



Quick Start Guide

Tracer® TU Balancing Tool



SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.



Introduction

This Quick-Start Guide is intended for first-time and early users of the Tracer TU Air and Water Balance Tool (referred to as the “Balancing Tool”). It provides a quick overview of the following topics:

- Various methods you can use to connect to UC400 and UC200 controllers individually or through a network
- The Calibrate Air Valve dialog box (single duct VAVs) and the Hot Deck Air Valve Balancing Steps dialog box (dual duct VAVs) used to perform two-point air valve calibrations
- The dialog boxes used to override fans, air valves, and water valves on VAV boxes, blower coils, fan coils, unit ventilators, and water source heat pumps
- The Facility View screen used to perform overrides and calibrations on multiple devices

For more detailed information about the Balancing Tool screens as well as procedural information, see the *Tracer TU Balancing Tool Getting Started Guide* and the *Tracer TU Balancing Tool Help*.

Warnings, Cautions, and Notices

Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.



Indicates a situation that could result in equipment or property-damage only accidents.

⚠ WARNING
Proper Field Wiring and Grounding Required! Failure to follow code could result in death or serious injury. All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠ WARNING**Personal Protective Equipment (PPE) Required!**

Failure to wear proper PPE for the job being undertaken could result in death or serious injury.

Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, **MUST** follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- Before installing/servicing this unit, technicians **MUST** put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). **ALWAYS** refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.
- When working with or around hazardous chemicals, **ALWAYS** refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labelling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.
- If there is a risk of energized electrical contact, arc, or flash, technicians **MUST** put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, **PRIOR** to servicing the unit. **NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

⚠ WARNING**Follow EHS Policies!**

Failure to follow instructions below could result in death or serious injury.

- All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.
- Non-Trane personnel should always follow local regulations.

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Revision History

This version of the Balancing Tool Quick-Start Guide includes the following changes:

- New terminology to accommodate support for Tracer® SC+
 - Tracer TU supports the new Tracer SC+ hardware. Because Tracer TU now supports both the existing Tracer SC hardware and Tracer SC+, this document uses some of the following terms:
 - Tracer SC and Tracer SC+ are both referred to as the "System Controller".



Introduction

- The Tracer SC User Interface and Tracer Synchrony (the new Tracer SC+ user interface) are referred to as the "System Controller User Interface".
 - The Tracer SC/SC+ with Core application license (or CPC application license) was previously referred to as an "Application-SC". It is now referred to as "Tracer SC/SC+ (app) controller".
 - The Tracer SC with Base license was previously referred to as a "Base-SC". It is now referred to as "Tracer SC/SC+ (base) controller".
 - The specific product names are used only if the discussion applies to one of the products or the name occurs in an existing document title.
- An updated graphic showing the Startup Task Panel



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Device Connections

The Balancing Tool is designed primarily to support VAV air and water balancing tasks. However, you can also perform limited operations for blower coils, unit ventilators, and water source heat pumps. In addition, the Balancing Tool provides controller summary and controller status information and lists alarms.

Connect to individual controllers in one of the following ways:

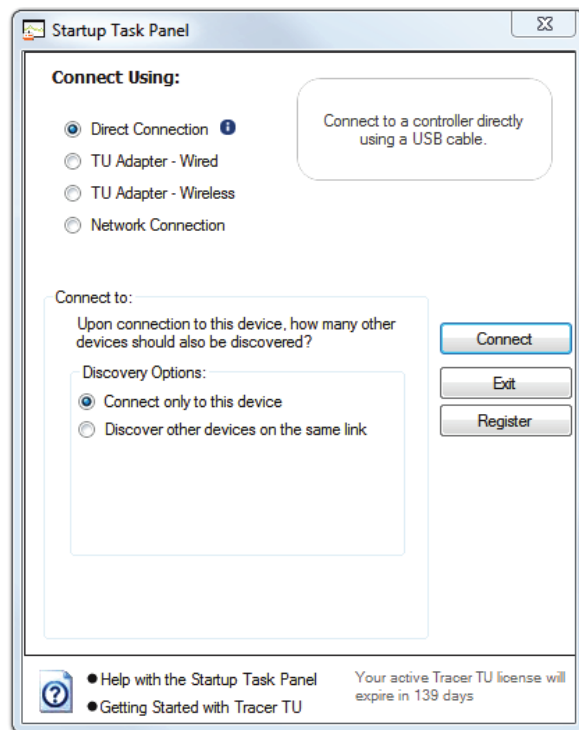
- Physically using a USB cable
- Through the Tracer® TU Adapter (Wired/ Wireless)
- Through System Controller pass-through or a LAN connection

You can also perform operations on multiple similar devices through the Facility View.

