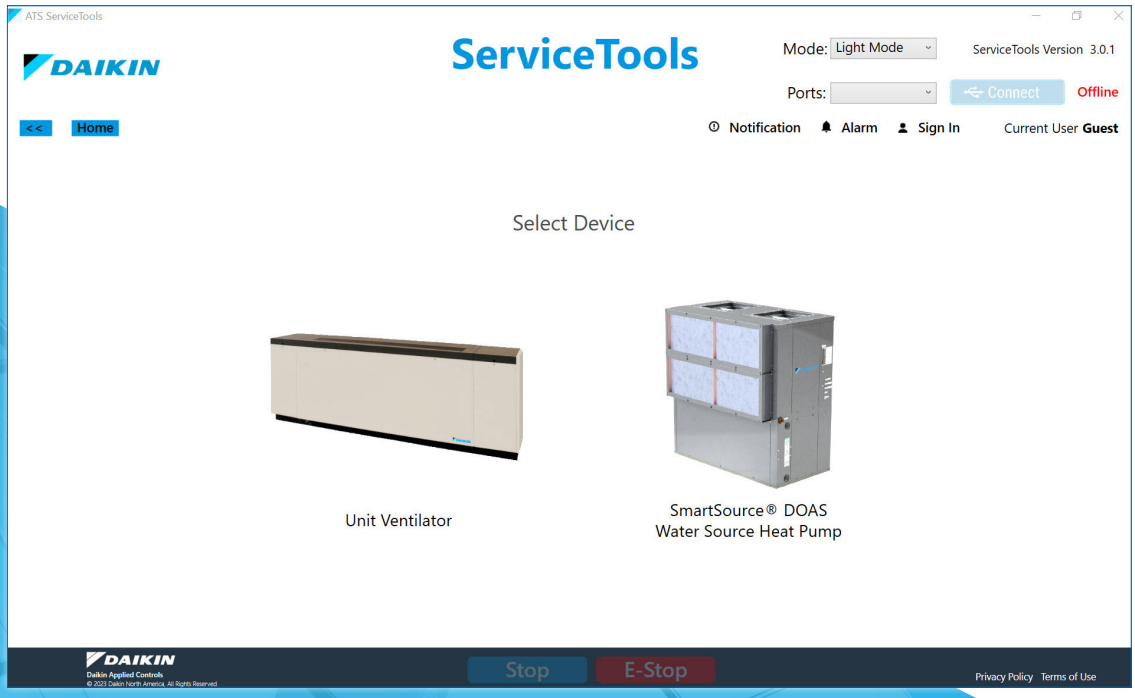
OM 732-6
APRIL 2025

SERVICETOOLS SOFTWARE

FOR MICROTECH® UNIT VENTILATOR AND DOAS WSHP UNIT CONTROLLER APPLICATIONS



- VERTICAL, HORIZONTAL AND VERTICAL SELF-CONTAINED UNIT VENTILATORS MODELS WITH/ WITHOUT R-32 REFRIGERANT
- SMARTSOURCE® DOAS WATER SOURCE HEAT PUMPS

General Information

Hazard Identification

⚠ DANGER

Danger indicates a hazardous situation, which will result in death or serious injury if not avoided.

⚠ WARNING

Warning indicates a potentially hazardous situations, which can result in property damage, personal injury, or death if not avoided.

⚠ CAUTION

Caution indicates a potentially hazardous situations, which can result in minor injury or equipment damage if not avoided.

NOTICE

Notice indicates practices not related to physical injury.

NOTE: Indicates important details or clarifying statements for information presented.

Reference Documents

Number	Company	Title	Source
IM 1286	Daikin Applied	MicroTech Unit Ventilator Controller Installation Manual	www.daikinapplied.com
OM 1280		MicroTech Unit Ventilator Controller Operation Manual	
ED 19110		MicroTech UV Controller Integration Guide	
ED 19118		MicroTech DOAS WSHP Integration Guide	
OM 1308		MicroTech Controls for SmartSource DOAS Water Source Heat Pump	
OM 1365		MT6210 Refrigerant Detection System (A2L Controller)	
ANSI/ ASHRAE 135-2008	BACnet International	BACnet A Data Communication Protocol for Building Automation and Control Networks	www.ashrae.org

Description

Daikin's ATS ServiceTools is a free, multi-purpose desktop application for use with MicroTech® Unit Ventilator (UV) and SmartSource® DOAS Water Source Heat Pump (DOAS WSHP) applied products. ServiceTools software is intended for service technicians or installing contractors who are performing unit startup and configuration, network addressing and diagnostics. The ServiceTools application is a convenient way to view and make changes when a laptop is available.

Capabilities

- View dashboard of current unit settings
- Adjust operational parameters and setpoints
- Modify controller setup and configuration
- Download and update controller software
- Configure the software for specific unit hardware options
- Set up the unit for network communications
- Capture and save trending data to SD card

Installation and Setup

Getting Started

This section describes the tools and instructions for setting up ATS ServiceTools software.

Hardware

The MicroTech controller supports the USB 2.0 protocol to communicate with an external device such as a laptop or computer. Use the controller's USB-A port to connect with the laptop and run ServiceTools.

NOTE: Laptops with USB 3.0/3.1 (USB-C port) require an adaptor in order to communicate to the MicroTech controller. See Table 1 for part numbers and ordering information. Also see Connecting a USB-C Device to the MicroTech Controller for instructions.

- Laptop with Microsoft Windows® 10 or newer operating system.
- MicroTech MT2205 controller baseboard with latest firmware loaded
- SD Card (optional for saving downloaded application files and/or trending data)
- 2.0 USB-A to USB-A Male direct connect cable (Figure 1) or USB-A to USB-C cable adapter (Figure 5)
- LonWorks® communication module (optional)

Table 1: Hardware Part Numbers

Name	Part Number	Description/Source
MT2205 Controller (UV/DOAS WSHP Apps)	106380052	PN ordered from Daikin Applied Parts and Aftermarket at 800-377-2787.
	106380011	PN no longer available. Replaced with 106380052.
	106380051	PN no longer available. Replaced with 106380052.
3.0/3.1 USB-C to USB-A Female Adapter	See Description	No PN is currently available for the adapter shown in Figure 5. Must be purchased locally or online.
2.0 USB-A to USB-A Male Cable	910295895	PN orderable from Daikin Applied Parts and Aftermarket.

Software

- Standard web browser for accessing ServiceTools software from Daikin Applied's public website (www.daikinapplied.com).
- The most recent version of MicroTech controller software application. *UV v1.2 and older versions are no longer supported.* Refer to Table 2 for ServiceTools compatibility with UV or DOAS WSHP application firmware, bootloader, and LonWorks communication module firmware, if installed. BACnet® is also supported as an onboard feature of the controller application.

NOTE: An error message appears if an unsupported software application version is detected. The user is then directed to the Download page where a compatible version can be installed.

Table 2: ServiceTools Software Compatibility Matrix

		ATS ServiceTools											
		v1.1.4	v1.2.0	v1.2.1	v2.0	v2.2	v2.3	v2.3.1	v2.3.1a[3,4]	v2.3.2	v2.4	v3.0	v3.1
UV Software Application	v1.1[5]	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No
	v1.2[2]	Yes	Yes	Yes	Yes	Yes[1]	No	Yes[1]	Yes[1]	Yes[1]	Yes[1]	Yes[1]	Yes[1]
	v1.3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes[1]	Yes[1]	Yes[1]	Yes	No
	v1.4	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
	v1.5	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
	v1.6	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
	v1.7	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
	v2.0	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes
	v3.0[6,7]	No	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes
DOAS WSHP Software Application	v1.0	No	No	No	No	No	No	No	No	No	No	No	No
	v1.1	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bootloader	v1.1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LonWorks	v1.0	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	v1.1	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	v1.2[7]	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

[1]Only compatible when upgrading UV software to v1.3.0 and newer.
[2]UV application v1.2 is no longer supported. Compatible with ServiceTools v1.2.1 but not v1.1.4.
[3]Refers to the ServiceTools installer version. No changes were made to the ServiceTools v2.3.
[4]The ServiceTools user interface displays the software version, not the installer.
[5]UV application v1.1 is no longer supported.
[6]Supports A2L/R32 refrigerant.
[7]LonWorks v1.2 is compatible with UV application software, but does not support A2L alarms.

Download ATS ServiceTools Software

NOTE: Refer to Table 2 for UV and DOAS WSHP software compatibility details.

1. Access the Daikin Applied website: www.daikinapplied.com/resources/application-software (available from the Water Source Heat Pump and Unit Ventilator product pages).
2. Click on the "DaikinAppliedServiceTools_exe" installer and save the file to the hard drive.
3. Right-click on the .exe file and select "Run as administrator" to install the application.
4. From the ATS ServiceTools Setup screen, press the Install button to begin the download. This takes just a few seconds and then the "Installation Successfully Completed" screen appears. Click Close.

NOTE: The install process overwrites any previous versions of ATS ServiceTools. The Uninstall screen may appear when unistalling an older version of the software through the Control Panel ▶ Programs and Features. Otherwise, the Uninstall screen does not appear.

Also note that ServiceTools v2.0 (and newer) only overwrites **2**.x versions. It does not overwrite **1**.x versions.

An ATS ServiceTools desktop icon appears once installed. The ATS ServiceTools application can also be accessed from the Windows icon/Start/Programs menu.

Connect Laptop to Unit Controller

If the laptop has a USB-A port, follow steps 1 and 2. Otherwise, skip to Connecting a USB-C Device to the MicroTech Controller.

Do not use a data transfer or cross-over cable.

1. Insert a "Type A Male to Type A Male" cable from the laptop to either the USB port on the MicroTech controller (Figure 1) or the USB port located on the exterior side of the unit control panel box. The same controller baseboard is used for UV and DOAS WSHP applications.
1. The controller can be energized through its 24 VAC input or through its USB port (with limited power). If power has been disconnected to the unit, the controller is capable of being energized through the USB port if it is connected to another USB device capable of supplying power. When being powered through the USB port, the controller attempts to exercise the outputs based on standard sequences of operations, but it may not have adequate power for optimal control of all sequences. It is, however, still possible to read inputs, download, and configure the application when power is provided through the USB port.

   Without 24 VAC power, certain alarms or errors may appear in ServiceTools such as high pressure alarms and/or invalid sensor readings.

2. Verify that the controller LED activity is normal (Service). If not, see Troubleshooting and Support for descriptions of LED activity.

Figure 1: MicroTech Controller USB Port and LED Locations

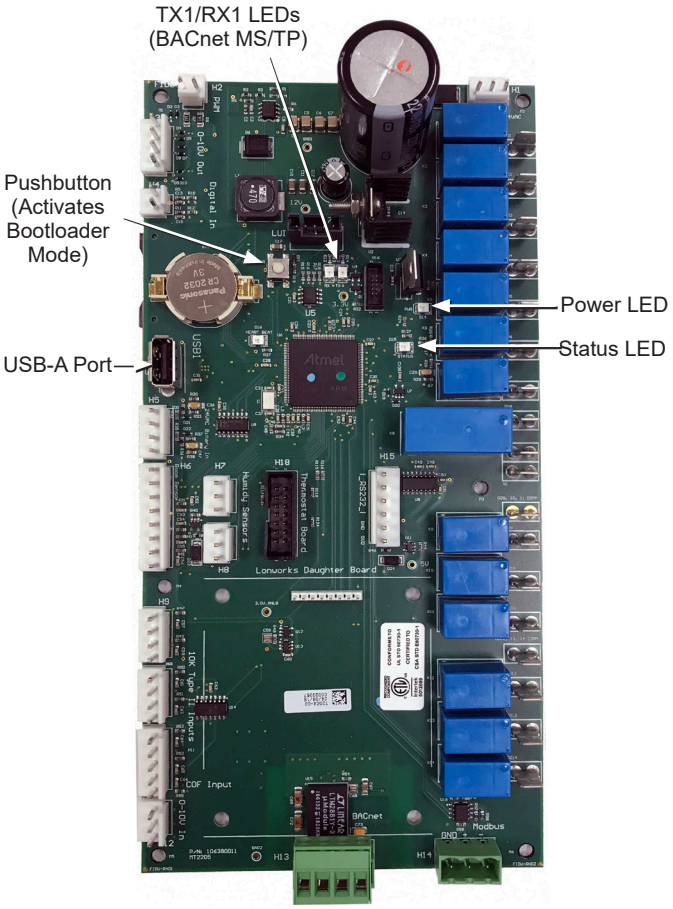


Figure 2: USB-A Male to Male Cable

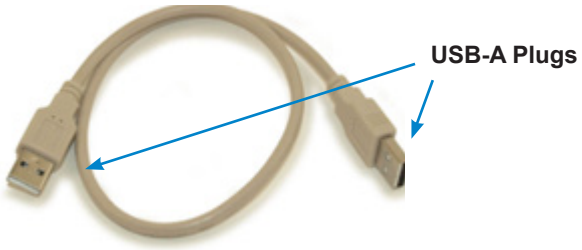
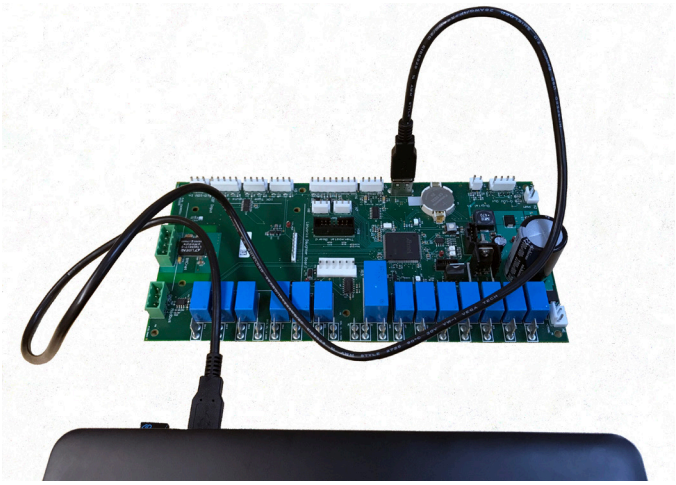


Figure 3: Connect MicroTech Controller to Laptop



Connecting a USB-C Device to the MicroTech Controller

1. Obtain USB-C to USB-A adapter (Figure 4 and Table 1).
2. Insert the adapter USB-C plug into the USB-C port on the laptop (Figure 5).

NOTE: The MicroTech controller requires a USB-A to USB-A Male to Male cable (Figure 1 and Table 1).

3. Insert one end of the USB-A Male to Male cable to the USB-C adapter. Insert the other end to the USB port on the ATS controller. See Figure 5.

Figure 4: USB-A to USB-C Cable Adapter (Example)

Figure 5: USB-A to USB-C Cable Adapter Inserted

Launch ATS ServiceTools

1. Click the ATS ServiceTools desktop icon or select from the Windows/Programs menu.
2. The software opens to the Select Device screen. See Figure 7.

NOTE: It is possible to navigate among screens even without being connected to a unit. *However, no valid data is provided without actual connection.*

3. Sign in to ATS ServiceTools

NOTE: ServiceTools automatically launches with guest (default) level access. The guest level offers the ability to view all pages but limits the amount of unit configuration possible. The two user options and passwords are described in the next section and in Table 3. To change from the default guest user:

a. Click on the Sign In link from the top, right-hand side of the navigation bar and Figure 6 appears.

b. Select either Maintenance or Technician from the Username drop-down, depending on user preferences.

c. Enter the password from Table 2 and click the Sign In button or press Enter from the laptop.

Contact Daikin Applied ATS Technical Response at ATSTechSupport@daikinapplied.com or 1-800-432-1342 for assistance with setup, use, or troubleshooting ServiceTools.

Using ServiceTools

Once connected and signed in, the next step is to choose the unit type. Hover over and click on either the Unit Ventilator or the DOAS WSHP image from the Select Device screen (Figure 7).

A “dark mode” version of the interface can be selected from the Mode drop-down menu (Figure 8).

ServiceTools launches to the Status Info screen for the chosen unit type (Figure 10 and Notes 1-3). ServiceTools automatically detects and displays the current unit configuration options, operating modes, active alarms, and other relevant status information for the controller. Access to features depend on the user permissions. If the controller does not have an application loaded, ServiceTools opens directly to the Download page.

NOTE: If a user is connected to a controller (with power applied) and then launch ServiceTools, the software automatically detects the type of unit and opens directly to the Status screen.

Online = Device is connected and active data displayed
Offline = No device connected and no active data displayed

Figure 6: User Name and Password .

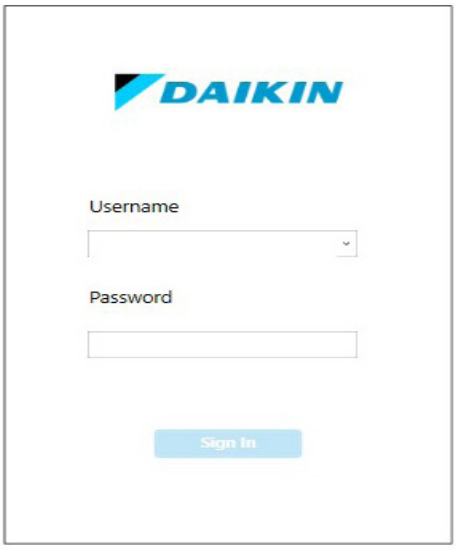


Table 3: User Types and Passwords

Use Table 3 and Table 4 for user types and access given to the various menu screens within ServiceTools.

User Type	Password
Guest (Default)	No password required
Maintenance	Maintenance492
Technician	Technician385

Table 4: User Access to Menu Screens

Screens[1,2]		Guest	Maintenance	Technician
Select Device	Unit Ventilator	R	R	R
	DOAS WSHP	R	R	R
Home	Status info	R	R	R
	Setpoints	R	R/W	R/W
	Alarms	R	R	R
	Network	R	R/W	R/W
Configuration		-	-	R/W
Tools	Scheduling	-	R/W	R/W
	Set Clock	R/W	R/W	R/W
	Config Imp/ Exp	-	R/W	R/W
	Download	-	R/W	R/W
	Diagnostic	-	R/W	R/W
	Inputs	-	-	R/W
	PI Settings	-	-	R/W
	Network I/O	-	-	R/W
	Manual Override	-	-	R/W
	A2L	-	-	R/W
	Log	-	R	R

[1]A “-” indicates the screen is not visible.
[2]R=Read only, R/W=Read/Write (Editable).

Figure 7: Select Device Screen

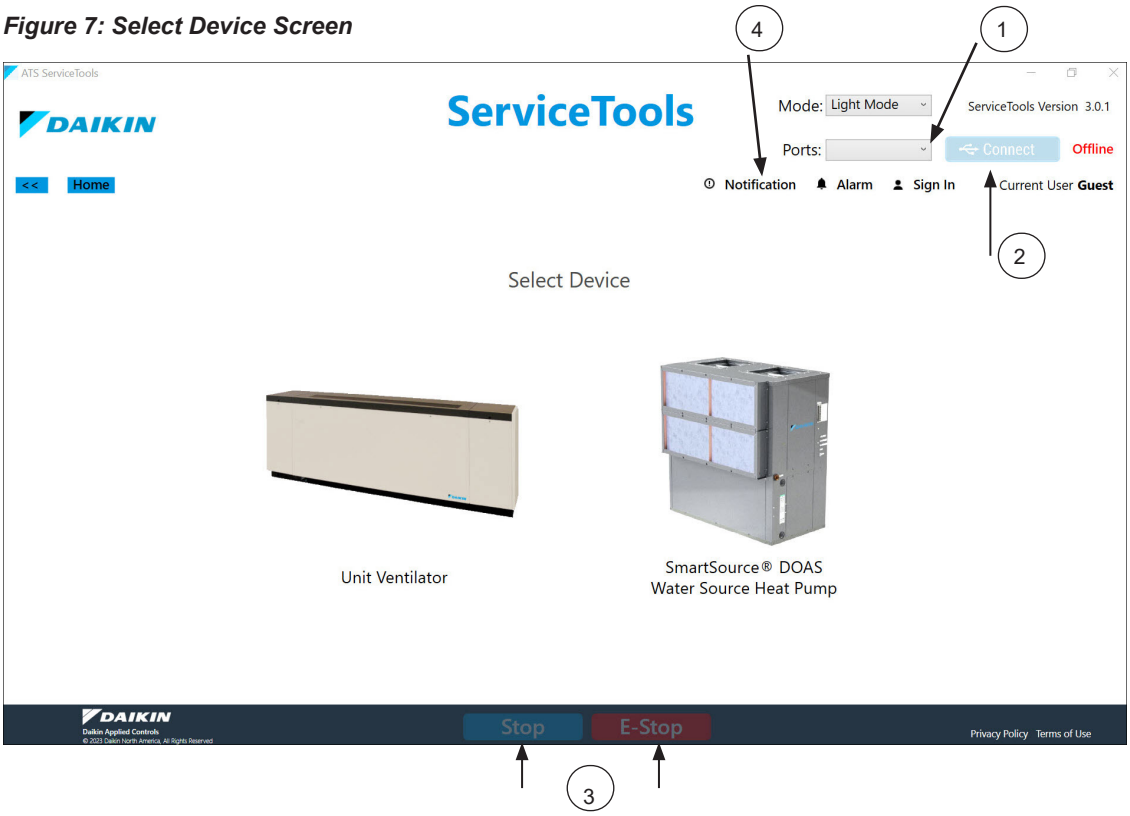
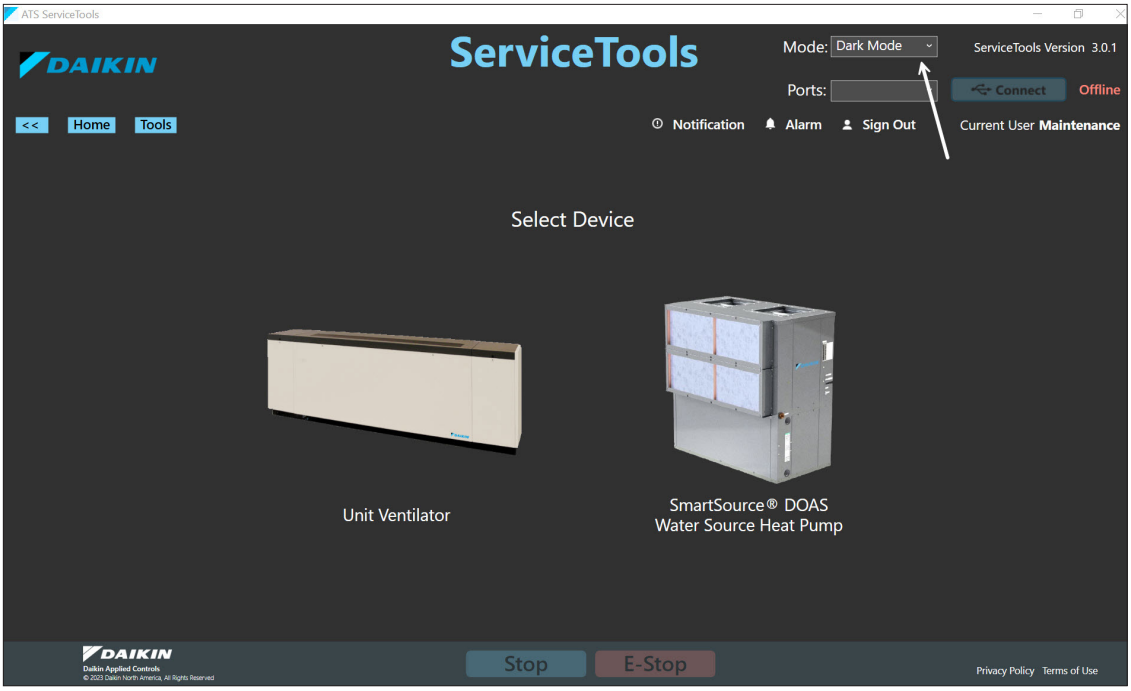


Figure 8: Select Device, Dark Mode



Select Device Screen Notes

1. The Ports menu shows the laptop USB serial port that is connected to the device and available for use with ServiceTools. This menu displays more options only if additional USB serial ports are actively connected to more than one device (ex: laptop is direct connected to two UVs)
2. The Connect status bar turns bright blue when ServiceTools detects the USB port.
3. Press the blue Stop button to initiate a normal (recommended) unit shutdown process. Press the E-Stop button to initiate an immediate (forced) unit shutdown. Note that using E-Stop generates an Emergency Shutdown alarm. Initiating a forced shutdown should only be used after first consulting Daikin Applied ATS Technical Response.
4. Click the Notification icon to view warning notices, missing information, system status or configuration error messages that require action.

User Interface Features

Save and Refresh

Save and Refresh buttons appear on certain screens. Click the Save button after making changes so they take effect. ServiceTools prompts to save if switching to another screen without saving first.

The Refresh button reads and displays parameters from the controller. This can be useful when modifications have been made (on any page) but not needed, AND HAVE NOT SAVED. If a change is made using the LUI keypad display, it does not display as live data in ServiceTools until one of two conditions are met:

1. The Refresh button is pressed
2. Navigate to another page and return to the page that shows the new setting

NOTE: ***Once changes have been saved, they cannot be undone.***

In order to protect the equipment from damage and maintain expected unit performance, verify all changes before saving and exiting ServiceTools.

Save and Restore

The Configuration screen (Config Import/Export) has a Save and Restore feature specifically used for “restoring a configuration file from” and “saving a configuration file to” the controller. Separate buttons on this page are used when performing this function:

- Save button = Backup file
- Restore button = Import file

Menu Items Value Ranges

A number of menu item parameters have min/max range limits to the input. ServiceTools displays the range as a pop-up when hovering the mouse above a given field. Only input values within the acceptable range can be saved.

Help with Entering Data

ServiceTools indicates an invalid input or missing information by highlighting the field in red and prevents the change from being saved (Figure 9).

Figure 9: Example of Invalid or Missing Input

Unit Status

Status Info

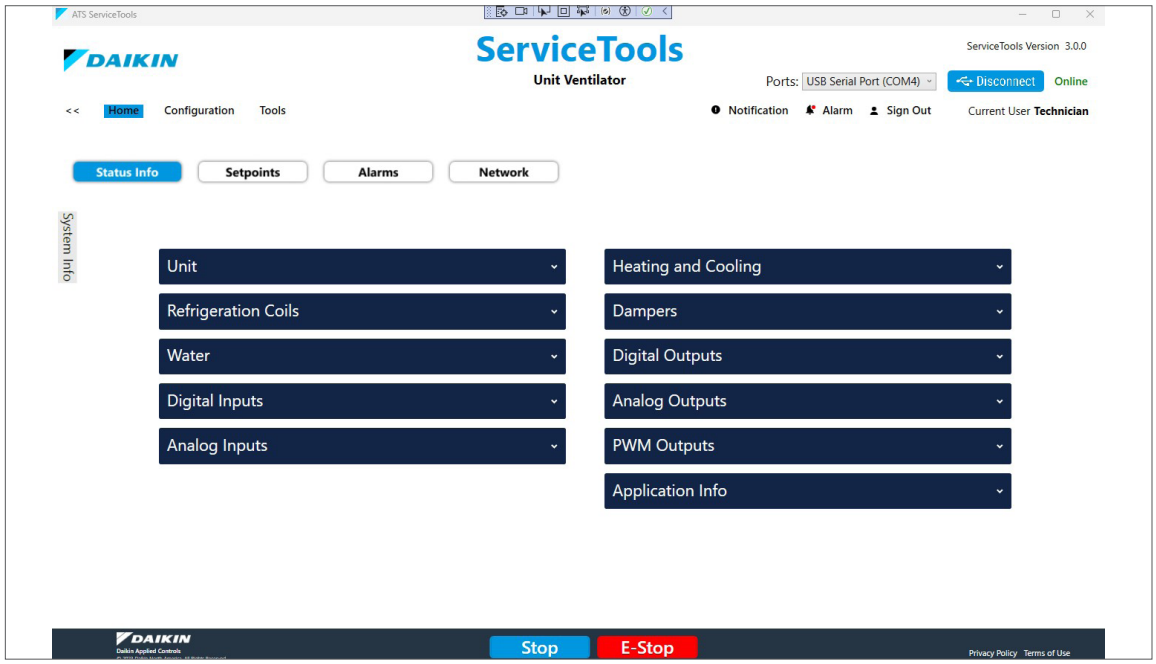
The Status Info screen is where all the unit parameters can be viewed (Figure 10). This is particularly useful during unit start-up. See notes below for additional reference. See Table 5 for menu item descriptions. Note that a given unit configuration may not have all of the items shown here and in Table 5.

The Status Info screen updates from the controller once per second. In other words, the information shown is in real-time and values change frequently when connected to the unit.

NOTE: Verify all unit configuration settings prior to connecting supply power.

A complete list of all unit parameters can be found in the controller Operation Manual (Reference Documents). The settings available in ServiceTools can also be changed from the local user interface (LUI) keypad display.

Figure 10: UV Status Info Screen



Using ServiceTools for Unit Start-Up

Unit Ventilator Start-Up Notes

- Before enabling compressor operation on air-source units, make sure the outdoor fan Digital Output (DO) and the correct indoor fan (DO1, DO2 or DO3) are configured and are on.
- Before testing electric heat stages 1,2 or 3, make sure the correct indoor fan (DO1, DO2, or DO3) is configured and is on. It is also recommended that compressors are turned off before electric heat is enabled.

DOAS WSHP Start-Up Notes

DOAS WSHP units ship in the unoccupied mode by default. This is done to prevent the unit from running without a certified HVAC technician on-site prior to operation. To enter the occupied mode and allow the unit to run, the occupancy command must be changed to either Auto or Occupied. This is done by changing KyOccManCmd from the LUI keypad display or by changing Occupancy Manual Command from the ServiceTools Setpoints ▸ Keypad Display menu (see Setpoints section).

