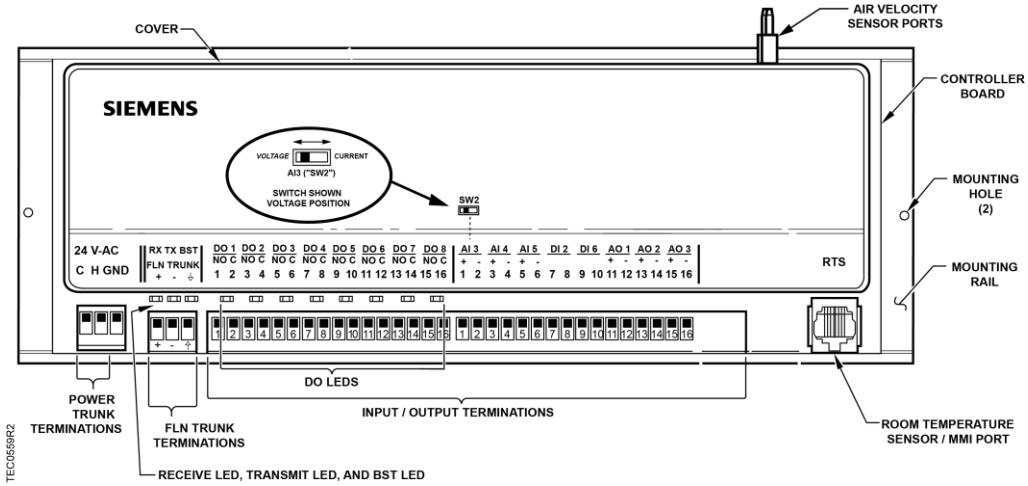
SIEMENS

Installation Instructions
Document No. 550-157
October 26, 2016

Smoke Control BACnet PTEC Terminal Box (VAV) Controller



Generic Controller I/O Layout. See *Wiring Diagram* for application specific details.

Control Applications

6600 through 6607

Product Description

These instructions explain how to field install or replace a Siemens BACnet PTEC Terminal Box (VAV) Controller.

Product Numbers

Smoke Control Listed Siemens BACnet PTEC Terminal Box (VAV) Controller	550-495PKA

Shipping cartons includes a controller assembly, a mounting rail, and two self-tapping/drilling screws.

	⚠ CAUTION
	Keep the unit in its static-proof bag until installation. Otherwise you run the risk of damage to the PCA from electrostatic discharge.

	⚠ ATTENTION
	Ne pas retirer la carte de son emballage avant son installion. Autrement, une décharge électrostatique peut endommager la carte équipée.

Warning/Caution Notation

⚠ WARNING

Personal injury/loss of life may occur if you do not follow the procedures as specified.

⚠ CAUTION

Equipment damage or loss of data may occur if you do not follow the procedures as specified.

⚠ AVERTISSMENT

Risques de blessures graves ou mortelles, si vous ne suivez pas les procédures indiquées.

⚠ ATTENTION

Risques de dommages ou de pertes de données, si vous ne suivez pas les procédures indiquées.

Accessories

Parts for Smoke Control Compliance

Smoke Control Listed Small Equipment Controller Enclosure (Short board controllers only)	540-155K
Smoke Control Listed Large Equipment Controller Enclosure (Long board and ATEC controllers)	550-002K
UL Listed Class 2 transformer with 120/240/277/480 Vac 50/60 HZ 0.5A primary with hub and 24 Vac 96VA secondary w/ hub and circuit breaker	TR100VA004

NOTE:
For smoke control application, primary rating is only 120V/60 Hz.

Expected Installation Time

New controller installation	10 Minutes
Replacement (old controller has removable terminal blocks)	6 Minutes
Replacement (old controller does not have removable terminal blocks)	16 Minutes

NOTE:
You may require additional time for database work at the field panel.

Required Tools and Equipment

- Small flat-blade screwdriver (1/8-inch blade width)
- Cabling and connectors
- Cordless drill/driver set
- ESD wrist strap

Prerequisites

- Wiring conforms to NEC and local codes and regulations. For further information see the *Wiring Guidelines Manual* (125-3002).
- Room temperature sensor installed (optional).
- 24 Vac Class 2 power available.
- Supply power to the unit is OFF.
- Any application specific hardware or devices installed.
- Air velocity sensors installed in ducts.

