

SIEMENS

Room Automation Stations DXR2 FPB Start-up Procedures

Table of Contents

Security best practices	3
Cyber security disclaimer	3
Before You Begin	4
User Knowledge	4
Design Engineer	4
ABT Site Project Data.....	4
Job Site.....	5
Equipment.....	5
Navigating ABT-SSA	5
Common data point icons.....	6
Setting up the Automation Station.....	7
Establishing a Connection to the Automation Station	7
Configure and Load Pre-engineered Automation Stations (Recommended workflow)...	7
Manual Configuration	9
Verify Configuration Settings.....	11
Point Verification and Checkout	12
KNX PL-Link Device(s).....	13
Favorite room status.....	14
Favorite room, start-up & checkout	15
Favorite room control.....	19
Additional room parameters	20
Favorite room segment, start-up & checkout	22
Favorite room operator unit configuration	25
Favorite terminal control	29
Favorite balancing	30
Favorite recorded balancing values	33
Backup Commissioning Settings.....	34
Appendix A.....	35
Data Point Icons	35
Appendix B: VAV Start-up Pocket Guide.....	37

Security best practices



Network setup must avoid direct connection from Internet to the end device.

- Implement Port Security to disallow the connection and network participation of any unauthorized laptop/device to a switch.
- Unauthorized access should be prevented by physical security measures. Meaning, access to the devices (controllers) must be limited only to people who require it. Equipment can further be monitored via CCTV.
- When possible, physically segment control systems from non-control systems. Apply the concept of Least Privilege to minimize the impact in case of a compromise of user credentials.
- Ensure that complex and strong passwords are required. Furthermore, ensure that administrator passwords are at least 12 characters long for users with administrative privileges and at least 8 characters long for non-administrative users.
- Ensure that the same username/password credentials are unique for each site within the country/office.
- Ensure that users each have their own individual unique login accounts. User accounts must not be shared.
- Configure account lockout settings (Threshold, Observation Windows, Duration) to protect the system from password guessing or brute force attacks.
- Ensure that accounts are removed within a reasonable time when users no longer work at the site.
- Ensure that firmware is downloaded only from legitimate / known locations.

Cyber security disclaimer

Siemens products and solutions provide security functions to ensure the secure operation of building comfort, fire safety, security management and physical security systems. The security functions on these products and solutions are important components of a comprehensive security concept.

It is, however, necessary to implement and maintain a comprehensive, state-of-the-art security concept that is customized to individual security needs. Such a security concept may result in additional site-specific preventive action to ensure that the building comfort, fire safety, security management or physical security system for your site are operated in a secure manner. These measures may include, but are not limited to, separating networks, physically protecting system components, user awareness programs, defense in depth, etc.

For additional information on building technology security and our offerings, contact your Siemens sales or project department. We strongly recommend customers to follow our security advisories, which provide information on the latest security threats, patches and other mitigation measures.

<http://www.siemens.com/cert/en/cert-security-advisories.htm>

Before You Begin

User Knowledge



ABT Site has two online help systems:

- ABT Site online help
- Application online help

ABT-Site online help is the “tool” help - how to create projects, load templates etc. To access, click the Help button.

Application online help describes functions and features of the application types and templates loaded in the ABT-Site Library. To access, see **Application selection** in ABT-Site Help. This topic has information explaining when and how to access the Application help.

Prerequisites

- ABT Site installed.
- Working knowledge of ABT Site features and functionality.
- Users should be trained and knowledgeable regarding the technical principles and concepts of Designo Room Automation (RA) including the Room / segment concept.

Design Engineer

Best practice

- Application templates with any configuration changes are completed by the Design Engineer prior to handoff.
- Parameter default values have been entered for each DXR2 automation station to minimize technician online setup time.

ABT Site Project Data

If following the recommended ABT project workflow for start-up, make sure that you have received the required ABT Site project data. This will include:

- ABT Site project requires User name and Password (both are case sensitive).
- Common project settings including user profiles.
- Engineered DXR2 automation stations.
- Application templates with any configuration changes are completed by the Design Engineer prior to handoff.
- Checkout reports.



ABT Site project data

Project data must be completed using ABT Site (ABT-Site license required).

ABT-Site library with standard or custom templates/types must be installed so that changes applied during commissioning can be backed up following start-up.

Job Site

Prerequisites at the job site

- Electrical tested and available.
- Automation stations installed and pass Basic Sanity test (LED steady green).
- All needed mechanical documentation (plans and specifications) are available.

Equipment


Required equipment depends on the connection method and type of automation station.

Connection Method	Automation Station
Room operator unit	USB-KNX Interface (Siemens OCI702 stock number S55800-Y101)
USB	USB cable (A/B)
Ethernet IP connection (DXR2.E only)	- LAN cable - If necessary: USB to Ethernet adaptor

Navigating ABT-SSA

Users should be trained and knowledgeable with ABT Site.

To get to the properties of an object, click on the properties icon .

After clicking the properties icon, click the filter button , to filter out most of the properties / parameters that don't typically need to be checked. (the filter button is a toggle – you can reverse your choice by clicking it a second time).

Common data point icons



ABT-Site uses icons to visually identify the different types of points in the DXR automation station.

When online and viewing points in the DXR automation station, some items will have icons and some will not.

If an item has an icon next to it, it means the item is a BACnet object.

Items without icons are properties or parameters of an object.

Icon	Description	BACnet object type
	Input value	AI, BI, BlsIn, LgtIn, MI
	Output value	AO, BO, BlsOut, EmgLgt, LgtAOut, LgtBOut, MO
	Calculated value	ACalcVal, BCalcVal, MCalcVal, PrphDev
	Process value	APrcVal, BPrcVal, MPrcVal
	Configuration value	ACnfVal, BCnfVal, MCnfVal, UCnfVal
	Application function	FuncView: Functional view "parent" object that contains (owns) or references other objects.

For a complete list, open ABT-Site help and go to **ABT-SSA > User interface overview > Online icons**.

Setting up the Automation Station

Establishing a Connection to the Automation Station

- ▷ The proper equipment is physically connected.
- ▷ In ABT Site, the desired project is open.
- 1. In the **Start-up** component, **Set up connection** task, select one of the following connection method tabs:
 - **Room unit connection**
 - **USB**
 - **Ethernet**
- 2. Do one of the following:
 - If using a room unit connection, click **Connect** and proceed to next section.
 - If using a USB or Ethernet connection, continue with the remaining steps.
- 3. Under **Target selection**, select the **Device type** you want to work with:
 - **IP device** (for DXR2.E automation station)
 - **MS/TP device** (for DXR2.M automation station)



Note
The **Device type** you want to work with does not have to be the same automation station that you are using to connect to the network.

- 4. Select IP address.
- 5. Select the desired **Network interface** from the drop-down list (use "Network connections..." if needed).
- 6. Click **Connect**.
 - ⇒ The connection is established.

Configure and Load Pre-engineered Automation Stations (Recommended workflow)



CAUTION

Recommended workflow
You must use this workflow if your job requires custom application templates defined by the Design Engineer.

The following steps show how to configure and load pre-engineered Automation stations (AS). You can also use engineered serial numbers or configure / load multiple devices in parallel. See **Startup** in ABT Site Help for detailed information on these topics. These workflow(s) are more efficient than manual configuration.

If you choose to manually configure the automation stations, skip the following and proceed to Manual Configuration [→ 9].

- (Connection to DXR is established)
In the **Startup** component, **Configure and download** task, the connected AS is automatically discovered and displayed under **Discovered devices**.
⇒ In some cases with an Ethernet connection or IP device, you may need to click **Discover** and wait a few moments before the connected AS displays. To extend discovery to other automation stations, ensure "All devices" is selected in the Discover drop-down menu.