- Confirm steady state operation refrigerant temperatures and pressures.
- Confirm relative air (DB/WB) and water temperatures shown are within 10% of measured values.

Table 5: Status Info Details

Menu Item	Unit Ventilator	DOAS WSHP	Default Value[2,3]	Minimum Value	Maximum Value	Units	Description
Unit							
Eff Setpoint	x		0	-40	212	ºF	Effective DAT setpoint is the target control temperature setpoint based on the current unit mode.
Alarm Status	x	x	No Alarm	-	-	-	Displays status of alarm objects as either Active or Inactive. If Active, click on the Alarms button to view and then clear once the problem has been resolved.
A2L Status	x		Init	-	-	-	Status of the alarm for the A2L controller. Alarm States are: Init, Run, Fault, Alarm, Mitig, Test, NoComm (A2L not communicating with the controller).
Modbus Alarm Status	x		OK	-	-	-	Status of Modbus serial communication between the unit controller and A2L system.
Active Config Alarm	x	x[4]	None	-	-	-	Indicates that the “Configuration Alarm Status” parameter is active. This means that multiple, or duplicate, inputs have been configured for the same functionality.
Unit State	x	x	Powerup	-	-	-	The active unit operating state, determined by current operation and temperature control conditions. Refer to the MicroTech Controller OM for descriptions of all unit state transitions (see Reference Documents).
Fan Status	x		Off	-	-	-	The fan operation speed. Options are Auto, High, Medium, Low or Off.
Eff Occupancy	x	x	Null	-	-	-	The unit occupancy mode (occupied, unoccupied, bypass, or standby). The effective occupancy is determined based on inputs from occupancy override, occupancy scheduler, an internal schedule, and/or an occupancy sensor.
Modbus Configuration	x		None	-	-	-	Modbus communication configuration (None, Client, Server)
Setpoint Method	x		Easy	-	-	-	Determines the control strategy used for calculating the heating or cooling setpoints (effective setpoint). The Advanced method relies on the controller application to determine the occupied, standby, and unoccupied setpoint calculations.
Refrigeration Coils							
High Pressure Status	x		Not High	-	-	-	The output provided by the compressor high pressure switch, if installed and configured correctly.
Indoor Coil Temp	x		---	-40	212	ºF	Indoor coil/suction refrigerant temperature value. Displays a null value (---) if no sensor is installed or is not functioning properly.
Outdoor Coil Temp	x		---	-40	212	ºF	Outdoor refrigerant coil temperature value. Displays a null value (---) if no sensor is installed or is disabled.
Water							
Hot Water Valve Position	x		0	0	100	%	The position of the modulating hot water valve.
Cold Water Valve Position	x		0	0	100	%	The position of the modulating chilled water valve.
Eff Entering Water Temp	x	x	0	-40	212	ºF	The effective entering water temperature value provided by either the local sensor (including any calibration offsets) or the BAS network. Displays a null value (---) if no sensor is installed or is not functioning properly.
Pump Command	x		Inactive	-	-	-	Commands the pump on or off depending on the unit mode (heating, cooling, dehumidification). Indicates when the unit is requesting flow from the main water loop. The loop pump must be running to provide adequate flow through the unit so the compressor(s) can operate safely.
Compressor							
Compressor Stage		x	0	-	-	-	The current compressor stage (0-8) being commanded by the controller.
Eff Suction Refrig Temp		x	0	-	-	ºF	Suction refrigerant temperature value. Displays a null value (---) if no sensor is installed or is not functioning properly.
Eff Suction Refrig Press		x	0	-	-	psi	Suction refrigerant pressure value. Displays a null value (---) if no sensor is installed or is not functioning properly.

Table 4. Status Info Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value[2,3]	Minimum Value	Maximum Value	Units	Description
Suction Saturated Temp		x	0	-	-	ºF	The calculated suction refrigerant saturated temperature value.
Suction Superheat		x	0	-	-	ºF	The calculated suction refrigerant superheat value.
Eff Discharge Refrig Temp		x	0	-	-	ºF	Discharge refrigerant temperature value. Displays a null value (---) if no sensor is installed or is not functioning properly.
Eff Discharge Refrig Press		x	0	-	-	psi	Discharge refrigerant pressure value. Displays a null value (---) if no sensor is installed or is not functioning properly.
Discharge Condensing Temp		x	0	-	-	ºF	The calculated discharge refrigerant condensing temperature value.
Discharge Superheat		x	0	-	-	ºF	The calculated discharge refrigerant superheat value.
Compressor 1 Run Time		x	0	-	-	hours	The accumulated compressor 1 hours of operation.
Compressor 1 Starts		x	0	-	-	-	The accumulated number of times compressor 1 has been energized.
Compressor 2 Run Time		x	0	-	-	hours	The accumulated compressor 2 hours of operation.
Compressor 2 Starts		x	0	-	-	-	The accumulated number of times compressor 2 has been energized.
Digital Inputs[1]							
DI1 High Pressure	x	x	Off	-	-	-	24 VAC high pressure switch input.[2] Used in conjunction with phase monitor and low pressure (DI2). See Configuration.
DI2 Freeze Stat	x	x	Off	-	-	-	24 VAC freeze stat sensor input. See Configuration.[2]
DI3 None (Not Used)	x		-	-	-	-	Extra 24 VAC binary input available. Not used.
DI3 Phase Mon & Low Press		x	Off	-	-	-	24 VAC shared binary input for phase monitoring and low pressure. Also used in conjunction with high pressure (DI1). See Configuration.
DI4 None (Not Used)	x		Off	-	-	-	Extra 24 VAC binary input available. Not used.
DI4 Duct High Limit		x	Off	-	-	-	24 VAC binary input for the duct high limit switch, if sensor is installed and configured. This switch is normally closed. When in an open position, an alarm is indicated.
DI5 Boilerless EH	x		Off	-	-	-	Closed to ground (0 VDC) contact input. Disables compressor heat and enables boilerless electric heat if enabled.
DI5 Dirty Filter		x	Off	-	-	-	Dry contact input that indicates the dirty filter alarm is active and the filter should be replaced. Applies when the binary input, biDirtyFilter, has been configured properly.
DI6 Vent Lockout	x		Off	-	-	-	Dry contact input that indicates if the energy recovery alarm is active. Applies if energy recovery is enabled.
DI6 Energy Recovery Feedback		x	Off	-	-	-	Dry contact input that indicates if the energy recovery alarm is active. Applies if energy recovery is enabled.
DI7 Unoccupied	x	x	Off	-	-	-	Closed to ground (0 VDC) contact input. Used in conjunction with other inputs to set the unit into occupied/unoccupied modes. Set DI7 to None for the controller to follow the schedule.
DI8 Shutdown	x	x	Off	-	-	-	Closed to ground (0 VDC) contact input. Commands the unit to an emergency stop state.
Analog Inputs[1]							
AI1 Room Sensor Setpoint Adjust	x		75	55	95	ºF	The remote wall sensor setpoint adjustment input. It reflects the long-range sensor value using one of two methods: • ABS (absolute): 55° to 95°F adjustment (long range sensor) • DIFF (differential): +/-3°F adjustment
		x	-	55	95	ºF	
AI2 Room Sensor System Mode	x	x	Cool	-	-	-	The unit mode input value (heat/cool/auto/off).
AI3 Room Sensor Fan Speed	x		Auto	-	-	-	The fan speed input value. If Auto is selected, the controller determines the fan speed. This same input is used to indicate a unit OFF command from the sensor's mode button.
AI4 Space Temp	x	x	-	-40	212	ºF	The space temperature value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly.

Table 4. Status Info Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value[2,3]	Minimum Value	Maximum Value	Units	Description
AI5 Indoor Humidity	x		-	-0.1	100.1	%	The indoor relative humidity (RH) value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly.
AI5 Suction Refrig Press		x	-	0	300	psi	The suction refrigerant pressure value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly.
AI6 Outdoor Humidity	x		-	-0.1	100.1	%	The outdoor relative humidity (RH) value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly.
AI6 Discharge Refrig Press		x	-	0	750	psi	The discharge refrigerant pressure value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly.
AI7 Discharge Air Temp	x	x	-	-40	212	ºF	The discharge air temperature (DAT) value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly.
AI8 Return Air Temp	x		-	-40	212	ºF	The return air temperature (RAT) value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly.
AI8 Discharge Refrig Temp		x	-	-40	300	ºF	The discharge refrigerant coil temperature (DRT) value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly.
AI9 Outdoor Air Temp	x	x	-	-40	212	ºF	The outdoor air temperature (OAT) value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly.
AI10 Entering Water Temp*	x	x	-	-40	212	ºF	The entering water temperature (EWT) or outside coil temperature (OCT) value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly. • *AI10 input for UV = OCT or EWT • AI10 input for DOAS WSHP = EWT or Unused
AI11 Leaving Water Temp	x		-	-40	212	ºF	The leaving water temperature (LWT) value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly.
AI11 Leaving Coil Temp		x	-	-40	212	ºF	The leaving coil temperature (LCT) value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly.
AI12 Indoor Coil Temp	x		-	-40	212	ºF	The indoor refrigerant coil temperature (ICT) value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly.
AI12 Suction Refrig Temp		x	-	-40	212	ºF	The suction refrigerant temperature (SRT) value provided by the local sensor. Displays a null value (---) if a valid input is not available.
AI13 Condensate Overflow	x	x	-	-	-	-	The status of the condensate overflow sensor (wet or dry). Displays a null value (---) if no sensor is installed or is not functioning properly.
AI14 CO2	x		-	10	2000	ppm	The CO_2 value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly.
AI15 Outside Humidity		x	-	-0.1	100.1	%	The outdoor relative humidity (OAH) value provided by the local sensor. Displays a null value (---) if no sensor is installed or is not functioning properly.
Heating and Cooling							
Eff Space Temp	x	x	---	-40	212	ºF	The effective space temperature input value provided by either the local sensor (including any calibration offsets) or the BAS network. Displays a null value (---) if no sensor is installed or is not functioning properly.
Eff Return Air Temp	x		---	-40	212	ºF	The effective return air temperature (RAT) input value provided by the local sensor (including any calibration offsets). Displays a null value (---) if no sensor is installed or is not functioning properly.
Eff Discharge Air Temp	x	x	---	-40	212	ºF	The effective discharge air temperature (DAT) input value provided by the local sensor (including any calibration offsets). Displays a null value (---) if no sensor is installed or is not functioning properly.

Table 4. Status Info Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value[2,3]	Minimum Value	Maximum Value	Units	Description
Eff Outdoor Air Temp	x	x	---	-40	212	ºF	The effective outdoor air temperature (OAT) input value provided by the local sensor (including any calibration offsets). Displays a null value (---) if no sensor is installed or is not functioning properly.
Eff Outdoor Humidity	x	x	---	0	100	%	The effective outdoor relative humidity (OAH) input value provided by either the local sensor (including any calibration offsets) or the BAS network. Displays a null value (---) if no sensor is installed or is not functioning properly.
Eff Indoor Humidity	x	x	---	0	100	%	The effective indoor (space) relative humidity (IAH) input value provided by either the local sensor (including any calibration offsets) or the BAS network. Displays a null value (---) if no sensor is installed or is not functioning properly.
Eff Humidity	x		Not Humid	-	-	-	The effective humidistat value, which reflects the effective condition of the indoor/outdoor air (dry or humid) based on either a binary humidistat input or comparison of the relative humidity input to a humidity setpoint, indicating if dehumidification is required.
Control Temp	x		-	-40	212	ºF	Control Temp determines if the unit should be in heating or cooling mode. Depending on how the unit is configured, one of the installed sensors is used to set this value.
Cooling Setpoint	x		73	61	86	ºF	The value used to determine when the unit should enter the cooling mode.
Cooling Off Setpoint	x		-	-	-	ºF	The cooling off setpoint value used to determine when the unit should exit the cooling mode. This value is calculated using the cooling setpoint (see above) and the occupied or unoccupied differential depending on effective occupancy.
Cooling DAT Setpoint	x		90	-40	212	ºF	When in cooling mode, this is the discharge air temperature target that the unit uses to determine its capacity.
Heating Setpoint	x		70	50	82	ºF	The value used to determine when the unit should enter the heating mode.
Heating Off Setpoint	x		---	-	-	-	The heating off setpoint value used to determine when the unit should exit the heating mode. This value is calculated using the heating setpoint (see above) and the occupied or unoccupied differential depending on effective occupancy.
Heating DAT Setpoint	x		85	-40	212	ºF	When in heating mode, this is the discharge air temperature target that the unit uses to determine its capacity.
Setpoint Shift	x		0	-5	5	ºF	Reflects incremental setpoint shifts made to the effective space temperature based on the local room sensor or BAS network input. Displays a null value (---) if no sensor is installed or is not functioning properly.
Electric Heat Stage	x		0	0	3	-	Indicates the electric heat stage (1,2, 3) if enabled.
Condensate Overflow	x		Dry	-	-	-	The status of the condensate overflow sensor (wet or dry). Displays a null value (---) if no sensor is installed or is not functioning properly.
Eff Leaving Coil Temp	x	x	---	-40	212	ºF	The effective leaving coil temperature (LCT) value provided by the local sensor (including any calibration offsets). Displays a null value (---) if no sensor is installed or is not functioning properly.
Eff Dewpoint	x	x	---	0	100	ºF	Reflects the calculated effective dewpoint value. It is used to determine proper unit mode. The effective dewpoint is calculated using the inputs for effective outdoor air temperature, relative humidity, and elevation.

Table 4. Status Info Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value[2,3]	Minimum Value	Maximum Value	Units	Description
Active Setpoint		x	0	-40	212	ºF	Reflects the active control setpoint used for compressor control and staging strategy. The current operating mode determines the setpoint to which the unit is controlling: • Dehumidification = Effective LCT setpoint • Cooling = Effective LCT setpoint • Heating = Effective DAT setpoint
Active Setpoint Upper Bound		x	0	-40	212	ºF	Reflects the calculated upper range of the temperature that results in compressor stage-up in cooling or stage-down in heating.
Active Setpoint Lower Bound		x	0	-40	212	ºF	Reflects the calculated lower range of the temperature that results in compressor stage-down in cooling or stage-up in heating.
Cooling Stage Change		x	None	-	-	-	Indicates if the compressor capacity is shifting up or down to attain the desired cooling state setpoint. Displays “None” when the cooling state has been achieved and the compressors are no longer staging up or down. A true unit steady-state is achieved when both the cooling and heating setpoints have been reached, and “None” is displayed in both of these fields.
Heating Stage Change		x	None	-	-	-	Indicates if the compressor capacity is shifting up or down to attain the desired heating state setpoint. Displays “None” when the heating state has been achieved and the compressors are no longer staging up or down. A true unit steady-state is achieved when both the cooling and heating setpoints have been reached, and “None” is displayed in both of these fields.
OAT High Lockout		x	Unlocked	-	-	-	Indicates if the unit has been disabled (locked) because the outdoor air temperature exceeds the OAT high lockout setpoint range of 80 - 115 ºF. Applies when the lockout functionality is enabled.
OAT Low Lockout		x	Unlocked	-	-	-	Indicates if the unit has been disabled (locked) because the outdoor air temperature is below the OAT low lockout setpoint range of -20 - 20 ºF. Applies when the lockout functionality is enabled.
Dampers - UV							
OA Damper Position	x		0	0	100	%	The outdoor air damper position signal being sent to the actuator. 100% indicates full outdoor air.
OA Damper Min Position	x		0	0	100	%	Outdoor air damper minimum position. This value is determined by setpoint inputs and fan speed. The damper may be open more than this value depending on economizer availability, CO_2 levels, or other factors.
Face & Bypass Damper Position	x		---	0	100	%	The face and bypass (FB) damper position signal being sent to the actuator. Applies when the FB control is active. A value of 0% indicates full bypass of the heating/cooling coils.
Face & Bypass Damper PI Output	x		---	0	100	%	The face and bypass (FB) damper PI loop output signal. Applies when FB damper control is active. The PI loop modulates the damper in order to maintain the control temperature when it goes above the heating setpoint or below the cooling setpoint.
Outdoor Enthalpy	x		---	0	100	BTU	Calculated outdoor enthalpy value based on the outdoor air temperature and outdoor humidity inputs. Displays a null value (---) if no sensor is installed or is not functioning properly.
Indoor Enthalpy	x		---	0	100	BTU	Calculated indoor enthalpy value based on the indoor air space temperature and indoor humidity inputs. Displays a null value (---) if no sensor is installed or is not functioning properly.
Eff CO2*	x		0	0	2000	ppm	The effective space CO_2 value provided by either the local sensor (including any calibration offsets) or the BAS network. Displays a null value (---) if no sensor is installed or is not functioning properly. *Displayed under Fan menu for DOAS WSHP as Eff Space CO2.

Table 4. Status Info Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value[2,3]	Minimum Value	Maximum Value	Units	Description
Fan - DOAS WSHP							
Fan Status		x	Off	-	-	-	The fan operation status, which is either on or off.
Fan Speed		x	0	0	100	%	Fan speed output as a percentage of total capacity.
Fan Run Time		x	-	0	300,000	hours	The total fan run time hours.
Eff Duct Static Press		x	---	0	2.1	inches	The effective duct static pressure (DSP) input value provided by the local sensor (including any calibration offsets). Displays a null value (---) if no sensor is installed or is not functioning properly.
Eff Building Static Press		x	---	-0.25	0.25	inches	The effective building static pressure (BSP) input value provided by either the local sensor (including any calibration offsets) or the BAS network. Displays a null value (---) if no sensor is installed or is not functioning properly.
Eff Space CO2		x	-	0	5000	ppm	The effective space CO_2 input value provided by either the local sensor (including any calibration offsets) or the BAS network. Displays a null value (---) if no sensor is installed or is not functioning properly.
Eff Outside Air Flow		x	-	0	4095	CFM	The effective outdoor airflow value provided by the local sensor (including any calibration offsets). Displays a null value (---) if no sensor is installed or is not functioning properly.
Reset Min CO2		x	-	-	-	%	The minimum CO_2 reset value determines the minimum fan speed.
Reset Max CO2		x	-	-	-	%	The maximum CO_2 reset value determines the maximum fan speed.
Digital Outputs							
DO1 Fan Low	x		Off	-	-	-	The 24 VAC output for a PWM low fixed-speed fan. This output must be energized before the PWM signal to control the fan. Applies to applications with ECM fans controlled by a PWM signal.
DO1 Fan Out		x	Off	-	-	-	The 24 VAC output for fan control output. Determines if fan is enabled (on) or disabled (off).
DO2 Fan Med	x		Off	-	-	-	The 24 VAC output for a PWM medium fixed-speed fan. This output must be energized before the PWM signal to control the fan. Applies to applications with ECM fans controlled by a PWM signal.
DO2 Crank Case Heater		x	Off	-	-	-	24 VAC output for the compressor crank case heater. The crank case heater turns on when both compressors are de-energized. It turns off when either one of the compressors is energized.
DO3 Fan High	x		Off	-	-	-	The 24 VAC output for a PWM high fixed-speed fan. This output must be energized before the PWM signal to control the fan. Applies to applications with ECM fans controlled by a PWM signal.
DO4 Hot Water EOC	x		Off	-	-	-	The 24 VAC output for the hot water end of cycle valve used with 4-pipe heating, 2-pipe heating and 2-pipe cooling configurations.
DO4 Reversing Valve		x	Off	-	-	-	24 VAC reversing valve output. This output moves the reversing valve into either a heating or cooling position based on the unit operating mode.
DO5 Fault Output	x	x	Off				The 24 VAC output signal used to indicate an alarm condition. The output is energized when there is a fault alarm or problem (displayed as Fault Problem) alarm. A problem alarm disables the output but does not shut down the unit. A fault alarm disables the output and forces the unit to shut down This output is reverse-acting. Refer to the Alarm Output in the Digital Output Polarity menu.
DO6 None	x		Off	-	-	-	-
DO6 Energy Recovery Enable		x	Off	-	-	-	Output indicates if energy recovery is enabled.
DO7 None	x		Off	-	-	-	-
DO7 Outside Air Damper		x	Off	-	-	-	Outside air damper status output.
DO8 None	x		Off	-	-	-	-
DO8 Pump Request/Isolation Valve		x	Off	-	-	-	Compressor pump output.

Table 4. Status Info Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value[2,3]	Minimum Value	Maximum Value	Units	Description
DO9 None	x		Off	-	-	-	-
DO9 Comp 1 Low		x	Off	-	-	-	Compressor 1-stage low output.
DO10 None	x		Off	-	-	-	-
DO10 Comp 1 High		x	Off	-	-	-	Compressor 1-stage high output.
DO11 None	x		Off	-	-	-	-
DO11 Comp 2 Low		x	Off	-	-	-	Compressor 2-stage low output.
DO12 None	x		Off	-	-	-	-
DO12 Comp 2 High		x	Off	-	-	-	Compressor 2-stage high output.
DO13 None	x		Off	-	-	-	-
DO13 PreHeat		x	Off	-	-	-	24 VAC output for hydronic or electric preheat. This output can be configured for preheat in order to maintain the DAT setpoint when the unit is in heating mode.
DO14 None	x		Off	-	-	-	-
Analog Outputs							
AO1 Outdoor Air Damper	x		-	0	100	%	The current position of the outdoor air damper.
AO1 Electronic Expansion Valve		x	-	0	100	%	The current position of the electronic expansion valve (EEV).
AO2 Face & Bypass Damper	x		-	0	100	%	The current position of the face and bypass (F&BP) damper.
AO2 Hot Gas Reheat Valve		x	-	0	100	%	The current position of the hot gas reheat (HGR) valve.
AO3 Chilled Water Valve	x		-	0	100	%	The current position of the chilled water valve.
AO4 Hot Water/Chg Over Valve	x		-	0	100	%	The current position of the hot water valve.
AO4 Preheat		x	-	0	100	%	The current output signal to a field-installed preheat device (electric or hot water.)
PWM Outputs							
PWM1 Supply Fan	x	x	-	0	100	%	PWM supply fan speed output.
Application Info							
Application Version	x	x	-	-	-	-	The software application (i.e. build) version loaded on the controller.
Application Number	x	x	-	-	-	-	The full software part number and unit type for the application loaded on the controller.
Bootloader Version	x	x	-	-	-	-	The current version of the bootloader application file. The bootloader is required so that the controller application installs properly.
Local User Interface Version	x	x	-	-	-	-	The current version of the local user interface (LUI keypad display) application.
Lon Application Number*	x		-	-	-	-	The current version of the LonWorks application. Applies only if optional LonWorks communication module is installed. *Available for UV applications only. The DOAS WSHP menu displays a “Not Present” value to indicate that LonWorks is not currently supported.

1 Accessible from the LUI keypad display.
2 If no sensor is installed, the input defaults to null value, displayed in ServiceTools as (---).
3 The default values are based on unit type selected. These are the defaults the application uses when first downloaded into a new controller.
4. Supported by DOAS WSHP v1.1 and newer.

Setpoints

The Setpoints screen is where unit parameters can be configured to meet specific conditions. See Figure 11 (Unit Ventilator) for an overview of the available features. See Table 6 for descriptions of all menu items. Select a field and enter the desired value. Make any additional changes and then click Save. A prompt appears in the event changes have not been saved before leaving this screen. In other words, changes cannot be inadvertently lost. The cell turns red to indicate that a value has been entered that is outside of the acceptable range for that parameter.

Figure 12 shows the Setpoints screen with System Info expander menu. The System Info menu is a convenient tool for quickly viewing the most relevant parameters. Click the gray tab on the left-hand side of the screen and the menu appears.

The System Info menu can be pinned to the screen to see any changes after they have been saved. System Info settings remain pinned on the Status Info, Setpoints, Alarms, Network and Configuration screens. It is also pinned in certain Tools screens depending on user login type: Diagnostic, Inputs (offsets), PI Settings, Network I/O, Manual Override, A2L, and Log.

Figure 11: UV Setpoints Screen

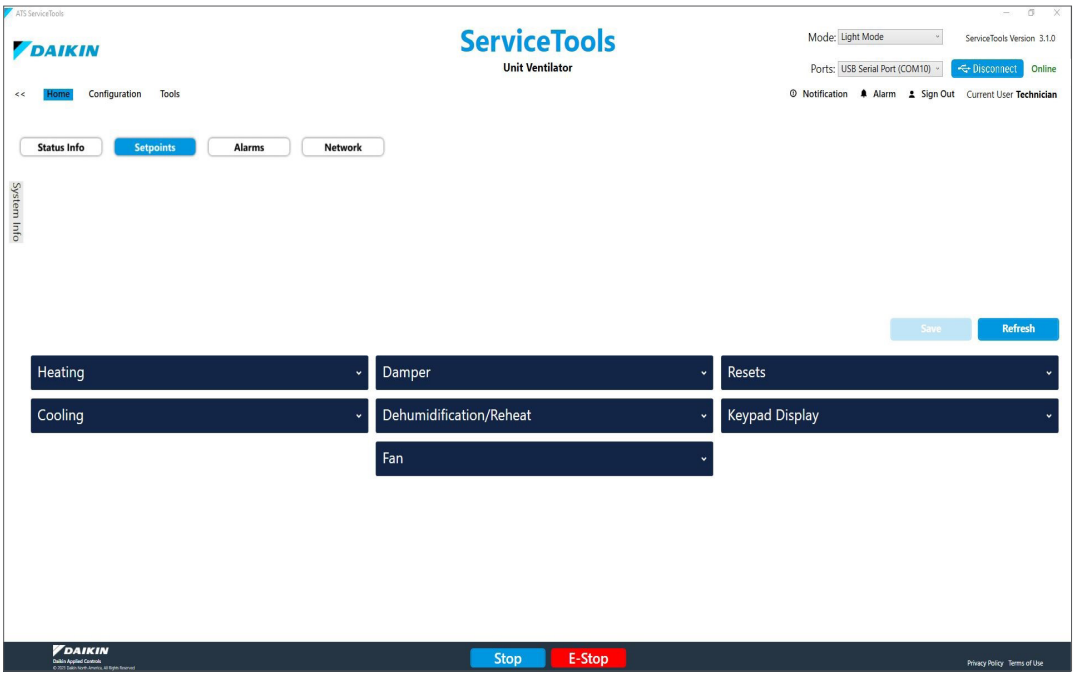
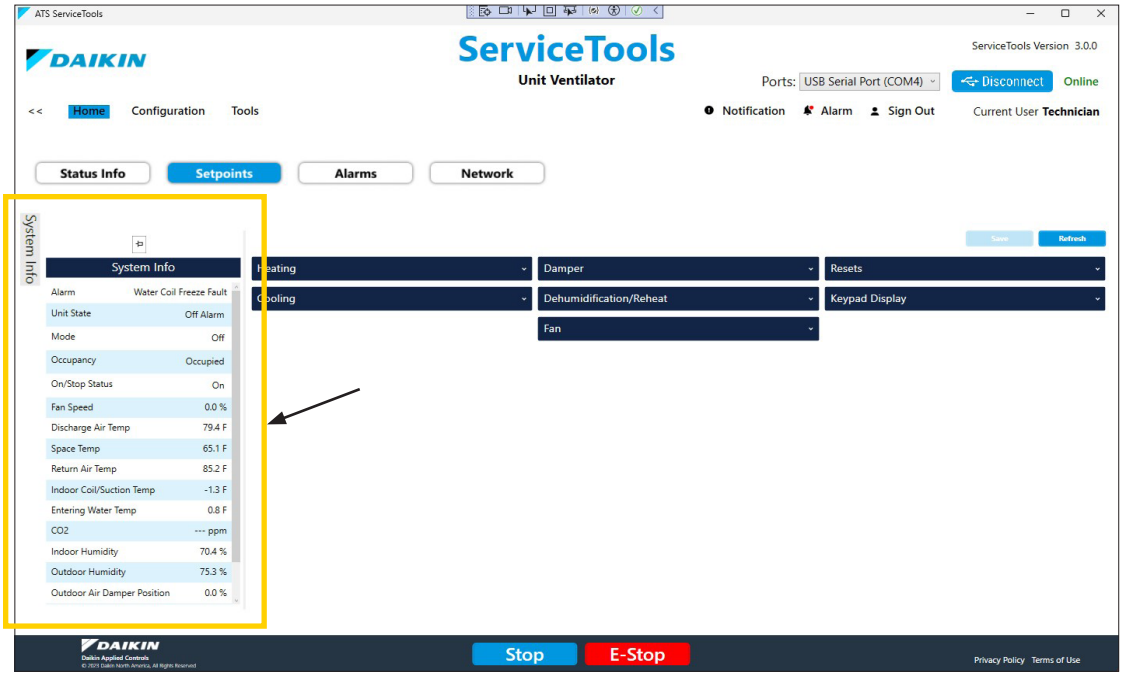


Figure 12: System Info Quick View



Adjusting Setpoints

A number of the control setpoint outputs appear in other ServiceTools screens. However, the Setpoints menus are the only location where inputs can actually be adjusted and saved.

NOTE: Analog inputs commanded from the BAS network override the local sensor inputs.

If there is an error, the Save button is disabled (grayed out) and a Tool-tip appears when hovering over the Save button that states “Set Point Value Error - Modify set point or click Refresh to use previous value.” Note that the Effective and Setpoint values change based on the dependency among the internal setpoint calculations. However, they are prevented from exceeding their allowable ranges. Because sensor types vary, not all of the options shown on this page may be supported.