USB and Tracer TU Adapter Connections

The **Direct Connection**, **TU Adapter – Wired**, or **TU Adapter - Wireless** radio button is pre-selected on the Startup Task Panel according to the device you have plugged into your computer, so you can click **Connect** immediately.

Figure 1. The Startup Task Panel



Tracer TU senses and selects the connection type you are using.



UC400 USB Port



Type A/B cable used for direct connection

Network Connections

You can connect to a System Controller with an Ethernet cable or over a local area network (LAN).

Connecting Directly with an Ethernet Cable

To connect to a System Controller directly with an Ethernet cable :

1. Select the **Network Connection** radio button on the Startup Task Panel.
The Facility drop-down selection box appears.
2. Select **Trane Device BACnet / IP Ethernet 1** or **Ethernet 2** depending on which port you are using.
3. Click **Connect**.

The Unit Summary screen appears. The connection is established for the session and is maintained until you disconnect from the controller or exit out of Tracer TU.

Using a LAN Connection

To use a LAN connection, you create a link to a "facility" in Tracer TU.

Note: *The term "facility" corresponds to an individual System Controller that acts as a central point of control for all devices on its links, including Tracer SC/SC+ (base) controllers. (The main System Controller is referred to as an Tracer SC/SC+ (app) controller.)*

To create a link to a facility, you need to know the IP or DNS address assigned to the System Controller you want to access. You can create a link to the facility on the Startup Task Panel in two ways:

- Use the Add New Facility Connection option to create a persisting link, which you can access from the Startup Task Panel. (See ["Adding a Facility," p. 7.](#))
- Manually enter an IP address or DNS name on the Startup Task Panel to link to a System Controller on a one-time basis. (See ["Using the Manual Entry Option," p. 8](#))

Adding a Facility

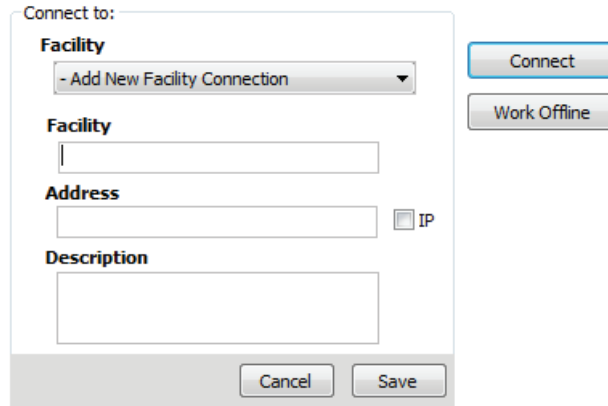
1. Click either the **Tracer TU** desktop icon or the **Tracer TU** program item in the Tracer TU group on the Start menu.

The Balancing Tool splash screen appears briefly followed by the Startup Task Panel dialog box.

2. Select the **Network Connection** radio button.
The Facility drop-down selection box appears.

3. Select **Add New Facility Connection**.

A set of entry boxes appear in which you can specify the name of the Facility, its address (URL or IP), and a brief description.

Figure 2. Add new facility connection box on the startup task panel


Connect to:

Facility

- Add New Facility Connection

Facility

Address

IP

Description

Connect Work Offline

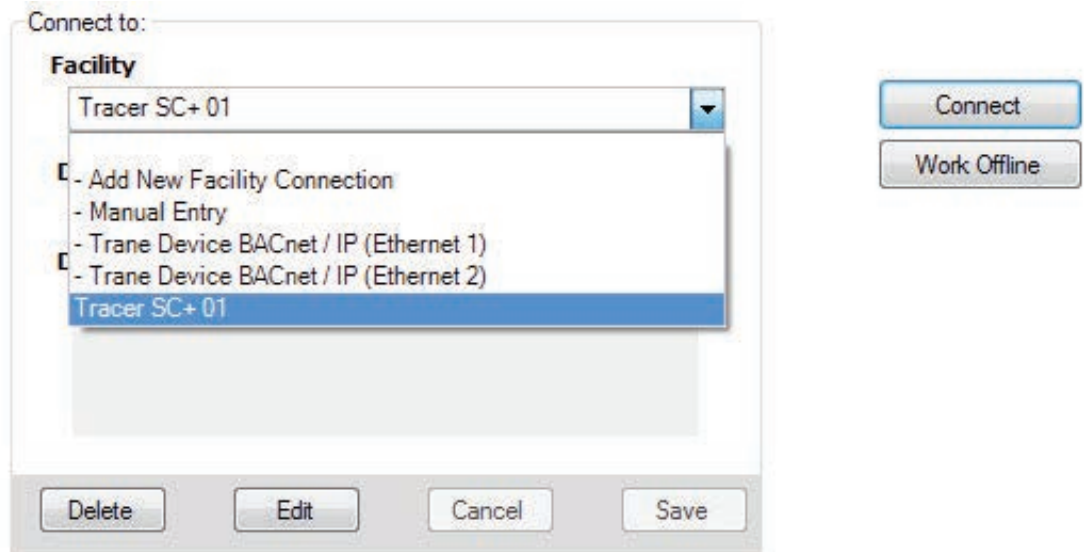
Cancel Save

4. Enter the name of the System Controller you want to access.
5. Enter a DNS address or an IP address.
6. Specify a port if your site uses a specific port other than the default 80.