Note

For MS/TP device connected through a room unit, discovery is limited to the local network (the network that the automation station is connected to).

2. Under the **Engineered devices** list, expand the building(s) and floor(s) to display the automation stations. Select the device to be loaded.
3. Under the **Discovered devices** list, select the device to be configured and loaded. Make sure the equipment ID of the discovered device matches the equipment ID of the engineered device. They must be the same.
4. Select **Assign > Device network configuration**.
5. Wait 15 seconds for the update to finish and the **Message** column to show **Configured**.
⇒ The communication settings of the automation station are now configured. At this point, the **Status** column will show **Download required** indicating that no application parameters have been loaded.
6. Select **Assign > Application configuration** to load application parameters.
⇒ When the **Status** column displays **Operational** (up to 4 - 5 minutes for slower connections) the automation station is ready to **Go online**.
7. If connected through a room unit, do the following after 4 - 5 minutes to refresh the Discovered devices list: Click **Clear table**, and then click **Discover**. Repeat if necessary until **Status** column displays **Operational**.
8. Repeat steps 4 through 8 for other automation stations as needed.
9. When ready, proceed to Verify Configuration Settings [→ 11].

Manual Configuration

This procedure assumes the DXR has not been previously configured.

1. (Connection to DXR is established)

In the **Startup** component, **Configure and download** task, click the icon for

Discovered devices pane ().

⇒ The connected AS is automatically discovered and displayed under **Discovered devices**. In some cases with an Ethernet connection or IP device, you may need to click **Discover** and wait a few moments before the connected AS displays.



Note

For MS/TP device connected through a room unit, discovery is limited to the local network (the network that the automation station is connected to).

2. Under the **Discovered devices** list, right click on the AS to be configured and select **Manually configure**.

3. Complete the configuration details and click **Configure**.

4. Wait 15 seconds for the update to finish and the **Message** column to show **Configured**.

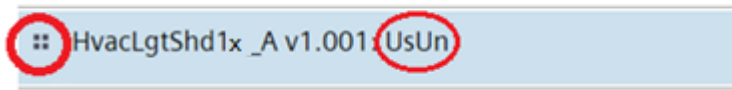
⇒ The communication settings of the automation station are now configured. At this point, the **Status** column will show **Download required** indicating that no application parameters have been loaded.

5. Select **Go online**.

6. Enter the default user name and password and click **Login**.

⇒ You are prompted for Old password, New password, and Confirm new password.

7. After confirming the new password, wait for the screen to load and then select the desired **application type** by clicking the icon to the left of the description. Note the engineering units (see caution note).



CAUTION

Engineering Units MUST be correct

It is crucial to select the correct application type – **this includes engineering units**. The example above shows US engineering units (**UsUn**). Select the type and engineering units you need.

8. Select one of the pre-loaded application templates by click the following, in order:

- a. **Select application**
- b. The **Select** button
- c. The desired template, and then click **OK**.

Note:

If the entire template name is not visible, hover your cursor over the truncated name to display a pop-up with the full template name. See table(s) at the end of this section for correct (full) template names.

9. To activate the selected application, click the **Command** arrow and then select **Activate** from the drop-down list.

- ⇒ The DXR takes time to process the command and restart. Before continuing, wait until the screen changes and **APPLICATION** displays at the top of the list. (the top parameter displays a status of **Operational**)

When finished, click the menu icon  (upper left) and select **Application**.

Templates (DXR)

	Number	Description	AS hardware
Series FPB	14024	VAV Series Fan Powered Box with 2-Stage Electric Heat	DXR2.x12P / PX
	14025	VAV Series Fan Powered Box with Hot Water	
	14125	VAV Series Fan Powered Box with Hot Water and Supply Temp Control	
Parallel FPB	14026	VAV Parallel Fan Powered Box with 2-Stage Electric Heat	
	14027	VAV Parallel Fan Powered Box with Hot Water	
	14127	VAV Parallel Fan Powered Box with Hot Water and Supply Temp Control	

Templates (ADXR)

	Number	Description	AS hardware
Series FPB	14724	ADXR VAV Series Fan Powered Box with 2-Stage Electric Heat	DXR2.x10PL / PLX
	14725	ADXR VAV Series Fan Powered Box with Hot Water	
	14825	ADXR VAV Series Fan Powered Box with Hot Water and Supply Temp Control	
Parallel FPB	14726	ADXR VAV Parallel Fan Powered Box with 2-Stage Electric Heat	
	14727	ADXR VAV Parallel Fan Powered Box with Hot Water	
	14827	ADXR VAV Parallel Fan Powered Box with Hot Water and Supply Temp Control	
	14828	ADXR VAV Parallel Fan Powered Box with Hot Water and Supply Temp Control – Pressure Dependent	



Verify Configuration Settings

(Optional)

This step, if done, is part of the recommended workflow and **follows Configure and Load Pre-engineered Automation Stations**.

The following should be verified. See "Reports (component)" in the Help prior to going online with the automation station.

- MAC address
- Instance number
- Network number
- Baud rate (Link speed) → Network port

Note

How to create reports is covered in ABT Site Help; search for "creating reports" using the search function in the Help.

Point Verification and Checkout

Before checking or setting points using ABT-SSA (Setup and Service Assistant), the automation station(s) must be Configured and Operational. Refer to previous steps if necessary.

To save time, read the **Navigating ABT-SSA** section earlier in this document before going online with the tool. Also, for a better understanding of application template functionality and related parameters, read the Application Notes documentation available on InfoLink (InfoLink > Automation > Desigo DXR) as well as the ABT Site Help.

Nominal Air Volume Flow

(skip this topic for pre-loaded applications 14820 or 14828; they do not have the AirFINom parameter)

Nominal air volume flow refers to the "nominal" flow rating of the terminal box, the maximum flow for which it is rated.

Nominal air volume flow (AirFINom) is a parameter located in the VAV supply or extract damper AF ("VavSu.xx"). (Exceptions: not in VavSu11 or 15; not in VavEx11 or 15)

AirFINom can be accessed in the **Favorite room segment, start-up & checkout** section.

Default value of AirFINom

- Standard preloaded VAV / FPB templates: AirFINom default = 1200 ft3/min
- Raw factory value in unconfigured VAV or FPB type: AirFINom default = 100 m3/h (59 ft3/min)
- Lab (CET) type: see Lab documentation

READ THE FOLLOWING CAREFULLY

The guidelines for configuring AirFINom in HVAC Types 12 and 13 (VAV and FPB respectively) differ depending on the **version number** of the application. The version number can be read by going online with the DXR using ABT Site. Access path:

Device > List view > Infrastructure > *your application* .[properties] > "Present application version"

AirFINom is used to define the scaling value that converts physical flow values to their relative (percent) flow values. When AirFINom is used, all of the application's air volume flow percent calculations are based on the value of AirFINom. This means that the value of AirFINom - when used - is crucial for the proper functioning of the automation station's air volume flow control algorithms. Application version numbers 2.xxx and lower **must use** AirFINom. Application version numbers 3.xxx and higher have the option of setting AirFINom to zero, in which case it is not used. See the following guidelines for specific information.

Guidelines for application versions 2.xxx and lower

For application versions 2.xxx and lower, AirFINom must be set **at least** equal to the largest max flow setpoint. It can be set equal to or slightly larger than the largest max flow setpoint. The best setup for application versions 2.xxx and lower is usually about 1.1 times the flow value of the largest max flow setpoint. For example if max cooling flow setpoint is 1000 ft3/min, AirFINom could be set to 1100. This allows some flexibility for the balancer who may need to increase the flow slightly above the max setpoint during balancing procedures.