DOAS WSHP units ship in the unoccupied mode by default. This is done to prevent the unit from running without a certified HVAC technician on-site prior to operation. To enter the occupied mode and allow the unit to run, the occupancy command must be changed to either Auto or Occupied. This is done by changing KyOccManCmd from the LUI keypad display or by changing Occupancy Manual Command from this page.

Table 6: Setpoint Details

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Unit - DOAS WSHP							
Compressor Startup Delay		x	0	0	60	seconds	After controller power-up, this is the amount of time that is added to the compressor minimum off time before the compressor is allowed to run. If this value is left at the default of 0, the controller generates a random value between 0 and 60 seconds.
Remote Setpoint Adjust		x	Differential	-	-	-	The room temperature setpoint value, which can be either: • Absolute (ABS): fixed range of 55°- 95°F. Also referred to as long-range sensor • Differential (DIFF): shift setpoint values up or down by 5°. Also referred to as short-range sensor Note that the UV room sensor setpoint adjust can be changed from Absolute to Differential via the Configuration → Miscellaneous Setpoints page.
Min State Transition Time		x	3	1	5	minutes	The minimum amount of time that the unit must remain in a given state before a stage change can occur.
Local Bypass Time		x	120	0	480	minutes	Sets the period of time the unit is allowed to continue operating when the tenant override button is pressed during an unoccupied period. Applies to units with an optional wall-mounted room temperature sensor with timed override button.
Heating - UV							
Occupied	x		70	50	82	ºF	Mode-dependent setpoint inputs for each occupancy state.
Standby	x		66	50	82	ºF	
Unoccupied	x		61	50	82	ºF	
Discharge Air Temp	x		90	-40	212	ºF	Discharge air temperature (DAT) heating setpoint. In the heating mode, the controller uses the controller, electric heat or hot water valve to maintain this setpoint.
DAT Heating Deadband	x		2	1	5	ºF	Discharge air temperature heating deadband. This value set the range (deadband) around the DAT setpoint. Within this deadband, the controller only enables heating if the DAT < DAT Heating - ½ DAT db.
Auxiliary Heat Off Differential	x		1	1	10	ºF	Auxiliary heating is activated when the control temperature < Effective Heating Setpoint - AuxHtOnDiff, and when all other heating is at 100%.
Auxiliary Heat On Differential	x		2	1	10	ºF	Auxiliary heating is deactivated when the control temperature > Effective Heating Setpoint - AuxHtOnDiff + AuxHtOffDiff.
Cooling - UV							
Occupied	x		73	61	86	ºF	Mode-dependent setpoint inputs for each occupancy state.
Standby	x		77	61	86	ºF	
Unoccupied	x		82	61	86	ºF	
Discharge Air Temp	x		60	-40	212	ºF	Discharge air temperature (DAT) cooling setpoint. In the cooling mode, the controller uses the controller, chilled water valve, and economizer to maintain this setpoint.
DAT Cooling Deadband	x		2	1	5	ºF	Discharge air temperature cooling deadband. This value sets the range (deadband) around the DAT setpoint. Within this deadband, the controller only enables cooling if the DAT > DAT Cooling + ½ DAT db.

Table 6: Setpoint Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Heating and Cooling - DOAS WSHP							
Desired cooling setpoints vary depending on cooling strategy (economy vs precision cooling). The MicroTech DOAS WSHP Operation and Installation Manuals (Reference Documents) provide additional information.							
OAT Cooling		x	80	65	80	ºF	The outside air temperature (OAT) cooling setpoint. This value determines when the unit is in cooling mode. When in cooling mode, compressor staging is based on the leaving coil temperature (LCT).
OAT Heating		x	55	55	70	ºF	The outside air temperature (OAT) heating setpoint. This value determines when the unit is in heating mode. When in heating mode, compressor staging is based on the discharge air temperature (DAT).
Dewpoint		x	65	45	75	ºF	Enables the unit to enter the dewpoint mode (i.e. remove excess humidity from the air) when the dewpoint is above this setpoint.
LCT Cooling		x	70	40	80	ºF	Sets the leaving coil temperature (LCT) setpoint. This value controls compressor staging when the unit is in cooling mode. Used only with economy cooling.
DAT Dehumid		x	70	40	80	ºF	Sets the discharge air temperature reheat setpoint. This value controls the hot gas reheat (HGR) modulation valve when the unit is in dehumidification mode.
DAT Heating		x	70	55	80	ºF	Sets the discharge air temperature (DAT) heating setpoint. This value controls compressor staging when the unit is in heating mode. Also used to modulate the electronic expansion valve (EEV) and hot gas reheat (HGR) valve to attain higher accuracy.
DAT High Limit		x	110	80	135	ºF	Sets the discharge air temperature (DAT) maximum setpoint. An alarm is generated when the DAT is above this setpoint. This value initiates compressor stage-down. Compressors shut off at stage 0 (when the unit reaches the DAT low limit setpoint).
Damper - UV							
The minimum damper values depend on the speed at which the fan is running. If the unit has an optional CO_2 sensor installed and Space CO_2 control is enabled, the minimum damper position is equal to the outdoor air damper minimum position regardless of fan speed.							
Outdoor Air Min Position (High/CO2)	x		20	0	100	%	Outdoor air damper minimum position. The minimum damper position if the supply fan is at high speed, or regardless of fan speed if there is an optional CO_2 sensor installed and space CO_2 control is enabled.
Outdoor Air Min Position (Med)	x		25	0	100	%	Outdoor air damper minimum position medium speed. The minimum damper position if the supply fan is at medium speed and space CO_2 control is disabled.
Outdoor Air Min Position (Low)	x		30	0	100	%	Outdoor air damper minimum position low speed. The minimum damper position if the supply fan is at low speed and space CO_2 control is disabled.
Outdoor Air Max Position	x		100	0	100	%	Outdoor air maximum damper position.
Space CO2	x		1200	0	2000	ppm	Space CO_2 high limit setpoint. If a CO_2 sensor is installed, and space CO_2 control is enabled, the unit adjusts the outdoor air damper position to maintain this setpoint while never going below the OAMin Pos value.
Econ IA/OA Temp Diff	x		2	0	70	ºF	Economizer outdoor/indoor air temperature differential setpoint is used when Diff Temp is selected as the Economizer Method. The OAT must be less than or equal to the space temperature minus this differential for the economizer to be available.

Table 6: Setpoint Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Outdoor Enthalpy	x		27	5	50	BTU	Economizer enthalpy setpoint. The outdoor air enthalpy setpoint used on units with an outdoor air humidity sensor and when Out Enth is selected as the Economizer Method. The calculated outdoor enthalpy must be less than or equal to this setpoint for the economizer to be available.
Econ IA/OA Enthalpy Diff	x		1	0	10	BTU	Economizer outdoor/indoor air temperature differential setpoint is used when Enthalpy Comp is selected as the Economizer Method. The outdoor enthalpy must be less than or equal to the space enthalpy minus this differential for the economizer to be available.
OAT Economizer Lockout	x		68	-40	80	ºF	Configures the economizer outdoor air temperature (OAT) lockout setpoint. When the OAT is above this setpoint, the economizer is not available.
Outdoor Air Temp Lockout Enable	x		Disable	-	-	-	Enables the outdoor air lockout function, which causes the unit to close the outdoor air damper when the outdoor air temperature drops below the damper low OAT lockout setpoint.
Damper Low OAT Lockout	x		36	25	45	ºF	Outdoor air low lockout setpoint. When OA lockout has been enabled, the outdoor air damper is forced closed and the controller cooling is disabled when the OAT drops below this setpoint. The outdoor air damper is not allowed to resume normal operation until the OAT rises above this setpoint plus a 1°F differential. Emergency override and night purge can override and open the outdoor air damper.
Compressor - DOAS WSHP							
Low Suction Line Temp		x	28 (Water) 6.5 (Glycol)	0	50	ºF	The suction refrigerant temperature (SRT) low limit setpoint value. An alarm is generated when the SRT is below this setpoint. This value reflects the water loop type that is configured for the unit (water or glycol). **This setpoint should only be adjusted by a qualified technician after consulting Daikin ATS Technical Response.**
Low Suction Line Temp Diff		x	8	2	15	ºF	The temperature differential value that generates an alarm when either: 1. The unit is configured for a water loop and the suction refrigerant temperature (SRT) is below the low SRT setpoint (28°F) 2. The unit is configured for glycol and the SRT is below the low SRT setpoint (6.5°F) This indicates that a potential freeze condition can occur. The alarm clears automatically when the suction refrigerant temperature exceeds the setpoint by 4°F. The alarm can occur up to three times within a 7-day period. The third time requires a manual reset.
Compressor Minimum On Time		x	180	60	600	seconds	The minimum amount of time the compressor must run before it can be turned off.
Compressor Minimum Off Time		x	300	300	600	seconds	The minimum amount of time the compressor must be off before it can be started again.
Outside Air - DOAS WSHP							
OA Lockout Enable		x	Disable	-	-	-	Enables the outdoor air lockout function. When enabled, the unit forces the outdoor air damper closed when the outdoor air temperature drops below the outdoor air lockout setpoint.

Table 6: Setpoint Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
OAT High Lockout		x	115	80	120	ºF	Outdoor air high lockout setpoint. When OA lockout has been enabled, the outdoor air damper is forced closed and the controller cooling is disabled when the OAT rises above this setpoint. The outdoor air damper is not allowed to resume normal operation until the OAT drops below this setpoint plus a 1°F differential.
OAT Low Lockout		x	-20	-20	20	ºF	Outdoor air low lockout setpoint. When OA lockout has been enabled, the outdoor air damper is forced closed and the controller cooling is disabled when the OAT drops below this setpoint. The outdoor air damper is not allowed to resume normal operation until the OAT rises above this setpoint plus a 1°F differential. Emergency override and night purge can override and open the outdoor air damper.
OAD Damper Timer to Open		x	10	1	300	sec	The amount of time that is allowed for the air damper door to open.
Water - DOAS WSHP							
Heating EWT Lockout		x	30 (Water) 15 (Glycol)	10 0	212 70	ºF	Disables heating when the entering water temperature drops below this setpoint. This value reflects the water loop type that is configured for the unit (water or glycol).
Dehumidification/Reheat - UV							
Space Relative Humidity	x		60	10	100	%	Indoor (space) relative humidity sensor input value. Applies to units with some form of reheat, a space relative humidity sensor is installed, and enabled, and dehumidification enabled. In this configuration, the unit enters dehumidification mode if the space relative humidity rises above this setpoint. Note that the unit prioritizes heating or cooling above dehumidification.
Discharge Air Temp	x		55	-40	212	ºF	Discharge air temperature setpoint for the reheat mode. Used when no reheat reset is enabled.
Dehumid Setpoint Select	x		RH	-	-		Dehumidification measurement type when in occupied mode. Supported in UV v1.5 and newer. Options: RH or DEWPT
Space Dewpoint Setpoint	x		60	50	70	ºF	Dehumidification dewpoint setpoint. Supported in UV v1.5 and newer.
Space Dewpoint Off Differential	x		2	1	10	ºF	Dehumidification dewpoint off differential setpoint. Supported in UV v1.5 and newer.
Fan - UV							
Dirty Filter Alarm	x		Disable	-	-	-	Enables the filter change alarm function.
Clear Dirty Filter Alarm	x		None	-	-		Reset filter alarm input.
Filter Change Hours	x		700	50	2000	hours	Configures the number of fan run hours before the filter change alarm indicates that the filter needs to be replaced.
Fan - DOAS WSHP							
Reset Min CO2		x	400	0	5000	ppm	The fan is set to the minimum speed when the space CO_2 is at or below this setpoint. Applies only to VAV units with fan speed control strategy configured for CO_2.
Reset Max CO2		x	2000	0	5000	ppm	The fan is set to the maximum speed when the space CO_2 is at or above this setpoint. Applies only to VAV units with fan speed control strategy configured for CO_2.
Building Static Press		x	0.1	-.25	.25	inches	The effective building static pressure sensor (BSP) setpoint. Applies only to units configured for BSP fan control.
Duct Static Press		x	1	0	3	inches	The effective duct static pressure (DSP) sensor setpoint.
Reset Change Filter Alarm		x	None	-	-	-	Reset filter alarm input.

Table 6: Setpoint Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Expansion Valve - DOAS WSHP							
Filter Change Hours		x	700	50	2000	hours	Configures the number of fan run hours before the filter change alarm indicates that the filter needs to be replaced.
High SSH Limit		x	50	-	-	ºF	When the calculated suction superheat value rises above this setpoint, an alarm is generated and the compressors shut down. This value is read-only.
Low SSH Limit		x	2	-	-	ºF	When the calculated suction superheat value is below this setpoint, an alarm is generated and the compressors shut down. This value is read-only.
Resets - UV							
The Resets menu provides access to parameters that support reset features for indoor fan speed and discharge air temperature setpoints in reheat mode. These inputs shift the DAT setpoint up or down based on another value such as the space temperature or outside air temperature.							
Cooling DAT Reset Select	x		Network	-	-	-	Selects the method used to determine the discharge air temperature reset cooling mode setpoint. Selecting anything other than None enables this functionality based on the following options: • Network = Value supplied by the BAS • Space = Space temperature • Return = Return temperature • OAT = Outdoor air temperature • Cntrl Df = Based on the differential between the control temperature and the effective cooling setpoint
Min Cooling DAT	x		55	40	100	ºF	Sets the minimum cooling discharge air temperature allowed when unit is in cooling mode and the reset is enabled.
Max Cooling DAT	x		65	40	100	ºF	Maximum cooling discharge air temperature allowed when unit is in cooling mode and the reset is enabled.
Min Cooling Control Temp	x		75	-40	212	ºF	Minimum discharge air temperature control value. When the control temperature is less than or equal to Min Cooling Control Temp, the DAT Cooling value is equal to Max DAT.
Max Cooling Control Temp	x		78	-40	212	ºF	Maximum discharge air temperature control value. When the control temperature is equal to or greater than Max Cooling Control Temp, the DAT Cooling value is equal to MinDAT.
Min Cooling Differential	x		5	1	20	ºF	Minimum cooling control temperature differential value. When the control temperature is less than or equal to the Effective Cooling Setpoint plus the Min Cooling Differential, the DAT cooling setpoint is equal to Min Cooling DAT.
Max Cooling Differential	x		0	0	10	ºF	Maximum cooling control temperature differential value. When the control temperature is greater than or equal to the Effective Cooling Setpoint plus the Max Cooling Differential, the DAT Cooling setpoint is equal to Max Cooling DAT.
Heating DAT Reset Select	x		Network	-	-	-	Selects the method used to determine the discharge air temperature reset heating mode setpoint. Selecting anything other than None enables this functionality based on the following options: • Network = Value supplied by the BAS • Space = Space temperature • Return = Return temperature • OAT = Outdoor air temperature • Cntrl Df = Based on the differential between the control temperature and the effective heating setpoint
Min Heating DAT	x		80	40	140	ºF	Minimum heating discharge air temperature allowed when unit is in heating mode and the reset is enabled.
Max Heating DAT	x		120	40	140	ºF	Maximum heating discharge air temperature allowed when unit is in heating mode and the reset is enabled.

Table 6: Setpoint Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Min Heating Control Temp	x		67	-40	212	ºF	Minimum discharge air temperature control value. When the control temperature is less than or equal to MnDAT Ctrl, the DAT Heating value is equal to Min DAT.
Max Heating Control Temp	x		70	-40	212	ºF	Maximum discharge air temperature control value. When the control temperature is equal to or greater than MxDAT Ctrl, the DAT Heating value is equal to Max DAT.
Min Heating Differential	x		5	1	20	ºF	Minimum heating control temperature differential value. When the control temperature is less than or equal to the Effective Heating Setpoint minus the Min Heating Differential, the DAT heating setpoint is equal to Min Heating DAT.
Max Heating Differential	x		0	0	10	ºF	Maximum heating control temperature differential value. When the control temperature is greater than or equal to the Effective Heating Setpoint minus the Max Heating Differential, the DAT Heating setpoint is equal to Max Heating DAT.
Low DAT Reset Select	x		None	-	-	-	Selects the method used to determine the discharge air temperature reset reheat mode setpoint. Selecting anything other than None enables this functionality based on the following options: • Network = Value supplied by the BAS • Space = Space temperature • Return = Return temperature
Low DAT Setpoint Min	x		50	40	100	ºF	Minimum discharge air temperature setpoint.
Low DAT Setpoint Max	x		60	40	100	ºF	Maximum discharge air temperature setpoint.
Low DAT Control Temp Min	x		70	40	100	ºF	Minimum control temperature for Discharge Air Temperature. The DAT reheat setpoint is Max Reheat DAT when the selected reheat control temperature is less than or equal to this value. Applies when DAT reheat reset is enabled.
Low DAT Control Temp Max	x		75	40	100	ºF	Maximum control temperature for Discharge Air Temperature. The DAT reheat setpoint is Min Reheat DAT when the selected reheat control temperature is greater than or equal to this value. Applies when DAT reheat reset is enabled.
Fan Speed Reset Select	x		Single DAT	-	-	-	Sets the Indoor fan speed control strategy when the fan is in Auto mode. Applies to the following options: • Singl DAT (Single Zone VAV) • CO_2 • AI Input (Analog input voltage)
Min Fan Speed	x		20	10	100	%	Sets the fan speed to this value when the CO_2 ppm reading is less than or equal to ResetMinCO2. Applies when Fan Reset Select is CO_2 and one of the analog inputs is configured for CO_2.
Max Fan Speed	x		100	20	100	%	Sets the fan speed to this value when the CO_2 ppm reading is greater than or equal to ResetMaxCO2. Applies when Fan Reset Select is CO_2 and one of the analog inputs is configured for CO_2.
AI Voltage Min	x		0	0	10	volts	Sets the voltage level at which the controller commands the fan speed to the ResetMinUnits value when Fan Reset is AI_Input and one of the analog inputs is configured for Reset Volts.
AI Voltage Max	x		10	0	10	volts	Sets the voltage level at which the controller commands the fan speed to the ResetMaxUnits value when Fan Reset is AI_Input and one of the analog inputs is configured for Reset Volts.
AI Units Min	x		0	0	100	%	Sets the fan speed to which the controller commands when the reset voltage input is at the ResetMinVolts level. Applies when Fan Reset is AI_Input and one of the analog inputs is configured for Reset Volts.

Table 6: Setpoint Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
AI Units Max	x		100	0	100	%	Sets the fan speed control when the reset voltage input is at the ResetMaxVolts level. Applies when Fan Reset is AI_Input and one of the analog inputs is configured for Reset Volts.
DAT Cooling		x	None	-	-	-	Selects the method used to determine the discharge air temperature reset cooling mode setpoint. Selecting anything other than None enables this functionality based on the following options: • Network = Value supplied by the BAS • Space = Space temperature • Outside Air Temp = Outside air temperature • AiReset = Field-supplied 0-10 VDC analog input
Resets - DOAS WSHP							
DAT Heating		x	None	-	-	-	Selects the method used to determine the discharge air temperature reset heating mode setpoint. Selecting anything other than None enables this functionality based on the following options: • Network = Value supplied by the BAS • Space = Space temperature • Outside Air Temp = Outside air temperature • AiReset = Field-supplied 0-10 VDC analog input
Cooling Max DAT		x	70	60	70	ºF	Maximum cooling discharge air temperature allowed when unit is in cooling mode and the reset is enabled.
Cooling Min DAT		x	60	50	60	ºF	Minimum cooling discharge air temperature allowed when unit is in cooling mode and the reset is enabled.
Heating Max DAT		x	70	70	90	ºF	Maximum heating discharge air temperature allowed when unit is in heating mode and the reset is enabled.
Heating Min DAT		x	60	60	80	ºF	Minimum heating discharge air temperature allowed when unit is in heating mode and the reset is enabled.
Cooling Max OAT		x	90	80	100	ºF	Maximum outside air temperature (OAT) cooling control value. When the OAT is equal to or greater than the Cooling Max OAT, the DAT Cooling setpoint is equal to Cooling Min DAT.
Cooling Min OAT		x	70	60	80	ºF	Minimum outside air temperature (OAT) cooling control value. When the OAT is equal to or less than the Cooling Min OAT, the DAT Cooling setpoint is equal to Max Cooling DAT.
Heating Max OAT		x	60	50	70	ºF	Maximum outside air temperature (OAT) heating control value. When the OAT is equal to or greater than the Heating Max OAT, the DAT Heating setpoint is equal to Heating Min DAT.
Heating Min OAT		x	50	30	50	ºF	Minimum outside air temperature (OAT) heating control value. When the OAT is equal to or less than the Heating Min OAT, the DAT Heating setpoint is equal to Heating Max DAT.
Cooling Max Space Temp		x	75	70	80	ºF	Maximum discharge air temperature (DAT) cooling control value. When the control temperature is equal to or greater than the Cooling Max Space Temp, the DAT cooling value is equal to the minimum DAT.

Table 6: Setpoint Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Cooling Min Space Temp		x	70	65	75	ºF	Minimum discharge air temperature cooling control value. When the control temperature is less than or equal to the Cooling Min Space Temp, the DAT cooling value is equal to the maximum DAT.
Heating Max Space Temp		x	70	65	75	ºF	Maximum discharge air temperature heating control value. When the control temperature is equal to or greater than the Heating Max Space Temp, the DAT heating value is equal to the minimum DAT.
Heating Min Space Temp		x	65	60	70	ºF	Minimum discharge air temperature heating control value. When the control temperature is less than or equal to the Heating Max Space Temp, the DAT heating value is equal to the maximum DAT.
DAT Ai Cool/Heat Max		x	10	5	10	volts	Maximum discharge air temperature (DAT) cooling analog input voltage value. When the analog input voltage is equal to or greater than the DAT Ai Cool/Heat Max value, the DAT cooling/heating value is equal to the maximum DAT.
Resets - DOAS WSHP							
DAT Ai Cool/Heat Min		x	0	0	2	volts	Minimum discharge air temperature (DAT) cooling analog input voltage value. When the analog input voltage is equal to or less than the DAT Ai Cool/Heat Min value, the DAT cooling/heating value is equal to the minimum DAT.
DAT Ai Max Volts		x	10	0	10	volts	Maximum voltage level for AI4 when configured for DAT Reset.
DAT Ai Min Volts		x	0	0	10	volts	Minimum voltage level for AI4 when configured for DAT Reset.
DAT Reset Direction		x	Direct	-	-	-	Configures the AI4 polarity output signal from normally closed (Direct) to normally open (Reversed) when AI14 is configured for DAT Reset.
Fan Reset Max Volts		x	0	0	10	volts	Sets the voltage level at which the controller commands the fan speed to the Fan Reset Min value when AI14 is configured for Fan Reset.
Fan Reset Min Volts		x	10	0	10	volts	Sets the voltage level at which the controller commands the fan speed to the Fan Reset Max value when AI14 is configured for Fan Reset.
Fan Reset Direction		x	Direct	-	-	-	Configures the AI4 polarity output signal from normally closed (Direct) to normally open (Reversed) when AI14 is configured for Fan Reset.
DAT Cooling Source		x	0	-	-	ºF	The DAT cooling control value that determines the DAT reset setpoint.
DAT Heating Source		x	0	-	-	ºF	The DAT heating control value that determines the DAT reset setpoint.
Keypad Display							
The following parameters are adjustable from the LUI keypad display. They are also adjustable with ServiceTools to assist with unit start-up and troubleshooting. Press Save and then Refresh to send the new configuration to the controller. Once this happens, the new settings appear in the LUI, ServiceTools, and the BAS.							
System Mode Command	x	x	Auto	-	-	-	The current unit mode input value (heat, cool, fan only, etc.) Note that System Mode Command drop-down menu options vary depending on unit type (UV or DOAS WSHP).
Occupancy Manual Command	x	x	Auto	-	-	-	Occupancy override that can be set from the LUI keypad display or from a BAS network command.
Keypad Setpoint Command	x	x	Auto	-	-	-	Overrides the occupancy mode automatically set by the controller. Puts the unit into constant occupied, unoccupied, bypass, or standby mode until this setpoint is returned to Auto mode.
Dehumidification	x	x	Enable	-	-	-	Disables the dehumidification mode.

Table 6: Setpoint Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Energy Hold Off	x		Normal	-	-	-	Enables the unit to enter the energy hold off mode. Energy hold off prevents the unit from heating and cooling, thus allowing it to protect the space from temperature extremes. When energy hold off is enabled, heating is not provided unless the space temperature exceeds the emergency heat setpoint. With the exception of free cooling, it does not allow for cooling operation.
Manual Fan Speed	x		Auto	-	-	-	Allows user to manually set the fan speed to low, medium or high speed; also allows user to control automatically. Changes are not reset when cycling power to the controller.
Units of Measure	x	x	Imperial	-	-	-	Changes the units of measure for temperature setpoints. Note that switching the default of Imperial (English) to SI (Metric) changes the temperature values for the affected properties in the BACnet portion of the controller application.

Alarms

The MicroTech controller has various ways of monitoring, acknowledging, and clearing alarms. The Alarms screen is where active unit alarms are displayed and cleared (Figure 13 and Table 7). The alarms are listed by the highest priority active alarm.

Refer to Table 8 and Table 9 for the full list of alarms supported by UV and DOAS WSHP unit controller applications.

Table 7: Alarms Screen Details

Name	Default	Description
Current Alarm	No Alarm	Displays the highest priority active alarm.
Control Board Alarm	0 (No Alarm)	Indicates if the controller is in an alarm condition. 0 = No alarm active 1 = One or more active alarm
Active Config Alarm	None	Indicates if one of the configurable alarm parameters is active. Alarm automatically resets upon clearing.
Modbus Alarm Status	OK	Indicates Modbus configuration and communication status. • OK = No alarms. A2L refrigerant detection control system communicating properly. • Config = Internal software error. • Comm = Communication error with either the A2L controller or sensor(s) on the Modbus network. • Version = Internal mismatch between UV application version and Modbus version. • SRange = Invalid A2L sensor (server) address. • CRange = Invalid A2L controller address; (client) is not 1. • RSRange = Invalid room sensor address (range). • Duplicate = Duplicate device address on the Modbus network. All devices must have a unique Modbus address. Alarm clears automatically upon reset.

Each alarm is cleared by one of these three methods as described in Table 8 and Table 9:

1. Automatic clearing (Auto)
2. Manual clearing (Manual)
3. Manual clearing if alarm has been activated three times within a seven-day period (Auto/Manual)

Alarm History

The last 32 alarms are recorded in the alarm history with the date, the time the alarm became active and inactive, and alarm description. When an alarm is cleared, it is removed and no longer appears in the alarm history. When more than 32 alarms have occurred, the last (oldest) is automatically removed from the log and does not appear in the alarm history.

Often times a number of erroneous alarms are generated during unit start-up or maintenance. These nuisance-type alarms get stored in the alarm history and then appear in ServiceTools or the LUI keypad display. Clearing the alarm history removes the nuisance alarms.

Clearing Active Alarms

To clear all active alarms:

1. First verify that the source of the alarm has been corrected (for example, having an incorrect/unsupported sensor installed or a faulty sensor).
2. Click the Clear Alarms button to remove all active alarms. Once the alarm has been cleared, it moves to the alarm history.

NOTE: Once the alarms have been cleared, there is no way to refresh or retrieve them.

A2L Refrigerant Detection System Alarms (UV Only)

UV controller application software v.3 and newer support R-32 refrigerant requirements. The MT6210 A2L refrigerant detection controller is used in conjunction with the UV controller and refrigerant sensor(s) to achieve this purpose. The MT6210 communicates sensor status to the UV controller. ServiceTools v3.1 and newer allows Maintenance and Technician level users to access this information and to manually clear alarms.

Modbus Client/Server (UV Only)

A single UV controller (client) can supervise multiple server devices such as room sensors. ServiceTools can be used to configure client and server devices and enable alarm notifications.

NOTE: Modbus client/server alarms are only supported in UV applications v1.5 and newer.

Once configured, the client can:

1. Coordinate communication from 1-9 server UVs
2. Coordinate communication with 1-4 room sensor servers

Both the UV controller client and affected server(s) use the *ModbusAlarm* parameter to indicate a loss of communication, incorrect or duplicate device addressing, or software incompatibility. When one or more servers lose communication to the client, the affected server(s) parameters become invalid and revert to their default values. The unaffected servers continue to communicate as expected. Once the server is communicating, the alarm clears the next time it is pinged by the client. The server parameter settings are then restored.

Each server has its own fault, problem, and warning alarms. *ModbusAlarm* does not automatically activate when one of these server alarms has been generated. See Alarm Tables in the next section for a complete description of *ModbusAlarm* and individual server alarms.

NOTE: When a new server device is added or replaced, the UV controller client must be configured for manual discovery. This can be done with ServiceTools software. If the client discovers an unexpected server device while performing routine network polling, a “comm” error is displays from ModbusAlarm (Alarm 31) until the server is discovered.

Refer to MicroTech UV Controller OM 1280 or MicroTech DOAS WSHP Controller OM 1308 for more alarm information. BAS-supported alarms are found in the MicroTech UV Controller Network Integration Guide, ED 19110 or MicroTech DOAS WSHP Controller Network Integration Guide, ED 19118 (www.DaikinApplied.com).

