV-HP Status Screens

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

```
RSM #1
RSM #2
RSM #3
Select & Press Enter
```

```
RSM #4

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 <↓>* to scroll through the screens.

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

```
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.

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:

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

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

```
RSM #1-4 Status
Coil Temp: 0.0°F
Coil Setpt: 0.0°F
Suction Pr: 0 PSI
```

- 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.

RSMV & RSMV-HP Status Screens**RSM Status Screen #3 - Coil (Suction Line) Temperature 1, Superheat 1, and Expansion Valve 1 Position**

```

RSM #1-4 Status
Coil Tmp 1: 0.0°F
Superheat 1: 0.0°F
EXV 1 Pos: 0.0%

```

- Line 2 Coil (Suction Line) Temperature 1**
Current Coil (Suction Line) Temperature 1.
- Line 3 Superheat 1**
Current Superheat temperature for Expansion Valve 1.
- Line 4 Expansion Valve 1 Position**
Modulating position for Expansion Valve 1.

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

```

RSM #1-4 Status
Coil Tmp 2: 0.0°F
Superheat 2: 0.0°F
EXV 2 Pos: 0.0%

```

- Line 2 Coil (Suction Line) Temperature 2**
Current Coil (Suction Line) Temperature 2.
- Line 3 Superheat 2**
Current Superheat temperature for Expansion Valve 2.
- Line 4 Expansion Valve 2 Position**
Modulating position for Expansion Valve 2.

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

```

RSM #1-4 Status
Head Pr: 0psi
Setpoint: 0psi
Cond. Signal: 0.0%

```

- Line 2 Head Pressure 1**
If a Head Pressure Transducer is connected, this line indicates the current Head Pressure reading.
- Line 3 Head Pressure Setpoint**
The current Head Pressure Setpoint.
- Line 4 Condenser Signal**
The current percentage signal being sent to the Condenser Fan or Valve in order to maintain the Head Pressure Setpoint.

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

```

RSM HP #1-4 Status
Coil Tmp 3: 0.0°F
Superheat 3: 0.0°F
EXV 3 Pos: 0.0%

```

- Line 2 Coil (Suction Line) Temperature 3**
Current Coil (Suction Line) Temperature 3.
- Line 3 Superheat 3**
Current Superheat temperature for Expansion Valve 3.
- Line 4 Expansion Valve 3 Position**
Modulating position for Expansion Valve 3.

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

```

RSM HP #1-4 Status
Coil Tmp 4: 0.0°F
Superheat 4: 0.0°F
EXV 4 Pos: 0.0%

```

- Line 2 Coil (Suction Line) Temperature 4**
Current Coil (Suction Line) Temperature 4.
- Line 3 Superheat 4**
Current Superheat temperature for Expansion Valve 4.
- Line 4 Expansion Valve 4 Position**
Modulating position for Expansion Valve 4.

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

```

RSM HP #1-4 Status
Leaving H2O: 0.0°F
H2O Flow: NO

```

- Line 2 Leaving Water Temperature**
Current Leaving Water Temperature.
- Line 3 Water Flow**
Current Status of Proof of Water Flow.

RSM Status Screen #9 - Alarms

```

RSM #1-4 Alarms
Active Alarms: No
See Active Alarms
on the RSM LCD

```

RSMD Status Screens

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* <↓>. 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
```

```
RSM #4

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* <↓> to scroll through the screens.

RSMD Status Screen #1 - A1 Compressor Enabled and Current Position

```
RSMD #1-4 A1 Status
Compressor: ON/OFF
Comp Position: 0%
```

- 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

```
RSMD #1-4 A1 Status
Compressor Discharge
Temp: 0.0°F
```

- Line 2-3 **Compressor Discharge Temperature**
Current Average Discharge Temperature

RSMD Status Screen #3 - A1 Coil (Saturation) Temp & Setpoint & Suction Pressure

```
RSMD #1-4 A1 Status
Coil Temp: 0.0°F
Coil Setpt: 0.0°F
Suction Pr: XXX PSI
```

- 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

RSMD Status Screens

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

```

RSMD #1-4 A1 Status
  Head Pr: Opsi
  Setpoint: Opsi
  Cond Signal: 0.0%
  
```

Line 2 Head Pressure

If a Head Pressure Transducer is connected, this line indicates the current Head Pressure reading.