In versions 2.xxx and lower, **do not** set AirFINom larger than 1.2x the value of the largest max flow setpoint. (see also the Caution note below)

Guidelines for application versions 3.xxx or higher

For application versions 3.xxx or higher, AirFINom can be set to 0. If AirFINom is set to 0 in an application version 3.xxx or higher, the application will not rely on AirFINom as the basis for its air volume flow percent calculations. Instead, the application will use the largest max flow setpoint for this purpose (typically either max cooling or max ventilation flow setpoint).

If AirFINom is to be used in an application version 3.xxx or higher (i.e., set to a non zero value), then set it equal to the largest max flow setpoint. In versions 3.xxx or higher, AirFINom should not be set larger than the largest max flow setpoint (setting it higher may adversely affect control functions). (see also the following Caution note)

	CAUTION
	<p>Duct size must be considered when setting AirFINom</p> <p>For all application version numbers, when AirFINom is used (i.e., set to a non zero value), duct size must be considered.</p> <p>Example: a 6-inch round duct (approx 0.2 sq ft) with a typical maximum velocity of 3000 ft/min suggests a nominal air volume flow of 600 cfm (3000 ft/min * 0.2 sq ft = 600 cfm (approximately 300 lps)).</p> <p>In this example, AirFINom must not be left at the preloaded template default value of 1200 cfm! It requires a different value following the guidelines above.</p> <p>(AirFINom is not a BACnet object. It is a configuration parameter that can only be set using ABT Site or ABT-SSA.)</p>

Going online with ABT-SSA

First, establish a connection with the automation station(s). Then in the Startup component, Configure and download task: Under **Discovered automation stations**, right click on the desired automation station and select **Go online**.




In ABT-SSA, changes made during a live session should save automatically (**once every 30 minutes**).

To force a save, use the **Log out** feature when you quit a session. Logout is located in the user management menu dropdown (upper right).

KNX PL-Link Device(s)

If only one device with KNX PL-Link is connected to the network, it is typically detected and automatically configured. To verify that **any/all** KNX PL-Link devices are configured and operational, follow these steps:

1. Click the navigation menu icon and select **Installation**.
⇒ Wait for the screen to fully load (10 seconds).
2. Select **KNX PL-Link bus**.
3. Select **Identification**.

4. Confirm that each KNX PL-Link device on the bus displays.
5. Verify that each device is in the State: **Operational**.
6. Click the navigation menu icon .
7. Select **Application** and proceed to the next section.

**Note**

If the state of any KNX PL-Link device is **Device not assigned**, follow the instructions in ABT Site Help > Online. (search for "Assigning KNX PL-Link devices")

Favorite room status

For a quick overview of the room (its "status"), the room status Favorites comprise the main setpoints and mode points. Point values do not need to be changed here.

1. In the Application menu, select **Favorites**.
 2. Select **Room > Favorite room status**.
- ⇒ The room status Favorites display.

Description	Object / Property Name	Comment	Default	Template
Room operating mode	ROpMod RM OP MODE	Displays current value. Commandable for testing purposes. [Protection Economy Pre-Comfort Comfort]	Comfort	All
Present operating mode	PrOpMod OP MODE EFF	Displays current value.	Comfort	All
Plant operating mode	PltOpMod PLANT OPMODE	Displays current value. Commandable for testing purposes.	Comfort	All
Room temperature	RTemp RM TEMP EVAL	Displays the result of one or more room temperature sources.	—°F	All
Relative humidity for room	RHuRel RM HUM EVAL	Displays current (average) value of one or more room RH inputs (for QMX3.P74 room unit or similar).	—	Hpu templates
Room air quality	RAQual RM DCV EVAL	Displays current (average) value of one or more room air quality inputs (for QMX3.P74 room unit or similar).	—	Hpu templates
Heating/cooling state	HCSta H.C STATE	Displays current value. Note: There is a two-minute delay when switching from heating to cooling.	—	All

Description	Object / Property Name	Comment	Default	Template
Room temperature setpoint (Room unit display only)	SpTR RM TEMP STPT	Display only. Displays last heating/cooling Comfort (or Pre-Comfort) setpoint for use on room unit. CAUTION: Commanding this point does not change the setpoint for control (instead use Present cooling or Present heating setpoint).	72.5°F	All
Room temperature setpoint shift	SpTRShft RM TEMP SHFT	The current setpoint shift from Room operator unit. Commandable for testing purposes.. CAUTION: Commanded / overridden @ Prio8 will prevent input requests from room unit (Prio13) from taking effect.	0.0°F	All
Present cooling setpoint	PrSpC CLG STPT EFF	Result of inputs from Room operating mode, cooling setpoints, and user input. Commandable for testing purposes.	75.0°F	All
Present heating setpoint	PrSpH HTG STPT EFF	Result of inputs from Room operating mode, heating setpoints, and user input. Commandable for testing purposes.	70.0°F	–

Favorite room, start-up & checkout

The room startup and checkout Favorites provide points that regulate room functions.



The ★ icon in the **Verify** column indicates typical items to set or verify.

1. In the Application menu, select **Favorites**.
2. Select **Room > Favorite room, start-up & checkout**.
⇒ The Favorites for Room start-up & checkout display.
3. Proceed with point verification and checkout:
 - a. Match the objects in the table with those in ABT-SSA.
 - b. **IMPORTANT:** Read the notes in the Comment column for items you change or verify.






Manual setpoint adjustment & EefCndTrg

The default configuration for **Energy efficiency condition trigger** will reset a user-entered setpoint adjustment when the room mode changes. To eliminate this reset, do the following:

- Set **Comfort/Pre-Comfort to Economy (CmfPcfToEco)** to "None"
- Set **Comfort to Pre-Comfort (CmfToPcf)** to "None"

See below.

Verify	Description	Object / Property Name	Comment	Default
	Ventilation control	VntCtl	Displays current value.	1000 ppm
	Present cooling setpoint	PrSpC CLG STPT EFF	Result of inputs from Room operating mode, cooling setpoints, and user input. Commandable for testing purposes. See Cooling setpoint for comfort for additional information.	75°F
★	Cooling setpoint for comfort	SpCCmf CMF CLG STPT	Initial configuration for cooling Comfort setpoint (set as relinquish default) Room operating units and other sources command this point at higher priorities.	75°F
★	Delta cooling setpoint for pre-comfort	DSpCPcf STBY C DELTA	Configuration: Entered as positive offset from current Comfort cooling calculation.	2°F
★	Cooling setpoint for economy	SpCEco ECO CLG STPT	Configuration for fixed cooling Economy modes. Automatically shifted by the system application to prevent changes from user input to prevent overlaps.	85°F
	Cooling setpoint for protection	SpCPrt PROT CLGSTPT	Adjustable configuration, but typically left at default. Protection mode can be set by the central system for extended unoccupied periods (e.g. holiday break)	104°F
	Present heating setpoint	PrSpH HTG STPT EFF	Result of inputs from Room operating mode, heating setpoints, and user input. Commandable for testing purposes. See Heating setpoint for comfort for additional information.	70°F
★	Heating setpoint for comfort	SpHCmf CMF HTG STPT	Initial configuration for heating Comfort setpoint. (set as relinquish default) Room units and other sources command this point at higher priorities.	70°F
★	Delta heating setpoint for pre-comfort	DSpHPcf STBY H DELTA	Entered as positive offset from current Comfort heating calculation.	2°F
★	Heating setpoint for economy	SpHEco ECO HTG STPT	Configuration for fixed heating Economy modes (unoccupied). Automatically shifted by the system application to prevent overlapping changes from user input.	55°F
	Heating setpoint for protection	SpHPrt PROT HTG SP	Adjustable configuration, but typically left at default. Protection mode can be set by the central system for extended unoccupied periods (e.g. holiday break).	45°F
	Room temperature setpoint (Room unit display only)	SpTR RM TEMP STPT	Display only. Displays last heating/cooling Comfort (or Pre-Comfort) setpoint for use on room unit. CAUTION: Commanding this point does not change the setpoint for control (instead use Present cooling or Present heating setpoint).	72.5°F
	Room temperature setpoint shift	SpTRShft RM TEMP SHFT	Displays current setpoint shift value (SpShftIn) configured in room operator unit. CAUTION: Commanded / overridden @ Prio8 will prevent input requests from room unit (Prio13) from taking effect. See also Room operator unit configuration section .	0.0°F

