SIEMENS

Room Automation Stations

DXR2 FCU Start-up Procedures

A6V10665941
2017-07-25

Building Technologies

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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 (ABT-Site Help > Configuration > Application selection)

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 Desigo 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

Prerequisites

- Users are trained and knowledgeable with ABT Site and comfortable with the online help systems.
- ABT-Site is loaded, licensed and running.
- See topics under the “Online” book in the Help.

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 the desired **Network interface** from the drop-down list (use "Network connections…" if needed).
5. Select IP address.
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].

1. (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. (Optional) See 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).

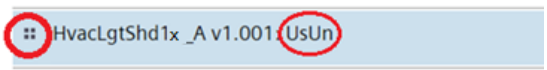
2. Under the **Discovered devices** list, right click on the AS to be configured and select **Manually configure**.
3. Complete the configuration details and click **Configure**.
4. Wait 15 seconds for the update to finish and the **Message** column to show **Configured**.

   ⇨ 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 the table 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**.

FCU templates

Box type	Number	Description	AS hardware
Fan Coil	14050	Fan Coil 2Pipe Heating/Cooling and HW Coil	DXR2x18.xx
	14051	Fan Coil 4Pipe with ChW and HW	
	14052	Fan Coil with 2-Stage DX Cool and 2-Stage Electric Heat	
	14054	Fan Coil with ChW and 2-Stage Electric Heat	
Fan Coil Unit Vent	14081	Fan Coil Unit Vent with ChW and HW and OA Damper	
	14083	Fan Coil Unit Vent with ChW and 2-Stage Electric Heat and OA Damper	
	14084	Fan Coil Unit Vent with 2-Stage DX Cool and HW and OA Damper	
	14184	Fan Coil Unit Vent w/ 2-Stage DX Cool & 2-Stage Electric Heat & OA Dmpr	
Fan Coil	14550	Fan Coil 2Pipe Heating/Cooling and HW Coil	DXR2M11.xx
	14551	Fan Coil 4Pipe with ChW and HW	
	14552	Fan Coil with 2-Stage DX Cool and 2-Stage Electric Heat	
	14554	Fan Coil with ChW and 2-Stage Electric Heat	
Fan Coil Unit Vent	14581	Fan Coil Unit Vent with ChW and HW and OA Damper	
	14583	Fan Coil Unit Vent with ChW and 2-Stage Electric Heat and OA Damper	
	14584	Fan Coil Unit Vent with 2-Stage DX Cool and HW and OA Damper	
	14684	Fan Coil Unit Vent w/ 2-Stage DX Cool & 2-Stage Electric Heat & OA Dmpr	

Verify Configuration Settings

(Optional)

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

For MS/TP 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.

IP configuration: see IP topic(s) in ABT Site Help: see **Startup > Configuring a network connection**.

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.

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**.

Saving changes made in ABT Site and SSA

In ABT-SSA, changes made during a live session are automatically saved via auto-save after 30 minutes and every 30 minutes thereafter. Always use the **Log out** feature whens you quit a session. This forces a save of parameter changes regardless of the 30 minutes timer. 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
Room temperature setpoint (Room unit display only)	SpTR RM TEMP STPT	Display only. Displays last heating/cooing 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 (Only for templates 14*x*81, 14*x*83, and 14*x*84.)	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

Verify	Description	Object / Property Name	Comment	Default
	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/cooing 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
	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. | Free cooling | Free cooling | Night cooling | Ventilation | Frost protection | Air vol.flow off |Smoke | not used | not used] **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

Verify	Description	Object / Property Name	Comment	Default
	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).

4. 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**.
5. Proceed with **Ventilation control** setup.

Verify	Description	Object / Property Name	Comment	Default
☆	Ventilation control (Only for templates 14*x*81, 14*x*83, 14*x*84.)	VntCtl	Click the properties icon then click the filter button	1000 ppm
☆	Comfort configuration (Only for templates 14*x*81, 14*x*83, 14*x*84.)	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, **AirFlMinRCmf**).	Min.ventilation
☆	Pre-Comfort configuration (Only for templates 14*x*81, 14*x*83, 14*x*84.)	PcfCnf	Set for ventilation options in Pre-Comfort mode: [Off | Min.ventilation | DCV | Min.ventilation & DCV] **Note** s/a Comfort	Min.ventilation

