Room automation stations

DXR1.. Balancing procedure
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Security best practices

Network setup must avoid direct connection from Internet to the end device.
- Implement Port security to disallow connection and network participation of unauthorized laptops/devices to a switch.
- Unauthorized access must be prevented by physical security measures. Thus, access to devices (controllers) must be limited to only those person who require it. Equipment can further be monitored via CCTV.
- If possible, physically separate control systems from non-control systems. Apply the concept of least-privilege to minimize 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 and at least 8 for non-administrative users.
- Ensure that username/password are unique for each site within the country/office.
- Ensure that users each have their own individual 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.
- Make sure accounts are removed within a reasonable amount of time after users leave the site.
- Make sure firmware is downloaded only from legitimate / known locations.

Cyber security disclaimer

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1 Before You Begin

Prerequisites:
- ABT Site (33.2.325.0 or higher)
- ABT Go (36.0.904.0 or higher)
- All needed mechanical documentation (plans and specifications) are available

⚠️ CAUTION

Be aware of the following
- Technician must provide User name (typically Balancer)
- Technician must provide Password(s)
- Technician provides necessary connection cable(s)

Caution: Duct area is calculated by the application. If the duct area is entered manually but the proper procedure is not followed, the system overwrites the value without informing the user. See substep 5.6 under Step 5 - Command Parameters and Balance Individual Automation Stations.
Step 1 - Preparing A Project

1.1 Open ABT Site.

1.2 Click **Settings** to configure the tool settings. Review all items.

**Settings – User interface**

![User interface settings graphic]

**a. User interface:** (reference the above graphic as you review the choices)

- Tool language - The language setting of the user interface. A restart is required for changes to take effect.
- Application engineering - The language setting for project data, typically same as Tool language. A restart is required for changes to take effect.
- Tool operation - Notebook or Tablet.
- UDP port number - hex or decimal.
- Show workflow help on startup - (optional) When checked as per default setting, the user Help files display automatically when ABT Site opens.
- Show recently used projects - (optional) Leaving at **no** will not hide projects.
- Browser selection - Typical choice = Default external browser.
Step 1 - Preparing A Project

Settings – Project and paths

b. **Project and paths:** (reference the above graphic as you review the choices)
   - Default project settings: Choose HQ - SI.
   - Local project folder - Path where projects are saved, e.g., C:sbt_jobs\
   - Local archive folder - (optional) A path where projects may be archived.
   - Local firmware folder - Leave at default.
   - Pack & Go folder - Path where Pack & Go files are saved.
   - Export path - Choose relative path; Files are saved to the Export folder of the working project. In the example above this would be C:sbt_jobs\Exports

1.3 Click **Projects**.

a. (Optional) Click **Add folder** - provide a name and click **OK**.

b. Click **Add project** - provide the following:
   - Project name
   - Administrator password (technician may need to enter)
   - Confirm password
   - Project description (optional)

c. Check the **Root project** check box and click **OK**. (Root project places data / files in the jobs folder.)

d. Close ABT Site to ensure all changes have been captured.

e. Open ABT Site.
f. Select **Projects**, then select the project you created in step b and click **Open project**.

g. Select the **Users** tab under **User profiles** and **Settings**.
h. Now select **Balancer** and create / enter the correct password for the Balancer role. Technician must supply all necessary passwords.

![Balancer and password input screen]

i. (Optional) For the project used for Apogee integration, follow this step. Tick the checkbox next to **Show application number** under **Number ranges** and **Settings**. On the **Naming rules** tab under **Naming defaults** and **Settings**, confirm the Object names selection = **Abbreviated, standard names**.

Note: This step must be done before creating the application template.

![Setting upShow application number]

j. **Preparing A Project** is now complete.
Step 2 - Setting Up Connection

When the project opens, go to Startup page, click ▼ on the top right.

The screen displays the following tabs:

- Room unit connection
  
  Note: Not used for DXR1.X type devices

- USB

- Ethernet

2.1 Click the tab for how you will physically connect.

2.2 If you have not done so already, make the physical connection with a provided cable.

The steps below are not standard balancer procedure steps and should rarely be used. They are provided as a convenience, just in case.

- Under **Target selection** select the Device type that you want to work with. (This may or may not be the device you are physically connected to.)