Line 3 Head Pressure Setpoint

The current Head Pressure Setpoint.

Line 4 Condenser Signal

The current percentage signal being sent to the Condenser Fan or Valve in order to maintain the Head Pressure Setpoint.

RSMD Status Screen #5 - A2 Compressor Enable and Current Position

```

RSMD #1-4 A2 Status
  Compressor: ON/OFF
  Comp Position: 0%
  
```

Line 2 Compressor A2 Enabled or Disabled

Current status of the first Compressor.

Line 2 Current Position

Current position of the Modulating Compressor.

RSMD Status Screen #6 - A2 Compressor Discharge Temperature

```

RSMD #1-4 A2 Status
  Compressor Discharge
  Temp: 0.0°F
  
```

Line 2-3 Compressor A2 Discharge Temperature

Current Average Discharge Temperature

RSMD Status Screen #7 - A2 Coil (Saturation) Temp & Setpoint & Suction Pressure

```

RSMD #1-4 A2 Status
  Coil Temp: 0.0°F
  Coil Setpt: 0.0°F
  Suction Pr: XXX PSI
  
```

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 #8 - A2 Head Pressure Setpoint and Condenser Fan Signal

```

RSMD #1-4 A2 Status
  Head Pr: Opsi
  Setpoint: Opsi
  Cond Signal: 0.0%
  
```

Line 2 Head Pressure

If a Head Pressure Transducer is connected, this line indicates the current Head Pressure reading.

Line 3 Head Pressure Setpoint

The current Head Pressure Setpoint.

Line 4 Condenser Signal

The current percentage signal being sent to the Condenser Fan or Valve in order to maintain the Head Pressure Setpoint.

RSMD Status Screen #9 - Alarms

```

RSM #1-4 Alarms
  Active Alarms: No
  See Active Alarms
  on the RSM LCD
  
```

Line 2 Active Alarms

This screen will display Yes if there are active alarms. Active alarms can be viewed on the LCD display of the RSMD Module.

VAV/ZONE CONFIGURATION

VAV/Zone Configuration Screens

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

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 Screens

Configuration Screen #2 - Damper Operation

```
XX Box Cnfg  IDXXXX
  Damper Operating
Mode: DIRECT ACTING
Use < Or > To Change
```

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

```
XX Box Cnfg  IDXXXX
  Is This Box a
  Voting Zone...: YES
Use < Or > To Change
```

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

```
XX Box Cnfg  IDXXXX
Pr Independent Boxes
  Airflow @ 1" WG
Constant...: 1200 CFM
```

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

```
XX Box Cnfg  IDXXXX
  Expansion Relays
  [Optional]
Steps of Reheat.: 2
```

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

```
XX Box Cnfg  IDXXXX
Proportional Heating
Signal...: 0 - 10 VDC
Use < Or > To Change
```

Select 0-10 VDC or 2-10 VDC as the range of the proportional heat output.

Configuration Screen #7 - Box Heat Allow

```
XX Box Cnfg  IDXXXX
Allow Box Heat With
  HVAC Heat...: NO
Use < Or > To Change
```

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

```
XX Box Cnfg  IDXXXX
This Unit Needs Main
  Fan Status...: NO
Use < Or > To Change
```

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.

VAV/ZONE CONFIGURATION

VAV/Zone Configuration Screens

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

```
XX Box Cnfg  IDXXXX
On Board Relay Type
Aux Baseboard Heat
Use < Or > To Change
```

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

```
XX Box Cnfg  IDXXXX
Occupied Switch Type
Not Used
Use < Or > To Change
```

Default is Not Used. *Select* Not Used, Window Open Detect, or Motion Sensor Detect.

Configuration Screen #17 - Occupied Switch Polarity

```
XX Box Cnfg  IDXXXX
Occ Switch Polarity
Direct Contact
Use < Or > To Change
```

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

```
XX Box Cnfg  IDXXXX
Occupancy Time
Detection: XXXSec
Duration: x.xHr
```

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*.