Verify	Description	Object / Property Name	Comment	Default
	Economy configuration (Only for templates 14*x*81, 14*x*83, 14*x*84.)	EcoCnf	Set for ventilation options in Economy mode: [OFF | Min.ventilation | DCV | Min.ventilation & DCV] **Note** s/a Comfort	Off
	Protection configuration (Only for templates 14*x*81, 14*x*83, 14*x*84.)	PrtCnf	Set for ventilation options in protection mode: [OFF | Min.ventilation | DCV | Min.ventilation & DCV] **Note** s/a Comfort	Off
★	Min.pos.outside air damper for comfort (Only for templates 14*x*81, 14*x*83, 14*x*84.)	DmpOaPosMinCmf	Set flow for minimum ventilation in Comfort mode. **Note** If flow setting is greater than zero, **CmfCnf** must not equal Off.	20%
★	Min.pos.outside air damp. for pre-comfort (Only for templates 14*x*81, 14*x*83, 14*x*84.)	DmpOaPosMinPcf	Set flow for minimum ventilation in Pre-Comfort mode. **Note** If flow setting is greater than zero, **PcfCnf** must not equal Off.	10%
	Min.pos.outside air damper for economy (Only for templates 14*x*81, 14*x*83, 14*x*84.)	DmpOaPosMinEco	Set flow for minimum ventilation in Economy mode. **Note** If flow setting is greater than zero, EcoCnf must not equal Off.	0%
	Min.pos.outside air damp. for protection (Only for templates 14*x*81, 14*x*83, 14*x*84.)	DmpOaPosMinPrt	Set flow for minimum ventilation in Comfort mode. **Note** If flow setting is greater than zero, PrtCnf must not equal Off.	0%

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 (Only for templates 14*x*81, 14*x*83, 14*x*84.)	VntCtl	Click the Link icon › to display additional vent control objects.	1000 ppm
	Present ventilation setpoint (Only for templates 14*x*81, 14*x*83, 14*x*84.)	PrSpVnt VENT SP EFF	Current setpoint based on operating mode Displays current value	— ppm
	Ventilation ctr.for outs.air damper (Only for templates 14*x*81, 14*x*83, 14*x*84.)	DmpOaVntCtr	Displays current value Ventilation controller (PID)	— %
	Ventilation controller for fan (Only for templates 14*x*81, 14*x*83, 14*x*84.)	FanVntCtr	Displays current value Ventilation controller for fan (PID)	— %
	Room control (Only for templates 14*x*81, 14*x*83, 14*x*84.)	RCtl	Displays current value (Group member)	-

Verify	Description	Object / Property Name	Comment	Default
★	Setpoint room air quality for comfort (Only for templates 14*x*81, 14*x*83, 14*x*84.)	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 (Only for templates 14*x*81, 14*x*83, 14*x*84.)	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 (Only for templates 14*x*81, 14*x*83, 14*x*84.)	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 (Only for templates 14*x*81, 14*x*83, 14*x*84.)	SpAQualRPrt PROT DCV SP	Set for CO2 level in ppm in Protection mode when optional ventilation 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.ctr.cooling for outs.air damp.	DmpOaTRCtrC	Loop controller (see Favorite terminal control [→ 27] for the other temperature OA damper loop controller)	0.0%	14081, 14184, 14581
▷ Room temp.controller cooling for coil	CoilTRCtrC	Loop controller	0.0%	14051, 14054, 14081, 14083, 14551, 14554, 14581, 14583, 14584
▷ Room temp.ctr.cooling for cooling coil	CclTRCtrC	Loop controller	0.0%	14052, 14084, 14184, 14552, 14684

Description	Object	Comment	Default	Template
Room temp.controller heating for coil	CoilTRCtrH	Loop controller	0.0%	14051, 14081, 14084, 14550, 14551, 14581
Room temp.ctr.heating for heating coil	HclTRCtrH	Loop controller	0.0%	14050, 14052, 14054, 14083, 14184, 14552, 14554, 14583, 14584, 14684
Room temp.ctr.cool.for heating/cool.coil	HCclTRCtrC	Loop controller	0.0%	14050
Room temp.ctr.heat.for heating/cool.coil	HCclTRCtrH	Loop controller	0.0%	14050
Ventilation ctr.for outs.air damper	DmpOaVntCtr	Loop controller	0.0%	OA damper only
Ventilation controller for fan	FanVntCtr	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. Room temperature setpoint determination
   b. Green leaf
4. See the table for instructions and information on the parameters associated with these objects.

Verify	Description	Object / Property Name	Comment	Default
★	Room temperature setpoint determination	SpTRDtr	Click the properties icon then click the filter button 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 the properties icon then click the filter button 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.

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.

Table 1: FCU, Favorite room segment, start-up & checkout.

Verify	Description	Object / Property Name	Comment	Default
★	Supply air temperature	TSu SPLY TEMP	Displays current value. Click the properties icon then click the filter button to display parameters. Verify or set **Correction offset** as needed. *(Optional)* Set **Commissioning state** and **Commissioning information**.	--- °F
★	Outside air damper position (Only for templates 14*x*81, 14*x*83, and 14*x*84.)	DmpOaPos OA DMP POS	Displays current value. Commandable for testing purposes. Click the properties icon then click the filter button to display parameters. Verify or set **Signal value 1** and **Signal value 2**. (For OA damper min positions that correspond to different operating modes, see **Favorite room, start-up & checkout > Ventilation control**.) *(Optional)* Set **Commissioning state** and **Commissioning information**.	20%
★	Signal value 1 (Only for 0-10V actuators.)		Reset as needed for voltage at 0%. For example reverse acting (10V – 0V) set to 10V.	0.0
★	Signal value 2 (Only for 0-10V actuators.)		Reset as needed for voltage at 100%. For example, reverse acting (10V – 0V) set to 0V.	10.0
	Single-speed fan	Fan1Spd FAN 1 SPD	Displays current value. Commandable for testing purposes. Click the properties icon then click the filter button to display parameters. *(Optional)* Set **Commissioning state** and **Commissioning information**.	--