- **USB**
  
  - IP device (not used for DXR1.X devices)
  
  - MS/TP device (not used for DXR1.X devices)
  
  - PTP device: Point (PC) To Point (DXR1.X) connection. This is the only way that you want to connect the DXR1.X with USB port.

- **Ethernet connection**
  
  - IP device
  
  - MS/TP device

- Network interface: Select the PC network card from the dropdown.

- IP address: Select the network card IP address from the dropdown. This is only needed if more than one IP address is setup for the selected network card.

- UDP port number configured for the network: typically 0XBAC0.

- Click **Connect**.

  - **Note**: If downloading application for multiple devices (IP and MSTP) simultaneously, you need to perform the following steps, and then click **Connect**.
a. Click **More >>** on the bottom left.

- b. Tick the checkbox beside **Encountering failures on simultaneous loads?** to avoid download failures.
3.1 Under **Startup**, click **Configure and Download**. **Discovered devices** tab displays.

- **Discover ▼**  
  - **Clear table**

**Discovery scope:**  
- Local network  
- Remote network

**Network scope:**  
- Local

**Device scope:**  
- Locally connected device  
- All devices

**Return to default settings**

3.2 Opens the **Discovery** dialog box. You can choose to discover devices in the **Local network** or the **Remote network**. **Locally connected devices** displays only connected devices based on the network specified. Default is **All devices**.

Once the devices have been discovered you have several options available. You can:

- Command parameters on several automation stations (**Step 4**)
- Command parameters and balance individual automation stations (**Step 5**)
- Upload report data and create reports (**Steps 7 and 8**)
Step 4 - Global Commanding

**Note**  
The purpose of global commanding is to setup the automation stations for balancing. After balancing is complete the commands must be released. Releasing commands is covered in **Step 6 Release Existing Commands**.

4.1 Click the **Command** tab.

4.2 Select **Air Balancer Commanding List** from the Command list dropdown and tick the checkboxes next to parameters to be previewed and eventually commanded.

*Example:*

<table>
<thead>
<tr>
<th>Description</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply air VAV balancing command</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply air VAV balancing mode</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply air VAV duct area</td>
<td>m²</td>
<td>0</td>
</tr>
<tr>
<td>Supply air VAV duct shape</td>
<td></td>
<td>Rectangular</td>
</tr>
<tr>
<td>Supply air VAV dimension A</td>
<td>cm</td>
<td>0</td>
</tr>
<tr>
<td>Supply air VAV dimension B</td>
<td>cm</td>
<td>0</td>
</tr>
<tr>
<td>Supply air VAV flow coefficient</td>
<td></td>
<td>0.78</td>
</tr>
</tbody>
</table>
4.3 Click the **Discovered devices** tab.

4.4 Select the automation station(s) to be commanded.

4.5 Click **Preview**. (Columns can be re-ordered to customize the display. Click a column header and drag it to the desired location.) The selected parameter displays below the selected automation station(s) in the Discovered automation stations list.

4.6 View the current values of the previewed parameters.

4.7 Determine if additional commanding is needed. Enter or select values to be commanded in the value field(7) for each parameter.

4.8 Click **Commit** to issue the command or **Cancel** to clear the preview.
Step 5 - Command Parameters and Balance Individual Automation Stations

Set up ABT Go app

a. The first time the ABT Go app starts the Account view automatically. Else:  
   Go to Account.
   
   > Account

b. Enter Name  
   Enter Mobile phone (i.e. +41771234567).  
   Enter Email address. (i.e. abc@xyz.com)  
   Enter Company.  
   This information will be added in exported data (i.e. reports).

c. Go to Settings.
   
   > Settings

d. Set ABT Go app Language.  
   Set System of units (not used for DXR1.X).

e. Set or change connection method.  
   Go to Connection.
   
   > Connection

f. Tap Device AP or Network or MS/TP or USB. The illustration changes accordingly.

g. Tap Connect. Follow the appendant task and Tap Connect as needed.  
   Opens the Network view.  
   The connection method is set.

The ABT Go app settings are set. Next time the ABT Go app opens the Devices view directly.

Discover device on ABT Go

a. Go to Devices.
   
   > Devices

Searching the network starts automatically.

b. Tap Discover to start / stop discovering devices.

c. Identify the device in the list.

d. 1. Tap on device in the list.  
   2. Device view opens.

Command parameters and balance individual automation stations
5.1 Open ABT Go, enter username and password, and click **log in**.