Description	Minimum	Default	Maximum
Occupancy Time Detection	0 Sec	0 Sec	900 Sec
Occupancy Time Duration	0.0 Hr	0.0 Hr	8.0 Hr

Configuration Screen #19 - Box is Stand Alone

```
XX Box Cnfg  IDXXXX
Box is Stand Alone
No
Use < Or > To Change
```

Default is No. *Select* Yes or No for whether this box is Stand Alone.

Configuration Screen #20 - Stand Alone Proof of Flow for Heat

```
XX Box Cnfg  IDXXXX
SA Box POF for Heat
No
Use < Or > To Change
```

Default is No. *Select* Yes or No for whether this Stand Alone box has Proof of Flow for Heat.

VAV/Zone Setpoint Screens

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 Unit Address
Then Press Enter
Selected Unit#: XXXX

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.

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 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.

VAV/Zone Setpoint Screens

Setpoint Screen #1 - Occupied Setpoints

```

XX Box Spts IDXXXX
Occupied Setpoints
Cooling.....: XX°F
Heating.....: XX°F
    
```

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.

Description	Minimum	Default	Maximum
Cooling Setpoint	50°F	74°F	90°F
Heating Setpoint	50°F	70°F	90°F

Setpoint Screen #2 - Unoccupied Setbacks

```

XX Box Spts IDXXXX
Unoccupied Setbacks
Cooling SetUp: XX°F
Heating SetBk: XX°F
    
```

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.

Description	Minimum	Default	Maximum
Cooling SetUp	0°F	+10°F	+30°F
Heating SetBk	0°F	-10°F	-30°F

Setpoint Screen #3 - AHU Heat Call Space Temp

```

XX Box Spts IDXXXX
AHU Heat Call
Space Temp...: XX°F
    
```

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.

Description	Minimum	Default	Maximum
AHU Heat Call Space Temp	50°F	70°F	90°F

Setpoint Screen #4 - Auxiliary Heat Setpoint

```

XX Box Spts IDXXXX
Auxiliary Heat
Setpoint...: XX°F
    
```

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.

Description	Minimum	Default	Maximum
Auxiliary Heat Setpoint	50°F	70°F	90°F

Setpoint Screen #5 - Damper Airflow Integral

```

XX Box Spts IDXXXX
Damper/Airflow Spt
Integral [Ki]...: XXX
    
```

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.

Description	Minimum	Default	Maximum
Integral	0	0	100

VAV/ZONE SETPOINTS

VAV/Zone Setpoint Screens

Setpoint Screen #6 - Damper Airflow Max & Vent Min

```

XX Box Spts IDXXXX
Damper/Airflow Spt
Maximum.: XXX %
Vent Min.: XXX %
    
```

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.

Description	Minimum	Default	Maximum
Maximum	0% or 0 CFM	100% or 1000 CFM	100% or 30000 CFM
Vent Min	0% or 0 CFM	25% or 250 CFM	100% or 30000 CFM

Setpoint Screen #7 - Damper Airflow Cool/Heat Minimum

```

XX Box Spts IDXXXX
Damper/Airflow Spt
Cool Min.: XXX %
Heat Min.: XXX %
    
```

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.

Description	Minimum	Default	Maximum
Cool Min	0% or 0 CFM	10% or 1000 CFM	100% or 30000 CFM
Heat Min	0% or 0 CFM	10% or 100 CFM	100% or 30000 CFM

Setpoint Screen #8 - Damper Airflow Night Min and Fan On Min

```

XX Box Spts IDXXXX
Damper/Airflow Spt
Night Min.: XXX %
Fan On Min.: XXX %
    
```

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. 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. 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 = %.

Description	Minimum	Default	Maximum
Night Min	0% or 0 CFM	0% or 0 CFM	100% or 9999 CFM
Fan On Min	0% or 0 CFM	25% or 250 CFM	100% or 9999 CFM

Setpoint Screen #9 - Damper Airflow Reheat Min

```

XX Box Spts IDXXXX
Damper/Airflow Spt
Reheat Min.: XXX %
    
```

The Reheat Min is the damper or airflow setting used during the Space Reheat Mode of operation.