***Note:** You can specify a secure connection (HTTPS) by selecting the IP check box and specifying port 443. However, be aware that using a secure connection slows Tracer TU performance.*

7. Click **Save**.

Each facility you create is saved and can then be selected from the Facility drop-down list.

Figure 3. Selecting a System Controller from the Facility drop-down list


Connect to:

Facility

Tracer SC+ 01

- Add New Facility Connection
- Manual Entry
- Trane Device BACnet / IP (Ethernet 1)
- Trane Device BACnet / IP (Ethernet 2)
- Tracer SC+ 01

Connect Work Offline

Delete Edit Cancel Save

Using the Manual Entry Option

You can specify a facility on a one-time basis without creating a facility entry on the Startup Task Panel.

1. Select **Manual Entry** on the Facility drop-down list.
2. Enter an IP or DNS address in the entry box as shown in the following figure.

Figure 4. Using the Manual Entry option on the Startup Task Panel

Connect to:

Facility

- Manual Entry ▼

Address

TracerSCCafeteria|

Enter an IP or a DNS address.

Example
192.168.1.10
TracerSCWestWing
http://tracersc.trane.com:8080
https://192.168.1.10:443

This is a one time entry for this connection.
Address will not be saved.

3. Continue with the steps described in [“Connecting to a System Controller and Its Devices,”](#) p. 9.

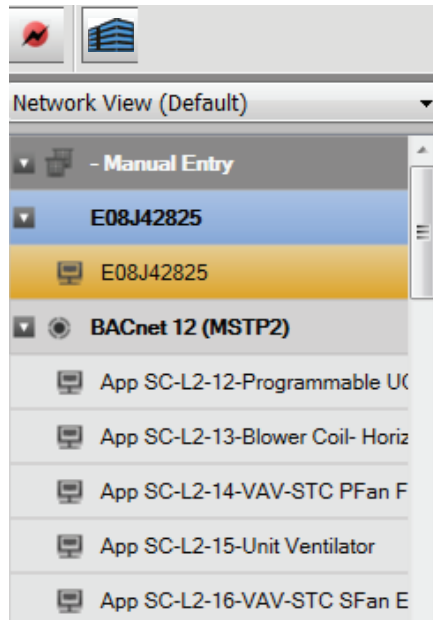
Connecting to a System Controller and Its Devices

1. Select the facility you have just created or any existing facility on the drop-down list.
2. Click **Connect**.

A security dialog box appears that prompts you for a user name and password. When the Balancing Tool is connected, you can now see the Device Navigation Tree pane on the left side of the Balancing Tool window. All the devices on the System Controller’s links are listed in the Device Navigation Tree. (See “The Device Navigation Tree Pane” section in the *Tracer™ TU Balancing Tool Help* for additional information about complex networks that use a master System Controller (Tracer SC/SC+ (app) controller) with System Controllers that act as routers (Tracer SC/SC+ (base) controllers).

In addition, you have the option of using the BACnet Discovery feature to discover UC210s and UC400s on the wider BACnet/IP network and include them in group override operations using the Facility View. See the “Accessing Devices Using BACnet Discovery” TOC book in the *Tracer TU Balancing Tool Help* for details.

Figure 5. Device Navigation Tree pane showing the System Controller and its network devices



3. Right-click the device you want to work with on the tree and select **Connect to Device**.

The Unit Summary screen for that device appears as shown in [Figure 6, p. 11](#). (It may take the Balancing Tool a minute or two to download and populate the screen with the point values).

You can navigate to any of the other Balancing Tool screens (Flow Calibration, Unit Configuration, Alarm, and Controller Status) by clicking the tabs along the top of the screen or selecting them from the Utilities menu. (See the *Tracer TU Balancing Tool Help* for detailed descriptions of these screens).

Figure 6. The Unit Summary Screen

1. Unit Summary
2. Flow Calibration
3. Unit Configuration
4. Alarms
5. Controller Status

Connected to:

Model: UC400
 BAS Communication: Comm. Up
 IMC Communication: Error

i 7 Points Out of Service

! 5 Active Alarms

?

