

## VAVD Terminal Unit Controller

SUPERSEDES: New

EFFECTIVE: August 21, 2012

Plant ID: 001-4124

**PURPOSE:** This guide is a consolidation of important VAVD information that can be used when installing, commissioning and setting up the controller. It is not meant to replace any other VAVD documents or drawings.

**APPLICATION:** The application is for controlling a pressure dependent zone damper, VAV box, series-fan-powered VAV box, or parallel-fan-powered VAV box.

### IMPORTANT FACTS

- The controller can be associated to MPU or VPU controllers.
- The controller can be placed in a stand-alone mode of operation; when in this mode, there should be a primary air temperature sensor connected so the VAV can receive the temperature of the supplied air and adjust the damper properly.
- The controller can be configured for first stage radiant heat without notifying the MPU of a heat demand for a configurable time period.

### INSTALLER/ELECTRICIAN CHECKLIST

Task	Verified Yes/No
Ensure that the 24VAC power source is properly connected to terminals 8 and 9 and that the polarity is correct.	
Ensure that terminal 10 GND is connected to a known good earth ground.	
Ensure that the proper wire is used for inputs and the communication trunk. Analog input wiring must be 18 AWG TSP (can also use multi-conductor). Taco part # WIR-018 (1 Pair + shield). Communication wiring must be Echelon approved cable 22 AWG TP. Taco part # WIR-022	
Ensure that the shielded input wiring is properly grounded. Remember the shield must only be connected at the controller end; at the sensor end it should be cut even with the wire jacket and taped.	
Ensure that the sensors required for this application are properly installed and wired to the controller. Refer to sensor and controller installation sheets or reference.	
Ensure that the damper end stops are set for the actual damper travel range.	
Ensure the actuation of the damper is normal or reverse and set accordingly in the System Options settings.	
If the LCI is connected and powered up, press the service pin button so that the controller is recognized and added to the LCI's database. This can be verified by logging into the LCI and pressing <code>Controllers</code> . The controller appears as <code>Unitx_VAVD</code> , where <code>x</code> is the order in which all controllers' service pin buttons have been pressed.	

### COMMISSIONING THE CONTROLLER

After the VAVD has had all inputs and outputs properly wired, a point-to-point check should be performed to ensure all terminations have been properly made. Use this checklist to verify all inputs are working correctly and reading properly in the LCI; if a point is not used, simply indicate "not used."

## Steps required for verifying inputs on the VAVD

To verify the inputs and outputs, login to the LCI and perform the following steps:

1. Press **Controllers** from the Home screen.
2. Select the VAVD from the list of controllers.
3. Press **Inputs** and verify that there are realistic temperatures. It is recommended that the temperature sensors be warmed up or cooled down so a response can be seen.
4. To verify the outputs, press **All Settings**.
5. From the list of settings, select **Commissioning** and set the damper to a desired position.
6. Verify the output has turned on in the **Outputs** screen.
7. Verify the physical damper has opened to the desired position.
8. After verification, set **Commissioning** to "Off."

Inputs	Verified/initials	Outputs	Verified/initials
Space Temperature		Fan	
Indoor Air Quality		Reheat	
Occupied Sensor		Damper Position	
Discharge Air Temp			
Primary Air Temp			