Description	Minimum	Default	Maximum
Reheat Min	0% or 0 CFM	0% or 0 CFM	100% or 30000 CFM

Setpoint Screen #10 - Damper Airflow Fixed Position

```

XX Box Spts IDXXXX
Damper/Airflow Spt
Fixed Pos: XXX %
    
```

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.

Description	Minimum	Default	Maximum
Fixed Pos	0% or 0 CFM	0% or 0 CFM	100% or 9999 CFM

VAV/Zone Setpoint Screens

Setpoint Screen #11 - SAT HVAC Mode Deadband

```

XX Box Spts IDXXXX
SAT HVAC Mode
Deadband.: XX°F
    
```

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.

Description	Minimum	Default	Maximum
SAT HVAC Mode Deadband	0°F	10°F	20°F

Setpoint Screen #12 - Zone Alarm Offsets

```

XX Box Spts IDXXXX
Zone Alarm Offsets
Hi Zone.....: XX°F
Lo Zone.....: XX°F
    
```

The VAV/Zone Controller can be setup to generate an alarm anytime the box goes into the Occupied Mode and the Zone Temperature exceeds the user-defined alarm limits for a user-defined period of time. A *High Temperature Alarm Setpoint* is created by adding the **Hi Zone Alarm** offset to the current *Cooling Setpoint*. The *Low Temperature Alarm Setpoint* is created by adding the **Lo Zone Alarm** offset to the current *Heating Setpoint*. If the zone temperature exceeds either of these limits for a period defined by the **Alarm Delay** setpoint, the controller can generate an alarm callout if all the optional hardware components required for this to occur are installed.

Description	Minimum	Default	Maximum
Hi Zone Alarm	+1°F	+30°F	+50°F
Lo Zone Alarm	-1°F	-30°F	-50°F

Setpoint Screen #13 - Zone Alarm Delay

```

XX Box Spts IDXXXX
Zone Alarm Delay
Must Be Out Of
Limits For.: XXX Min
    
```

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.

Description	Minimum	Default	Maximum
Out of Limits	1 Min	30 Min	300 Min

Setpoint Screen #14 - Maximum Slide Offset

```

XX Box Spts IDXXXX
Maximum Slide Offset
Effect on Spt.: X°F
    
```

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.

Description	Minimum	Default	Maximum
Effect on SP	0°F	0°F	6°F

Setpoint Screen #15 - Push-Button Override Duration

```

XX Box Spts IDXXXX
Push-Button Override
Duration : X.X Hr
    
```

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.

Description	Minimum	Default	Maximum
Duration	0.0 Hr	0.0 Hr	8.0 Hr

VAV/ZONE SETPOINTS

VAV/Zone Setpoint Screens

Setpoint Screen #16 - Maximum EMS Offset

```

XX Box Spts IDXXXX
Maximum EMS Setpoint
Offset...: XX°F
    
```

If the Energy Management System (EMS) is activated, the heat and cool setpoints can be spread apart by this amount.

Description	Minimum	Default	Maximum
Maximum EMS Setpoint Offset	0°F	0°F	30°F

Setpoint Screen #17 - Sensor Calibration for Space Temp and Supply Air Temp

```

Sensor Calibration
SPC: XXX.X° XXX.X°
SAT: XXX.X° XXX.X°
[SAT Only if Sensor]
    
```

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.

Description	Minimum	Default	Maximum
SPC (Space Temp)	-100°F	0°F	+100°F
SAT (Supply Air)	-100°F	0°F	+100°F

Setpoint Screen #18 - Scheduled Space Setpoints

```

XX Box Spts IDXXXX
Scheduled Space
Setpoints are set on
the next 5 screens
    
```

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

```

XX Box Spts IDXXXX
1st to 2nd Event
Cooling.....: XX°F
Heating.....: XX°F
    
```

```

XX Box Spts IDXXXX
2nd to 3rd Event
Cooling.....: XX°F
Heating.....: XX°F
    
```

```

XX Box Spts IDXXXX
3rd to 4th Event
Cooling.....: XX°F
Heating.....: XX°F
    
```

```

XX Box Spts IDXXXX
4th to 5th Event
Cooling.....: XX°F
Heating.....: XX°F
    
```

```

XX Box Spts IDXXXX
5th to 1st Event
Cooling.....: XX°F
Heating.....: XX°F
    
```

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*.