0 Active Overrides

Space

Discharge Air Temperature	— °F	Space Temperature Local	— °F
Discharge Air Temperature Setpoint Active	85 °F	Space Temperature Setpoint Active	85 °F
Heat Cool Mode Request	Auto	Space Temperature Setpoint BAS	72.5 °F
Occupancy Status	Occupied	Space Temperature Setpoint Default	72.5 °F
Occupied Offset	1.49 Δ °F	Space Temperature Setpoint Local	— °F
Space Temperature Active	— °F	Space Temperature Setpoint Source	Local Source ▾

Operating Status

Cooling Capacity Status	0 %	Heating Capacity Primary Status	0 %
Discharge Air Temperature	— °F	Occupancy Status	Occupied
Heat Cool Mode Status	Off		

Output Status

Chilled Water Valve Command Binary	Off	Supply Fan Speed Status	0 %
Cooling Capacity Status	0 %		

Ventilation and Economizing

Outdoor Air Temperature Active	77 °F		
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For complete information on connection methods including wireless connections, see the "Connecting to and Disconnecting from a Controller" section in the *Tracer TU Balancing Tool Help*.

Balancing Tool Dialog Boxes

Use the dialog boxes described in this section to perform the main balancing tasks on individual VAV boxes, blower coils, fan coils, unit ventilators, and water source heat pumps. To perform balancing tasks on multiple devices, see “Facility View,” p. 16.

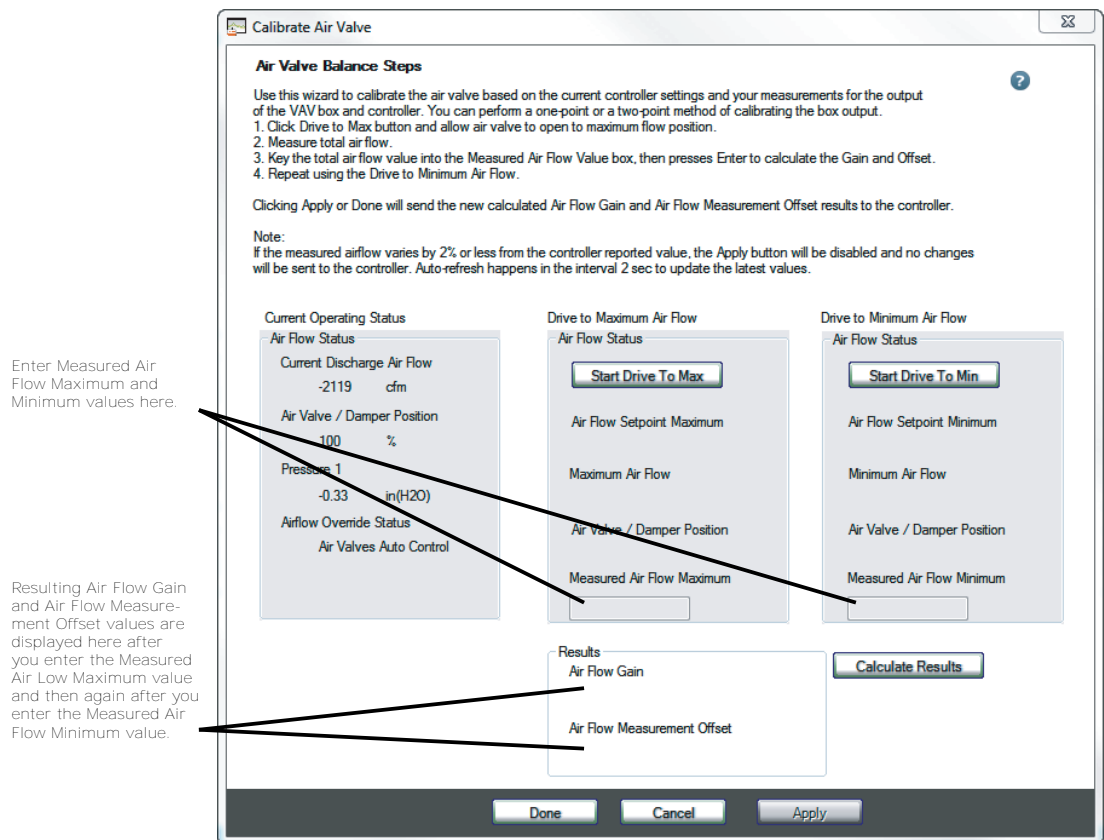
Note: For coverage of the main Balancing Tool screens, see the Tracer TU Balancing Tool Getting Started Guide (TTU-SVN07). For procedural information and screen help, see the Tracer TU Balancing Tool Help, which is integrated in and accessible within the software application.

The Calibrate Air Valve Dialog Box

The Calibrate Air Valve dialog box appears when you click the Calibrate Air Valve **Start** button on the Flow Calibration screen. You can use this dialog box to perform a two-point air valve calibration.