Figure 13: UV Alarms

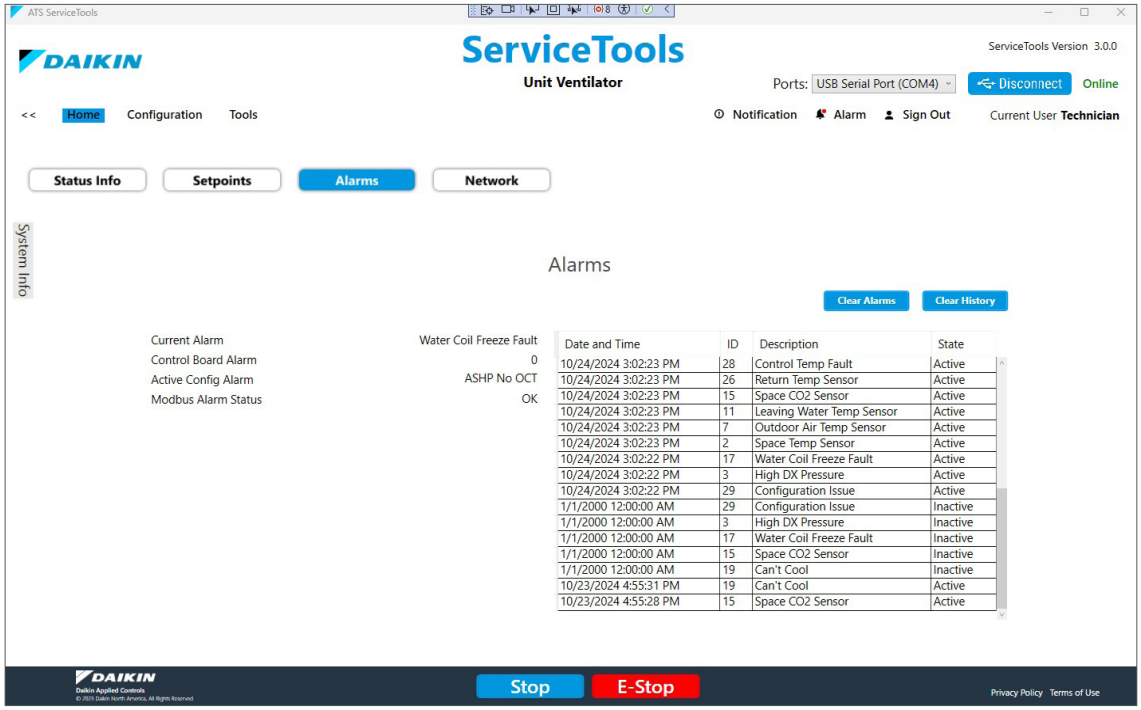


Table 8: UV Alarm Details

BACnet Alarm Index Number[3]	LonWorks Alarm Index Number	Description	Priority	Type	Clear
1	0	NoAlarm	-	-	-
2	1	ShutdownDIAlarm	3	Fault	Auto
3	2	SpaceTempSensorAlarm	8	Problem	Auto
4	3	HighDxPressureAlarm[1,2]	9	Problem	Auto
5	4	DATLLDxAlarm	10	Problem	Auto
6	5	CondensateOverflowAlarm	11	Problem	Auto
7	6	IndoorAirCoilDxTempSensorAlarm[2]	12	Problem	Auto
8	7	OATSensorAlarm	13	Problem	Auto
9	8	DATSensorAlarm	4	Fault	Auto
10	9	OutdoorAirCoilDxTempSensorAlarm[2]	14	Problem	Auto
11	10	WaterCoilDxTempSensorAlarm[2]	15	Problem	Auto
12	11	WaterOutTempSensorAlarm	16	Problem	Auto
13	12	WaterInTempSensorAlarm	17	Problem	Auto
14	13	SpaceHumiditySensorAlarm	18	Problem	Auto
15	14	OutdoorHumiditySensorAlarm	19	Problem	Auto
16	15	SpaceCO2SensorAlarm	20	Problem	Auto
17	16	WaterInTempInadequateAlarm	21	Problem	Auto
18	17	WaterCoilFreezeFaultAlarm	7	Fault	Auto
19	18	LowSuctionLineTempAlarm[1,2]	22	Problem	Auto
20	19	CantCoolAlarm	23	Problem	Auto
21	20	CantHeatAlarm	24	Problem	Auto
22	21	DATLLAlarm	25	Problem	Auto
23	22	BrownoutAlarm[2]	26	Problem	Auto
24	23	HighVoltageAlarm[2]	27	Problem	Auto
25	24	ChangeFilterAlarm	31	Warning	Manual
26	25	LowOACoilTempAlarm	28	Problem	Auto
27	26	ReturnTempSensorAlarm	29	Problem	Auto
28	27	FactoryConfigStringAlarm	5	Fault	Manual

Table 8: UV Alarm Details, Continued

BACnet Alarm Index Number[3]	LonWorks Alarm Index Number	Description	Priority	Type	Clear
29	28	ControlTempAlarm[2]	6	Fault	Manual
30	29	ConfigurationAlarm	37	Warning	Auto
31	30	ControlBoardAlarm	2	Fault	Auto
32	-	ModbusAlarm[3]	34	Problem	Auto
33	-	ServerFaultAlarm[4]	11	Problem	Auto
34	-	ServerProblemAlarm	35	Problem	Auto
35	-	ServerWarningAlarm	38	Warning	Auto
36	-	A2lLeakAlarm	3	Fault	Manual
37	-	A2lSensorAlarm	9	Problem	Auto
38	-	A2lCommunicationAlarm	10	Problem	Auto

[1] After seven days, alarm reverts from Auto to Manual reset.
[2] Multi-compressor alarm.
[3] Each server has its own fault, problem, and warning alarms. See BACnet alarms 33-35 in the following tables. ModbusAlarm does not automatically activate when there is an individual server alarm. It activates due to an addressing error, software incompatibility, or loss of communication with at least one of the server devices. When this happens, the affected server parameters revert to invalid (default) values until communication is restored. The other servers maintain control by the server and continue to communicate as expected.
[4] Indicates a fault has occurred in at least one of the server devices. This generates a problem alarm in the client. This prevents the client from shutting down due to a fault.

Table 9: DOAS WSHP Alarm Details

BACnet Alarm Index Number[3]	LonWorks Alarm Index Number	Alarm Name Description	Priority	Type	Clear
1	0	NoAlm	0		
2	1	HighDxPressureAlarm	4	Fault	Auto/Manual[2]
3	2	LowDxPressureAlarm	5	Fault	Auto/Manual[2]
4	3	LowSuctionLineTempAlarm	12	Fault	Auto/Manual[2]
5	4	HydronicCoilFreezeAlarm	19	Fault	Auto
6	5	ShutdownDIAlarm	1	Fault	Auto
7	6	ChangeFilterAlarm	44	Warning	Manual
8	7	HighDuctStaticPrsAlarm	10	Fault	Manual
9	8	CondensateOverflowAlarm	20	Fault	Auto
10	9	LowEnteringWaterTempAlarm	34	Problem	Auto
11	10	BrownoutAlarm	3	Fault	Auto
12	11	LowLeavingCoilTempAlarm	21	Fault	Auto
13	12	HighDischargeAirTempAlarm	23	Fault	Auto
14	13	HiSuctionSuperHeatAlarm	37	Warning	Auto
15	14	LoSuctionSuperHeatAlarm	18	Fault	Auto/Manual[2]
16	15	HighDRTAlarm	15	Fault	Manual
17	16	HighCondSatTempAlarm	38	Warning	Auto
18	17	LowCondSatTempAlarm	24	Fault	Auto
19	18	HighEvapSatTempAlarm	39	Warning	Auto
20	19	LowEvapSatTempAlarm	25	Fault	Auto
21	20	HighCondSatTemp2Alarm	31	Fault	Auto
22	21	LowCondSatTemp2Alarm	32	Warning	Auto
23	22	HydronicHeatAlarm	40	Warning	Auto
24	23	SpcTLwtSensorAlarm	35	Problem	Auto
25	24	DRTSensorAlarm	14	Fault	Auto
26	25	FanSensorAlarm	41	Warning	Auto
27	26	SuctionTempSensorAlarm	11	Fault	Auto
28	27	SuctionPressSensorAlarm	13	Fault	Auto
29	28	DischargePressSensorAlarm	16	Fault	Auto
30	29	InHumOAFlwSensorAlarm	42	Warning	Auto
31	30	OutdoorHumSensorAlarm	8	Fault	Auto
32	31	LCTSensorAlarm	9	Fault	Auto
33	32	OATSensorAlarm	7	Fault	Auto
34	33	OilPurgeAlarm	43	Warning	Auto

Table 9: DOAS WSHP Alarm Details, Continued

BACnet Alarm Index Number[3]	LonWorks Alarm Index Number	Description	Priority	Type	Clear
35	34	ConfigErrorAlarm	26	Fault	Auto
36	35	FanConfigAlarm	27	Fault	Auto
40	39	DATSensorAlarm	17	Fault	Auto
41	40	DefrostAlarm	30	Fault or Warning[1]	Auto/Manual[2]
42	41	EnergyRecoveryAlarmP	33	Problem	Auto
43	42	EnergyRecoveryAlarmF	29	Fault	Auto
44	43	ControlBoardAlarm	2	Fault	Auto
45	44	LowDATAlarm	22	Fault	Auto/Manual[2]

[1] See alarm description in either Fault or Warning table for details.
[2] After seven days, alarm reverts from Auto to Manual reset with the Intelligent Reset feature.
[3] BAS integrators may see BACnet alarms 46-49 not shown here. These additional alarm enumerations are for internal use only and not supported for field use.

Network

The Network screen (Figure 14) is where BACnet and LonWorks addressing parameters are configured. Setting these basic parameters establishes communication between the MicroTech controller and the BAS. Table 10 describes the BACnet and LonWorks parameters supported for both UV and DOAS WSHP applications. Technician and Maintenance level users can make changes on this page.

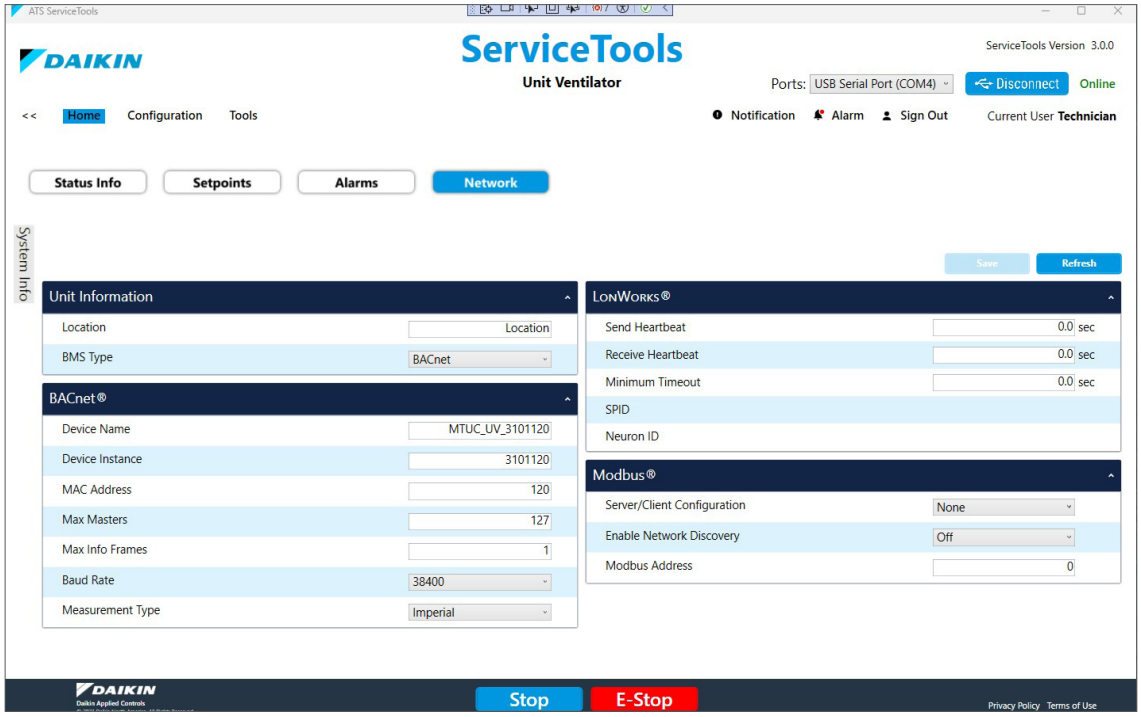
Changes made from ServiceTools effect inputs currently being controlled by the BAS. It is recommended that the system manager is made aware of any updates to local setpoints as the new values may conflict with network configuration. Similarly, subsequent changes made from the BAS override those previously made from ServiceTools. In other words, the last value(s) written to the controller, regardless of where the changes were made (ServiceTools, BAS, or LUI keypad display), take precedent and replace prior settings.

If the controller's configuration parameters (BACnet baud rate, in particular) are not set correctly prior to BAS connection, network communication can be disrupted or lost for this and other devices residing on the same trunk.

Additional parameters can be set from the Tools ►Network I/O page with correct user access. Exercise caution when writing to or modifying displayed settings. The corresponding output may override local settings.

LonWorks is only available for UV applications. BACnet is supported for both UV and DOAS WSHP units.

Figure 14: Network Screen



Refer to the UV or DOAS WSHP MicroTech Controller Protocol Information Document for detailed network integration information (Reference Documents). Otherwise, contact the Daikin Applied Controls Customer Support group at 866-462-7829 or Controls@daikinapplied.com.

Table 10: Network Details

Menu Item	Unit Ventilator	DOAS WSHP	BACnet Object Type/Instance Number	BACnet Object Name	Default Value	Range	Description
Unit Information							
Location	x	x	DEV:2	Location	Location	20 Characters	Text string used to describe the physical location of the unit. The location can be set through the BAS, ServiceTools software, or LUI keypad display.
BMS Type	x	x	-	-	BACnet	BACnet LonWorks None	Selects the Building Management System (BMS) network protocol.
BACnet							
Device Name	x	x	DEV:4	Object_Name	DevName	32 Characters	Text string used to define the BACnet device name. The device object name can be set from the BAS, ServiceTools software, or LUI keypad display.
Device Instance	x	x	DEV:3	Object_Identifier	3101000	0 to 4194303	Unique instance number or object-identifier assigned by integrator. The device instance number can be set from the BAS, ServiceTools software, or LUI keypad display. See BACnet MAC Address (AV:411) and BACnet Minimum Instance Number (AV:412) for the objects used to configure the Device Name. See the respective Network Protocol Information Document (Reference Documents) for details.
MAC Address[1]	x	x	AV:411	MacAddress	120	0 to 127	MS/TP Address of the device (i.e. unit controller). Each device on a BACnet MS/TP trunk must have a unique MAC Address.
MaxMasters[1]	x	x	DEV:6	Max_Master	127	2 to 127	MaxMasters should be set to the highest address of a MS/TP master on the network segment. The default value is 127 for maximum compatibility. Setting this to the highest address of the MS/TP master device on the network reduces the MS/TP token traffic and decreases the response time of the controller. MaxMasters can be set from the BAS, ServiceTools software, or LUI keypad display.
Max Info Frames	x	x	NA	Max_Info_Frames	1	1 to 5	Reflects the maximum number of information frames that the node (unit controller, in this case) may send before it has to pass the token. This parameter cannot be changed.
Baud Rate[1]	x	x	DEV:5	BaudRate	38400	9600 19200 38400 76800	Set the baud rate to match the speed of the BACnet network. Speeds above 38400 should be avoided unless the network wiring has been tested and verified to meet the required speed. The baud rate can be set from the BAS, ServiceTools software, or LUI keypad display.
Measurement Type	x	x	MSV:15	Units	Imperial	Imperial (English) or SI (Metric)	English: Use English units of measure (Deg F, psi, GPM). Metric: Use metric units of measure (Deg C, kPa, liter/sec)
LonWorks - UV Only							
Send Heartbeat	x		nciSndHrtBt	-	0 seconds (Disabled)	0 to 3276 seconds	If the network has not sent a network variable output (nvo) within this amount of time, then the network value is manually transmitted. The value of 0 disables this feature.
Receive Heartbeat	x		nciRcvHrtBt	-	0 seconds (Disabled)	0 to 3276 seconds	If an network variable input (nvi) value has not been received within this amount of time, the present value reverts back to the network default. The value of 0 disables this feature.
Minimum Timeout	x		nciMinOutTm	-	0 seconds	0 to 3276 seconds	Defines the minimum amount of time that must pass before a LonWorks network variable output (nvo) can be sent. It limits network traffic when output network variables are frequently changing. The value of 0 disables the timer.
SPID	x		LonSPID	-	Variable	23 Characters	Defines the LonWorks Standard Program ID type.
Neuron ID	x		NeuronID	-	Variable	12 Characters	The unique LonWorks ID number.

[1] Parameter is required for minimum network configuration. Verify this has been set correctly before connecting to the BAS.

Configuration

Use the Configuration screen (Figure 15) to verify that the software application is configured to match desired unit options. Technician level users can access this page to make changes to the original unit configuration after initial startup or after replacing a MicroTech controller in the field.

To simplify the field-installation process, units ship from the factory configured as ordered. However, some settings are unknown at the factory and need to be defined during the setup process. Other settings require configuration due to hardware changes in the field, like replacing or adding a sensor, actuator, etc. Factory-installed controllers ship with the latest software application and are pre-configured to enable the hardware options selected for each unit.

The adjustable parameters (Table 11) vary depending on the permissions allowed for each user type. The Configuration screen is available for Technician level users only.

NOTE: ***Configuring multiple inputs for the same function triggers a Configuration alarm.***

⚠ CAUTION

Binary Inputs 5-8 are 0 VDC dry contacts. Do not connect an external relay or other 24 VAC device (ex. a high pressure sensor or freezestat sensor) to these inputs.

Press the Save button when finished making changes.

Press the Refresh button to revert back to previously unsaved values.

Figure 15: UV Configuration Screen

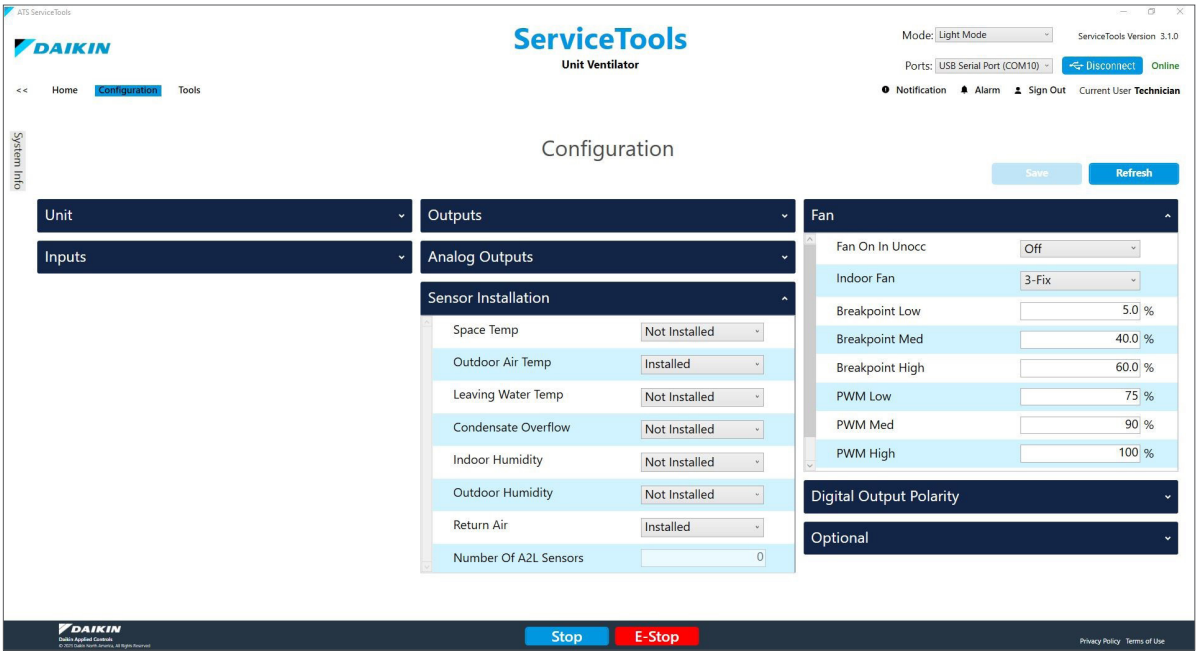


Table 11: Configuration Details

Menu Item	Unit Ventilator	DOAS WSHP	Default Value[2]	Description
Unit				
Compressor Type	x		None	Configures the application for the type of compressor installed on the unit. • None = no compressor • Air Cool = 2-stage cooling only • ASHP = 2-stage air source heat pump • WSHP = 2-stage water source heat pump
Valve Type	x		2-Pos Heat	Configures the application for the type of valve installed on the unit. • 2-Pos Heat = 2-position heating only • 2-Pos Cool = 2-position cooling only • 2-Pos Heat/Cool = 2-position heating and cooling changeover • Mod Heat = modulating heating only • Mod Cool = modulating cooling only • Mod Heat/Cool = modulating heating and cooling changeover
Pipe Configuration	x		2-Pipe	Sets the number of pipes for units with water valves (2 or 4 pipes only).
Face & Bypass Damper Enable	x		Enable	Allows face and bypass damper to function.
Electric Heat	x		0	Sets the number of electric heat stages (0 or 3 only).
Steam Valve	x		Not Installed	Configures the unit to support an optional steam valve.
Fan Cycling	x		Continuous	When in the occupied mode, this determines if the fan is going to turn off or remain at low speed when there is no demand for heating or cooling.
Split System	x		Non Split	Indicates if the unit has a split condensing section.
Economizer Control	x		Diff Temp	Selects the economizer changeover configuration. • Diff Temp = basic indoor/outdoor temperature comparison • Out Enthalpy = advanced outdoor enthalpy monitoring • Enthalpy Comp = leading edge indoor/outdoor enthalpy comparison
Fan Reset	x		Sngl DAT	Selects the indoor air fan control strategy. Sngl DAT (single discharge air temperature) is the only option currently supported.
Demand Controlled Ventilation	x		Disable	Enables demand control ventilation mode. This mode is used to monitor CO_2 for outdoor air damper minimum position control.
Dehumidification	x		Null	Enables the unit to enter dehumidification mode if configured properly
Trend Rate	x	x	None	Determines the rate at which trending-supported parameters are recorded. Data is captured in a .csv file type and saved to an external SD card. See the MicroTech DOAS WSHP Controller OM 1308 or MicroTech UV Controller OM 1280 for more information about trending. • None = no trend data recorded • Occupy Change = trend data recorded when unit transitions from an occupied to unoccupied mode, or vice versa • 1 Min = trend data recorded once every 60 seconds • 10 Min = trend data recorded once every 10 minutes • Hourly = trend data recorded once per hour • Daily = if not specified, trend data is recorded automatically once every 24 hours
Control Temp Source	x		RAT	Selects the control temperature source from either a space, return air sensor, or the average temperature using both sensor inputs. • Space = control provided by the space temperature sensor. This value defaults to the hard-wired temperature sensor input unless it is overridden by the network • RAT = control provided by the return air temperature sensor • Average = control based on the average of both the space and RAT sensor inputs
Unit Size		x	800	Selects unit size from one of these options: • 800 CFM • 1200 CFM • 1600 CFM • 2400 CFM Unit size is used in determining fan speed for constant-speed fan control.
Preheat		x	None	Selects the preheat method for the unit (hydronic or electric).
Loop Type		x	Water	Configures the heat pump water loop type for water or glycol.
Cooling Method		x	Economy	Configures the unit for economy cooling, precision cooling, or dehumidification. • Economy = cooling is controlled to meet DAT using the leaving coil temperature (LCT) setpoint • Precision = cooling is controlled using the modulating hot gas reheat valve (MHGR) to control to the DAT setpoint • Dehum = the unit is always in dehumidification mode when cooling is required

Table 11: Configuration Details, Continued

The following section describes all configurable analog and binary inputs available for the controller. The defaults shown reflect the factory-installed sensor for each input. In order to replace a sensor, change sensor type, or replace the controller, the input must be configured from the options provided in the drop-down menu. The appropriate sensor must be installed before configuration. If no sensor is installed, the input defaults to None. Note that sensors and inputs vary by unit type (UV or DOAS WSHP). Offsets are configurable from the LUI keypad display or ServiceTools software with valid user level access. Inputs cannot be modified by Guest users. Additionally:

1. Configuring multiple inputs for the same function triggers a Configuration alarm.
2. It is strongly recommended that all unit hardware is verified before any changes are made on this page.
3. The high pressure safety input needs to be physically interlocked with compressor output to prevent compressor operation during high compressor conditions.

Menu Item	Unit Ventilator	DOAS WSHP	Default[2]	Minimum Value	Maximum Value	Units	Description
Inputs - UV[1]							
Analog In 10	x		Entering Water Temp	CfgAnIn10			10k Type II sensor input. It is factory-wired and configured for the following options: • None • EWT (Entering Water Temperature) (Default) • Outdoor Coil Temp • Indoor Coil Temp The following BACnet network overrides are available: • Entering Water Temp: EWT (AI:3) • Indoor Coil Temp: CompSuctionTemp (AI:6)
Analog In 12	x		Indoor Coil Temp	CfgAnIn12			10k Type II sensor input. It is factory-wired and configured for the following options: • None • Entering Water Temp • Outdoor Coil Temp • Indoor Coil Temp (Default) The following BACnet network overrides are available: • Entering Water Temp: EWT (AI:3) • Indoor Coil Temp: CompSuctionTemp (AI:6)
Analog In 14	x		CO2	CfgAnIn14			0-10 VDC sensor input. It is factory-wired and configured for the following options: • None • CO_2 (Default) • Reset Volts The following BACnet network override is available: SpaceCO2 (AI:12)
Digital Input 1	x		High Pressure	biHighPressure			24 VAC sensor input. High Pressure (required safety switch) Disabled (if no sensor installed)
Digital Input 2	x		Freeze Stat	biFreezeStat			24 VAC sensor input. Freeze Stat (if sensor installed) None (if no sensor installed)
Digital Input 3	x		None	-			24 VAC input. Not used.
Digital Input 4	x		None	-			24 VAC input. Not used.
Digital Input 5	x		Boilerless EH	biBoilerLessEH			Closed to ground (0 VDC) dry contact input.
Digital Input 6	x		Vent Lockout	biVentLockout			Closed to ground (0 VDC) dry contact input.
Digital Input 7[2]	x		Unoccupied	biUnoccupied			Closed to ground (0 VDC) dry contact input
Digital Input 8	x		Shutdown	biShutdown			Closed to ground (0 VDC) dry contact input.
[1]With the exception of Digital Inputs 3 and 4, they default to the factory configuration for that input. However, any input listed in the Configuration Parameters column can be field-configured for other uses (as shown in the drop-down menu next to each input). See notes after Digital Input 8 for additional descriptions. [2]When adjusting the controller's internal schedule, it is generally recommended that digital inputs are not set to Unoccupied as this may cause a conflict.							
Inputs - DOAS WSHP[1]							
Analog Input 4		x	Space Temp	SpcTmpTO LWT			10k type II sensor input. It is factory-wired and configured for the following options: • None • Space temperature (Default) • LWT (leaving water temperature) The following BACnet network overrides are available: • LocalSpaceTemp (AI:1) • LWT (AI:2)

Table 11: Configuration Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default[2]	Config Parameter[3]	Description
Analog Input 14		x	None	aiDSP aiBSP aiCO2 aiAI_Reset	0-10 VDC sensor input. It is factory-wired and configured for the following options: • Duct static pressure (DSP) • Building static pressure (BSP) • CO_2 • AI Reset sensor The following BACnet network overrides are available • BldgStatPress (AI:20) • LocalCO2 (AI:12)
Analog Input 16		x	None	HumIn OAFlow	0-10 VDC sensor input. It is factory-wired and configured for the following options: • Indoor humidity • Outside air flow (cfm)
DI 4 Polarity		x	Direct	CfgRevBI4	Closed to ground (0 VDC) dry contact input. Configures the polarity for DI4 from direct to reverse-acting.

- High Pressure (biHighPressure) = The high pressure switch located on the refrigerant discharge line. The high pressure safety input may need to be interlocked with compressor outputs.
- Freeze Stat (biFreezeStat) = Hydronic water coil freeze fault sensor used to protect the coil from freezing.
- Damper End 1 (biDamperEnd1) = 24 VAC sensor input. Reverseable parameter.
- Damper End 2 (biDamperEnd2) = 24 VAC sensor input. Reverseable parameter.
- Boilerless Electric Heat (biBoilerLessEH) = When configured, it disables compressor heating when boilerless electric heat is enabled.
- Vent Lockout (biVentLockout) = When configured, it forces the outdoor air damper closed when vent lockout is enabled.
- Unoccupied (biUnoccupied) = Input used to configure the unit to an unoccupied mode. Used in conjunction with other inputs to set the unit into occupied/unoccupied modes.
- Shutdown (biShutdown) = Commands the unit to an emergency stop state.
- Dehum (biDehumid) = 24 VAC input.
- Exhaust Interlock (biExhaustInterlock) = Configures the outdoor air damper minimum position when exhaust interlock is enabled.