Verify	Description	Object / Property Name	Comment	Default
	Room operating mode	ROpMod RM OP MODE	Displays current value. Commandable for testing purposes. [Protection Economy Pre-Comfort Comfort]	Comfort
	Present operating mode	PrOpMod OP MODE EFF	Displays current value.	Comfort
	Plant operating mode	PltOpMod PLANT OPMODE	Displays current value. Commandable for testing purposes. [Off Protection Economy Pre-Comfort Comfort Warm-up Cool down Room low temp.prot. Not used Free cooling Night cooling Ventilation not used Air vol.flow off Smoke ctrl.pos.press. Smoke ctrl.neg.press.] Note: Not all configurations support every plant mode.	Comfort
	Room temperature	RTemp RM TEMP EVAL	Displays the result (average) of one or more room temperature sources.	—°F
	Heating/cooling state	HCSta H.C STATE	Displays current value. [Neither Heat Cool] Note: There is a two-minute delay when switching between heating and cooling.	—
★	 Room operating mode determination	ROpModDtr	Click the properties icon  then click the filter button 	Comfort
★	Time for comfort button	TiCmfBtn	TiCmfBtn = time in Comfort mode when the Comfort button on the room unit is pressed. If TiCmfBtn = 0, Comfort button is disabled.	[120:0.0]min:s
★	Comfort/Pre-Comfort to Economy - and - Comfort to Pre-Comfort	CmfPcfToEco CmfToPcf	Default configuration causes reset of user-entered setpoint adjustment when the room mode changes. To eliminate this reset, set both to None .	Energy efficiency condition



ROpModDtr

Room operating mode determination has additional configurable parameters. For detailed information on application functionality, read the Application Notes documentation available on InfoLink (InfoLink > Automation > Desigo DXR).

- Return to the beginning of this section by repeating the initial navigating steps as follows:
In the Application menu, select **Favorites**, then select **Room > Favorite room, start-up & checkout**.
- Proceed with **Ventilation control** setup.

Verify	Description	Object / Property Name	Comment	Default
★	 Ventilation control	VntCtl	Click the properties icon  then click the filter button 	1000 ppm
★	Comfort configuration	CmfCnf	Set CmfCnf for ventilation options in Comfort mode: [Off Min.ventilation DCV Min.ventilation & DCV] Note When configured as Min.ventilation, the ventilation setpoints function without IAQ sensor or DCV control. When configured as DCV, an IAQ sensor is mandatory in the room. When configured as Min.ventilation & DCV, an IAQ sensor is needed either in the room or in the Extract air of the room. Also set the desired flow setpoint for each mode (for example, AirFIMinRCmf). (Optional) Also see the minimum ventilation setpoint (VavSuAfMinVnt) in the Room segment start-up and checkout section.	Min.ventilation
★	Pre-Comfort configuration	PcfCnf	Set for ventilation options in Pre-Comfort mode: [Off Min.ventilation DCV Min.ventilation & DCV] Note s/a Comfort	Min.ventilation
	Economy configuration	EcoCnf	Set for ventilation options in Economy mode: [OFF Min.ventilation DCV Min.ventilation & DCV] Note s/a Comfort	Off
	Protection configuration	PrtCnf	Set for ventilation options in protection mode: [OFF Min.ventilation DCV Min.ventilation & DCV] Note s/a Comfort	Off
★	Minimum room air volume flow for comfort Note: the name is different for pressure dependent applications 14820 and 14828: Minimum damper position for comfort	AirFIMinRCmf DmpPosMinCmf	Set flow for minimum ventilation in Comfort mode. Note If flow setting is greater than zero, CmfCnf must not equal Off.	150 ft³/min (50% for pressure dependent)
★	Minimum room air volume flow for pre-comfort (see above Note)	AirFIMinRPcf DmpPosMinPcf	Set flow for minimum ventilation in Pre-Comfort mode. Note If flow setting is greater than zero, PcfCnf must not equal Off.	150 ft³/min (50% for pressure dependent)
	Minimum room air volume flow for economy	AirFIMinREco	Set flow for minimum ventilation in Economy mode. Note If flow setting is greater than zero, EcoCnf must not equal Off.	0 ft³/min (50% for pressure dependent)
	Minimum room air volume flow for protection	AirFIMinRPrt	Set flow for minimum ventilation in Protection mode. Note If flow setting is greater than zero, PrtCnf must not equal Off.	0 ft³/min (50% for pressure dependent)

6. Return to the beginning of this section one last time by repeating the initial navigating steps as follows: In the Application menu, select **Favorites**, then select **Room > Favorite room, start-up & checkout**.
7. Set the following air quality control objects if required.


Verify	Description	Object / Property Name	Comment	Default
★	Ventilation control	VntCtl	Click the Link icon ➤ to display additional vent control objects.	1000 ppm
	Present ventilation setpoint	PrSpVnt VENT SP EFF	Current setpoint based on operating mode Displays current value	— ppm
	Ventilation controller	VntCtr	Displays current value Ventilation controller (PID)	— %
	Room control	RCtl	Displays current value (Group member)	-
★	Setpoint room air quality for comfort	SpAQualRCmf CMF IAQ STPT	Set for CO2 level in ppm in Comfort mode when optional DCV control and CO2 sensor present. Requires IAQ sensor (see note for CmfCnf parameter above).	1000 ppm
★	Setp.room air quality for pre-comfort	SpAQualRPcf STBY DCV SP	Set for CO2 level in ppm in Pre-Comfort mode when optional DCV control and CO2 sensor present. Requires IAQ sensor (see note for CmfCnf parameter above).	1200 ppm
	Setpoint room air quality for economy	SpAQualREco ECO DCV STPT	Set for CO2 level in ppm in Economy mode when optional DCV control and CO2 sensor present.	1500 ppm
	Setpoint room air quality for protection	SpAQualRPrt PROT DCV SP	Set for CO2 level in ppm in Protection mode when optional DCV control and CO2 sensor present. Optional configuration - typically left at default.	2000 ppm





Favorite room control

The room control Favorites show the PID loop controllers for the room.



Tuning of PID controllers is limited to unstable operation. Parameters should not be changed otherwise.

1. In the Application menu, select **Favorites**.
2. Select **Room > Favorite room control**.
⇒ The room control Favorites display.
3. (*Optional or as required*) Display the parameters by clicking the icon  next to the loop controller description.

Description	Object	Comment	Default	Template
 Room temp.controller cooling for VAV	VavTRCtrC	Loop controller	0.0%	All
 Room temp.controller heating for VAV	VavTRCtrH	Loop controller	0.0%	All
 Room temp.ctr.heating for heating coil	HclTRCtrH	Loop controller	0.0%	14024, 14026, 14027
 Ventilation controller	VntCtr	Loop controller	0.0%	All

Parameter favorites for a loop control object include:

- Controller type (PID or Staged)
- Controller output maximum
- Controller output minimum
- Controller output for offset
- Gain
- Number of stages (1 or 2 stages - only for Staged controller)
- Switch delay (Delay between stages for 2 stage control – 5 or 8min depending on HVAC device)
- Hysteresis switch-off
- Hysteresis switch-on
- Integral action-time Tn: 15min or 30min depending on the type of controller function (heating, cooling, or ventilation)
- Derivative action-time Tv: 0.0 sec




Additional room parameters

Some parameters that may need adjustment are not listed in Favorites. See the following.