Description	Minimum	Default	Maximum
Cooling Setpoint	50°F	74°F	90°F
Heating Setpoint	50°F	70°F	90°F

Setpoint Screen #24 - Occupancy Setpoints

```

XX Box Spts IDXXXX
Occupancy Setpoints
Cooling SetUp: XX°F
Heating SetBk: XX°F
    
```

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.

Description	Minimum	Default	Maximum
Cooling SetUp	0°F	+10°F	+30°F
Heating SetBk	0°F	-10°F	-30°F

Setpoint Screens #25, #26 & #27 - Analog Space Sensor Calibrate Slide Adjust

```

XX Box Spts IDXXXX
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 #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.

```

XX Box Spts IDXXXX
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.

```

XX Box Spts IDXXXX
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.

VAV/ZONE STATUS

VAV/Zone Status Screens

VAV/Zone Status

Screen #1	Mode of Operation
Screen #2	Zone Temperature and Cooling/Heating Setpoints
Screen #3	Slide Offset and H/C Demand
Screen #4	Supply Air Temperature and Box Air Temperature
Screen #5	Zone Damper Position, Airflow, and Desired CFM
Screen #6	Fan Status and Reheat Stages
Screen #7	Alarm Status
Screen #8	Bad Space Temperature, Bad Airflow, Damper Open Failure
Screen #9	Damper Close Failure, Hi Space Temperature, Low Space Temperature
Screen #10	Damper Feedback

Status Screen #1 - Mode of Operation

```
XX Box Vx.xx IDXXXX
Occupied Mode
Vent Mode
Belongs to Group # 1
```

Line 2 Unoccupied Mode
Occupied Mode
Override Mode
Damper Calibration
Group Override

Line 3 OFF Mode
Vent Mode
Cooling Mode
Heating Mode
Sensor Fail Mode*

Line 4 Belongs to Group # xx
No Group Affiliation

* Displays for either a temperature sensor failure or an airflow sensor failure.

Status Screen #2 - Zone Temperature and Cooling/Heating Setpoints

```
XX Box Vx.xx IDXXXX
Zone Temp.: XX.X°F
Cooling Spt: XX.X°F
Heating Spt: XX.X°F
```

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

```
XX Box Vx.xx IDXXXX
Slide Offset: XX°F
H/C Demand.: XX.X°F
```

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

```
XX Box Vx.xx IDXXXX
Supply Air: XX.X°F
Box Air.: XX.X°F
```

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.

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 #5 - Zone Damper Position, Airflow, and Desired CFM

```
XX Box Vx.xx IDXXXX
Damper FRC:   XXX %
Airflow      : XXXX CFM
Desired      : XXXX CFM
```

- 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

```
XX Box v1.04 IDXXXX
Fan Status      : OFF
Heating Relay#1 : OFF
Heating Relay#2 : OFF
```

- 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.

Status Screen #7 - Alarm Status Screens

```
XX Box v1.04 IDXXXX
```

NO ALARMS!

```
XX Box v.104 IDXXXX
```

ALARMS PRESENT
SCROLL DOWN TO VIEW

- 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*.

VAV/Zone Status Screens

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 #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.

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.

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.

```
Box Schedule
Schedule Control
Daily Setpt Events
Select & Push Enter
```

Schedule Control Screen - Day/Night Schedule

Press the **<↓>** 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.

Description	Minimum	Default	Maximum
Schedule Control Number	0	0	1 to 5

Daily Setpoint Events Screens

Press the **<↓>** button until the cursor is on the Daily Setpt Events option and then press **<ENTER>**.