Menu Item	Unit Ventilator	DOAS WSHP	Default[2]	Description
Digital Outputs - UV				
The UV controller supports a set of 14 digital output (DO) parameters that are cofigured based on the options described below. Outputs are not accessible for Guest users. Certain digital outputs can be selected as direct or reverse-acting, as indicated. Each output also has a corresponding override. Overrides can be commanded from ServiceTools or the LUI keypad display with valid user level access. • DO1-DO5 default to the configuration shown. The remaining DOs can be selected from the drop-down menu next to each one. • Additional I/O parameters are supported by the controller but not accessible from ServiceTools. Refer to MicroTech UV Controller OM 1280 for all parameters available from the LUI keypad display (www.DaikinApplied.com) and the user permissions. Also note the following: 1. Before enabling compressor operation on air-source units, make sure the outdoor fan Digital Output (DO) and the correct indoor fan (DO1, DO2 or DO3) are configured and are on. 2. Before testing electric heat stages 1,2 or 3, make sure the correct indoor fan (DO1, DO2, or DO3) is configured and is on. It is also recommended that compressors are turned off before electric heat is enabled.				
Digital Output 1	x		Fan Low	Configures the 24 VAC output for a PWM low fixed-speed fan. This output must be energized before the PWM signal to control the fan. Applies to applications with ECM fans controlled by a PWM signal.
Digital Output 2	x		Fan Med	Configures the 24 VAC output for a PWM medium fixed-speed fan. This output must be energized before the PWM signal to control the fan. Applies to applications with ECM fans controlled by a PWM signal.
Digital Output 3	x		Fan High	Configures the 24 VAC output for a PWM high fixed-speed fan. This output must be energized before the PWM signal to control the fan. Applies to applications with ECM fans controlled by a PWM signal.
Digital Output 4	x		Hot Water EOC	Configures the 24 VAC output for the hot water end of cycle valve used with 4-pipe heating, 2-pipe heating and 2-pipe cooling/heating changeover configurations.
Digital Output 5	x		Fault Output	Configures the 24 VAC output signal used to indicate an alarm condition. The output is energized when there is a fault alarm or problem (displayed as Fault Problem) alarm. A problem alarm disables the output but does not shut down the unit. A fault alarm disables the output and forces the unit to shut down This output is reverse-acting. Refer to the Alarm Output in the Digital Output Polarity menu.

Table 11: Configuration Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default[2]	Config Parameter[3]	Description
Digital Output 6	x		None	See **Notes** below for descriptions.	
Digital Output 7					
Digital Output 8					
Digital Output 9					
Digital Output 10					
Digital Output 11					
Digital Output 12					
Digital Output 13					
Digital Output 14					

The following outputs are also configurable from the LUI keypad display or ServiceTools:

- Reversing Valve = (boReversingValve) 24 VAC hot water end-of-cycle (EOC) valve or reversing valve output signal is functional.
- Outside Fan = (boOutdoorFan) 24 VAC output for the outdoor condenser fan.
- Exhaust Fan = (boExhaustFan) 24 VAC output for the exhaust fan.
- Pump/Isolation Valve = (boPump) 24 VAC output for the pump/isolation valve.
- Electric Heat 1 = (boElectricHeat1) 24 VAC output for stage 1 electric heat.
- Electric Heat 2 = (boElectricHeat2) 24 VAC output for stage 2 electric heat.
- Electric Heat 3 = (boElectricHeat3) 24 VAC output for stage 3 electric heat.
- Compressor 1 = (boCompressor1) 24 VAC compressor 1 output signal. For compressor 1, both the indoor and outdoor fans should both be running. For WSHPs, water flow is needed before turning on the compressor (the outdoor fan is not applicable).
- Compressor 2 = (boCompressor1) 24 VAC output for compressor 2. The compressor 1 output must be energized for the compressor 2 output to affect compressor operation.
- Drain Pan Heater = (boDrainPanHeater) 24 VAC output for the drain pan heater.
- Cool Water EOC = (boColdWaterEOC) 24 VAC output signal for the two position chilled water valve.
- ECM Enable = (boECMEnable) 24 VAC output signal to enable ECM supply fan operation.
- Aux Heat = (boAuxHeat) 24 VAC output signal to enable or disable auxiliary heat.

Menu Item	Unit Ventilator	DOAS WSHP	Default[2]	Minimum Value	Maximum Value	Units	Description
Analog Outputs - UV							
Min OA Damper Voltage	x		2	0	10	volts	Voltage signal sent by the controller that commands the OA damper to 0% open.
Max OA Damper Voltage	x		6				Voltage signal sent by the controller that commands the OA damper to 100% open.
Min F&B Damper Voltage	x		2				Voltage signal sent by the controller that commands the face and bypass damper to full bypass.
Max F&B Damper Voltage	x		6 (*See Description Note)				Voltage signal sent by the controller that commands the face and bypass damper to full face. *Note that this analog output is factory set to 8 VDC for horizontal unit configurations.
CW Valve Closed Voltage	x		2				Voltage signal sent by the controller that commands the chilled water valve to 0% open.
CW Valve Open Voltage	x		10				Voltage signal sent by the controller that commands the chilled water valve to 100% open.
HW / Chg Over Valve Closed Voltage	x		2				Voltage signal sent by the controller that commands the hot water valve to 0% open. Note that this analog output is factory set to 10 for normally open hot water valves.
HW / Chg Over Valve Open Voltage	x		10				Voltage signal sent by the controller that commands the hot water valve to 100% open. Note that this analog output is factory set to 2 for normally open hot water valves.
Outputs - DOAS WSHP							
Digital Output 5		x	Fault Problem	-	-	-	Configures the 0-10 VDC output (boFaultOut) for alarm type. The output is energized when there is a fault alarm or problem (displayed as Fault Problem) alarm. A problem alarm disables the output but does not shut down the unit. A fault alarm disables the output and forces the unit to shut down This output is reverse-acting. Refer to the Alarm Output in the Digital Output Polarity menu.

Table 11: Configuration Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default[2]	Minimum Value	Maximum Value	Units	Description
Digital Output 13		x	PreHeat	--	-	-	Configures the 0-10 VDC output (boPreHeat) for preheat. When the unit is configured for preheat, and is in heating mode, preheat can be used if the unit is unable to maintain a DAT to satisfy the setpoint. This output is reverse-acting. When preheat is configured for electric heat, the digital output must be configured as Direct. This activattes the output, enabling the PID loop to control the analog signal. Refer to the PreHeat output in the Digital Output Polarity menu.
Energy Recovery Alarm		x	Problem	-	-	-	Configures the 0-10 VDC digial output (EngyRecCfg) for the energy recovery alarm as either a problem or fault alarm. A problem alarm disables the energy recovery output but does not shut down the unit. A fault alarm disables the energy recovery output and forces the unit to shut down normally.
Min Preheat Voltage		x	2	0	10	volts	Voltage signal sent by the controller that commands the preheat output (PreheatOutputVoltage) to 0%. Note that this digital output should be field configured to 10 for normally open hot water valves.
Max Preheat Voltage		x	10	0	10	volts	Voltage signal sent by the controller that commands the preheat output (PreheatOutputVoltage) to 100%. Note that this digital output should be field configured to 2 for normally open hot water valves.
Sensor Installation							
Space Temp	x	x	Not Installed	Enables the space temperature sensor, if installed or replaced in the field.			
Outdoor Air Temp	x		Installed	Enables the outdoor air temperature (OAT) sensor, if installed or replaced in the field. Configuration from ServiceTools is available for UV only.			
Leaving Water Temp	x	x	Installed	Enables the leaving water temperature sensor (LWT) if installed or replaced in the field.			
Indoor Humidity	x	x	Installed	Enables the indoor relative humidity sensor, if installed or replaced in the field.			
Condensate Overflow	x		Installed	Enables the condensate overflow sensor, if installed or replaced in the field. Configuration from ServiceTools is available for UV only.			
Outdoor Humidity	x		Installed	Enables the outdoor relative humidity sensor, if installed or replaced in the field. Configuration from ServiceTools is available for UV only.			
Return Air	x		Installed	Enables the room/return air temperature (RAT)sensor, if installed or replaced in the field. Configuration from ServiceTools is available for UV only.			
DSP/BSP/CO2/AI Reset		x	Installed	Enables the sensor when analog input 14 has been configured for one of the available sensor inputs (DOAS WSHP only): Duct static pressure (DSP) Building static pressure (BSP) CO_2 AI Reset sensor			
Freeze Stat		x	Installed	Enables the freeze stat sensor, if installed or replaced in the field. Configuration from ServiceTools is available for DOAS WSHP only.			
Number of A2L Sensors	x		0	Configures the number (0-3) of refrigerant sensors used with A2L refrigerant detection control systems. Supported only with UV software v3.0 and newer.			
Entering Water Temp		x	Installed	Enables the entering water temperature (EWT) sensor, if installed or replaced in the field. Configuration from ServiceTools is available for DOAS WSHP only.			
Fan - UV							
Fan On In Unocc	x		Off	-	-	-	Enables the fan to run while the unit is in the unoccupied mode. • When set to Off, the fan is not running while in unoccupied mode if the control temperature is between the unoccupied heating/cooling setpoints. • When set to On, the fan runs at low speed in unoccupied mode if the control temperature is between the unoccupied heating/cooling setpoints.

Table 11: Configuration Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default[2]	Minimum Value	Maximum Value	Units	Description
Indoor Fan	x		3-Fix	-	-	-	Selects the indoor fan type. Options are: • 3-Fix = configuration uses three binary outputs to control high, medium, and low speed fan operation • ECM = for future use • PWM = configuration uses a fully variable signal to control the fan speed • PWM 3-Fix = configuration uses one of three discreet PWM signals to control low, medium, and high speed fan operation of an ECM fan
Breakpoint Low	x		5	5	100	%	The three setpoints used to establish the fan output percentage. Applies to 3-Fix and 3-FixPWM fans where control can modulate among low, medium, and high speeds.
Breakpoint Medium	x		40	5	100	%	
Breakpoint High	x		60	5	100	%	
Unit Ventilators with PWM (pulse width modulating) indoor fan types may be configured to use three PWM signals (low, medium, high) for staged fan operation with ECM efficiency.							
PWM Low	x		75	50	80	%	The % speed for a PWM low fixed-speed fan.
PWM Medium	x		90	70	90	%	The % speed for a PWM medium fixed-speed fan.
PWM High	x		100	80	100	%	The % speed for a PWM high fixed-speed fan.
A2L Exhaust Fan	x		Off				Configures the exhaust fan to be on or off during an A2L refrigerant leak event.
Fan - DOAS WSHP							
AFCM		x	1000	0	5000	cfm	Configures the cfm setpoint used to determine the PWM (pulse width modulating) fan output for constant speed fans. Actual cubic feet per minute (ACFM) is a unit of volumetric flow. It is the actual volume of air delivery relative to the current PWM fan inlet conditions.
System Static Pressure		x	1	-0.5	5	inches	Configures the static pressure. This value is used to determine the fan speed.
Fan Extend		x	0	-15	15	%	Adjusts fan output so that CFM calculated by the application matches the measured CFM. Applies to constant-speed fans only.
Elevation		x	750	0	65535	feet	Configures the elevation (feet above sea level) of the unit's physical location. Elevation is one of the parameters used to calculate the effective dewpoint.
Fan Configuration		x	Single Torque	-	-	-	Configures the fan control strategy to one of the following fan motor and blower type selections. Applies only to constant-speed fans. Single Torque = configures the fan motor type to constant torque, single blower Single CFM = configures the fan motor type to constant CFM, single blower (for future use) Dual Torque = configures the fan motor to constant torque, dual blower Dual CFM = configures the fan motor to constant CFM, dual blower (for future use) These are configured at the factory and should only be changed after consulting ATS Technical Support.
Blower Type		x	Single	-	-	-	Displays the fan blower type configured for the unit.
Fan Motor Type		x	CFM	-	-	-	Displays the fan motor type configured for the unit.
Fan Control Method		x	Constant	-	-	-	Configures the fan speed control strategy to one of the following methods when sensor is installed and functioning properly: • Constant = constant speed fan • DSP = duct static pressure* • BSP = building static pressure* • CO2 (CO_2)* • AI_Reset = external analog input voltage reset* • Network = BACnet BAS

Table 11: Configuration Details, Continued

A select group of digital (or binary) outputs allow the user change, or reverse, the polarity of the valve associated with the device. This gives the ability for a normally-open valve to remain open when de-energized. Hot water end of cycle valves, for example, are normally-open valves (i.e. reverse-acting). This means that they are closed when energized. The water valve outputs can be reversed so that they can instead open upon energizing. This page is not accessible for Guest users.

Unless previously configured, the corresponding binary output for the hardware itself defaults to direct polarity.

Menu Item	Unit Ventilator	DOAS WSHP	Default[2]	Minimum Value	Maximum Value	Units	Description
Digital Output Polarity - UV							
Damper End	x		Direct	Configures the face and bypass damper output signal (used in conjunction with 1 or 2 two position end of cycle (EOC) valves) from normally closed (Direct) to normally open (Reversed) in order to activate the face and bypass damper. This may be necessary after field installation or replacement so the control signal matches the valve type.			
Hot Water End of Cycle	x		Reversed	Configures the two-position hot water end of cycle (EOC)valve output signal from normally open (Reversed) to normally closed (Direct). This may be necessary after field installation or replacement so the control signal matches the valve type.			
Cold Water End of Cycle	x		Direct	Configures the two-position chilled water end of cycle valve output signal from normally closed (Direct) to normally open (Reversed) in order to activate the chilled water EOC valve. This may be necessary after field installation or replacement so the control signal matches the valve type.			
Drain Pan Heater	x		Direct	Configures the drain pan heater output signal from a normally closed (Direct) to normally open (Reversed) in order to activate the drain pan heater. This may be necessary after the field installation or replacement so the control signal matches the heater type.			
Auxiliary Heat	x		Direct	Configures the auxiliary heat output signal from normally closed (Direct) to normally open (Reversed) in order to activate the auxiliary heater. This may be necessary after the field installation or replacement so the control signal matches the heater type.			
Alarm Output	x		Direct	Configures the fault alarm output signal from normally closed (Direct) to normally open (Reversed). The alarm output is energized in either a fault condition (default) or in a fault/ problem condition, and is de-energized when not in alarm.			
Digital Output Polarity - DOAS WSHP							
Alarm Output		x	Direct	Configures the fault alarm output signal from normally closed (Direct) to normally open (Reversed). The alarm output is energized in either a fault condition (default) or in a fault/ problem condition, and is de-energized when not in alarm.			
Energy Recovery		x	Direct	Configures the energy recovery problem alarm or fault alarm output signal from normally closed (Direct) to normally open (Reversed).			
Damper		x	Direct	Configures the outdoor air (OA) damper output signal from normally closed (Direct) to normally open (Reversed). When the output is energized, the damper is opened. When the output is de-energized, the damper closes.			
Preheat		x	Direct	Configures the output for preheat from normally closed (Direct) to normally open (Reversed). When configured for electric heat, the digital output must be configured as Direct. Otherwise, an alarm is activated. Preheat can be used if the unit is unable to maintain a DAT to satisfy the setpoint when the unit is in heating mode. If the preheat output is at 100% and the DAT setpoint still cannot be achieved, an alarm is generated.			

If one or more sensors are connected to the appropriate terminal(s) on the controller, it is then possible to enable the controller to use the sensors for monitoring and control purposes by selecting *Installed* from the drop-down box next to the sensor (or sensors).

Note that an alarm is displayed in ServiceTools in the event that the sensor has been set to Installed but the sensor is not physically connected to the controller or if the sensor has failed for some reason.

Refer to the appropriate MicroTech Controller Installation Manual's unit schematic for proper sensor location and installation instructions. (www.DaikinApplied.com).

Menu Item	Unit Ventilator	DOAS WSHP	Default Value[2]	Description			
Optional - UV							
Setpoint Method	x		Advanced	-	-	-	Determines the control strategy used for calculating the heating or cooling setpoints (effective setpoint) Currently, only the Advanced method is supported, and this value should not be changed from its default. The Advanced method relies on the controller application to determine the occupied, standby, and unoccupied setpoint calculations.
Remote Setpoint Adjust Type	x		Absolute	-	-	-	Defines the setpoint adjustment method used by the remote room sensor, if installed and configured correctly. • ABS (absolute) = 55° to 95°F adjustment • DIFF (differential) = +/-5°F adjustment
Remote Setpoint Adjust	x		Installed	-	-	-	Configures the room sensor to control the temperature setpoint adjustment.
Remote System Mode	x		Installed	-	-	-	Configures the room sensor to control the system mode.

Table 11: Configuration Details, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default[2]	Minimum Value	Maximum Value	Units	Description
Remote Fan Speed	x		Installed	-	-	-	Configures the room sensor to control the fan speed.
Low Suction Line Setpoint	x		28	0	50	ºF	Configures the setpoint used to determine when the compressor low suction line temperature alarm becomes active, and when the unit enters and exits defrost. Applies to both water and glycol loop units.
Supplemental Heat Enable	x		Enable	-	-	-	Enables electric heat to supplement the primary heat.
Compressor Heating Lockout EWT	x		30	10	212	ºF	Configures the controller to disable compressor heating when the effective entering water temperature is below this value. Applies only to WSHP unit configurations.
Exhaust Fan Enable OAD Pos	x		12	0	100	%	Configures the outdoor air damper position, above which point the exhaust fan output is energized.
Emergency Heat Enable	x		Enable	-	-	-	Allows the controller to enter an emergency heat state if the control temperature drops below the emergency heat setpoint.
Emergency Heat Setpoint	x		54	0	70	-	Configures the emergency heating setpoint. The unit enters the emergency heat state if the control temperature is below this setpoint and emergency heat is enabled.
Emergency Heat in Shutdown	x		Disable	-	-	-	Enables emergency heating when the unit is in shutdown mode. Note that Emergency Heat Enable must also be set to Enable.
Air Tempering	x		Disable	-	-	-	Enables air tempering mode functionality. Once enabled, air tempering activates under the following conditions: • The space temperature is between the effective heating and effective cooling setpoints • The unit is in either occupied or bypass mode (not unoccupied) The controller compares the discharge air temperature (DAT) to the occupied heating setpoint to determine when to enter the air tempering mode. When the DAT is lower than the occupied heating setpoint minus the air tempering differential, heating is enabled order to reheat the discharge air to the occupied heating setpoint.
Air Tempering Differential	x		5	2	20	ºF	The controller compares the discharge air temperature (DAT) to the occupied heating setpoint to determine when to enter the air tempering mode. When the DAT is lower than the occupied heating setpoint minus this parameter, heating is enabled in order to satisfy the occupied heating setpoint and maintain the proper space temperature. Air tempering is activated under the following conditions: • Air tempering mode is enabled • The unit state is fan-only • The unit is in either occupied or bypass mode
Dehumidification Type	x		Active	-	-	-	Selects the method used for dehumidification. • Active Dehumidification = cools the air and then uses an available heat source (hot water or electric) to maintain the discharge air temperature reheat setpoint • Passive dehumidification = cools the air but does not reheat
Night Purge Time	x		15	1	60	minutes	Configures the amount of time the unit should remain in the night purge mode. During night purge, the outdoor air damper remains open and the fan is forced to 100% regardless of occupancy.
Alarm Out Configuration	x		Fault Problem	-	-	-	Configures the alarm output for either a Fault or a Fault/Problem condition.

[1] The space temperature sensor includes a tenant override button. When the tenant override button is pressed and not active, the parameter *aiSpaceTemp* is used for control. When the unit is not in tenant override, space temperature control defaults to *hardwareSpaceTemp*, which must maintain its previous value for up to 30 seconds.
[2] The default values are based on unit type selected. These are the defaults the application uses when first downloaded into a new controller.
[3] Configurable I/O parameter name used by the LUI keypad display.

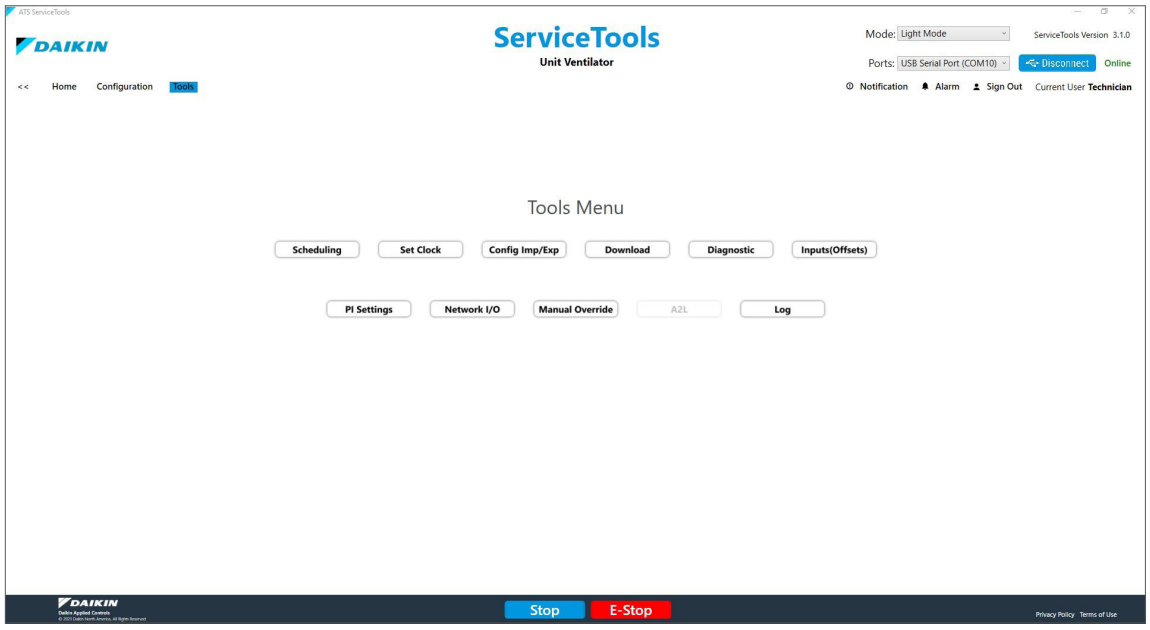
Tools

The Tools page has many useful elements to complete the unit configuration and set-up process. Figure 16 shows the menu options available for Technician users. Only Technician level users have access to all Tools pages. See Table 4 for Maintenance and Technician user access. It is also has advanced features to check that setpoints are responding correctly to changes, import the unit configuration file, fine-tune PI loop settings, change default offsets, and configure additional parameters for BAS communication. The Manual Override and other menus shown below are available for Technician level users only. Figure 17 is a close-up view of the Tools navigation links, which appears in the upper left side of the main Tools menu.

NOTE: If changes have been made from the tool page, the user is asked to save them before leaving the page. No changes can be accidentally lost.

Figure 16: Tools Screen

Figure 17: Tools Navigation



Scheduling

Occupancy Schedule

Use the Occupancy Scheduler to set the unit occupancy (occupied or unoccupied) for each day of the week. The controller defaults to a 24/7 occupied state, so this is where a user can modify each day when there are no occupants in the space (Figure 18). Occupancy periods are set using the slider bar next to each day of the week. At the bottom of the page is a slider bar to set a default (or fixed) holiday schedule, if desired.

Primary Occupancy

Primary occupancy is from 12:00 AM to 11:59 PM and can be adjusted in 15-minute increments as follows:

1. Press and hold the slider box for the desired day (Mon-Fri). Shift the box to the right, along the bar. The time of day is shown below the bar.
2. Repeat for each day of the week.
3. (Set Holiday schedule - Optional) Press and hold the slider box, then shift to the desired time to enable the Holidays schedule.

   Use the Holiday Schedule tab to name, configure, and add multiple holiday schedules, if desired. See next section.
4. Press Save.

When adjusting the controller's internal schedule, it is generally recommended that binary inputs are not set to unoccupied as this may cause a conflict.

Secondary Occupancy

It is also possible to set an additional occupancy period each day. Secondary occupancy only allows a user to configure a range of time that is outside of the primary occupancy, avoiding a potential overlap in occupied/unoccupied periods. This only applies if the unit has also been changed to unoccupied at some point in the day.

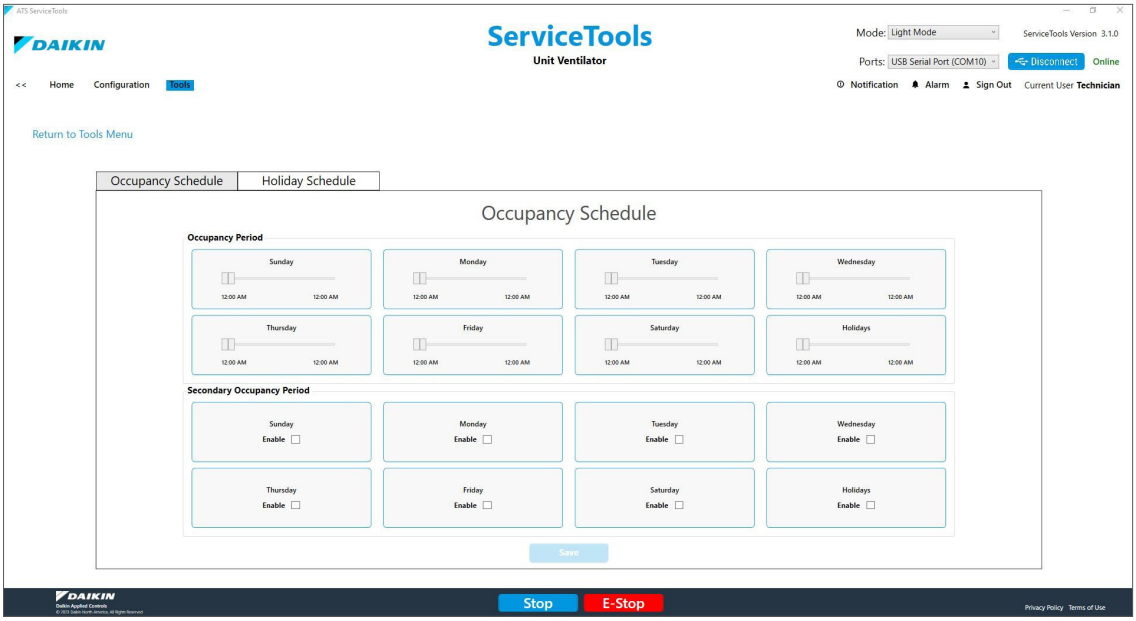
Similar to the main daily schedule, the secondary occupancy period is from 12:00 AM to 11:59 PM and is adjusted in 15-minute increments. To set a second daily schedule:

1. From the Secondary Occupancy Period (select the Enable check box to the right of each day).
2. Follow steps 1-3 again and save changes.

NOTE: The unit remains in an occupied state during the midnight transition, if scheduled. Although not always the case, the secondary occupancy feature is most likely used in this scenario.

Example: The space needs to occupied from 11:00 PM (Mon) to 3:00 AM (Tue). Primary occupancy has already been set for 6:00 AM to 5:00 PM on those days. In this example, a user would click on Enable next to Monday's Secondary Occupancy column, shift the slider bar to start at 11:00 PM through 11:59 PM on Monday and then click Enable next to Tuesday's Secondary Occupancy column. Finally, shift the slider from 12:00 AM through 3:00 AM.

Figure 18: Occupancy Schedule Screen



Holiday Schedule

Up to 16 holidays can be configured from the Holiday Schedule tab (Figure 19). Dates are fixed (based on the current year's calendar) and require annual adjustment. A single holiday schedule is available. This means that the occupancy hours defined for the first holiday are used for all the other days designated as a holiday. This is how to add a holiday(s):

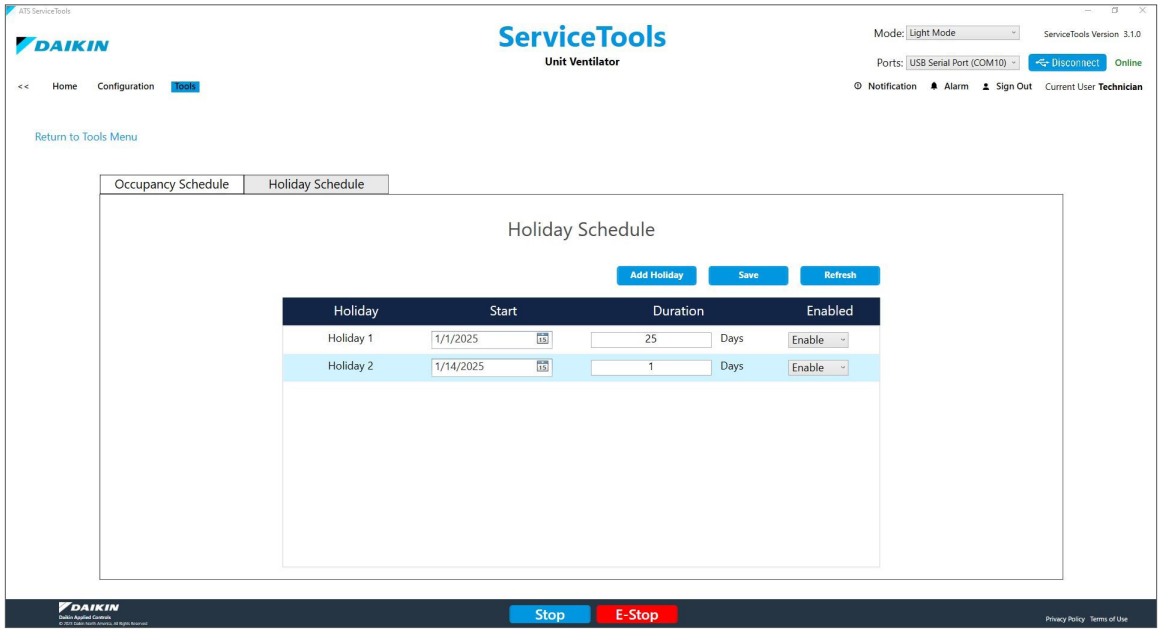
1. Press the Add Holiday button. This activates the calendar table. Select the first row and re-name Holiday 1.
2. Choose the start date day, month, and year by opening the calendar icon in the Start field. It is also possible to enter the date manually.
3. Select the duration of the holiday. This becomes the default for all remaining holidays. Enabled is set by default.
4. Press Save when finished making changes.

NOTE: Press Refresh to revert back to previously unsaved values.

NOTE: Record the name or description of each holiday as it is entered. This is helpful should the holiday schedule change in the future. The record itself must be kept in an external location, outside of the ServiceTools application.

To delete a holiday, change the Enable default option in the Enabled column drop-down and then press Save.