The  icon in the **Verify** column indicates typical items to set or verify.

1. In the Application menu, select **List view**.
2. Select **Room > Room HVAC coordination**.
 - ⇒ The sub items for **Room HVAC coordination** display.
3. Using the down arrow at the bottom of the screen, scroll down the list and locate the following objects:

- a.  Rapid ventilation operation
- b.  Room temperature setpoint determination
- c.  Green leaf

4. See the table for instructions and information on the parameters associated with these objects.

Verify	Description	Object / Property Name	Comment	Default
	 Rapid ventilation operation	RpdVntOp	Click directly on the object icon  to display the Rapid ventilation runtime parameter (TiRnRpdVnt).	Off
	Rapid ventilation runtime	TiRnRpdVnt	Defines the length of time for rapid ventilation (flush) operation.	15[min]
	 Room temperature setpoint determination	SpTRDtr	Click directly on the object icon  to display the Display absolute room temp.setpoint parameter (SpTRAbsDspy).	—°F
	Display absolute room temp.setpoint	SpTRAbsDspy	Defines whether the room unit will display the current temperature control setpoint (Comfort or Pre-Comfort heating or cooling), or if it will display an average of the two. For example, if heating setpoint = 70 and cooling setpoint = 75, setting this parameter to Average value will result in the room operating unit displaying 72.5 If H.C mode is "Neither" (deadband) the last H or C setpoint displays. Display does not change if mode is Economy or Protection. [Average value Present value]	Present value
	 Green leaf	RpdVntOp	Click directly on the object icon  to display the Max.tolerance of room temp.setp.shift parameter (TolMaxSpTRShft).	—
	Max.tolerance of room temp.setp.shift	TolMaxSpTRShft	Defines the limit of how much the temperature setpoint can shift (based on user changes) before the Green leaf LED changes from green to red.	3.6°F

Favorite room segment, start-up & checkout

The room segment startup and checkout Favorites provide points that regulate room segment functions. Note that for pressure dependent applications (14820, 14828) not all points will be present.





The ★ icon in the **Verify** column indicates typical items to set or verify.

1. In the Application menu, select **Favorites**.
2. Select **Room segment > Favor.room segment, start-up & checkout**.
⇒ The Favorites for Room segment start-up & checkout display.

Verify	Description	Object / Property Name	Comment	Default
	Supply air VAV	VavSu	(Parent object for Supply air VAV parameters)	--- %
★	Supply air VAV max.air vol.flow f.cool. Note: the name is different for pressure dependent applications 14820 and 14828: Supply air VAV max. position for cooling	VavSuAirFIMaxC CLG FLOW MAX VavSuPosMaxC CLG POS MAX	Per job specs CAUTION: Must not exceed Nominal air volume flow (AirFINom) . (100% for pressure dependent apps)	1200.0 ft ³ /min 100%
	Supply air VAV min.air vol.flow f.cool. (see above Note)	VavSuAirFIMinC CLG FLOW MIN VavSuPosMinC CLG POS MIN	CAUTION: CLG FLOW MIN does not function like it does in PTEC applications. Leave at default of zero and use ventilation flow setpoints based on the operating mode (Comfort, Pre-Comfort, Economy, Protection). (50% for pressure dependent apps)	ft ³ /min 50%
★	Supply air VAV max.air vol.flow f.heat. (see above Note)	VavSuAirFIMaxH HTG FLOW MAX VavSuPosMaxH HTG POS MAX	Should not be set greater than 50% of Max Cooling flow. If the AHU is configured* to provide heated air, set HTG FLOW MAX as required, otherwise leave at zero. *Note When an AHU delivers heated air, the Supply air VAV changeover condition object (VAV CHGOVR) must be controlled from Central / Field panel.	150 ft ³ /min 100%
★	Supply air VAV min.air vol.flow f.heat. (see above Note)	VavSuAirFIMinH HTG FLOW MIN VavSuPosMinH HTG POS MIN	Set to flow required for terminal heating coils heat transfer. Can be set to zero for configurations with terminal fans. Can be set to zero for configurations with only radiator or ceiling heating coils.	150 ft ³ /min 50%
★	Supply air VAV max.air vol.flow f.vent (see above Note)	VavSuAfIMaxVnt VENT FLO MAX VavSuPosMaxVnt VENT POS MAX	Configuration used when DCV is enabled with CO2 sensors. Also used for flow setpoint when Rapid ventilation is activated. Ensures proportional flow for each ventilation across multiple room segments (VAV flow terminals). Can be set higher than max cooling or max heating flow but should not exceed Nominal air volume flow (AirFINom) .	1200 ft ³ /min 100%

Verify	Description	Object / Property Name	Comment	Default
★	Supply air VAV min.air vol.flow f.vent. (see above Note)	VavSuAflMinVnt VENT FLO MIN VavSuPosMinVnt VENT POS MIN	Can be left at zero; Use the ventilation configurations for minimum ventilation flow in each operating mode. If VENT FLO MIN is set to a non-zero value, flow will be the larger of VENT FLO MIN and the current min flow setpoint for the operating mode. For example, if: - VENT FLO MIN = 200, - ventilation in Comfort = 300, and - Comfort configuration parameter CmfCnf = Min.ventilation , then the terminal unit will have a min ventilation setpoint of 300 during Comfort mode. See Ventilation control in Room start-up & checkout .	ft ³ /min 20%
	Supply air VAV position	VavSuPos DAMPER POS	Displays current value. Commandable for testing purposes.	---%
	Supply air VAV setpoint for air vol.flow (Supply air VAV setpoint position)	VavSuSpAirFI AIR VOL STPT VavSuSpPos SU POS SP	Displays current value. Commandable for testing purposes.	--
	Supply air VAV air volume flow	VavSuAirFI AIR VOLUME	Displays current value.	0.0 ft ³ /min
★	Supply air VAV duct area	VavSuDuctArea DUCT AREA	Duct area is calculated by the application. To manually enter a different value, you must first set the duct shape object (VavSuDuctShape) to Direct entry and then return here to manually enter the desired duct area value. CAUTION: If the user manually enters a duct area value without first setting VavSuDuctShape to Direct entry , the value will be accepted by the application but immediately overwritten by the system without informing the user!	0.55 ft ²
★	Supply air VAV duct shape	VavSuDuctShape	Default = Round [Rectangular Round Flat oval Direct entry] See the Caution note above regarding Direct entry.	Round
★	Supply air VAV dimension A	VavSuDmsnA	Entries used to calculate duct area when Duct shape set to round, rectangular or oval.	10 in
★	Supply air VAV dimension B	VavSuDmsnB	Entries used to calculate duct area when duct shape is set to rectangular or oval.	10 in
★	Supply air VAV flow coefficient	VavSuFIcoef FLOW COEF	Enter initial flow coefficient – to be adjusted during balancing procedures.	0.63
	Supply air temperature	TSu SPLY TEMP	Supply temp sensor	—°F
	Heating coil valve position	HclVlvPos HTG VLV POS	HclVlvPos displays current value. Commandable for testing purposes.	0%



3. Return to the beginning of this section by repeating the initial navigating steps as follows:
In the Application menu, select **Favorites**, then select **Room segment > Favor.room segment, start-up & checkout**.
4. Locate **Supply air VAV**.