Note: Tracer TU presents the Hot Deck Air Valve Balancing Steps dialog box when a dual duct VAV box is being calibrated. (See “The Hot Deck Air Valve Balancing Steps Dialog Box,” p. 13 and “Hot Deck Air Valve Balancing Steps” (dialog box help) in the Tracer TU Balancing Tool Help.)

Figure 7. The Calibrate Air Valve Dialog Box



Current Operating Status Box

Initially displays the following values as of the time the dialog box is opened:

- Current Discharge Air Flow
- Air Valve / Damper Position
- Pressure 1
- Air Flow Override Status

It then provides continuously updated values for these points reflecting the status of the Drive to Maximum and Drive to Minimum operations.

Note: *The changing values displayed on this screen are refreshed at the rate you specify in the User Preferences dialog box accessed from the Preferences menu.*

Drive to Maximum/Minimum Air Flow

Operate the Drive to Maximum and Drive to Minimum air flow functions as follows:

1. Select the **Drive to Maximum Air Flow** radio button and click the **Start Drive to Max** button to change the damper position so you can take flow measurements at the diffusers.

Note: *If there are multiple diffusers, add all the measurements to obtain the maximum air flow.*

2. Enter the **Measured Air Flow Maximum** value in the entry box and then press **Enter** or tab out of the entry box.

The results (Air Flow Gain and Air Flow Measurement Offset) are displayed for you in the Results box. This result is stored while you perform the Drive to Minimum Air Flow measurements.

3. Select the **Drive to Minimum Air Flow** radio button and click the **Start Drive to Min** button.

Note: *Again, if there are multiple diffusers, add all the measurements to obtain the minimum air flow.*

4. Enter the **Measured Air Flow Minimum** value in the entry box and press **Enter**, tab out of the entry box, or click **Calculate Result**.

The final two-point result is displayed.

The Hot Deck Air Valve Balancing Steps Dialog Box

The Hot Deck Air Valve Balancing Steps dialog box is very similar to the Calibrate Air Valve dialog box. You can perform the same two-point air flow calibration for the hot deck air valve of an individual dual duct VAV box. The cold deck valve is automatically closed when you are calibrating the hot deck air valve and vice versa. See the context-sensitive help and “Calibrating the Air Valve” in the *Tracer TU Balancing Tool Help* for detailed information.

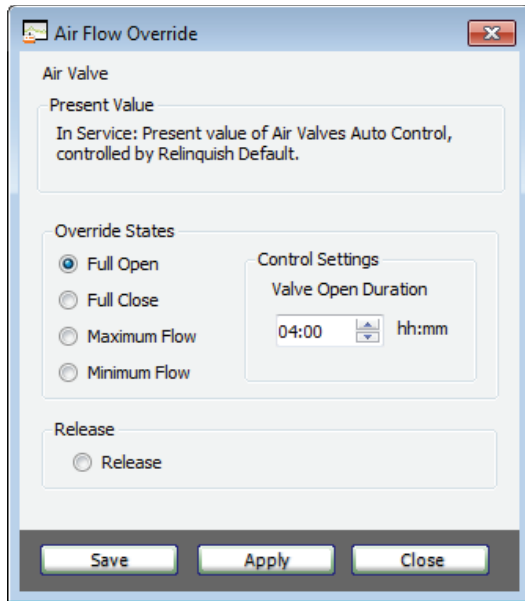
The Override Dialog Boxes

Use the following four types of dialog boxes to override the air valve (damper), fan, water valve, and outside air damper configured for individual pieces of equipment. When the specified duration ends, the override is released and the damper, valve, or fan is returned to its normal setting.

The Air Flow Override Dialog Box

The Air Flow Override dialog box shown in [Figure 8, p. 14](#) appears when you click the Air Flow Override **Start** button on the Flow Calibration screen. You can use this dialog box to drive the VAV air valve (damper) to the full open, full closed, maximum air flow, or minimum air flow position for a limited time while you balance the air flow at the diffusers. Click **Apply** to start the override of the air valve while keeping the dialog box open. Click **Save** to start the override and close the dialog box.