Figure 19: Holiday Schedule Screen



Set Clock

Set Clock and Daylight Savings Time

The controller relies on an internal clock to set occupancy schedules, time stamp alarms, and for data tracking. The controller does not ship with the internal clock configured for the current day and time. Use the Set Clock page (Figure 20) to enter the current time information so that the internal clock functions properly.

NOTE: Remove the tab on the unit controller battery, if it has not already been removed, so that the internal clock settings are retained.

Set Clock

Use the up and down arrows to set the current hour and minutes. The hour field is in military time (0-23 hrs). Click the calendar icon in the Date box to choose the current day of the month for the current calendar year.

Set Daylight Savings Time

The Daylight Savings Time section of this screen shows that daylight savings time defaults to starting the second week of March and ending the first week of November. To make changes:

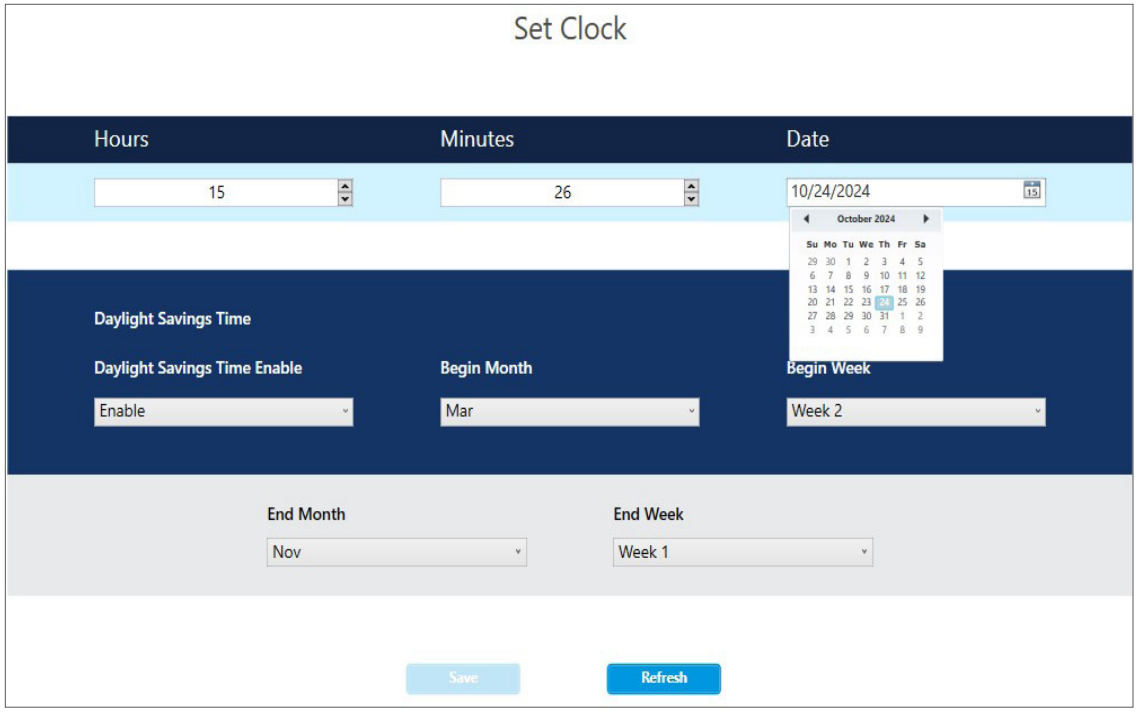
1. Refer to the menu options below and make desired selections.
2. Click Save when finished making changes.

NOTE: Press Refresh to revert back to previously unsaved values.

NOTE: Date and time settings only need to be configured once, except if the controller battery is removed or replaced in the field.

Field	Description
Begin Month	Sets the month in which daylight savings time begins
Begin Week	Sets the week of the Begin Month that daylight savings time begins. This is always on a Sunday at 2:00 AM
End Month	Sets the month in which daylight savings time ends
End Week	Sets the week of the End Month that daylight savings time ends. This is always on a Sunday at 2:00 AM

Figure 20: Set Clock Screen



Config Import/Export

ServiceTools can be used to download two file types from Tools Menu:

1. The MicroTech UV or DOAS WSHP configuration file (from Config Imp/Exp page)
2. The controller application software (from the Download page, and as described in the next section, Application Download).

The Config Imp/Exp page (Figure 21) is used for saving a configuration file from one controller for upload into another unit (one at a time).

The unit ships with the configuration file loaded into the controller, but can be changed or transferred to other controllers in the field. This is useful when the same configuration is used for multiple units. This page provides a way to save and restore the controller configuration (.csv) file.

For quick reference:

- Save = Backup file
- Restore = Import file

While both file types are accessible from ServiceTools, the configuration file requires a separate download from the application firmware.

The save and restore options work as follows:

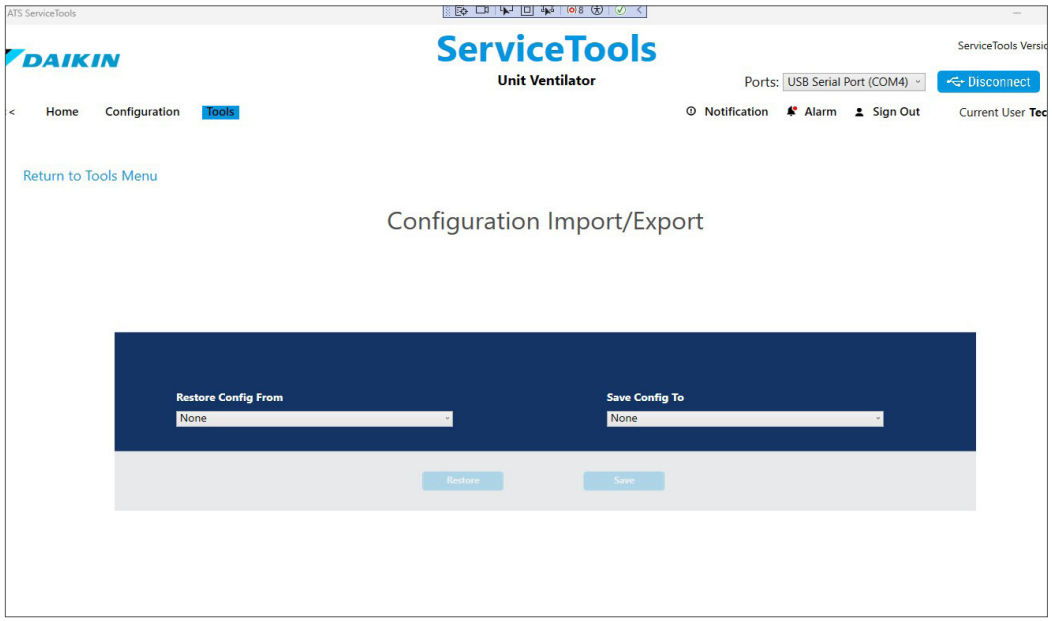
Field	Description
Restore Config From	Once the configuration file has been saved, it can be imported to other controllers that share the same configuration. Restore = import.
Save Config To	Saves the current parameter settings to the desired location. Factory Default option cannot be modified or saved. The rest of the options in the table below allow changes to be saved.

The ability to save and restore the unit configuration is not available for Guest level users.

The following options allow the user to choose the location of the existing configuration file to restore and/or save:

Restore File Options	Description and Important Notes
None	
Factory Default	Restores the configuration file from the on-board memory designated for the factory (as shipped) default configuration.
User Default	Restores the configuration file from the on-board memory designated for the user's custom configuration. This option is not available from the Save Config To menu.
SD Card	Restores all configuration parameters loaded on the SD card, including the BACnet addressing information. Note that every device on the BACnet trunk must each have a unique BACnet address. The first step of the two-part download process takes less than a minute. During this step, changes are applied to the controller application. ServiceTools displays a "Restored" message and then begins the second step of the auto-download process. This part requires up to an additional 20 minutes, at which time the changes are automatically saved to the controller's permanent memory. *Do not remove power from the controller for at least 30 minutes when restoring from an SD Card.* This option is available from the Save Config To menu.
SD Card (No BACnet)	Restores the configuration parameters loaded on the SD card. However, it does NOT save any of the BACnet addressing information. The first step of the two-part download process takes less than a minute. During this step, changes are applied to the controller application. ServiceTools displays a "Restored" message and then begins the second step of the auto-download process. This part requires up to an additional 20 minutes. During this time, the changes are automatically saved to the controller's permanent memory. *Do not remove power from the controller for at least 30 minutes when restoring from an SD Card*. This option is not available from the Save Config To menu.
PC File	This option allows a user to name the file, determine the location, and enable the controller to automatically save the file. This option is available from the Save Config To menu.

Figure 21: Import and Save Unit Configuration File



Application Download

The Download page (Figure 22) is used to download and import the controller application file. Similar to the configuration file, the application can be uploaded to a single unit or to multiple units (one at a time).

An application download must be performed whenever:

- An updated application has been provided by Daikin Applied.
- The application has become corrupt or the controller is not operating as expected.

The ability to download an application is not available for Guest level users.

NOTE: An error message appears when an unsupported software application version is detected. In this event, the user is then directed to the Download page to install a supported version.

⚠ WARNING

The unit controller must be in an Off state before performing the download process to avoid potential damage to the unit.

Follow these steps to download the controller application file:

1. Confirm the location of the application file:
   a. Click the Browse button to search for the firmware file.
   b. If the application file has yet to be downloaded to the laptop, navigate to www.daikinapplied.com/resources/application-software to download the latest application file to a laptop.
   c. Save the file to the hard drive.
2. Verify that the controller is properly connected to the laptop. See Installation and Setup.
3. Double-click the file or select it and click Open.

⚠ CAUTION

Performing a download overwrites existing application.

4. When the file appears in the white box, press the Download button.
5. If the controller is not already in the Off state prior to downloading, the pop-up message shown in Figure 23 appears. The unit can be put into the Off state by pressing the Stop button at the bottom of the pop-up message or by pressing the blue Stop button at the bottom of the Download page (Figure 22).

NOTE: Downloading takes up to four minutes. The status bar appears, indicating progress (Figure 25). If it does not appear, this means the download is not occurring as it should. The status bar then disappears when the download is complete.

ServiceTools opens directly to the Download screen if no application is loaded on the controller. Signing in is not required for download if no application is loaded. In this case, it is not possible to access the other ServiceTools menu screens (Select Device, Home, Alarms or Sign In) from the Download page. Once the application has been downloaded, access to the other screens is restored.

NOTE: UV application v3.0 and newer support R-32 refrigerant detection using the A2L MT6210 controller. The MT6210 has its own application firmware. However, ServiceTools does not support download of MT6210 firmware.

Figure 22: Application Download

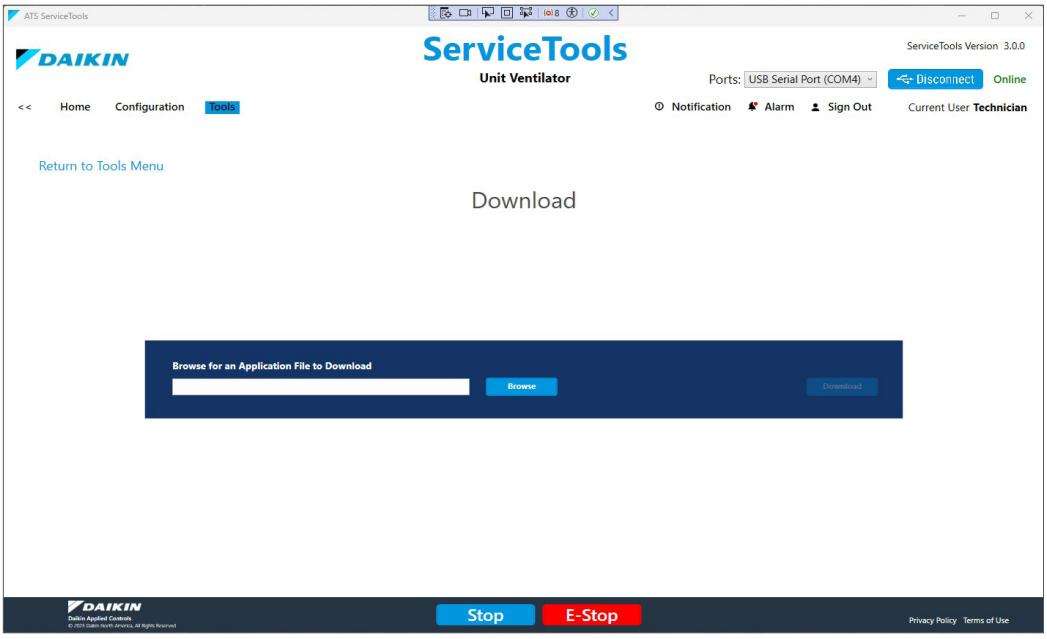


Figure 23: Application Download Pop-up Message

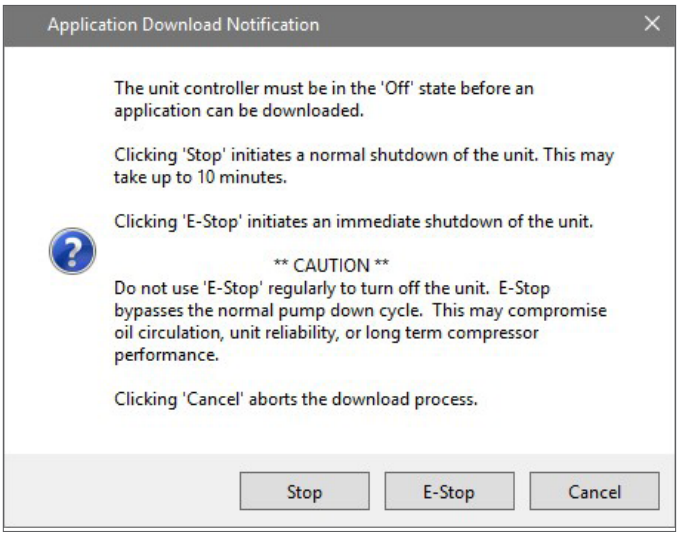


Figure 24: Download Confirm

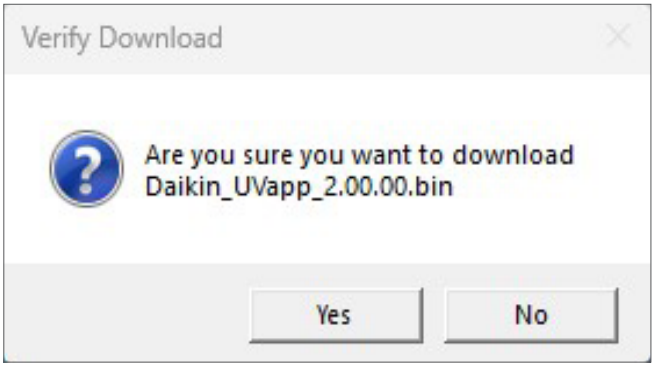
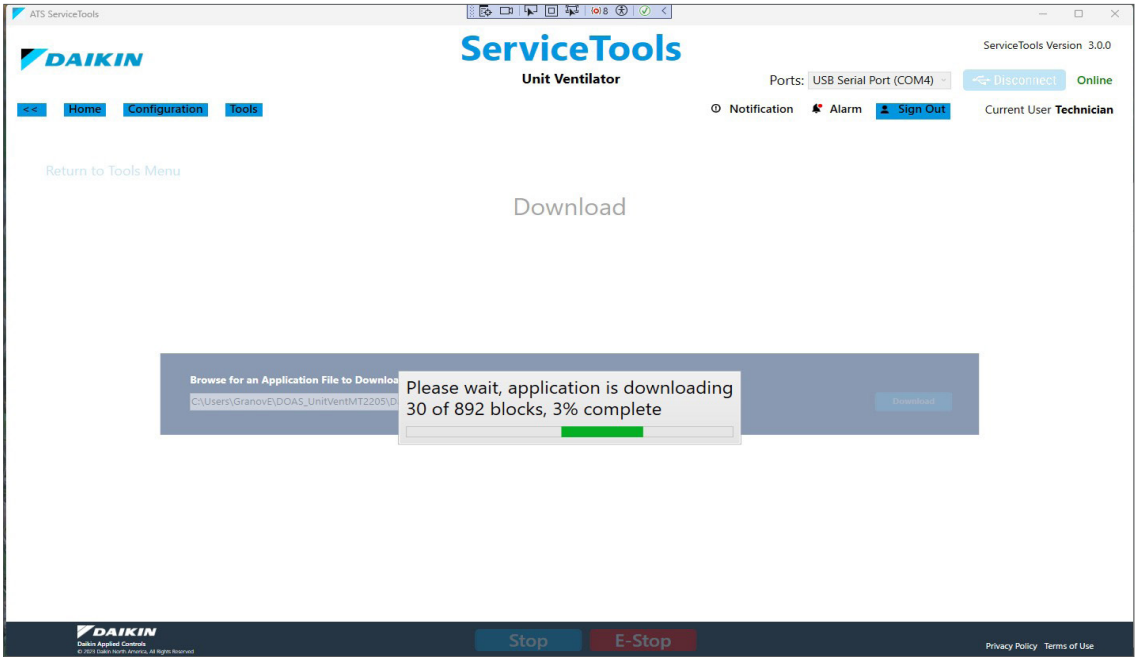


Figure 25: Downloading Status



Diagnostics

Use the Diagnostic page (Figure 26) to access more advanced controller settings and certain settings that are not available from other ServiceTools screens. It is intended for custom configuration of parameters unique to the job site operation or other environmental conditions.

Diagnostics can also be helpful for troubleshooting advanced setpoints.

This page requires Technician level access in order to make changes. Maintenancelevel users can make changes as well, but with limited access to settings. Table 12 describes the Diagnostics menu items.

Figure 26: Diagnostic Screen (Unit Ventilator)

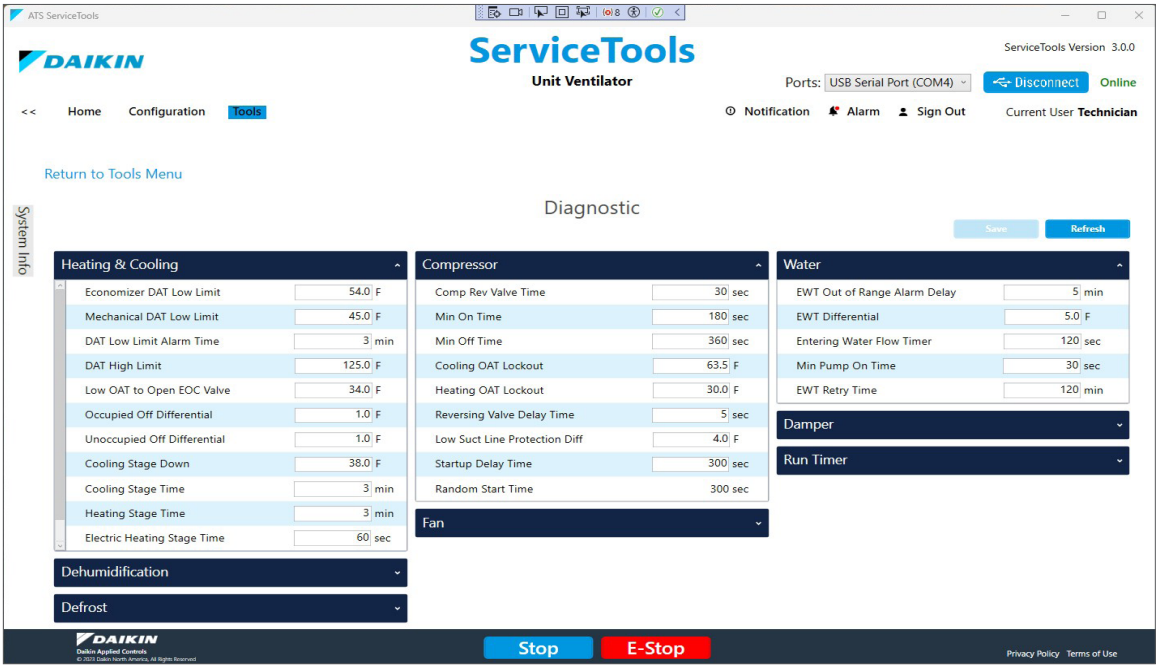


Table 12: Diagnostics Details

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Heating and Cooling - UV							
Economizer DAT Low Limit	x		50	45	65	°F	The discharge air temperature (DAT) cooling low limit setpoint for economizer cooling or fan only mode.
Mechanical DAT Low Limit	x		45	35	65	°F	The discharge air temperature (DAT) cooling low limit setpoint for hydronic or compressor cooling.
DAT Low Limit Alarm Time	x		3	1	10	minutes	Sets the amount of time before the discharge air temperature (DAT) low limit alarm activates. Alarm indicates that the DAT is below the minimum DisAirEconLowLim setpoint.
DAT High Limit	x		125	80	135	°F	The discharge air temperature (DAT) high limit setpoint.
Low OAT to Open EOC Valve	x		34	20	36	°F	Setpoint that forces the end of cycle (EOC) valve open when the outdoor air temperature (OAT) drops below this setpoint and the face and bypass damper is in the full bypass position. This prevents coil freeze-up.
Occupied Off Differential	x		1	1	10	°F	Sets the cooling and heating effective off setpoints when the unit is in the occupied, bypass, or standby mode. • The cooling off setpoint is equal to the effective setpoint minus this value • The heating off setpoint is equal to the effective setpoint plus this value
Unoccupied Off Differential	x		1	1	10	°F	Sets cooling and heating effective off setpoints when the unit is in the unoccupied mode. • The cooling off setpoint is equal to the effective setpoint minus this value The heating off setpoint is equal to the effective setpoint plus this value
Cooling Stage Time	x		3	1	10	minutes	The minimum amount of time that the cooling stage is active before a stage change can occur.
Heating Stage Time	x		3	1	5	minutes	The minimum amount of time that the heating stage is active before a stage change can occur.
Electric Heating Stage Time	x		60	1	120	seconds	The minimum amount of time that the electric heat stage is active before a stage change can occur. Up to three stages of electric heat are available. Applies when the unit is configured for more than one stage of electric heat.
Minimum Stage Time	x		3	1	5	minutes	The minimum amount of time that the unit must remain in a heating, cooling, or dehumidification state.
Dehumidification - UV							
Low Temp Setpoint	x		55	35	65	°F	Allows dehumidification when the control temperature is above this setpoint.
Stage Down Setpoint	x		32	20	40	°F	Activates the dehumidification stage-down process when the indoor air coil temperature (aiIndoorCoilTemp) is less than or equal to this setpoint.
Passive Face & Bypass Damper Max	x		50	0	100	%	The maximum position (% open) of the face and bypass damper.
Initial Dehumidification Fan Speed	x		50	10	100	%	The fan speed when the unit first enters the dehumidification state.
Defrost - UV							
Indoor Fan Off Setpoint	x		90	30	110	°F	During defrost, the indoor fan turns off when the indoor air coil temperature reaches this setpoint. As long as the indoor air coil temperature remains below the indoor fan off setpoint, the fan continues to run at the same speed it was running before defrost started.
Outdoor Air Coil Temp Setpoint	x		32	30	40	°F	The unit enters defrost mode when the outdoor air coil temperature sensor is below this setpoint. Applies only to air source heat pump units.

Table 12: Diagnostics, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Low Refrig Temp Differential	x		20	5	40	ºF	This value is added to the selected low suction line temperature protection setpoint to determine when the compressor low suction line temperature alarm is no longer active, and when the unit enters and exits defrost. Applies to both water and glycol loop units.
Compressor - UV							
Motorized Valve Time	x		30	0	60	seconds	The amount of time allowed after the pump/ motorized valve output energizes before the compressor can be energized.
Min On Time	x		180	60	600	seconds	The minimum period of time the compressor must remain on before it is allowed to turn off again.
Min Off Time	x		360	300	600	seconds	The minimum period of time the compressor must remain off before it is allowed to turn on again.
Cooling OAT Lockout	x		63.5	45	80	ºF	Prevents compressor cooling when the outdoor air temperature drops below this setpoint. Applies only to air source heat pump units.
Heating OAT Lockout	x		30	10	212	ºF	Disables compressor heating when the outdoor air temperature setpoint is below this value. Applies only to air source heat pump units.
Reversing Valve Delay Time	x		5	60	30	seconds	The compressor reversing valve is considered to be at position this many seconds after the reversing valve command is issued.
Low Suct Line Protection Diff	x		4	1	8	ºF	This value is added to the selected low suction line temperature protection setpoint (nciLowTempProt) to determine the setting at which the alarm becomes inactive. The alarm setpoint is fixed at 28°F.
Startup Delay Time	x		360	300	600	seconds	The minimum amount of time a compressor must remain off after being powered up. Used in conjunction with the random start time delay described below.
Random Start Time	x		0	300	600	seconds	To prevent compressor cycling and all compressors from starting up together after loss of power, the required minimum on/off time default is 600 seconds plus the random restart of 0 to 60 seconds. This may cause the compressor time delay to be longer than the startup delay time as indicated above. The controller automatically generates its own random start time if the default setting is not changed.
Fan - UV							
Speed Changes per Hour	x		60	1	60	-	The number of fan speed changes allowed each hour. Applies to 3-speed indoor fans.
Off Delay	x		4	0	10	seconds	When configured for fan cycling, this is the period of time the fan continues to run before going off.
Electric Heat Min Fan On Time	x		60	0	240	seconds	The minimum amount of time the fan must remain running when the unit is in electric heat mode.
Indoor Fan Control Method	x		Override	-	-	-	Indicates an override of the configured indoor fan control method.
Water - UV							
EWT Out of Range Alarm Delay	x		5	1	10	seconds	The amount of time that the entering water is allowed to flow before going into alarm if the entering water temperature is not suitable for heating or cooling.
EWT Differential	x		5	0	10	ºF	The minimum differential required between the control temperature and the effective entering water temperature. This allows the unit to enter hydronic heating or cooling.

Table 12: Diagnostics, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Entering Water Flow Timer	x		120	0	600	seconds	The amount of time that the entering water is allowed to flow before determining that hydronic heating or cooling is unavailable.
Min Pump On Time	x		30	0	120	seconds	The amount of time the pump output is to be energized required before the compressor is energized.
EWT Retry Time	x		120	20	120	minutes	The amount of time allowed after the entering water temperature (EWT) has been determined unsuitable for heating or cooling before the unit attempts to enter hydronic heating or cooling again. The retry timer works in conjunction with the flow timer to make sure that the EWT is hot enough for hydronic heating or cool enough for hydronic cooling. Applies only to 2 pipe heating/cooling change-over units.
Damper - UV							
Low Limit OAD Min Time	x		3	1	10	minutes	The amount of time the outdoor air damper is to remain at minimum position before entering the reheat low limit state.
Face & Bypass Min Position	x		0	0	100	%	The minimum position of the face and bypass (F&BP) damper.
Exhaust Interlock OAD Min Position	x		100	0	100	%	The minimum outdoor air damper position when the exhaust interlock is active.
OAD Close Delay	x		30	0	60	seconds	The amount of time before the outdoor damper closes after the supply fan turns off.
Run Timer - UV							
Compressor Run Time	x		0	0	300000	hours	The total compressor run time. Read-only.
Compressor Run Time Reset	x		None	-	-	-	Resets the total compressor run time hours.
Fan Run Time	x		0	0	30000	hours	The total compressor run time. Read-only.
Fan Run Time Reset	x		None	-	-	-	Resets the total fan run time hours.
Unit - DOAS WSHP							
Prev1MSM		x	Powerup	-	-	-	The unit state prior to its current state.
Prev2MSM		x	Powerup	-	-	-	The unit state prior to Prev1MSM.
Prev3MSM		x	Powerup	-	-	-	The unit state prior to Prev2MSM.
Prev4 MSM		x	Powerup	-	-	-	The unit state prior to Prev3MSM.
Unit Min Off Time		x	5	0	300	seconds	The minimum amount of time that the compressors must remain off after the unit is shut down.
Application Defaults		x	No Change	-	-	-	Sets all configuration parameters back to application defaults. **Consult Daikin ATS Technical Response before proceeding.**
Save Config Params		x	None	-	-	-	Indicates that all configuration parameters are being saved to non-volatile memory.
Calculated PWM		x	0	-	-	%	Supply fan signal calculated by the controller application. Read-only.
Or Reset Delay		x	1800	0	3000	seconds	After an override has been applied, this sets the amount of time before all overrides are cleared and the unit can resume to normal operation. The timer resets every time an override is applied.
Calc CFM		x	0	-	-	cfm	The calculated CFM value. Used to determine supply fan ramp up. Read-only.
Min CFM		x	0	-	-	cfm	The CFM low limit value. Used in conjunction with calculated CFM to determine supply fan ramp up. Read-only.
Alarm Check Delay		x	720	0	1200	seconds	The 12-minute alarm delay timer. After unit start-up, this is the amount of time where certain alarm conditions are ignored.
Lockout Time		x	0	0	65535	seconds	The amount of time that the unit is locked out from heating or cooling due to outdoor air temperature.