Verify	Description	Object / Property Name	Comment	Default
★	Heating/cooling coil valve position (Only for template 14*x*50.)	HCclVlvPos HC VLV POS	Displays current value. Commandable for testing purposes. Click the properties icon then click the filter button to display parameters. Verify or set **Signal value 1** and **Signal value 2**	---%
★	Signal value 1 (Only for 0-10V actuators.)		Reset as needed for voltage at 0%. For example reverse acting (10V – 0V) set to 10V.	0.0
★	Signal value 2 (Only for 0-10V actuators.)		Reset as needed for voltage at 100%. For example, reverse acting (10V – 0V) set to 0V.	10.0
	Heating/cooling coil valve pos.for cool. (Only for template 14*x*50.)	HCclVlvPosC HC CW POS	Displays current value.	---%
	Heating/cooling coil valve pos.for heat. (Only for template 14*x*50.)	HCclVlvPosH HC HW POS	Displays current value.	---%
★	Cooling coil DX evap.pos.first stage (Only for templates 14052, 14084, 14184, 14552, and 14684.)	CclDx1StPos DX 1ST	Current state of first stage of DX. (Fan and time delay interlocks) Click the properties icon then click the filter button to display parameters. *(Optional)* Set **Commissioning state** and **Commissioning information**.	Off
	Cooling coil DX evap.pos.second stage (Only for templates 14052, 14084, 14184, 14552, and 14684.)	CclDx2StPos DX 2ST	Current state of second stage of DX. (Fan and time delay interlocks) Click the properties icon then click the filter button to display parameters. *(Optional)* Set **Commissioning state** and **Commissioning information**.	Off
★	Cooling coil valve position (Only for templates 14*x*51, 14*x*54, 14*x*81, and 14*x*83.)	CclVlvPos CLG VLV POS	Displays current value. Commandable for testing purposes. Click the properties icon then click the filter button to display parameters. Verify or set **Signal value 1** and **Signal value 2**. *(Optional)* Set **Commissioning state** and **Commissioning information**.	---0%
★	Signal value 1 (Only for 0-10V actuators.)		Reset as needed for voltage at 0%. For example reverse acting (10V – 0V) set to 10V.	0.0
★	Signal value 2 (Only for 0-10V actuators.)		Reset as needed for voltage at 100%. For example, reverse acting (10V – 0V) set to 0V.	10.0

Verify	Description	Object / Property Name	Comment	Default
	Heating coil electric pos.first stage (Only for templates 14052, 14054, 14083, 14184, 14552, 14554, 14583, 14584, and 14684.)	HclEl1StPos HTG EL 1ST	Current state of first stage of electric heat. (Fan and time delay interlocks) Click the properties icon then click the filter button to display parameters. *(Optional)* Set **Commissioning state** and **Commissioning information**.	Off
	Heating coil electric pos.second stage (Only for templates 14052, 14054, 14083, 14184, 14552, 14554, 14583, 14584, and 14684.)	HclEl2StPos HTG EL 2ST	Current state of second stage of electric heat. (Fan and time delay interlocks) Click the properties icon then click the filter button to display parameters. *(Optional)* Set **Commissioning state** and **Commissioning information**.	Off
★	Heating coil valve position Only for templates 14*x*50, 14*x*51, 14*x*81, 14084, 14584, and 14684.)	HclVlvPos HTG VLV POS	Displays current value. Commandable for testing purposes. Click the properties icon then click the filter button to display parameters. *(Optional)* Set **Commissioning state** and **Commissioning information**.	---0%
★	Rise time 0-100% (Only for floating control actuators.)	-	Floating control stroke time to open (in tenths of seconds). For example, for 130 seconds enter 1300.	130.0s
★	Fall time 100-0% (Only for floating control actuators.)	-	Floating control stroke time to close (in tenths of seconds). For example, for 130 seconds enter 1300.	130.0s
★	Control action (Only for floating control actuators.)	-	Default – direct [Direct | Reverse]	Direct
	Room operator unit device 1		This item can be accessed in the next section, **Room operator unit configuration**.	

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

Verify	Description	Object / Property Name	Comment	Default
	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
	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 temp.ctr.cool.for outs.air damper	DmpOaTSuCtrC	Loop controller	---%	14081, 14084, 14550, 14551, 14581
Supply temp.ctr.cooling for cool.coil	CclTSuCtrC	Loop controller	---%	14081, 14084, 14550, 14551, 14581
Supply temp.ctr.heating for heating coil	HclTSuCtrH	Loop controller	---%	14051, 14081, 14084, 14550, 14551, 14581

Parameter favorites for a loop control object include:

- Controller type (PID / Staged)
- 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)

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. Free-programmable devices are created using an ABT Programming tool, not ABT Site. They appear with a lock icon and “PRO”.

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 (CenFnct)
	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

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