



# Modular Service Tool SD Quick Start Guide

Requires Modular Service Tool SD Code: SS1063

VCCX2 Controller Code: SS1088

VCC-X Controller Code: SS1079 and SS1062

VCB-X Controller Code: SS1051 Version 2.0 and up

VCM-X Controller Code: SS1026

VCM-X E-BUS Controller Codes: SS1030, SS1032, SS1033, SS1034

RNE Controller Code: SS1045

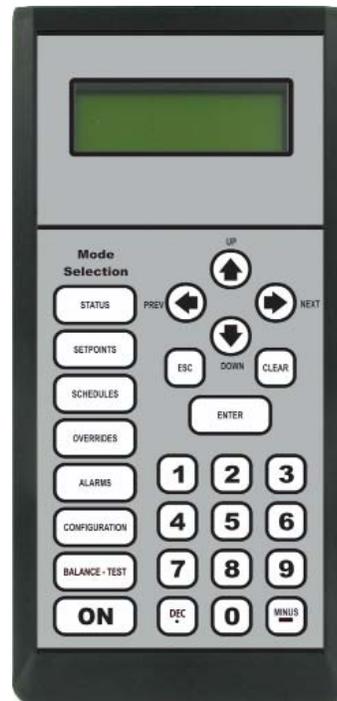
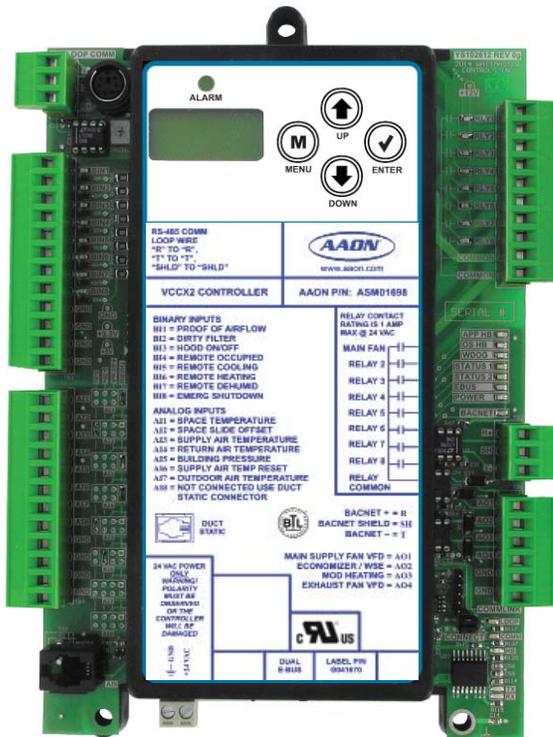
SA E-BUS Controller Code: Y200921

VCM Controller Code: SS1016

VAV/CAV Controller Code: SS1003 and MUA II Controller Code: SS1004

VAV/Zone Controller Codes: SS1001, SS1005, SS1025, SS8011

MiniLink PD Code: SS0040, SS1061



# IMPORTANT NOTICE

This Quick Start guide provides instructions for operating the Modular Service Tool SD.

The Modular Service Tool SD Operator Interface Guide for each type of controller is available for download from our website—[orioncontrols.com](http://orioncontrols.com)—where you can always find the latest updates to the literature, or if you have the Modular Service Tool SD Card available, the technical guides can also be printed from the SD card.

# SD CARD UPDATING INSTRUCTIONS

Your Modular Service Tool comes with an SD memory card that contains the software to communicate to the various controllers. 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 of this manual.



This manual is also available for download from our website—[aaon.com](http://aaon.com)—where you can always find the latest literature updates.

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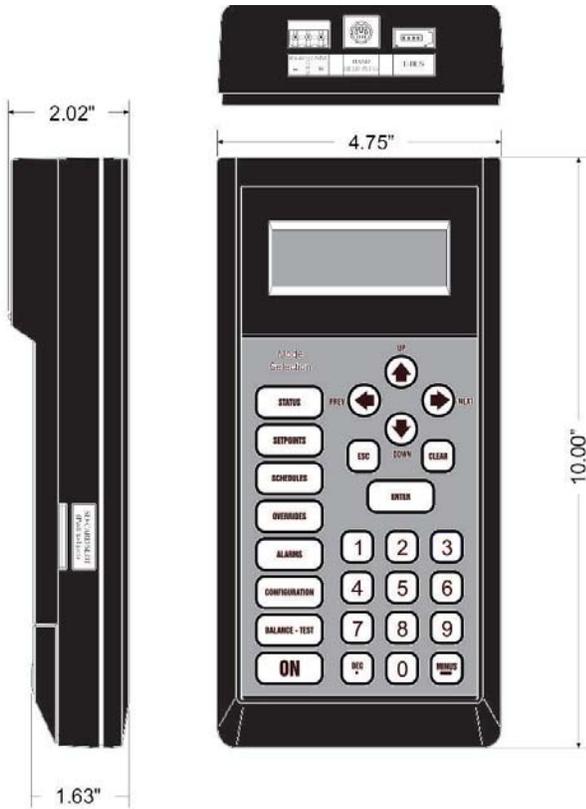
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## Modular Service Tool SD