Table 12: Diagnostics, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Config File Numb		x	0	0	999	number	The unique identifier used in each file name when saving configuration parameters to the SD card.
Low Line Voltage		x	0	0	4095	counts	Line voltage (VAC) to the controller.
Man Alarm Override Tm		x	0			seconds	The amount of time that passes once an alarm has been manually commanded. The timer resets every time an alarm is manually commanded.
SD Status		x	Good	-	-	-	The status of the SD card from the following options: • Good = The SD card is ready to receive data • Fail = An SD card error has occurred • No mount = The SD card is not properly connected to the drive. The SD card may not be available, or is not a compatible format
Int Sched		x	Unoccupied	-	-	-	The current occupancy mode provided by the controller's internal schedule.
Tenant Override Reset Alarm		x	None	-	-	-	The status of the alarm reset signal provided by an optional tenant override input.
Min Chg Over Delta		x	5	5	10	ºF	The minimum difference between the OAT Cooling and OAT heating setpoints.
Max Chg Over Delta		x	25	20	25	ºF	The maximum difference between the OAT Cooling and OAT heating setpoints.
Timer Resets		x	None	-	-	-	Clears the fan and compressor run times and starts. This is used when a compressor or fan has been replaced in the field. Options include: • Reset Comp 1 = Resets the runtime and starts for compressor 1 • Reset Comp 2 = Resets the runtime and starts for compressor 2 • Reset Fan = Resets the runtime for the supply fan • All = Resets both compressor runtime and starts and also supply fan runtime hours
Hot Gas Reheat - DOAS WSHP							
Proportional Error		x	0	-	-	-	The contribution to the hot gas reheat signal provided by the proportional part of the PID calculation.
Integral Error		x	0	-	-	-	The contribution to the hot gas reheat signal provided by the integral part of the PID calculation.
Derivative Error		x	0	-	-	-	The contribution to the hot gas reheat signal provided by the derivative part of the PID calculation.
Proportional Gain		x	5	-	-	-	The PID loop proportional gain value used to control the modulating hot gas reheat valve.
Integral Gain		x	0.33	-	-	-	The PID loop integral gain value used to control the modulating hot gas reheat valve.
Derivative Gain		x	100	-	-	-	The PID loop derivative gain value used to control the modulating hot gas reheat valve.
Min Process Value		x	-3000	0	-3000	-	The minimum accumulated process value used for PID control of the modulating hot gas reheat valve.
Max Process Value		x	120	0	3000	-	The maximum accumulated process value used for PID control of the modulating hot gas reheat valve.
Accumulated Process Value		x	0	-20000	20000	-	The total accumulated process value used for PID loop used for control of the modulating hot gas reheat valve. It must be within the min/max accumulation value range.
Correction Process Value		x	0	-20000	20000	-	PID loop correction value process variable used for control of the modulating hot gas reheat valve.

Table 12: Diagnostics, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Manual Mode		x	0	-	-	-	Indicates if the modulating hot gas reheat valve is in manual override.
Vacuum Mode - DOAS WSHP							
The vacuum mode is used by the DOAS WSHP to recharge the system. At times, air becomes trapped in the system and it becomes necessary to remove that trapped air from the system. Doing this improves system performance. Note that the vacuum mode should be used only when necessary. Contact Daikin ATS Technical Response prior to configuring the unit for this mode. Before proceeding, the unit must be in an Off state, and the EEV and HGR valves both open to 50%.							
Vacuum Mode Enable		x	Disable	-	-	-	Enables the vacuum mode, which modulates the EEV and HGR valves into 50% position in order to pull (vacuum) the air out during system recharge.
Vacuum Mode Timer		x	30	-	-	seconds	Countdown timer for opening the EEV and HGR valves. Applies when Vacuum Mode is enabled, and the control mode and MSM are OFF. When the timer reaches 0 from the default of 30 seconds, the vacuum mode is enabled.
Miscellaneous - DOAS WSHP							
Startup Timer		x	0			seconds	The amount of time after power is applied to the controller and when the unit initializes. The delay timer allows for fan stabilization upon initial unit start-up.
Brownout Voltage		x	2775	0	4095	counts	VAC input value (in ADC counts) from the controller for the incoming line voltage. This value is used to determine if a brownout or overvoltage condition exists.
Heat Cool Setup - DOAS WSHP							
DAT Cooling Deadband		x	7	1	15	°F	The deadband around the discharge air temperature (DAT) setpoint. This is the operating range used by the hot gas reheat (HGR) valve when the unit is in either precision cooling or dehumidification mode.
DAT Heating Deadband		x	7	1	15	°F	The deadband around the discharge air temperature (DAT) setpoint. This is the operating range used for compressor staging when the unit is in heating mode.
LCT Dehumid Deadband		x	7	1	15	°F	The deadband around the leaving coil temperature (LCT) setpoint. This is the operating range used for compressor staging when the unit is in dehumidification mode.
DAT Dehumid Deadband		x	2	0	10	°F	The deadband around the discharge air temperature (DAT) setpoint. This is the operating range used by the hot gas reheat (HGR) valve when the unit is in either precision cooling or dehumidification mode.
LCT Cooling (Stage 1)		x	65	33	75	°F	Sets the stage 1 leaving coil temperature (LCT) setpoint used when the unit is in either cooling or dehumidification mode.
DAT Heating (Stage 1)		x	70	55	110	°F	Sets the stage 1 discharge air temperature (DAT) setpoint used when the unit is in heating mode.
LCT Low Limit		x	32	30	40	°F	The minimum leaving coil temperature (LCT) setpoint that can be used by the controller.
LCT Dehumid Deadband (Stage 1)		x	7	0	15	°F	The deadband around the leaving coil temperature (LCT) setpoint when the unit is in stage 1.
Compressor - DOAS WSHP							
Compr 1 Run Time		x	0	0	300000	hours	The total compressor 1 run time hours.
Compr 2 Run Time		x	0	0	300000	hours	The total compressor 2 run time hours.
Saturated Evap Temp		x	0	-	-	°F	The calculated refrigerant saturation temperature for the evaporator.
Comp On Timer		x	0	-	-	hours	The amount of time that the compressor has been on since it last started.
Comp Off Timer		x	0	-	-	hours	The amount of time that the compressor has been off since it last stopped.
Pump On Timer		x	15	-	-	seconds	The amount of time that the compressor pump has been on since it last started.

Table 12: Diagnostics, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Pump Cmd		x	Inactive	-	-	-	Status of the pump request/isolation valve output.
Saturated Cond Temp		x	0	-	-	ºF	The calculated refrigerant saturation temperature for the condenser.
Defrost Timer		x	60	0	300	seconds	The amount of time that the unit is allowed to remain in the defrost mode before exiting.
Reversing Valve Cmd		x	Unknown	-	-	-	Intended position of the reversing valve based on heating/cooling demand.
Reversing Valve Status		x	Unknown	-	-	-	Status of the reversing valve output. It matches the Reversing Valve Cmd value once all appropriate timers have expired.
Standby		x	0	-	-	seconds	The amount of time that the unit must remain at the current stage before staging up or down.
C1 Min On Timer		x	0	-	-	seconds	The amount of time remaining before the compressor 1 minimum on time expires.
C2 Min On Timer		x	0	-	-	seconds	The amount of time remaining before the compressor 2 minimum on time expires.
C1 Min Off Timer		x	0	-	-	seconds	The amount of time remaining before the compressor 1 minimum off time expires.
C2 Min Off Timer		x	0			seconds	The amount of time remaining before the compressor 2 minimum off time expires.
Comp 1 Starts		x	0	0	300000	-	The total number of compressor 1 starts.
Comp 2 Starts		x	0	0	300000	-	The total number of compressor 2 starts.
Suction Refrig Press Avg		x	0	-	-	psi	For internal use only.
High Condenser Temp		x	130	100	140	ºF	The high temperature setpoint that determines when a condenser saturation alarm is generated. Alarm occurs when the condenser saturation temperature is higher than this setpoint for 60 consecutive seconds. The alarm automatically clears when the condenser saturated temperature is 10°F below this setpoint.
Low Condenser Temp		x	50	30	70	ºF	The low temperature setpoint that determines when a condenser saturation alarm is generated. The alarm occurs when the condenser saturation temperature is lower than this setpoint for 10 consecutive minutes. Alarm initiates a normal shutdown of the unit. It automatically clears when the condenser saturated temperature is 5°F above this setpoint.
High Evaporator Temp		x	65	50	80	ºF	The high temperature setpoint that determines when an evaporator saturation alarm is generated. Alarm is generated after the evaporator saturated temperature is higher than this setpoint for five consecutive minutes. If the unit is in compressor stage 1 when this occurs, the alarm forces the unit into compressor stage 2. Alarm automatically clears when the evaporator temperature is below this setpoint.
Low Evaporator Temp		x	5	0	20	ºF	The low temperature setpoint that determines when an evaporator saturation alarm is generated. The alarm occurs when the evaporator saturated temperature is lower than this setpoint for 60 consecutive seconds. Alarm initiates a normal shutdown of the unit. It automatically clears when the evaporator saturated temperature is 5°F above this setpoint.
Min Pump On Time		x	30	0	20	seconds	This is the minimum amount of time that the pump must be on before the compressors can turn on. The pump request timer is used when heating or cooling is needed. It delays compressor operation by this amount of time to allow adequate supply water flow.
Max Suction Refrig Temp		x	90	70	110	ºF	The unit exits the defrost mode when the suction refrigerant temperature is above this setpoint.

Table 12: Diagnostics, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Max Discharge Refrig Temp		x	225	50	250	°F	The maximum discharge refrigerant temperature (DRT) setpoint that determines when a high DRT alarm is generated. The alarm occurs when the effective DRT is above the DRT setpoint high limit for longer than ten minutes or when the DRT is above 250°F. This causes the unit to immediately shut down. The alarm initiates a normal compressor shutdown. The alarm is cleared when the DRT drops below the setpoint value by 10°F. It requires a manual reset via ServiceTools, the network, or the LUI keypad display.
Compressor Shutdown Press		x	20	0	100	psi	The suction refrigerant pressure setpoint at which the compressor(s) shut off during a normal shutdown sequence. Shutdown occurs when the suction pressure is below this value.
Defrost Check Delay		x	60	0	300	seconds	A 60-second (default) delay timer that prevents the unit from entering defrost mode under the proper conditions.
Electronic Expansion Valve - DOAS WSHP							
Enable Status		x	Disable	-	-	-	Indicates if the electronic expansion valve operation is enabled.
Press Differential Threshold		x	1.6	0	5	-	For internal use only.
Calculated Press Ratio		x	-	-	-	-	For internal use only.
Proportional Error		x	-	-	-	-	The contribution to the electronic expansion valve signal provided by the proportional part of the PID calculation.
Integral Error		x	-	-	-	-	The contribution to the electronic expansion valve signal provided by the integral part of the PID calculation.
Electronic Expansion Valve - DOAS WSHP							
Derivative Error		x	-	-	-	-	The contribution to the electronic expansion valve signal provided by the derivative part of the PID calculation.
Proportional Gain		x	5	0	1000	-	The PID loop proportional gain value used to control the electronic expansion valve.
Integral Gain		x	0.33	0	100	-	The PID loop integral gain value used to control the electronic expansion valve.
Derivative Gain		x	100	0	500	-	The PID loop derivative gain value used to control the electronic expansion valve.
Min Process Value		x	-14000	0	300000	hours	The minimum accumulated process value used for PID control of the electronic expansion valve.
Max Process Value		x	4500	0	5000	hours	The maximum accumulated process value used for PID control of the electronic expansion valve.
Accumulated Process Value		x	0	-20000	20000	-	The total accumulated process value used for PID loop control of the electronic expansion valve. It must be within the min/max accumulation value range.
Correction Process Value		x	0	-20000	20000	-	PID loop correction value process variable used for control of the electronic expansion valve.
Manual Mode		x	0	-	-	-	Indicates if the electronic expansion valve is in manual override. For internal use only.
Fan Points							
Fan Run Time		x	0	0	300000	hours	Configures the total fan run time. This parameter is used to reset the current run time hours back to zero hours after a new fan has been added or replaced.
Force PWM		x	0	1	101	%	Forces the PWM fan to the desired speed. For internal use only.

Table 12: Diagnostics, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Description
This section is intended to be a helpful reference for technicians to confirm that the correct configuration is loaded in the unit, and to verify that field modifications are correct before uploading the configuration to other units. Contact Daikin ATS Technical Response (ATSTechSupport@daikinapplied.com or 1-800-432-1342), for assistance before proceeding. Click both the Save and Refresh buttons so that changes take effect. Also switch to another screen and then return to this one to verify that the unit configuration has been updated. Requires at least Maintenance level permission.				
Factory Configuration				
Factory Config Str Cmd		x	None	ServiceTools can be used to display the unit code string values currently loaded in the controller or to make changes and display the new values. The two options include: Parameter to String = Creates an alphanumeric code string based on the values coming from the controller String to Parameter = Parses the values in the code string values that have been entered using ServiceTools and writes those values to the controller application
Product Category		x	W	W = WSHP
Model Type		x	GO	GO = DOAS
Configuration		x	V	V = Vertical H = Horizontal[1]
Unit Size		x	800	800 CFM 1200 CFM 1600 CFM 2400 CFM 3000[1] 3500[1] 4800[1]
Voltage		x	F	F = 208-230/60/3 K = 460-60-3 L = See note[1]
Design Series (Vintage)		x	1	Revision / Design Series 1
Entering/Discharge Air		x	RF	FF = Front Return / Upblast Front Discharge[1] FR = Front Return / Upblast Rear Discharge[1] FT = Front Return / Top Horizontal Discharge[1] RS = Right Hand Return / Straight Discharge[1] RE = Right Hand Entering / End Discharge[1] RF = Rear Entering / Upblast Front Discharge
Water Coil Type		x	B	B = Brazed plate heat exchanger
Control Option 1		x	B	B = Standard controller with BACnet L = Standard controller with LonWorks module[1] C =BACnet + wireless[1] M = LonWorks + wireless[1]
Fan Motor Option		x	Single Torque	Single (not available on 2400 CFM units) Single CFM[1] Dual (not available on 800 CFM units) Dual CFM[1]
Sound Package		x	B	B = Base package S = Sound package D = Doublewall panels[1] T = Doublewall panels with sound package[1]
Preheat Options		x	00	00 = Preheat ready HH = Right-hand hydronic pre-heat coil, field piped HL = Left-hand hydronic pre-heat coil, field piped[1]
Filters and Racks		x	4	2 = Merv 8 in 2” frame with duct flange 4 = Merv 13 in 4” frame with duct flange 0 = No filter with duct flange
Piping Options		x	0	0 = None (read-only)
Not Used		x	0	NA (read-only)
Control Option 2		x	0	0 = None C = Outdoor Air CFM sensor[1]
Standard or Special		x	S	S = Standard X = Special
Transformer		x	75	75 = 75 VA transformer
Corrosion Protection		x	0	0 = None C = Corrosion protection
Disconnect Switch		x	0	0 = None D = Disconnect switch

Table 12: Diagnostics, Continued

Menu Item	Unit Ventilator	DOAS WSHP	Default Value	Description
Extended Warranty		x	Y	Y = None V = 1 Year Extended Compressor Only Parts W = 1 Year Extended Refrigerant Circuit Parts E = 1 Year Extended Complete Unit Parts C = 4 Year Extended Compressor Only Parts R = 4 Year Extended Refrigerant Circuit Parts P = 4 Year Extended Complete Unit Parts L = First Year Labor Allowance T = 4 Year Extended Complete Unit Parts Warranty with Labor Allowance

[1]Code option displays in the drop-down menu but is not currently available.

Inputs (Offsets)

The Inputs (Offsets) tool is intended for technicians who are calibrating sensors during unit start-up and commissioning. If the sensor is not displaying the expected value, or to adjust sensor accuracy, it may be necessary to add an offset to the physical reading from the sensor. This page is where a user can make these adjustments. The sensor inputs available for calibration vary somewhat depending on unit type. See Figure 27 for unit ventilator inputs.

Contact Daikin ATS Technical Response at ATSTechSupport@daikinapplied.com or 1-800-432-1342 for troubleshooting or technical support before performing the calibration process.

NOTE: The correct sensor must be installed and functioning properly before inputs can be changed.

Descriptions of Values

System value: The current reading, or output, from the unit-installed sensor. The system value for each sensor is displayed next to each input.

Expected value: The desired sensor output.

Counts: Any non-zero number added manually (this can be done with ServiceTools or LUI keypad display) as an offset to the current system value.

- The input range for all sensor counts on this page is -1000 to 1000 for UV and -200 to 200 for DOAS WSHPs.
- All counts default to 0. This indicates an uncalibrated sensor reading. Once a count has been entered and saved, the field changes to reflect that offset value.

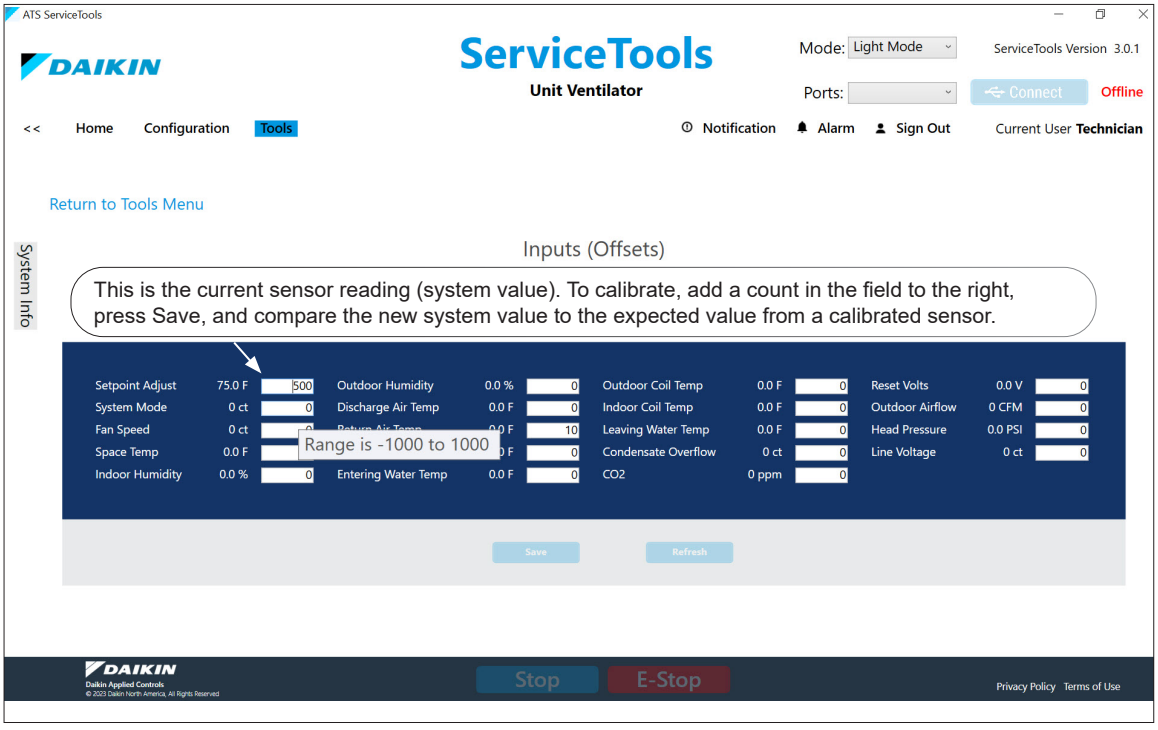
Calibration Process

Compare the actual sensor value on left to another sensor. If the system value displayed in ServiceTools is not as expected, enter a non-zero value and click Save. All new input values will refresh after a few seconds; reflecting the new calibration offset. Repeat as necessary until the input measurement matches the second (third-party or other calibrated) sensor.

A sensor is properly calibrated when the system value shown is the same as the expected value (i.e. reading from a second, calibrated sensor).

NOTE: Corresponding offsets are also adjustable from the LUI keypad display.

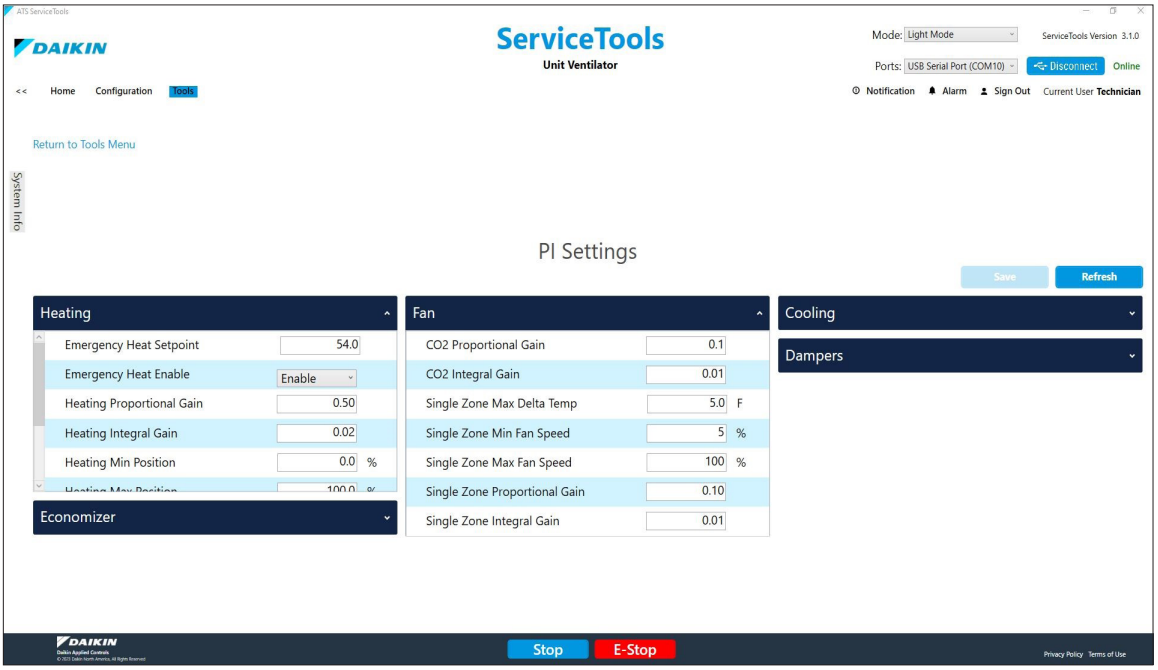
Figure 27: Inputs (Offsets) Screen



PI Settings

The controller relies on PI loop control to maintain certain setpoints. Technician level users have access to these parameters from the PI Settings page (Figure 28). Descriptions of the PID-adjustable parameters are provided in Table 13. Before making changes, it may be helpful to first review the next section (Overview of PI Loop Control) as it describes how PID loop strategy is implemented by the UV and DOAS unit applications.

Figure 28: PI Settings Screen



Overview of PI Loop Control

The adjustable parameters associated with the Proportional – Integral (PID) control loop are:

Kp = Proportional gain
Ki = Integral gain factor
Kd = Derivative gain

When the unit is properly sized for the space, the default settings for these parameters provide the best control action for all the various operating conditions. However, it may be necessary to fine-tune the system for maximum performance (response time) using the proportional and integral gain settings. In the event of a field issue, these parameters must be set back to the original default settings.

In general, these gain factors work in the following way: The overall demand in a PID loop system is made up of three distinct parts — the proportional, integral, and derivative. Each of these parts is calculated and then multiplied by its corresponding gain factor. These gain factors are the setup variables that can be accessed from the PI Settings menu. By making a gain factor larger, its overall influence on system demand is increased. Once each PID component is multiplied by its gain factor, all three terms are added together to determine the overall demand percentage.

Terminology

Proportional Gain (Kp): Or proportional action, causes the controlled output to change in proportion to the magnitude of the present error amount. Error is the difference between the sensors present value and the set point. When the Kp setting is too low, the process variable (PV) response will change too slowly. When the Kp setting is too high, the process variable response will excessively overshoot and possibly oscillate around the setpoint (SP). If faster system response is desired, increase the Kp setting. Make small, incremental adjustments to the proportional gain setting to avoid system instability.

Integral Gain (Ki): Or integral action, accumulates the error amounts and causes the controlled output to approach the setpoint over time in an attempt to eliminate any system offset. The higher the integral (Ki) setting, the more the integral effects the process under control. When the Ki setting is too high, the process variable (PV) oscillates around the setpoint. When the Ki setting is too low, the process variable does not reach the setpoint.

Derivative Gain (Kd): Or derivative action, accounts for the rate of change of the error and causes the controlled output to react more or less quickly depending on the rate. The inverse of the rate of change in the error is used so that when the rate of change is small, the derivative output is larger, speeding up the system response time. The higher the derivative (Kd) setting, the more the derivative effects the process variable (PV) under control. When the Kd setting is too high, small amounts of random noise can cause the system to over correct increasing wear on the devices. When the Ki setting is too low, the process variable may not be able to react as quickly as desired.

NOTE: The Kd portion of PID loop control applies only to DOAS WSHPs.

- **Control Variable (CV)**: The output signal as commanded by the PID equation.
- **Process Variable (PV)**: The parameter that reacts to a Control Variable change is the Process Variable (PV). It is the measured analog input reading.
- **Setpoint (SP)**: Desired target value.
- **Error**: Value is calculated one of two ways depending on the PI blocks fixed action type.
- **Direct Acting PI (Cooling)**: Error = PV – SP
- **Reverse Acting PI (Heating)**: Error = SP – PV
- **Sum of Errors:** Summation of all past errors. To prevent integral wind-up, the integral error summation is suspended when PI output reaches 100%.

Output Formula

*(Kp * Error) + (Ki*Sum of Error) + (Kd*(1/Change in Error))*

Table 13: PI Settings Details

Parameter	Unit Ventilator	DOAS WSHP	Default Value[1]	Minimum Value	Maximum Value	Units	Description
Heating - UV							
Emergency Heat Setpoint	x		54	0	70	ºF	The emergency heating setpoint is used to determine when the unit can enter the emergency heat state. This happens when the control temperature is below the emergency heat setpoint and emergency heat is enabled.
Emergency Heat Enable	x		Enable	-	-	-	Disables the unit from entering the emergency heat state.
Heating Proportional Gain	x		0.5	0	255	-	The proportional gain value of the PI loop configuration used to control the modulating hot water valve function.
Heating Integral Gain	x		0.02	0	255	-	The integral gain value of the PI loop configuration used to control the modulating hot water valve function.
Heating Min Position	x		0	0	100	%	The modulating hydronic hot water valve minimum position.
Heating Max Position	x		100	10	100	%	The modulating hydronic hot water valve maximum position.
Heating Max Delta Temp	x		5	1	10	ºF	The value used to determine the hydronic hot water valve position. It reflects the difference between the discharge air temperature and discharge air setpoint that causes the valve to open to 100%.
Electric Heat Proportional Gain	x		8	0	255	-	The proportional gain value of the PI loop configuration used to control electric heat function.
Electric Heat Integral Gain	x		0.5	0	255	-	The integral gain value of the PI loop configuration used to control electric heat function.
Cooling - UV							
Cooling Proportional Gain	x		0.5	0	255	-	The proportional gain value of the loop configuration used to control modulating hydronic chilled water valve function.
Cooling Integral Gain	x		0.02	0	255	-	The integral gain value of the PI loop configuration used to control the modulating hydronic chilled water valve function.
Cooling Min Position	x		0	0	100	%	The modulating hydronic chilled water valve minimum position when the difference between the discharge air temperature and the discharge air chilled setpoint equals 0.
Cooling Max Position	x		100	10	100	%	The modulating hydronic chilled water valve maximum position.
Cooling Max Delta Temp	x		5	0	10	ºF	The value used to determine the hydronic chilled water valve position. It reflects the difference between the discharge air temperature and discharge air setpoint that causes the valve to open 100%.
Fan - UV							
CO2 Proportional Gain	x		0.1	0	255	-	The proportional gain value of the PI loop configuration used to control the outside air damper for CO_2/demand control ventilation.
CO2 Integral Gain	x		0.01	0	255	-	The integral gain value of the PI loop configuration used to control the outside air damper for CO_2/demand control ventilation.
Single Zone Max Delta Temp	x		5	1	10	-	This value determines the fan output for single-zone VAV units. It reflects the difference between the control temperature and the effective setpoint that triggers maximum fan output.
Single Zone Min Fan Speed	x		5	0	100	%	Reflects the minimum fan speed for single-zone VAV units.
Single Zone Max Fan Speed	x		100	0	100	%	Reflects the maximum fan speed for single-zone VAV units.
Single Zone Proportional Gain	x		0.1	0	255	-	The proportional gain value of the loop configuration used for fan control function of single-zone VAV units.
Single Zone Integral Gain	x		0.01	0	255	-	The integral gain value of the PI loop configuration used for fan control function of single-zone VAV units.
Dampers - UV							
Face & Bypass Proportional Gain	x		10	0	255	-	The proportional gain (Kp) value of the PI loop configuration used to control the face and bypass damper function.
Face & Bypass Integral Gain	x		1	0	255	-	The integral gain (Ki) value of the PI loop configuration used to control the face and bypass damper function.

Table 13: PI Settings, Continued

Parameter	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
OA Damper Proportional Gain	x		2	0	255	-	The proportional gain value of the PI loop configuration used to control the low limit outdoor damper position when the unit is in low limit.
OA Damper Integral Gain	x		0.2	0	255	-	The integral gain value of the PI loop configuration used to control the control the low limit outdoor damper position when the unit is in low limit.
Economizer - UV							
Economizer Proportional Gain	x		1	0	255	-	The proportional gain value of the PI loop configuration used to control the outdoor damper position when the unit is in economizer mode and free cooling is available.
Economizer Integral Gain	x		0.1	0	255	-	The integral gain value of the PI loop configuration used to control the outdoor damper position when the unit is in economizer mode and free cooling is available.
Hot Gas Reheat Valve - DOAS WSHP							
Proportional Gain		x	5	0	1000	-	The proportional gain value of the PI loop configuration used to control the pressure switch to turn off/on water to the unit in hot gas reheat mode.
Integral Gain		x	0.33	0	1000	-	The integral gain value of the PI loop configuration used to control the pressure switch to turn off/on water to the unit in hot gas reheat mode.
Derivative Gain		x	100	0	1000	-	The derivative gain value of the PI loop configuration used to control the pressure switch to turn off/on water to the unit in hot gas reheat mode.
Building Static Pressure - DOAS WSHP							
Proportional Gain		x	1	0	255	-	The proportional gain value of the PI loop configuration used to control the building static pressure (BSP) when the unit is configured for BSP fan control.
Integral Gain		x	0.5	0	255	-	The integral gain value of the PI loop configuration used to control the building static pressure (BSP) when the unit is configured for BSP fan control.
Duct Static Pressure - DOAS WSHP							
Proportional Gain		x	1	0	255	-	The proportional gain value of the PI loop configuration used to control the duct static pressure (DSP) when the unit is configured for DSP fan control.
Integral Gain		x	0.5	0	255	-	The integral gain value of the PI loop configuration used to control the duct static pressure (DSP) when the unit is configured for DSP fan control.