Verify	Description	Object / Property Name	Comment	Default
★	 Supply air VAV	VavSu	Click directly on the object icon  to display the Supply air VAV parameters. Locate Nominal air volume flow (AirFINom) . In the list that opens, AirFINom is usually the only parameter that needs checking or setting.	— %
★	Nominal air volume flow	AirFINom	The Nominal air volume flow must be set at or above all other max flow setpoints. AirFINom is always the largest flow setpoint for the terminal unit. All flow percent calculations (including ventilation in each operating mode) are based on the value of AirFINom.	1200.0 ft ³ /min



5. Return to the beginning of this section by repeating the initial navigating steps as follows:

In the Application menu, select **Favorites**, then select **Room segment > Favor.room segment, start-up & checkout**.

6. Locate **Supply air VAV position**.

Verify	Description	Object / Property Name	Comment	Default
★	 Supply air VAV position	VavSuPos DAMPER POS	Click directly on the object icon  to display the Supply air VAV position parameters.	---%
	Commissioning state	-	--	Not checked
	Commissioning information	-	--	-
	Startup synchronization	-	For damper actuators, Single close is typical. If AHU is on, setting some (30 to 50 percent) to Single open will minimize over pressure conditions. Setting to None will keep damper at last control position at startup with risk of overpressure conditions. [None Single close Single open]	Single close
	End position synchronization	-	Set to Single for standard damper and water valve control (0 or 100 percent command will drive a floating actuator fully closed or fully open a single time). Special actuators may need different synchronization selection. [None Continuous Single Every 10 min Every 20 min Continuous open Continuous close Open every 10 min Open every 20 min Close every 10 min Close every 20 min]	Single
★	Rise time from 0 to 100%	-	Floating control stroke time to open. CAUTION: if using tenths of seconds to enter changes, multiply seconds by 10. That is, enter 900 for 90 seconds.	[90.0]s
★	Fall time from 100 to 0%	-	Floating control stroke time to close. CAUTION: if using tenths of seconds to enter changes, multiply seconds by 10. That is, enter 900 for 90 seconds.	[90.0]s
★	Control action	-	[Direct Reverse]	Direct

7. Return to the beginning of this section one last time (from the Application menu select **Favorites**, then select **Room segment > Favor.room segment, start-up & checkout**).
8. Locate **Heating coil valve position**.

Verify	Description	Object / Property Name	Comment	Default
★	 Heating coil valve position	HclVlvPos HTG VLV POS	Click directly on the object icon  to display the Heating coil valve position parameters.	---%
	Commissioning state	-	--	Not checked
	Commissioning information	-	--	-
	Startup synchronization	-	Cold or hot water valves should be set to Single close . [None Single close Single open]	Single close
	End position synchronization	-	Set to Single for standard damper and water valve control (0 or 100 percent command will drive a floating actuator fully closed or fully open a single time). Special actuators may need different synchronization selection. [None Continuous Single Every 10 min Every 20 min Continuous open Continuous close Open every 10 min Open every 20 min Close every 10 min Close every 20 min]	Single
★	Rise time from 0 to 100%	-	Floating control stroke time to open. CAUTION: if using tenths of seconds to enter changes, multiply seconds by 10. That is, enter 900 for 90 seconds.	[90.0]s
★	Fall time from 100 to 0%	-	Floating control stroke time to close. CAUTION: if using tenths of seconds to enter changes, multiply seconds by 10. That is, enter 900 for 90 seconds.	[90.0]s
★	Control action	-	[Direct Reverse]	Direct

Favorite room operator unit configuration

The room operator unit Favorites provide points that regulate the behavior of the room unit.

For detailed information on how the room operator unit functions, read the application template documentation and ABT Site Help. The most common settings are covered here in the startup.







The ★ icon in the **Verify** column indicates typical items to set or verify.

1. In the Application menu, select **Favorites**.
2. Select **Room segment > Favorite room operator unit config**.






**NOTICE****Room operator unit type**

Values for QMX3.P34, P74 are shown below.

Verify	Description	Object / Property Name	Comment	Default
★	Room operator unit device 1	-	Click the Link icon  to display additional vent control objects.	Operational
★	 Room operator unit 1	ROpUn RM UNIT STA	Status of room unit. Click the properties icon  then click the filter button 	Operational
★	Device type	-	Room operator unit model.	QMX3.P34 (QMX3.P74 if heat pump)
	Commissioning state	-	(Optional) Startup technician can enter commissioning stage. [Not checked Check failed Check successful]	Not checked
	Commissioning information	-	(Optional) Can be used to enter date and Tech ID.	-
	Room unit, display temperature	-	Defines which temperature values can be displayed. [None Display room temperature Display outside air temperature Display room & outside air temp.] If Display room & outside air temp. is selected, toggling between the values is enabled.	Display room temperature
	Room unit, display humidity	-	Enable display of room humidity , outside air humidity or both. (requires humidity sensing room operator unit such as QMX3.P74) [None Display room humidity Display outside air temperature Display room & outside air humidity.]	None (heat pump: Display room humidity)
	Room unit, display windows status	-	Enables display or window status [No Yes]	No
	Room unit, display air quality	-	Enable display of room air quality, outside air quality or both. (requires humidity sensing room operator unit such as QMX3.P74) [None Display room air quality Display outside air temperature Display room & outside air quality.]	None (heat pump, Display room air quality)
	Room unit, air quality display	-	Air quality display options [Numeric, in ppm Symbolic Textual]	Symbolic
	Room unit, display heat./cool. status	-	[No Yes]	Yes
	Enable operation: Room temp. setpoint	-	Also see options for shift limits and Setpoint option [No Yes]	Yes
★	Room unit, room temp. setpoint display	-	Setpoint display option [Absolute temperature setpoint Relative setpoint shift]	Absolute temperature setpoint

Verify	Description	Object / Property Name	Comment	Default
	Enable operation: Fan speed setpoint	-	VAV / FPB: defines whether Rapid ventilation option is configured for activation via fan speed button on room unit. [No Yes] FCU: defines if room unit provides visual indication of when fan is running. FCU has no rapid ventilation feature. HP: defines if room unit provides visual indication of when fan is running. HP has no rapid ventilation feature.	Yes (heat pump: No)
	Enable operation: Room humidity setp.	-	For humidity control [No Yes]	No
	Enable operation: Air quality setpoint	-	With CO2 sensor present [No Yes]	No
	Enable operation: Presence button	-	Defines if the user can activate / deactivate presence (Comfort mode) via push button (key 8). (If you change this to Yes, you must disable Temporary Comfort button below.) Enable operation: Presence button and Enable operation: Temporary comfort cannot both equal Yes because they use the same button on the room operator unit (key 8). [No Yes]	No
★	Enable operation: Temporary comfort	-	Defines if the user can activate presence (Comfort mode) via push button (key 8) for a configurable time. Enable operation: Temporary comfort and Enable operation: Presence button cannot both equal Yes because they use the same button on the room operator unit (key 8). [No Yes]	Yes
	Enable operation: Room op.mode	-	Room op mode control [No Yes]	No
	Enable operation: Green leaf	-	Defines if the GreenLeaf icon on the room operator unit can change color (green/red) based on user changes. [No Yes]	Yes







3. Return to the beginning of this section by repeating the initial navigation steps as follows:
In the Application menu, select **Favorites**, then select **Room segment > Favorite room operator unit config.**
4. Locate **Room temperature** object.