```
Daily Setpt Events
Event 1 Start: xxxx
Event 2 Start: xxxx
Event 3 Start: xxxx
```

```
Daily Setpt Events
Event 4 Start: xxxx
Event 5 Start: xxxx
```

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.

VAV/Zone Damper Force Modes

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 <i>VAV/Zone Controller Setpoint Screen #5</i> on page 77 for complete setpoint information. |
| 4 = Min | This setting will force the damper to its Minimum Position Setpoint. See <i>VAV/Zone Controller Setpoint Screen #5</i> on page 77 for complete setpoint information. |
| 5 = Fixed | This setting will force the damper to a fixed position based on the Fixed Position Setpoint. See <i>VAV/Zone Controller Setpoint Screen #8</i> on page 78 for complete setpoint information. |

MiniLink PD Configuration

Screen #1	System Type
Screen #2	Last Polled Zone
Screen #3	Mode Changeover Time
Screen #4	Optimal Start Target Zone
Screen #5	Maverick Testing
Screen #6-65	Alarm Polling

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.

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 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*.

Supply Fan Override
On Board Relay 1
Auto
Use < Or > To Change

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>**.

Relay Overrides
Relay 2 Override
Auto
Use < Or > To Change

After the screen for relay 23 is displayed, the first *Analog Output Override Screen* will be displayed.

Analog Output 1 Screen

Main Fan VFD
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 2 Screen

Economizer
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.

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.

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

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.

```
Outputs Force
Para Blocks
Save/Copy/Restore
```

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.

```
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 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:

```
Change Setpoints
Configure Unit
Save/Copy/Restore
```

Scroll down to the 'Save/Copy/Restore' option and *press* <ENTER>. This will take you to the Save Setpoints screen.

Save Setpoints - Network Mode

From the *Save Setpoints Screen* shown below:

```
Save Setpoints
Press Enter To Save
```

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.

APPENDIX A - SAVE, LOAD, COPY SETPOINTS

Copying & Restoring Previously Saved Setpoints

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.

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.

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
```

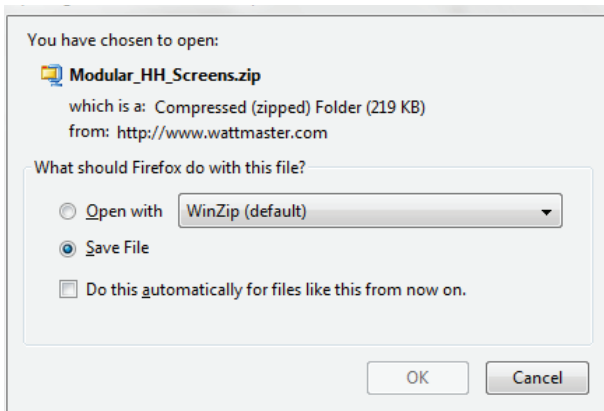
Press <ENTER>. This will reload the setpoints from the saved file. You will receive confirmation that the setpoints were loaded successfully.

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.

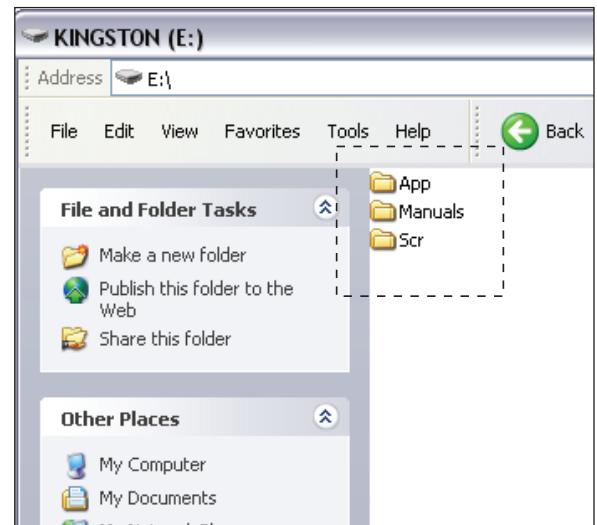
Follow the instructions below to download the update file from our tech support webpage:

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.

Updating Controller & E-BUS Module Software

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 93** 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/WattMaster Controllers or E-BUS Modules.

AAON/WattMaster Controllers

1. *Press* **<1>** to update an AAON/WattMaster 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."

E-BUS Modules

1. Press **<2>** to update an E-BUS Module. The following screen will appear:

```
Enter Board Address
      0
Esc) Exit Menu
```

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-XWR-1 - address 138 - 2nd - 139
PREHEAT-X - address 157
RSM #1 - address 152
RSM #2 - address 153
RSM #3 - address 154
RSM #4 - address 155
WSHP-X - 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
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.”

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