### Modular Service Tool SD



**Figure 1: Modular Service Tool Dimensions**

The ASM01895 Modular Service Tool SD 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, VCM-X, VCM-X E-BUS, SA E-BUS, RNE, VCB-X, VCM, VAV/CAV, MUA II or VAV/Zone Controller on the control system communications loop.

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, with (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, page 17**).

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.

Modular Service Tool SD

Whether you have a Stand Alone, Interconnected, or Networked 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.

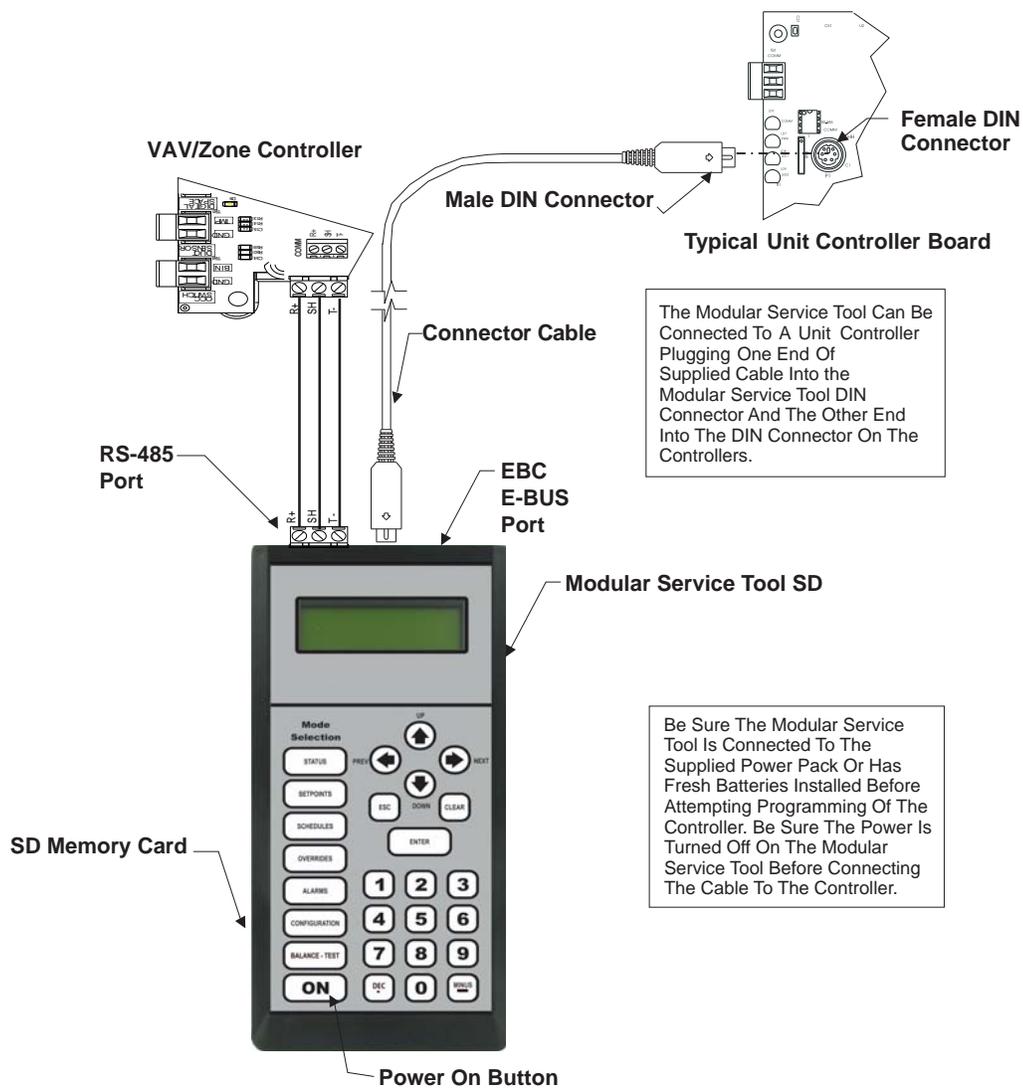


Figure 2: Modular Service Tool SD Connection and Wiring

# INTERFACE OVERVIEW

## Modular Service Tool Keys

### 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, the System Manager TS II (all controllers except VCC-X & VCCX2). These devices allow you to access the status and setpoints of the controllers on your communications loop. This manual describes the Modular Service Tool SD. If using the Modular System Manager or System Manager TS II, please see the *VCM-X / RNE Operator Interfaces Technical Guide* or the *System Manager TS II Technical Guide*. If using Prism 2, please see the *Prism 2 Technical Guide*.

The Modular Service Tool 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	Key Function
NEXT	Use this key to access the Setup Screens.
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	Mode Selection Buttons
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 <b>page 9</b> 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 <b>page 9</b> 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.
Notes: (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
    AAON
  
```

```

    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 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 Hours in 24-Hour Military Format  
(17 = 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 (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* shown below.

```

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

# INITIALIZATION

## 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**.

```
Service Tool SD vX.XX
01/16/19 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, VCC-X, VCB-X, or GPC-XP 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 <→> if you need to change the 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.

### Updating Software

The Modular Service Tool SD has the capability to update the software for certain Controllers and E-BUS Modules using the appropriate cable(s) and a computer with internet access.

The instructions for Updating Software - Option 4 on the second *Setup Screen* shown below are found in **Appendix C, page 17**.

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

Alarm and Override Search

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 *Setup Screen(s)*. 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.

One of the following screens will appear:

CONTROLLER V.XXX  
NO ALARMS

CONTROLLER V.XXX  
ALARMS PRESENT  
SCROLL DOWN TO VIEW

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

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

Modular Service Tool Override Search

When a space sensor with override option is used with any VAV/Zone or Unit Controller, 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. In the example above, Loop 1, address 60 has been entered. 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:

CONTROLLER V.XXX  
NO OVERRIDES

CONTROLLER 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.

# INITIALIZATION

## Schedules and Holidays

### 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 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.

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

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

### Week Schedules

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

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

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

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

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

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

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

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

### Holiday Start/Stop Day Selection

```
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 4<sup>th</sup> (NOTE: Leading zero not required)  
1225 = December 25<sup>th</sup>

---



---

 Holiday Scheduling and Schedule Override
 

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---

 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
 

---

```

    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.

---



---

## Outputs Force

### 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. The System Manager does not allow for programming of this function.

**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 Selection Screen*. Enter the unit ID of the Unit Controller you wish to access and *press* <ENTER>. Once communication is established, "No Communication" will be replaced with "Press Down." 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 "No Communication" remains, it indicates a communication failure to the controller.

**NOTE:** The Outputs Force settings are only available for the Unit Controllers. They are not supported for the VAV/Zone Controllers or other Add-on controllers.

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

Place the cursor on Outputs Force and *press* <ENTER> to access the *Outputs Force Screen*.

```
Supply Fan Override
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 20 *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 21 or 23 (23 for VCB-X) is displayed, the first *Analog Output Override Screen* will be displayed. For VCCX2, after Relay 8, EM1 Relays 1-5 will display and then 12 Relay Bd Relays 1-12 will display.

### VCM-X, VCM & RNE Controllers

#### Analog Output 1 Screen

```
Economizer Overrides
Analog Output #1
Override Volts: -1.0
[-1.0=Auto]
```

The default setting for normal operation is -1.0 volts. Voltages between 0 to 10.0 can be set for any of the Analog Output Overrides. *Press* <ENTER> after making a setting change and then *press* <↓> and the next *Analog Output Override Screen* will be displayed.

#### Analog Output 2 Screen

```
Supply VFD Override
Analog Output #2
Override Volts: -1.0
[-1.0=Auto]
```

#### Analog Output 3 Screen

```
Exhaust VFD Override
Analog Output #3
Override Volts: -1.0
[-1.0=Auto]
```

#### Analog Output 4 Screen

```
Mod Heating Override
Analog Output #4
Override Volts: -1.0
[-1.0=Auto]
```

Analog Output 5 Screen

```

Mod Cooling Override
Analog Output #5
Override Volts: -1.0
[-1.0=Auto]
    