Figure 8. The Air Valve Override dialog box

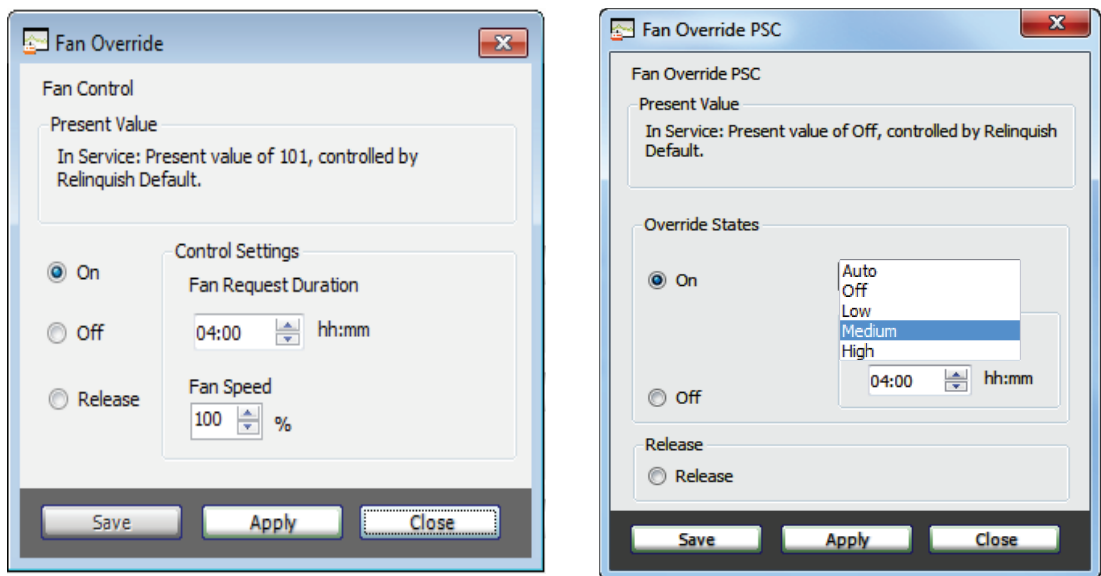


Note: You can override the air valve on multiple VAV boxes using the Facility View. (See “Facility View,” p. 16.)

The Fan Override Dialog Boxes

The Fan Override dialog boxes appear when you click the Fan Override, Fan Override ECM, or Fan Override PSC **Start** button on the Actions box of the Flow Calibration screen. You can use these dialog boxes to override the fan On or Off for a limited time while you balance the air flow at the diffusers. In addition, you can adjust the ECM fan speed as a percentage, if an ECM fan is installed and configured, or select a fan stage (Auto, Low, Medium, or High) for a PSC fan. Click **Apply** to override the fan on while keeping the dialog box open. Click **Save** to start the override and close the dialog box.

Figure 9. The Fan Override dialog boxes

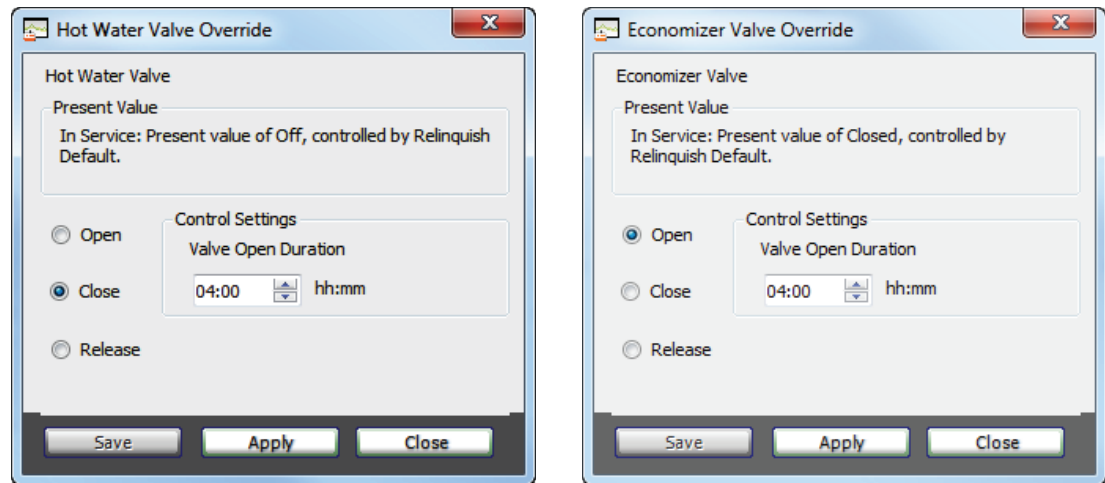


Note: You can override the fan on multiple instances of similar devices using the Facility View. (See “Facility View,” p. 16.)

The Water Valve Override Dialog Boxes

The Water Valve Override dialog boxes appear when you click the Hot Water Valve Override, Chilled Water Valve Override, Isolation Valve Override, or the Economizer Valve Override **Start** button in the Actions box on the Flow Calibration screen. You can use these dialog boxes to override these water valves Open or Closed for a limited duration. Click **Apply** to override the water valve to Open while keeping the dialog box open. Click **Save** to start the override and close the dialog box.