Verify	Description	Object / Property Name	Comment	Default
	 Room temperature	TR	Displays current value. Click the properties icon  then click the filter button 	--- °F
	Commissioning state	-	(Optional) Startup technician can enter commissioning stage. [Not checked Check failed Check successful]	Not checked
	Commissioning information	-	(Optional) Can be used to enter date and Tech ID.	-
	Present maximum value	-	-	122.0 °F
	Present minimum value	-	-	32.0 °F
	Correction offset	-	As necessary, enter correction offset (plus or minus).	0.00

5. Return to the beginning of this section by repeating the initial navigation steps as follows:

In the Application menu, select **Favorites**, then select **Room segment > Favorite room operator unit config**.

6. Locate **Setpoint shift input value** object.


Verify	Description	Object / Property Name	Comment	Default
	 Setpoint shift input value	SpShftIn	Displays current input. The available range for shifting the setpoint is +/- 5.4 °F. Click the properties icon  then click the filter button  to display the Setpoint shift input value min / max shift values.	Operational
	Present maximum value	-	Limit of setpoint shift up	5.4 F
	Present minimum value	-	Limit of setpoint shift down	5.4 F


Favorite terminal control

The terminal control Favorites show the PID loop controllers for the terminal unit.




Tuning of PID controllers is limited to unstable operation. Parameters should not be changed otherwise.

1. In the Application menu, select **Favorites**.
2. Select **Room segment > Favorite terminal control**.
⇒ The terminal control Favorites display.
3. (*Optional or as required*) Display the parameters by clicking the icon  next to the loop controller description.

Description	Object	Comment	Default	Template
 Supply air VAV air flow controller (not in pressure dependent applications 14820, 14828)	VavSuAirFICtr	Loop controller	---%	All

Additional control items:

- Supply air VAV setpoint for air vol.flow (VavSuSpAirFI / AIR VOL STPT): default 150 ft³/min
- Supply air temperature (TSu / SPLY TEMP): Click directly on the object icon  to display the **Correction offset** parameter as needed.

Parameter favorites for a loop control object include:

- Controller type (PID)
- Controller output maximum
- Controller output minimum
- Controller output for offset
- Gain
- Hysteresis switch-off
- Hysteresis switch-on
- Integral action-time Tn: 15 - 30min dependant on controller function (heating, cooling, or ventilation)
- Derivative action-time Tv (0.0 sec)

Favorite balancing

This section shows points associated with airflow balancing.



The ★ icon in the **Verify** column indicates typical items to set or verify.

1. In the Application menu, select **Favorites**.
2. Select **Room segment > Favorite balancing**.
⇒ The balancing Favorites display.
3. Proceed with point verification and checkout.



Verify	Description	Object / Property Name	Comment	Default
★	Supply air VAV max.air vol.flow f.cool.	VavSuAirFIMaxC CLG FLOW MAX	Per job specs CAUTION: Must not exceed Nominal air volume flow (AirFINom) .	1200 ft³/min
	Supply air VAV min.air vol.flow f.cool.	VavSuAirFIMinC CLG FLOW MIN	CAUTION: This point DOES NOT function like PTEC applications. LEAVE AT DEFAULT ZERO Leave at default of zero to use ventilation flow setpoints based on operating modes (Comfort, Pre-Comfort, Economy).	0.0 ft³/min
★	Supply air VAV max.air vol.flow f.heat.	VavSuAirFIMaxH HTG FLOW MAX	Should not be set greater than 50% of Max Cooling flow. If the AHU is configured* to provide heated air, set HTG FLOW MAX as required, otherwise leave at zero. *Note When an AHU delivers heated air, the Supply air VAV changeover condition object (VAV CHGOVR) must be controlled from Central / Field panel.	0 ft³/min
★	Supply air VAV min.air vol.flow f.heat.	VavSuAirFIMinH HTG FLOW MIN	Set to flow required for terminal heating coils heat transfer. Can be set to zero for configurations with terminal fans. Can be set to zero for configurations with only radiator or ceiling heating coils.	0 ft³/min
★	Supply air VAV max.air vol.flow f.vent.	VavSuAfIMaxVnt VENT FLO MAX	Configuration used when DCV is enabled with CO2 sensors. Also used for flow setpoint when Rapid ventilation is activated. Ensures proportional flow for each ventilation across multiple room segments (VAV flow terminals). Can be set higher than max cooling or max heating flow but should not exceed Nominal air volume flow (AirFINom) .	1200 ft³/min

Verify	Description	Object / Property Name	Comment	Default
★	Supply air VAV min.air vol.flow f.vent.	VavSuAflMinVnt VENT FLO MIN	Can be left at zero; Use the ventilation configurations for minimum ventilation flow in each operating mode. If VENT FLO MIN is set to a non-zero value, flow will be the larger of VENT FLO MIN and the current min flow setpoint for the operating mode. For example, if: - VENT FLO MIN = 200, - ventilation in Comfort = 300, and - Comfort configuration parameter CmfCnf = Min.ventilation , then the terminal unit will have a min ventilation setpoint of 300 during Comfort mode. See Ventilation control in Room start-up & checkout .	0.0 ft ³ /min
	Supply air VAV position	VavSuPos DAMPER POS	Displays current value. Commandable for testing purposes.	---%
	Supply air VAV setpoint for air vol.flow	VavSuSpAirFI AIR VOL STPT	Displays current value. Commandable for testing purposes.	150 ft ³ /min
	Supply air VAV air volume flow	VavSuAirFI AIR VOLUME	Displays current value.	0 ft ³ /min
	Supply air VAV balancing state	VavSuBalSta	Displays current balancing state. (updates as balancing commands change) Prior to Balancing procedure, state will display Initial To abort balancing during the process (prior to Calibrate), command the balancing state to Initial . [Initial Balancing Balanced]	Initial
	Supply air VAV balancing mode	VavSuBalMod	Displays current value Enter desired mode in which to perform balancing function. If Manual is selected, configuration object VavSuAirFISmk will be used. Overriding Supply air flow setpoint can be used for values other than existing configuration values [Max.cooling Max.heating Max.ventilation Min.cooling Min.heating Min.ventilation Smoke]	Max.cooling
★	Supply air VAV balancing command	VavSuBalCmd	Enter desired balancing mode: To start balancing process, select Balancing . When air flow value from hood is entered, a calculated flow coefficient (VavSuFICoefCal) is displayed. Select Calibrate to accept the calculated flow coefficient and it will replace the current coefficient (VavSuFICoef) and record a snapshot of current terminal unit values and configurations Select Record if an optional snapshot is desired. (Previous recorded will be overwritten. Each set of record values must be saved externally if needed). Select Balanced to indicate terminal unit has been balanced and is operational. [Balancing Calibrate Record Balanced]	-
	Supply air VAV air volume flow at hood	VavSuAirFIHood	Enter total supply air volume from registers after stable control is reached. Re-enter values as needed prior to selecting command to calculate new coefficient.	--- ft ³ /min

Verify	Description	Object / Property Name	Comment	Default
★	Supply air VAV duct area	VavSuDuctArea DUCT AREA	Duct area is calculated by the application. To manually enter a different value, you must first set the duct shape object (VavSuDuctShape) to Direct entry and then return here to manually enter the desired duct area value. CAUTION: If the user manually enters a duct area value without first setting VavSuDuctShape to Direct entry , the value will be accepted by the application but immediately overwritten by the system without informing the user!	0.55 ft ²
★	Supply air VAV duct shape	VavSuDuctShape	Default = Round [Rectangular Round Flat oval Direct entry]	Round
★	Supply air VAV dimension A	VavSuDmsnA	Entries used to calculate duct area when Duct shape set to round, rectangular or oval.	10 in
★	Supply air VAV dimension B	VavSuDmsnB	Entries used to calculate duct area when duct shape is set to rectangular or oval.	10 in
★	Supply air VAV flow coefficient	VavSuFICof FLOW COEF	Enter initial flow coefficient – to be adjusted during balancing procedures.	0.63

4. Return to the beginning of this section by repeating the initial navigation steps as follows:
In the Application menu, select **Favorites**, then select **Room segment > Favorite balancing**.