```

Analog Output 6 Screen

```

RA Damper Override
Analog Output #6
Override Volts: -1.0
[-1.0=Auto]
    
```

Analog Output 7 Screen

```

RA Bypass Override
Analog Output #7
Override Volts: -1.0
[-1.0=Auto]
    
```

The default setting for normal operation is -1.0. Voltages between 0.0 and 10.0 can be set. *Press <Enter>* after making a setting change and the next *Analog Output Override Screen* will be displayed.

Exhaust Fan Override Screen

```

Exhaust Fan Signal
Override Volts: -1.0

[-1.0 = Auto]
    
```

The default setting for normal operation is -1.0. Voltages between 0.0 and 10.0 can be set. *Press <Enter>* after making a setting change and the next *Analog Output Override Screen* will be displayed.

Modulating Cool Override Screen

```

Modulating Cool
Override %...: -10%

[-10 = Auto]
    
```

The default setting for normal operation is -10 percent. Percentages between 0 to 100 can be set. *Press <Enter>* after making a setting change and the next *Analog Output Override Screen* will be displayed.

VCB-X & VCCX2 Controllers

Main Fan VFD Override 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 can be set for any of the Analog Output Overrides. *Press <Enter>* after making a setting change and the next *Analog Output Override Screen* will be displayed.

Modulating Condenser 1 & 2 Override Screens  
(VCB-X Only)

```

Mod. Condenser 1 & 2
Override Volts: -1.0

[-1.0 = Auto]
    
```

The default setting for normal operation is -1.0. Voltages between 0.0 and 10.0 can be set.

Economizer Override Screen

```

Economizer
Override Volts: -1.0

[-1.0 = Auto]
    
```

The default setting for normal operation is -1.0. Voltages between 0.0 and 10.0 can be set. *Press <Enter>* after making a setting change and the next *Analog Output Override Screen* will be displayed.

Return Air Bypass Override Screen

```

Return Air Bypass
Override Volts: -1.0

[-1.0 = Auto]
    
```

The default setting for normal operation is -1.0. Voltages between 0.0 and 10.0 can be set.

Modulating Heat Override Screen

```

Modulating Heat
Override Volts: -1.0

[-1.0 = Auto]
    
```

Return Air Damper Override Screen

```

Return Air Damper
Override Volts: -1.0

[-1.0 = Auto]
    