Figure 10. The Hot Water Valve and Economizer Valve Override dialog boxes



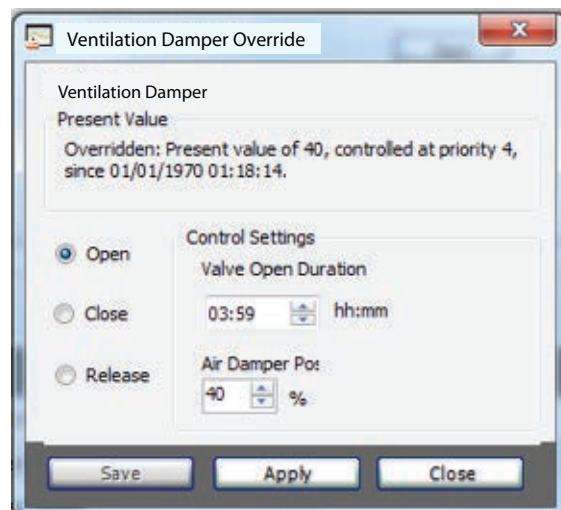
The standard default time duration is 4 hours on all of these override dialog boxes. If you wish to release the override manually, you can select **Release** and click **Apply** or **Save**.

Note: You can override the hot water valve, chilled water valve, economizer valve, or isolation valve on multiple devices using the Facility View. (See "Facility View," p. 16.)

The Ventilation Override Dialog Box

The Ventilation Damper Override dialog box appears when a blower coil, fan coil, or unit ventilator is configured with an outside air damper. You can temporarily override the outside air damper 'Open' to an adjustable percentage.

Figure 11. The Ventilation Damper Overrides dialog box



Facility View



You are working at a job that includes 50 VAV boxes on a single BACnet MS/TP link. All VAVs have been installed correctly and are fully commissioned. The System Controller has not yet been installed on the single water loop serving all 50 VAV boxes. You need to override all the water valves to the open position until the central water pump balancing task is complete. Access the Facility View by clicking the icon (shown at the upper left) to apply the override to all the VAVs you have selected on the Device Navigation Tree simultaneously in one operation. Applying overrides to groups saves time over a one-device-at-a-time approach.

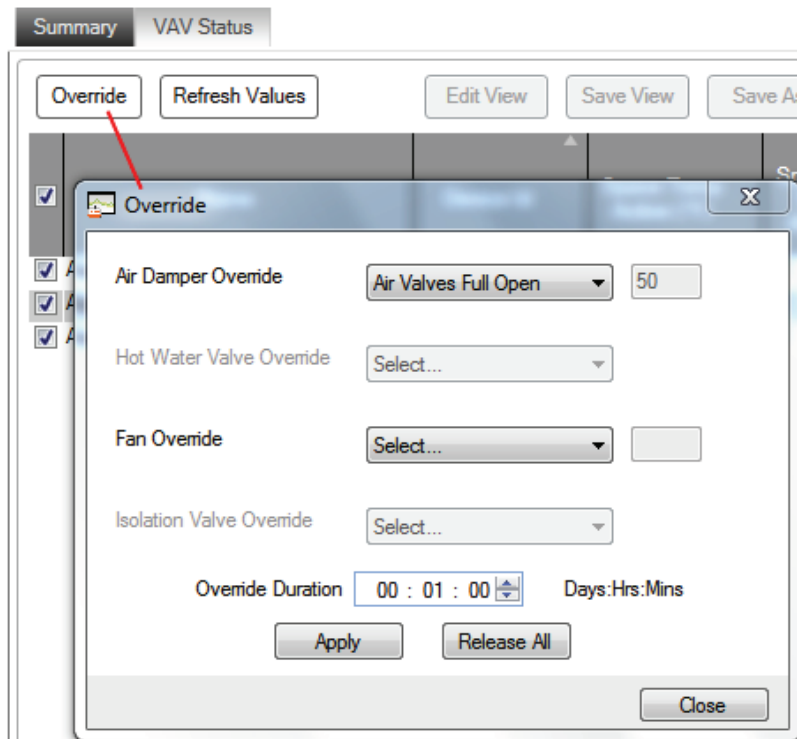
You can also use the Facility View to override air dampers, fans, and water valves on multiple instances of a single equipment type including BCs, FCs, UVs, and WSHPs.

The Facility View operates using all types of communication: wired or wireless via Single Link Access, System Controller pass-through, and BACnet/IP. While the presence of a System Controller improves performance, the Facility View grouping feature can also function independently of a System Controller.

The Override Dialog Box

Use the Override dialog box accessed with the Override button on the Facility View to drive air valves and water valves over the entire communication link to specific positions. Once you activate an override for a group of similar devices, you can then check the status of all selected devices to be sure they are acting in the expected manner. You are then free to turn to other tasks while the override is in effect for the specified duration (seven days maximum).