[1] The default values are based on unit type selected. These are the defaults the application uses when first downloaded into a new controller.

Network I/O

Network Configuration Settings

The Network I/O page (Figure 29) is available from the Tools menu. It allows a Technician level user to configure selected unit controller parameters for BACnet or LonWorks BAS (building automation system) communication.

Before proceeding, be aware that ServiceTools is not intended to replace a BAS. However, the user interface can be an efficient way to set some of the most common network-supported values for use by the controller (Table 14).

In general, the options available are the most important sensor inputs and configuration settings required during initial unit start-up and commissioning. Changes to this page require Technician level access. Sensors must be installed, configured and functioning as expected before the respective menu item is enabled (see Configuration).

Changes made in ServiceTools overrides the last values saved from either the LUI keypad display or the BAS.

Figure 29: Network I/O Screen

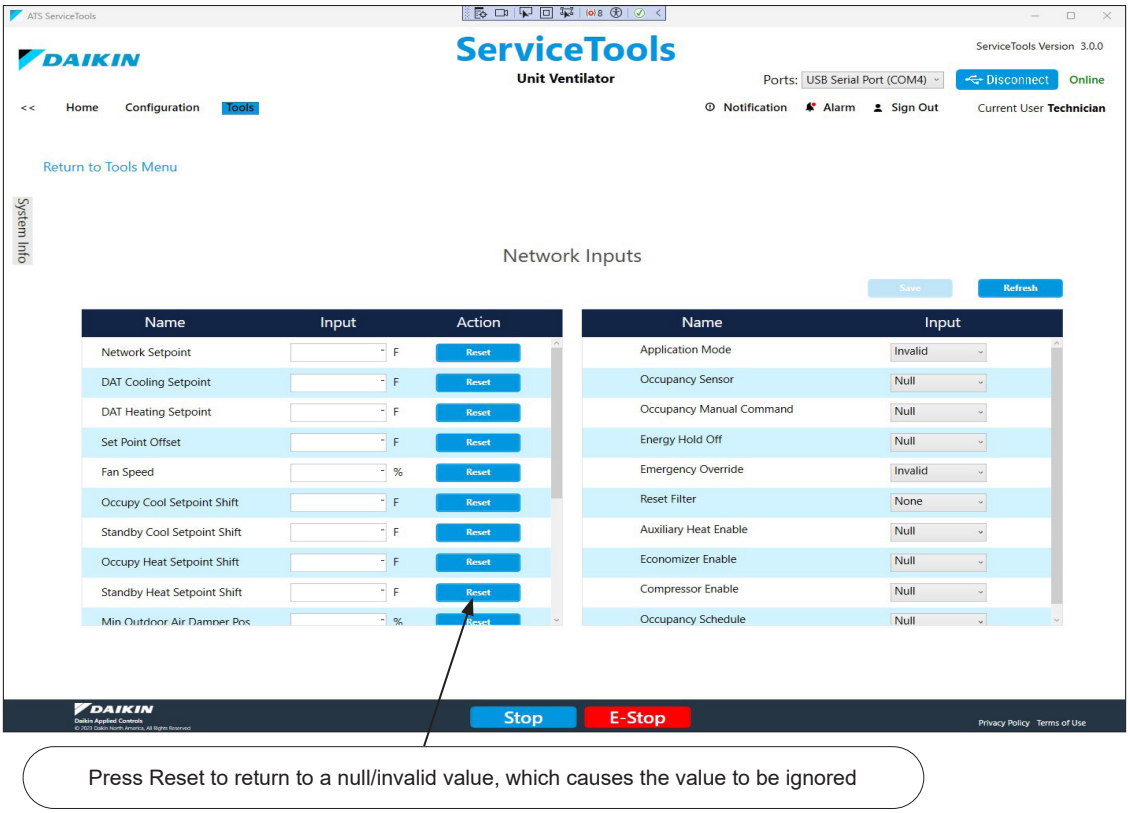


Table 14: Network I/O Details

Parameter	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Network Setpoint	x		-[1]	-40	212	ºF	Configures the network reference setpoint in occupied, unoccupied, standby, and bypass modes. It determines the effective temperature setpoint when provided with a valid input.[2]
		x	-[1]	-40	212	ºF	Configures the discharge air temperature (DAT) setpoint value when provided with a valid input. Not used.
DAT Cooling Setpoint	x		-[1]	-40	212	ºF	Configures the network DAT cooling setpoint value when provided with a valid input.[2]
DAT Heating Setpoint	x		-[1]	-40	212	ºF	Configures the network DAT heating setpoint value when provided with a valid input.[2]
Set Point Offset	x		-[1]	-3	3	ºF	Configures the temperature setpoint offset input. Shifts the occupied and standby effective setpoints via the network. The unoccupied effective setpoints are not affected.
Fan Speed	x	x	-[1]	0	100	%	Configures the fan speed override network input value.[2]
Occupy Cool Setpoint Shift	x		-[1]	-18	18	ºF	Configures the network input for the occupied cooling setpoint shift value. Shifts the effective setpoint via the network.
Standby Cool Setpoint Shift	x		-[1]	-18	18	ºF	Configures the network input for the standby cooling setpoint shift value. Shifts the effective setpoint via the network.
Occupy Heat Setpoint Shift	x		-[1]	-18	18	ºF	Configures the network input for the occupied heating setpoint shift value. Shifts the effective setpoint via the network.
Standby Heat Setpoint Shift	x		-[1]	-18	18	ºF	Configures the network input for the standby heating setpoint shift value. Shifts the effective setpoint via the network.
Min Outdoor Air Damper Pos	x		-[1]	0	100	%	Configures the network minimum outdoor air damper position. It overrides the minimum damper position set by the fan speed or the effective space CO_2 value.
Space Temp	x		-[1]	-14	122	ºF	Configures the space temperature setpoint value from the network in lieu of a local temperature sensor.[2]
		x	-[1]	-40	212	ºF	
Outdoor Air Temp (OAT)	x	x	-[1]	-40	212	ºF	Configures the space temperature value from the network in lieu of a local temperature sensor. A valid network input overrides the local sensor input.[2]
Outdoor Relative Humidity	x	x	-[1]	0	100	%	Configures the network outdoor relative humidity input. It is used to set the effective outdoor humidity value.[2]
Space Relative Humidity	x	x	-[1]	0	100	%	Configures the network indoor relative humidity input. It is used to set the effective outdoor humidity value.[2]
Space CO2	x		-[1]	0	2000	ppm	Configures the network space CO_2 input. It is used to set the effective space CO_2 value.[2]
		x	-[1]	0	5000	ppm	
Entering Water Temp (EWT)	x	x	-[1]	-40	212	ºF	Provides the entering water temperature (EWT) value to the network.[2]
DAT Reheat Setpoint	x		-[1]	-40	212	ºF	Configures the network discharge air temperature setpoint when the unit is in reheat/dehumidification mode.[2]
Application Mode	x	x	Invalid	-	-	-	Configures the network command that sets the operating mode of the unit. The application mode does not "force" the unit into any state. However, it does disable certain unit operations. Applies when the local LUI keypad display is configured for Auto or is invalid.[2] The menu selections supported by UV and DOAS WSHP applications are specific to each application.
Occupancy Sensor	x	x	Null	-	-	-	Configures the network command used to indicate the presence of occupants in the space (motion detection).[2]
Occupancy Manual Command	x	x	Null	-	-	-	Configures the network command to override the effective occupancy output.[2] DOAS = Occupied, Unoccupied, Bypass, Standby, Null
Energy Hold Off	x		Null	-	-	-	Configures the network command to enable the unit to enter the energy hold off mode. Energy hold off prevents the unit from heating and cooling, thus allowing it to protect the space from temperature extremes. When energy hold off is enabled, heating is not provided unless the space temperature exceeds the emergency heat setpoint. With the exception of free cooling, it does not allow for cooling operation.

Table 14: Network I/O, Continued

Parameter	Unit Ventilator	DOAS WSHP	Default Value	Minimum Value	Maximum Value	Units	Description
Emergency Override	x		Invalid	-	-	-	Configures the network to command the unit into an emergency (non-normal) mode. Overrides the local emergency mode if configured from the LUI keypad display.[2]
Reset Filter	x	x	None	-	-	-	Enables the network to clear the change filter alarm.
Auxiliary Heat Enable	x		Null	-	-	-	Enables the network to command auxiliary heat.[2]
Economizer Enable	x		Null	-	-	-	Enables or disables economizer operation. Overrides the local economizer enable if configured from the LUI keypad display.[2]
Compressor Enable	x	x	Null	-	-	-	Disables compressor heating and cooling from the network. A Null value indicates the compressor(s) is enabled.[2]
Occupancy Schedule	x	x	Null	-	-	-	Enables the network to command the unit into different occupancy modes.[2]

[1] The null value indicates that a sensor is not installed, the sensor is unreliable, or when the controller is not using a value within the acceptable range.
[2] The network override reverts back to its default value (Null/Invalid) upon controller reboot.

Manual Override

The Manual Override section is used for placing hardware into a startup mode and manually overriding individual outputs. This option is available for Technician level users, and is helpful when verifying wiring during unit installation, service, or performing advanced troubleshooting. Overrides can only be made using ServiceTools. An override is independent of the controller application. It does not lose the original value.

An override reset delay provides a 30-minute countdown timer that is set whenever an output is overridden. When the timer expires, override control is relinquished and the value automatically returns to its default. The reset delay is an added safety feature in the event an override is not released.

UV Overrides

There is an override for each digital, analog, and PWM output (Figure 31) supported by the UV application. This includes individual fan speeds, reversing valve control (on or off), pump control, electric heat, and controller operation.

DOAS WSHP Overrides

There is an override for each digital, analog, and PWM output supported by the DOAS WSHP application (not shown). This includes HGR and reversing valves, preheat, energy recovery, and damper control. Certain outputs such as EEV and compressor control do not support the manual override option. These outputs are displayed, but are read-only. This is because of the risk for potential damage to the unit or end devices.

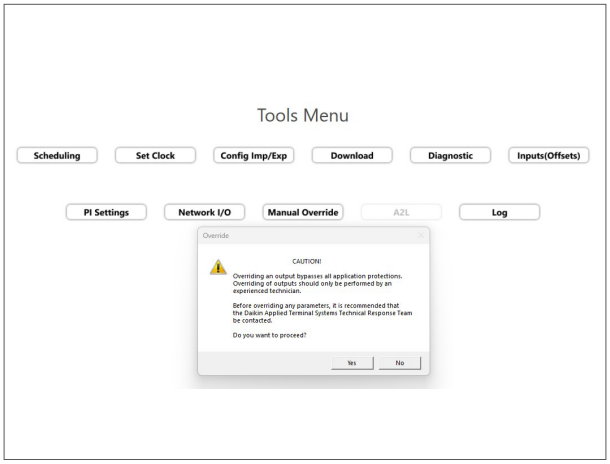
Once the Manual Override button is pressed from the Tools menu, a caution message appears (Figure 30). Select Yes to proceed to the Manual Override main menu.

The Start/Stop button is disabled when in Manual Override.

⚠ CAUTION

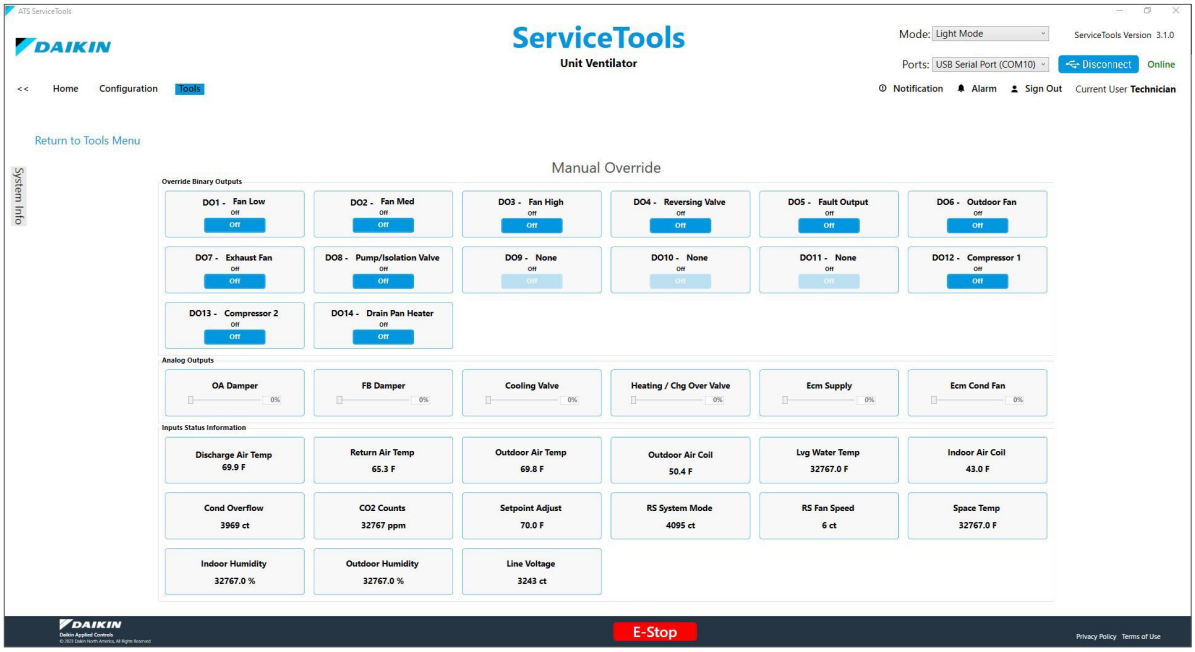
Proceed with caution before implementing any overrides. The controller does not have safeties to prevent potential unit damage.

Figure 30: Caution - Overriding Outputs



Contact Daikin Applied Technical Response at ATSTechSupport@daikinapplied.com or 1-800-432-1342 for assistance.

Figure 31: Manual Override Screen



Override Outputs

Outputs are commanded to “Off” by default. All manual overrides are removed upon leaving this page, and the controller returns to normal operation.

NOTE: Note: The On/Off button indicates status of output being sent to/coming from the controller.

To command each output:

Binary Output Override Command

1. Press the blue Off button below the desired output.
2. Confirm the button has turned white and displays On. This indicates the output has been overridden.

NOTE: Before enabling controller operation on air-source UV units, make sure outdoor fan (DO6) and the correct indoor fan (DO1, DO2 or DO3) are On.

Analog Output Override Command

1. Select the slider bar below the desired analog output. Allow a few moments for a response.
2. Shift the slider bar to the right. This commands the output to the desired value, based a range of 0-100%.
3. The box to the right of each output has a label that defaults to 0%. Verify that this % value changes based on the slider position. This is the command being sent from the controller to the end device.

NOTE: For UVs, DO1 Fan Low must be energized for the ECM Supply Fan output to effect fan operation.

Input Status Information

Displays the current status of all sensor inputs to the controller. The input status provides live feedback from the controller as a result of overrides being made to the outputs. It is used to monitor the effects of the commanded outputs on the overall system.

NOTE: The value displays None if sensor is not installed or configured.

Refer to the Configuration section, Table 11: Configuration Details for descriptions of all digital and analog outputs that support manual override. Note that outputs for the UV and DOAS WSHP are listed separately.

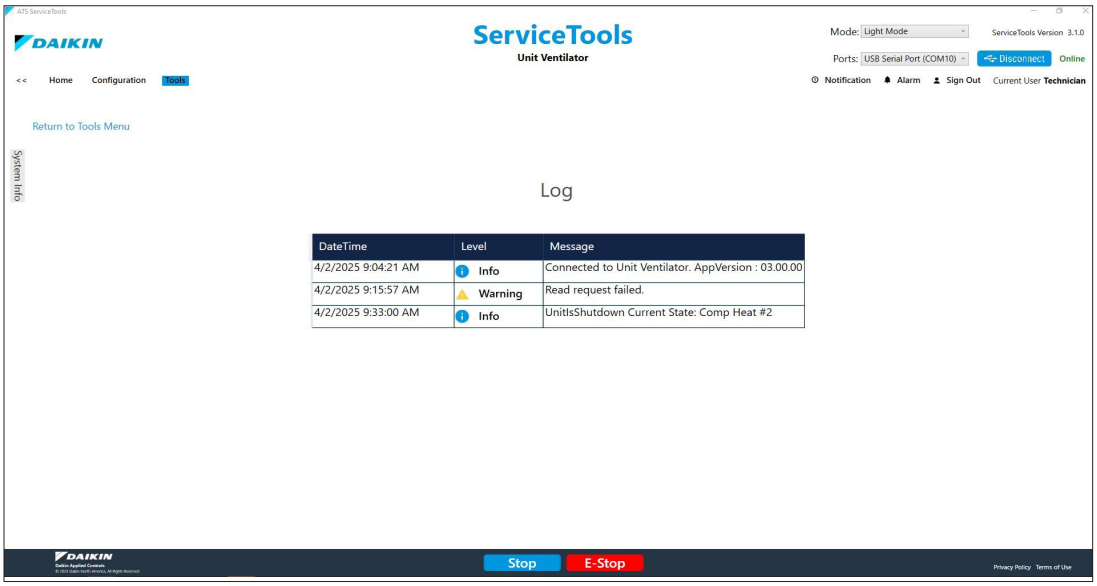
Log

The Tools Menu - Log page (Figure 32) displays the warning, error, and information messages that have been generated during the current ServiceTools session. This view is available for Maintenance and Technician level users.

Active messages are cleared when the ServiceTools session has ended and will then refresh at the start of the next new session.

Log files are also recorded in the PC local drive C:\ ProgramData\Daikin Applied\ServiceTools\Log. A log file is saved once a day and includes the file date (ex: log_1-1-2025. txt) and is saved for 30 days.

Figure 32: Log Screen



A2L

The Tools Menu - A2L page (Figure 33 and Table 15) is where Technician level users can configure the MT6210 Refrigerant Detection System (A2L controller) options. Applies only to UV applications.

The A2L controller connects to a refrigerant sensor or network of sensors to provide communication status and alarm notification. A2L is supported on UV applications v3.0 and newer.

The A2L menu options are grayed out (inactive) unless one or more refrigerant sensors has been installed and configured at the factory. Contact Daikin Applied Technical Response at ATSTechSupport@daikinapplied.com or 1-800-432-1342 for sensor configuration and general A2L system field support.

Also refer to MT6210 Refrigerant Detection System, OM 1365 (www.daikinapplied.com).

⚠ WARNING

Placing the MT6210 into Manual Test Mode may initiate a system mitigation response, including energizing fans, disabling compressors, or other unit specific operational responses. Verify unit is prepared for operation and safety precautions are followed prior to entering Manual Test Mode.

Figure 33: A2L Screen - Unit Ventilator Only

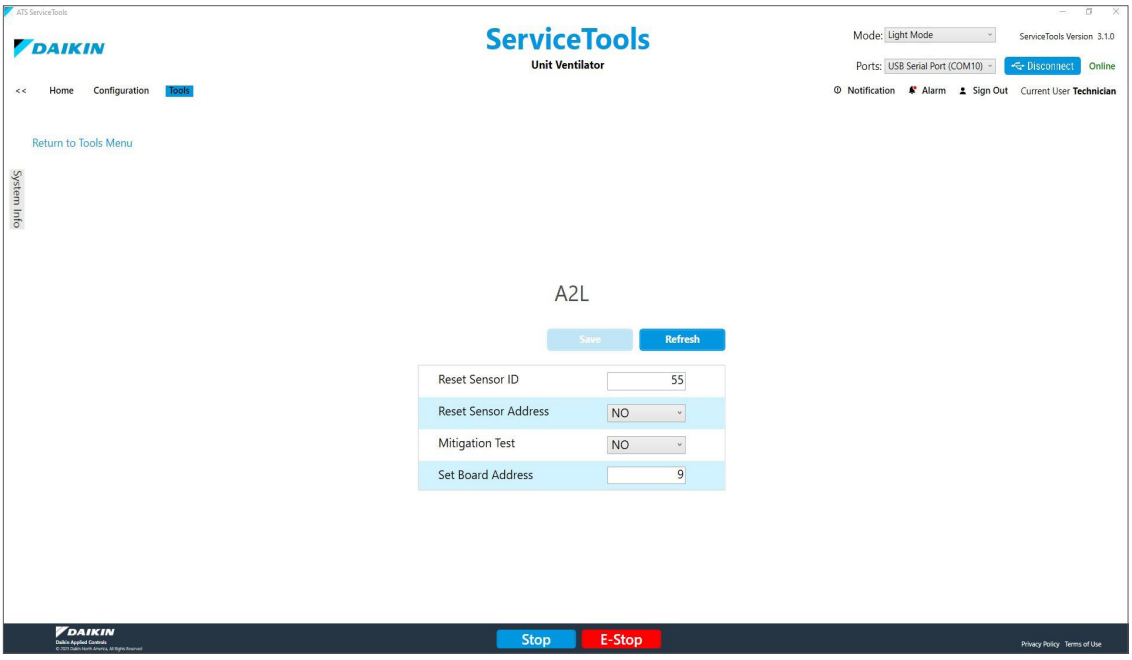


Table 15: MT6210 Refrigerant Detection (A2L Controller) Options

Field	Min	Max	Default	Description
Reset Sensor ID	48	55	55	Configures the A2L sensor address to return to default.
Reset Sensor Address	NO	YES	NO	Confirms the A2L sensor address is reset to the default. Requires the user to reboot the MT6210 board.
Mitigation Test	NO	YES	NO	Places the MT6210 board into an alarm state for field system mitigation testing.
Set Board Address	1	255	9	MT6210 board Modbus server address.

Click the Save button after making changes so they take effect. ServiceTools prompts to save if switching to another screen without saving first. Click the Refresh button to read and display current settings from the controller that have not been saved.

Service

Troubleshooting and Support

USB Connection Errors

- Verify that the unit is turned on and that the USB cable is properly connected.
- Confirm that the correct USB cable or cable adaptor is compatible with the USB-A port on the controller (see Getting Started).
- Open up the Device Manager. Verify that the USB port where the device is connected is being identified by Windows under Ports (COM and LPT).
- If this port is not being detected by Windows, restart the laptop and check again.
- If the port is still not being detected, reinstall ServiceTools and make sure the steps to extract and install the FTDI drivers are being followed during the installation process.

Confirm Power

Verify power source. The controller can receive power from either the 24 VAC on-board supply (if the unit is running) or when connected to a laptop with ServiceTools.

FTDI Conflicts

Occasional errors can occur if a device connected to a USB port also has the name “FTDI”. If this is discovered on a laptop, unplug all other USB devices and restart the laptop.

Network Issues

Be very cautious about using the Network, and especially the Network I/O, pages. The Network I/O screen is used to simulate writing values from the network to the device. However, using this to run a simulation and not resetting the values to defaults when done could cause issues with I/O on the device and/or issues with the network.

Unit Controller LED Activity

Table 16 describes the active LEDs on the controller and their behavior under different conditions. See Table 17 - Figure 36 for common errors and LED activity.

Table 16: Description of LED Activity

Condition	Expected LED Sequence	Notes
Power-up	Four LEDs are busy for approximately two seconds Heartbeat = blinking rapidly for approximately five seconds and then enters pattern.	This sequence occurs immediately after connecting the USB cable from controller to the laptop.
Downloading controller application software	PWR = steady green Heartbeat = blinking blue (0.5 sec on / 0.5 sec off) approximately once per second TX = rapid blinking yellow if not connected to BACnet. Varied blinking rate if connected to BACnet	
No application code or bootloader has been loaded	PWR = steady green Heartbeat = dim blue	See Table 17

Status LED

The red Status LED on the controller indicates the status of the UV. This is NOT the status LED on the remote sensor. The Status LED can have one of the blink patterns defined in Table 17. They are shown in order of priority.

Table 17: Status LED Details

Mode	Blink Pattern	Description
Network Wink	0.18 sec On 0.18 sec Off	The network has requested a wink command. Blinks On for approx.18 seconds.
Active Alarm	Initial 1.3 sec Off	If the alarm status is active, then the LED blinks out the alarm according to *UnitStatusInAlarm*.
		Initially Off for 1.3 seconds.
	0.3 sec On	Blinks alarm in .3-second On/Off counts.
	0.3 sec Off	
	1.3 sec Off when done	When done, the LED stays Off for 1.3 seconds, then repeats the alarm count blinking sequence.
Service Test	Off	LED is Off solid.
Unoccupied Mode	0.5 sec On 5.5 sec Off	When in unoccuppied mode, On for 0.5 seconds then Off for 5.5 seconds.
Standby	5.5 sec On 0.5 sec Off	When in standby mode, On for 5.5 seconds then Off for 0.5 seconds.
Occupied or Bypass	On	When in occuppied or bypass mode, LED is On solid.

Figure 34: No Application Loaded

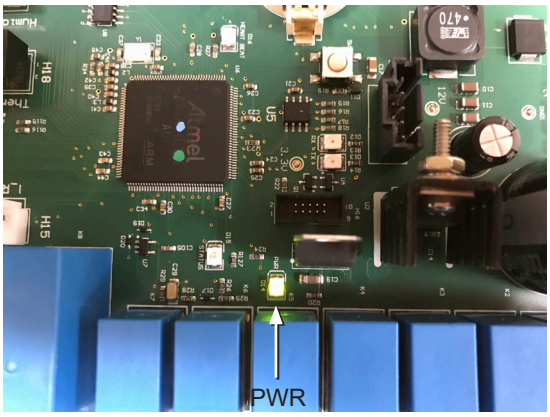


Figure 35: Application Loaded but no Bootloader

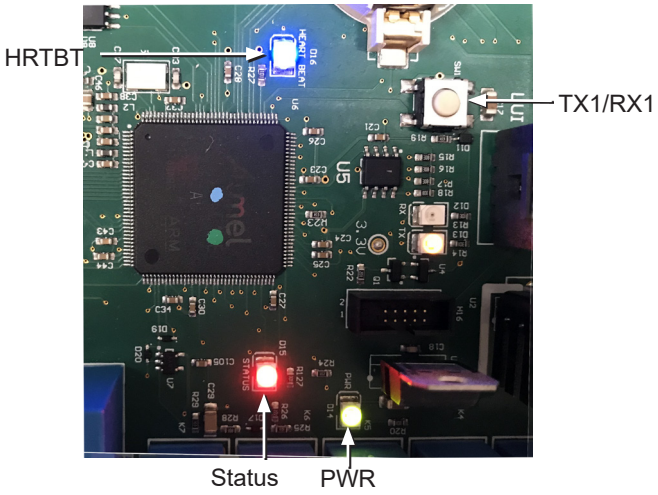
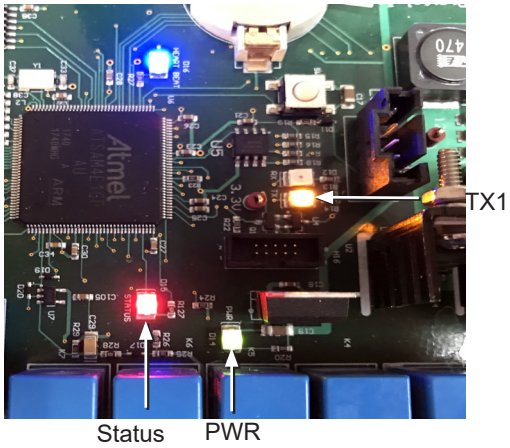


Figure 36: Wrong Application Loaded



Technical Support

For ServiceTools installation and use, unit operation and controller support, contact Daikin Applied Technical Response at ATSTechSupport@daikinapplied.com or 1-800-432-1342.

Revision History

Revision	Date	Changes
OM 732-3	Apr 2019	Initial release for the “MicroTech” version of the UV controller. Refreshed user interface and functionality
OM 732-4	Sept 2019	Updated cover image, Fig 13-16, 19, 27, 49 with new data table descriptions. Added aux heat, emergency shutdown, entering water temp and others. Added note to clarify DIs 5-8 are dry contacts and 24VAC input must be avoided. Added Software Compatibility Matrix on p.1, removed CO2 and Reset Volts AI options from Table 10
OM 732-5	Aug 2020	Major changes to document to support new v2.0 ServiceTools desktop interface and addition of DOAS WSHP application
OM 732-6	Apr 2025	Added support for UV 1.5 Modbus server/client functionality, UV v3.0 with new MT6210 Refrigerant Detection System (A2L controller) and other minor code changes. Added support for ServiceTools v3.1 with improved log file messages, enhanced UI screens and navigation elements, and updates to Daikin formatting standards. Removed screen shots for DOAS WSHP. Added note that if Service Tools cannot read a response from an UV application, it assumes that an unsupported UV version is loaded and an alert message is shown “This version is not supported. To use this tool, please contact Daikin customer support to update to UV version 01.03 or higher”. Added screen shots and descriptions for new buttons now included in Tools page. • A2L: UV v3.0 and newer only • Log: Both UV and DOAS WSHP

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