```

The default setting for normal operation is -1.0. Voltages between 0.0 and 10.0 can be set.

## Saving & Copying Setpoints

### Save Setpoints - Network Mode

#### Modular Service Tool Instructions

From any menu screen, *press* <BALANCE-TEST>. The *Unit Selection Screen* will appear requesting that you enter the unit ID number. *Enter* the network unit ID for the controller you want to save the setpoints from. Example, '102' for Loop 1 / Unit 2. Then *press* <ENTER>. Once communication is established, "No Communication" will be replaced with "Press Down." After a brief pause, *press* <↓> to get to the 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* 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.

### Copy Setpoints - Network Mode

To copy a saved setpoints file to other controllers on the network do the following:

*Press* <BALANCE-TEST>. The *Unit Selection Screen* will appear requesting that you enter the unit ID number. *Enter* the network unit ID for the controller you want to save the setpoints to. Example, '103' for Loop 1 / Unit 3. Then *press* <ENTER>. After a brief pause, *press* <↓> to get to the 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* 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.

## Restoring Previously Saved Setpoints

## 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 any menu screen, *press* <BALANCE - TEST>. The *Unit Selection Screen* will appear requesting that you enter the unit ID number of the controller. *Enter* the network unit ID for the controller you want to restore setpoints to. Example, 2 for Unit 2. Then *press* <ENTER>. Once communication is established, "No Communication" will be replaced with "Press Down." After a brief pause, *press* <↓> to get to the screen shown below.

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

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

## SD Memory Card Update

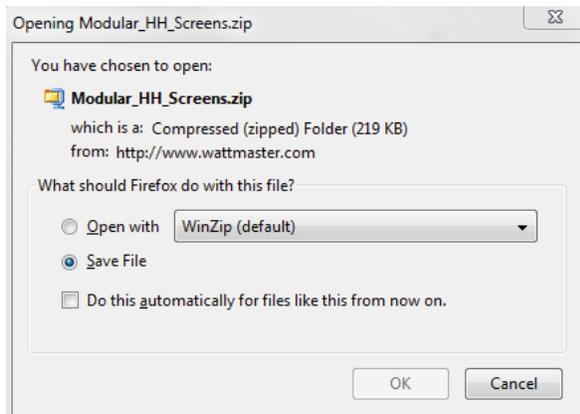
### Updating The SD Memory Card

You may need to update the SD memory card from time to time, either for a new release or to add data for another Controller.

**NOTE:** Some older controllers might require updating the software in the Service Tool itself. Contact Tech Support for further information.

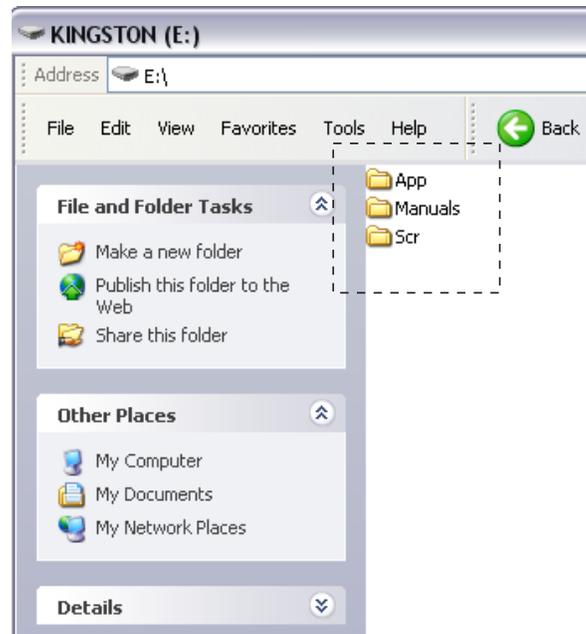
Follow the instructions below to download the update file from our tech support webpage:

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://aaon.com/controlstechsupport>.
3. On the Tech Support webpage, locate the file Modular\_HH\_Screens.zip and *double-click* your mouse 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 folders 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.

### Updating Controller and 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 16** for Updating the SD memory card.
2. Connect the Modular Service Tool to the device you wish to update using the mini DIN communication cable or EBC E-BUS cable provided.
3. Power up the controller or E-BUS module you wish to update.
4. Apply power to the Modular Service Tool SD and *press* the <ON> button.
5. After initialization of the Modular Service Tool SD, *press* <NEXT> at the first *Setup Screen* and <4> at the second *Setup Screen* shown below.

```

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

```

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

6. The *Update Software Screen* will appear as shown below:

```

Select Communication
1) WattMaster Comm
2) E-BUS Module
ESC) Exit Menu
    
```

7. Follow the instructions for AAON Controllers or E-BUS Modules.

### AAON Controllers

1. *Press* <1> to update an AAON Controller. The following screen will appear:

```

Enter Board Address
          0
Esc) Exit Menu
    
```

2. *Enter* the address of the controller you are updating and then *press* <ENTER>.
3. The *Software Version Screen* will appear as shown below. *Enter* <0> for the latest software version or enter the number of an older version given to you by Technical Support. Then *press* <ENTER>.

```

Software Version
Enter 0 for Latest
          0
Esc) Exit Menu
    
```

4. The screen will display the following messages:  
"Resetting Unit"  
"Load Sys Info"
5. If communications are successful, the screen will display, the name of the HEX file on the top line, "Flash Memory Erased" on the second line, and the progress percentage on the third line.

NOTE: If communications are not successful, the screen will display, "Press Any Key to Continue. Cannot Load Sys Info." Make sure you have the right address and the right software version on your SD card. If these two items are correct and you still experience a problem, contact Technical Support.

6. When updating is complete, the screen will display, "Finish Download."

## Updating Controller & E-BUS Module Software

### E-BUS Modules

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

```
Enter Board Address
      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 board - 139
PREHEAT-X - address 157
PREHEAT-X-EXT - address 157
RSM #1 - address 152
RSM #2 - address 153
RSM #3- address 154
RSM #4 - address 155
WSHP-X2 - address 17
```

3. The *Software Version Screen* will appear as shown below. Enter <0> for the latest software version or enter the number of an older version if given to you by Technical Support. Then press <ENTER>.

```
Software Version
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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AAON Factory Technical Support: 918-382-6450  
techsupport@aaon.com

AAON Controls Support: 866-918-1100  
**Monday through Friday, 7:00 AM to 5:00 PM**  
**central standard time.**

NOTE: Before calling Technical Support, please have the  
model and serial number of the unit available.

PARTS: For replacement parts please contact your local  
AAON Representative.



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