Figure 12. Override dialog box launched from the Facility View



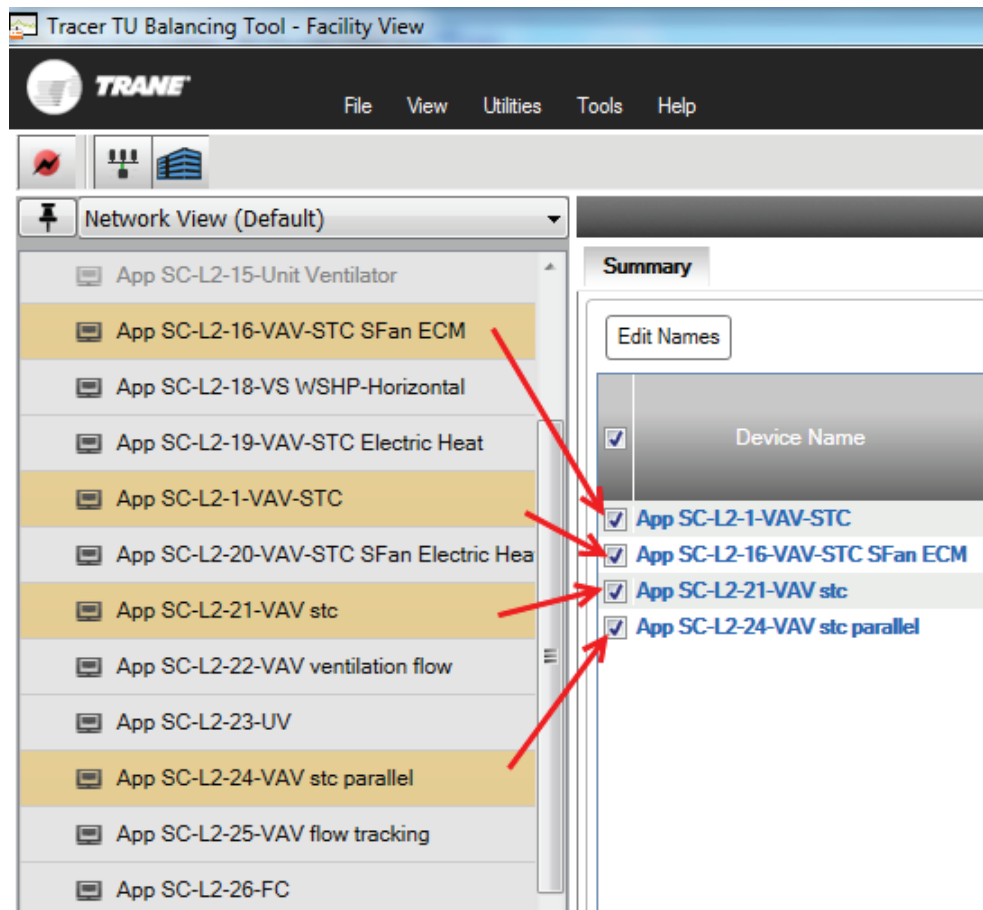
Note: Trane standard programs are required to perform group operations.

Facility View Operations

More specifically, you can use the Facility View to perform the following tasks:

- Select the devices to be included in the override operation on the Device Navigation Tree and transfer them to the Facility View. (See “Specifying a Device Group on the Navigation Tree” and “Overriding Multiple Air Valves, Water Valves” and Fans” in the *Tracer TU Balancing Tool Help*.)

Figure 13. Group selection and transfer to the Facility View



- Use the check boxes on Facility View to deselect or reselect items from the transferred device list.
- Override hot and chilled water valves, economizer valves, or isolation valves to Full Open or Full Closed.
Note: These water valve overrides apply only to equipment with reheat coils, such as VAVs, fan coils, and blower coils. It excludes air handling units.
- Override air valves to any of the following positions: Full Open, Full Closed, Maximum Flow, Minimum Flow, or a user-defined position.
Example: Enter a percentage open value that the air valve will drive to, such as 50% open.
Note: This air valve override applies only to VAV equipment types.
- Override the ventilation damper on BC, FC, and UV units configured with modulating outside air dampers. The damper can be opened to an adjustable percent.



Facility View

- Override some points included in the Facility View equipment point groups.
Note: When viewing and working with dual duct VAV units, in the Facility View, be aware that Air Flow Setpoint Active cannot be overridden due to a priority conflict.

- Calibrate the air valves of all selected VAV boxes using the VAV Balancing view.

In addition, Facility View performs the following operations:

- Releases overrides to automatic control for all override cases.
- Displays information pertaining to all members of a group on a status page.
- Saves the Facility View layout so each time Facility View is opened the existing views are displayed.

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