5. Locate Supply air VAV position.

Verify	Description	Object / Property Name	Comment	Default
★	 Supply air VAV position	VavSuPos DAMPER POS	Displays current value. Commandable for testing purposes. Click directly on the object icon  to access the following three parameters.	---%
★	Rise time from 0 to 100%	-	Floating control stroke time to open. CAUTION: if using tenths of seconds to enter changes, multiply seconds by 10 – i.e. enter 900 for 90 seconds.	[90.0]s
★	Fall time from 0 to 100-0%	-	Floating control stroke time to close. CAUTION: if using tenths of seconds to enter changes, multiply seconds by 10 – i.e. enter 900 for 90 seconds.	[90.0]s
★	Control action	-	Default – direct [Direct Reverse]	Direct

Favorite recorded balancing values

1. In the Application menu, select **Favorites**
 2. Select **Room segment > Favorite recorded balancing values**.
- ⇒ Record the balancing values.

Description	Object / Property Name	Comment	Recorded value	Template
Supply air VAV max.air vol.flow f.cool.	VavSuAirFIMaxC CLG FLOW MAX	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV min.air vol.flow f.cool.	VavSuAirFIMinC CLG FLOW MIN	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV max.air vol.flow f.heat.	VavSuAirFIMaxH HTG FLOW MAX	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV min.air vol.flow f.heat.	VavSuAirFIMinH HTG FLOW MIN	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV max.air vol.flow f.vent.	VavSuAfIMaxVnt VENT FLO MAX	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV min.air vol.flow f.vent.	VavSuAfIMinVnt VENT FLO MIN	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV air volume flow at hood	VavSuAirFIHood	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV recorded balancing mode	VavSuBalModRec	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV recorded air flow at hood	VavSuAfIHodRec	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV recorded flow coefficient	VavSuFICoefRec	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV initial flow coefficient	VavSuFICoefIni	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV recorded air volume flow	VavSuAirFIRec	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV recorded position	VavSuPosRec	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV duct area	VavSuDuctArea DUCT AREA	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV flow coefficient	VavSuFICoef FLOW COEF	Snapshot of current value when balancing 'record' is selected.		All
Supply air VAV calc.flow coefficient	VavSuFICoefCal	Snapshot of current value when balancing 'record' is selected.		All

Backup Commissioning Settings



ABT Site required for project data completion

ABT Site project data must be completed using ABT Site. It cannot be completed via ABT-SSA or other online tool.



















Only **Application type** devices (automation stations) can be uploaded, not free-programmable devices.










1. In the **Startup** component, **Set up connection** task, establish a connection as described previously in **Establishing a Connection to the Automation Station**.
 2. In the **Startup** component, **Upload** task, **Discovered automation stations** tab, the connected AS is automatically discovered and displayed.
 3. Select the automation station to be uploaded.
 4. Click **Upload**.
- ⇒ The status of the selected AS will display **Backup in progress**. After a few minutes, the status displays **Operational** when the upload is complete.

Appendix A

Data Point Icons

Datapoint icons represent BACnet objects associated with buildings, floors, and rooms. In ABT-SSA, datapoint icons appear to the left of objects in the favorites tables. Clicking an icon exposes the object's parameters if any exist.

Indicator	Description	BACnet object type
Structured view objects		
	Building	AreaView (Bldg)
	Floor	AreaView (Floor)
	Room	AreaView (R)
	Room segment	AreaView (RSegm)
	Favorite view	FvrView
	Other special View Node Objects	ColView, DevView, InfraView, yyy(xxx)
Value objects		
	Input value	AI, BI, BlsIn, LgtIn, MI
	Output value	AO, BO, BlsOut, EmgLgt, LgtAOut, LgtBOut, MO
	Calculated value	ACalcVal, BCalcVal, MCalcVal, PrphDev
	Process value	APrcVal, BPrcVal, MPrcVal
	Configuration value	ACnfVal, BCnfVal, MCnfVal, UCnfVal
	Trigger value	MTrgVal
Centralized command grouping objects		
	Command object	CmdObj
	Central function	AreaView (CenFunct)
	Group master	GrpMaster
	Group member	GrpMbr
	Application function	FuncView
Structured view objects		
	Network view	NwkView

Indicator	Description	BACnet object type
	Scheduler	Schedule
	Calendar	Calendar
System objects		
	Automation station	ASView
	Controller	Controller
Alarm and trend objects		
	Common Event Enrollment	CmnEvtEnr, EvtEnr, DevAlert
	Trend log	TrndLogS
	Other special Objects	AppCnf, CmnEvt, DevObj, FileObj, FldBusMgmt, NotifClass, NwkPortIP, NwkPortMSTP, Pgm
System function objects		
	Diagnostics	Diag
	Event log	EvtLog

Appendix B: VAV Start-up Pocket Guide

This topic summarizes the main steps of VAV Startup procedures.

1. Connect to the DXR2 automation station using ABT SSA.
2. Complete the following under **Room segment > Favor.room segment, start-up & checkout**:
 - a. Set the Nominal air volume flow: AirFINom
(MUST be set to largest flow setpoint for terminal unit)
 - b. Set base flow setpoints:
 - Max air flow for cooling (VavSuAirFIMaxC)
 - Min air flow for cooling (VavSuAirFIMinC)
(leave at zero to allow ventilation functions)
 - Max air flow for heating (VavSuAirFIMaxH)
(only for increased flow across coils)
 - Min air flow for heating (VavSuAirFIMinH)
(for units without terminal fans, set for min heating flow across coil; otherwise leave at zero)
 - Max air flow for ventilation
(can be set equal to max cooling)
 - Min air flow for ventilation
(leave at zero and set ventilation per operating mode in Step 3)
3. Set flow setpoints and configurations for ventilation under **Room > Favorite room, start-up & checkout > Ventilation control**:
 - a. Set / verify ventilation action in each operating mode:
 - Comfort / Pre-Comfort: Min ventilation
 - Economy / Protection: Off
 - b. Set ventilation flow in each operating mode:
 - Comfort: e.g. 150 ft3/min
 - Pre-Comfort: e.g. 150 ft3/min
 - Economy / Protection: 0 ft3/min
(linked with configuration "Off")
4. Complete the following for floating control damper actuator under **Room segment > Favor.room segment, start-up & checkout > Supply air VAV position**:
 - a. Set / verify damper open/close time
 - b. Set / verify control action (direct/reverse)
5. Complete the following for floating control Heating coil valve under **Room segment > Favor.room segment, start-up & checkout > Heating coil valve**:
 - a. Set / verify valve open/close time
 - b. Set / verify control action (direct/reverse)
6. Complete the following under **Room segment > Favor.room segment, start-up & checkout**:
 - a. Set Duct Area (VavSuDuctArea)
(Direct entry or Shape and dimensions)

- b. Set / verify flow coefficient (VavSuFICoef)
- 7. Set the Room temperature setpoint under **Room > Favorite room start-up & checkout**:
 - a. Set Comfort cooling and Comfort heating temperature setpoints: PrSpC, PrSpH
 - b. Pre-Comfort, Economy and Protection (change if needed)
 - Delta setpoints for Pre-Comfort: DSpCPcf, DSpHPcf
 - Setpoints for Economy and Protection: SpCEco, SpHEco, SpCPrt, SpHPrt

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