![Login page](image)

5.2 Click **Favorites**.

5.3 Click **Favorite commissioning**.
5.4 Select **Favorite balancing**.

5.5 (Optional) Verify or set airflow setpoints.
5.6 Verify/set duct area.

a. Locate Supply air VAV duct shape. Set Supply air VAV duct shape by selecting from the following options and then set the related parameters:

i. Round (Set Supply air VAV dimension A)

ii. Flat oval (Set Supply air VAV dimension A and Supply air VAV dimension B)

iii. Rectangular (Set Supply air VAV dimension A and Supply air VAV dimension B)

iv. Direct entry (Set Supply air VAV duct area)

Note: When setting a value less than 1, enter a leading zero and decimal (like 0.566)

5.7 Balancing procedure

a. Set Supply air VAV balancing mode. Select from the following options
Step 5 - Command Parameters and Balance Individual Automation Stations

i. MxCool - Maximum Cooling

ii. MxHeat - Maximum Heating

iii. MxVent - Maximum Vent

iv. MnCool - Minimum Cooling

v. MnHeat - Minimum Heating

vi. MnVent - Minimum Vent

vii. Manual - (Set Supply air VAV smoke ctrl.air flow setp. to the desired airflow setpoint)

b. Set Supply air VAV balancing command to Balancing. The airflow setpoint is set to the appropriate value based on the Supply air VAV balancing mode, the Supply air VAV balancing state is set to Balancing and the control program will be overridden for balancing operation.

c. Allow time to let airflows stabilize. The automation station will modulate dampers to achieve the defined airflow setpoint.

d. Measure airflow externally with a capture hood or other device.

e. Set Supply air VAV air volume flow at hood with the value determined from the previous step. The control program will calculate and update Supply air VAV calc. flow coefficient.

f. Set Supply air VAV balancing command to Calibrate. The value of Supply air VAV calc. flow coefficient will be set to Supply air VAV flow coefficient.

g. (Optional) - Repeat parts d through f if the calculated airflow does not meet the specified accuracy.

h. Set Supply air VAV balancing command to Record. All Recorded parameters will be updated.

i. (Optional) - Set Supply air VAV balancing mode to a different mode and repeat parts b through h if required to confirm accuracy at a different airflow setpoint.

j. Set Supply air VAV balancing command to Balanced. The Supply air VAV balancing state is set to Balanced and the control program will return to normal operation.

5.8 Back to devices list.

5.9 Repeat items 5.1 through 5.8 for all other automation stations.
Step 6 - Release Existing Commands (optional)

6.1 All remaining commands will display below the automation stations in the grid editor of the Discovered devices tab.

6.2 Select the automation stations and/or individual parameters.

6.3 Click Release.

6.4 Now repeat steps 4, 5, and 6 until all equipment is balanced.
Step 7 - Uploading Report Data

7.1 Click the Report tab.

7.2 Select Air Balancer from the Report list dropdown. The table will display a list of parameters to be uploaded. This table is read only.

7.3 Click the Discovered devices tab.

7.4 Select the automation station(s) to upload report data.

7.5 Click Upload report data. A report data file will be created for each selected automation station.

The status of the upload for each automation station is displayed in the Log and Job viewer.
Step 8 - Creating Reports

Note
Because report data was uploaded and stored in the project, report creation does not require an online connection. Therefore reports can be created anytime or anywhere.

8.1 Open the project and click Global functions.
8.2 Click the Discovered devices tab.
8.3 Select the device from device list, then click Create uploaded data reports.
8.4 Select Air balancer from the dropdown list of Select report, and select the automation station(s) from the table and click OK. The Reports engine will launch, displaying the formatted report with the uploaded data values for the selected automation stations.

8.5 The report engine offers several features:
   a. Print - This will print the report as displayed.
      i. Click Print to launch standard print dialog.
   b. Export - This will export the data allowing it to be manipulated and added with other data so that reports can be created as needed.
      ii. Click Export report to launch the windows file save dialog.
      iii. Specify a location and file name to save the report data.
      iv. Specify the desired file format type.
      v. Click Save.
8.6 To create other reports click the Startup component and repeat parts 3 through 5 as needed
8.7 To close individual reports, click Reports then click the X next the report name.
8.8 When you are finished with reports, close the project and then close ABT Site.