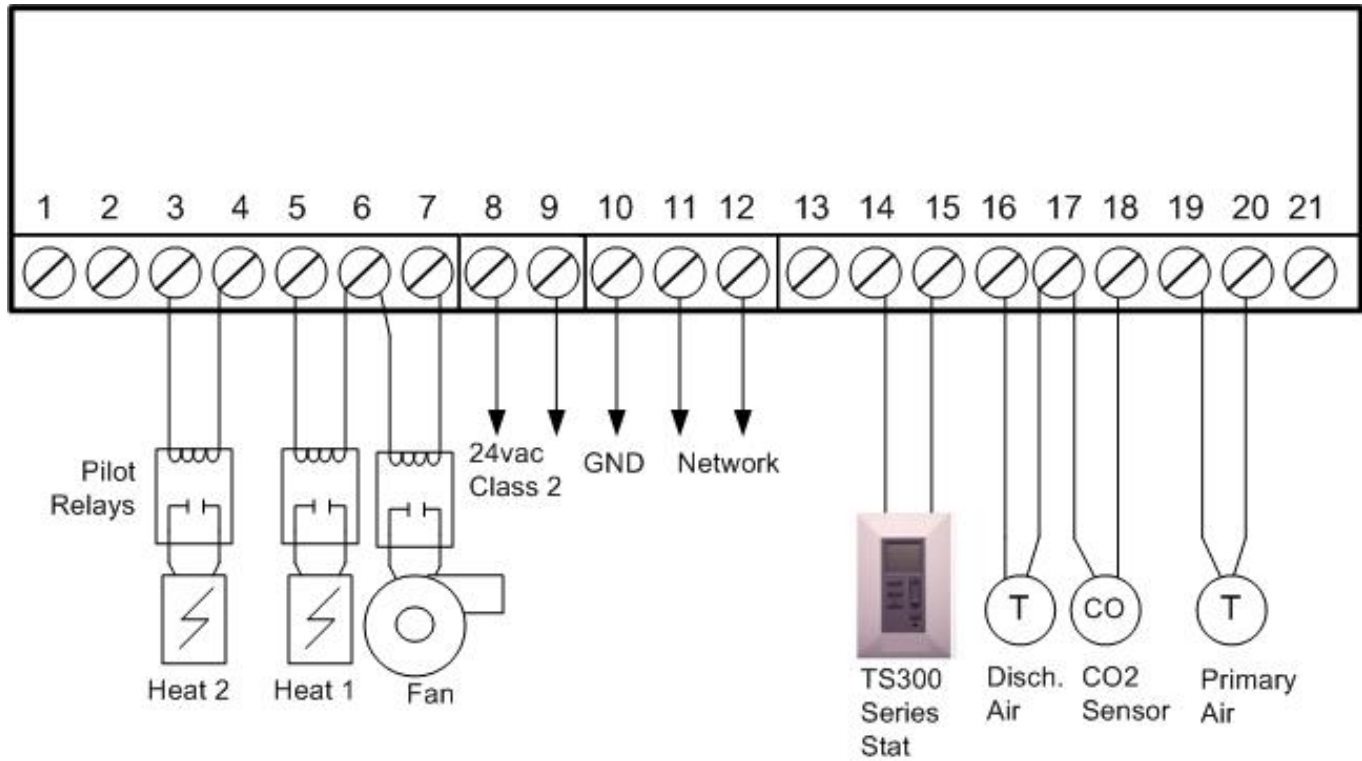
## CONFIGURING THE VAVD SETTINGS

A description of VAVD settings can be found in the Application Guide on pages 27-30. If a copy of the Application Guide is needed, it can be found at [www.taco-hvac.com](http://www.taco-hvac.com). Once in the web site, select the *Products* tab, and from the drop down list select *iWorx® by Taco Electronic Solutions*. A complete list of links to all documentation is shown on the left side of the web page.

## TROUBLESHOOTING & TECHNICAL TIPS

Problem	Solution
Controller is not running and Status LED is not illuminated.	No power to controller. Verify the voltage on the controller's power connector (24 VAC).
How do I reset the controller?	The controller can be reset by the LCI, or you can cycle power to the controller. Refer to the LCI documentation for more information on resetting the controller using the LCI.
I am using a TS303 thermostat and cannot force the fan ON.	On the VAVD controller, the Fan Override button is disabled. Model TS303 is not recommended for use with VAVD controllers.
On other iWorx® controllers, the status LED will turn Red when the controller has entered a fault mode that requires a reset. Are there any such modes on the VAVD?	Yes, but it doesn't require a reset. As with any of the controllers, if the controller detects that no TS300 series sensor is present, an alarm is issued, the controller enters fault mode, and the LED is turned red. However, this type of failure doesn't require a manual reset.
Can VAVD controllers have independent schedules?	Yes, each VAVD controller on the network can be part of a different LCI group containing a different schedule. Remember the LCI is limited to 16 groups and 16 schedules.
What is the maximum number of VAVD controllers that the LCI can support?	Since VAVD controllers require either a VPU2 or MPU2 controlling the air-handling unit, the LCI can support up to 32 VAVD controllers per MPU2 and up to 60 VAVI controllers per VPU2. Remember the LCI can only support a maximum of 63 controllers.
When will the damper be controlled to the minimum flow value?	The damper will be controlled to the minimum flow value when the space temperature is satisfied.
Is there any provision for an air balancer to override the VAV box damper?	Yes, using the LCI there is a mode that an air balancer can manipulate the damper or set it to maintain a specified flow.
My VAVD boxes are not entering heating or cooling mode.	Have the controllers been grouped with an VPU2 or MPU2? Have you sent the grouping information to the controllers?
My temperature and flow readings are fluctuating rapidly.	Verify that the VAVD is properly grounded. There must be a wire jumper between terminals T9 and T10.
Controller is not in stand alone mode, even though it has been ungrouped.	The VAVD does not automatically re-enter stand alone mode when it is deleted from a VPU2 or MPU2's group. Manually place the VAVD in stand alone mode from the "System Options" screen of the LCI, and reset the controller.
Controller is operating as if in stand alone mode, even though it is grouped.	If the VAVD has been manually switched to stand alone mode, it does not automatically exit stand alone mode when it is added to a VPU2 or MPU2's group. Switch "Stand Alone Mode" to "Off" on the "System Options" screen of the LCI, and reset the controller.
Changes to system options are not taking effect.	To prevent inadvertent changes to the functionality of the VAVD, the controller must be reset after any changes on the "System Options" screen of the LCI.

## TYPICAL VAVD WIRING



## CONTROLS MADE EASY®

Taco Electronic Solutions, Inc., 1160 Cranston Street, Cranston, RI 02920  
Telephone: (401) 942-8000 FAX: (401) 942-2360.

Taco (Canada), Ltd., 8450 Lawson Road, Unit #3, Milton, Ontario L9T 0J8.  
Telephone: 905/564-9422. FAX: 905/564-9436.

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Visit our web site at: <http://www.taco-hvac.com>