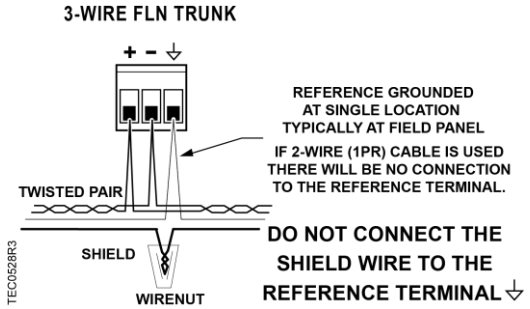
NOTE:
If the controller is being installed on a box with 1 or more stages of electric heat, the 550-809 MOV with pre-terminated spade connectors must be installed across the manufacturer-supplied airflow switch. MOVs can be installed at the time the controller is factory mounted; coordinate with the box manufacturer prior to order placement. For field installation, see *Metal Oxide Varistor Kit Installation Instructions* (540-986).

NOTE:
A low-cost temporary RTS (540-658P25) is available that plugs into the RTS port on the controller, providing temperature input and actual space control until a permanent RTS is installed.

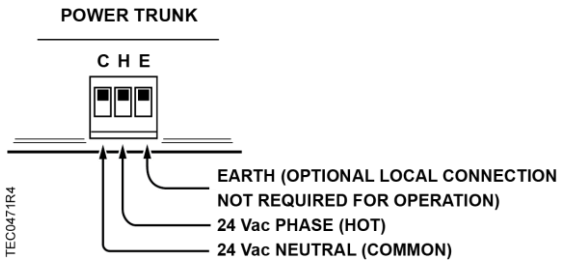
Installation Instructions

NOTE:
All wiring must conform to national and local codes and regulations (NEC, CE, etc.).

1. Secure the mounting rail in the controller's desired location.
2. Place the ESD wrist strap on your wrist and attach it to a good earth ground.
3. Remove the controller from the static proof bag and snap it into place on the mounting rail.
4. Connect the FLN.



5. Connect the point wiring (see *Wiring Diagrams*).
6. Plug the room temperature sensor cable into the RTS port.
7. Connect the power trunk. DO NOT apply power to the controller without first consulting the specialist. This TEC is designed to work with 2-wire AC power (Neutral and Phase (hot) at 24 Vac +/-20%. Use of the earth terminal is optional and if used it should be connected to the nearest earth ground (building steel, conduit or duct work (if earthed)).)



⚠ CAUTION

It is very important that the neutral that supplies the TEC be earth grounded at the source of the 24 Vac power.

Possible erratic equipment operation or damage if neutral is left floating.

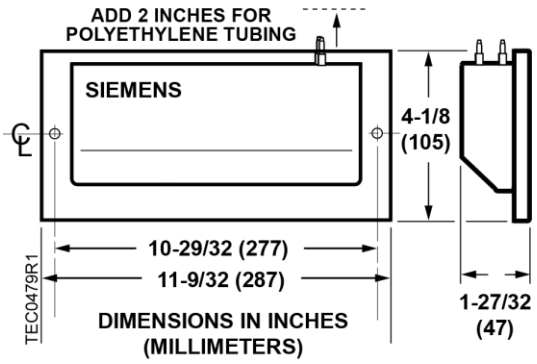
⚠ ATTENTION

Il est très important que le neutre qui alimente le TEC soit mis à la terre à la source de l'alimentation 24 Vca.

Risque de fonctionnement incohérent de l'équipement ou de dégats si le neutre n'est pas mis à la terre.

- Connect the tubing from the air velocity sensor pickup to the ports on the controller. Connect HI to HI and LO to LO.

The installation is complete.



Smoke Control Compliance

The following instructions and information apply if used for smoke control sequence.

1. Install Smoke Control Listed products, enclosure and transformer (see *Parts for Smoke Control Compliance* section for more information).
2. Input Rating:
   - 24V 60 HZ 60 VA
3. Digital Output (DO) are the only I/O suitable for smoke control application. Digital Output (DO) Electrical Ratings:
   - 5VA per DO/maximum 40 VA total.
4. The room temperature sensor (RTS) is installed in the same room as the TEC.
5. Connection from the TEC to the field panel is a maximum 4000 feet, 24 AWG minimum.
6. Wiring Range:
   - Transformer: primary 14 AWG
   - 24 Vac Input Power: 14 to 18 AWG
   - DO: AI: 18 to 20 AWG
   - DI: 18 AWG
   - LAN: 20 to 24 AWG
   - RST: 24 AWG

All circuits are power limited; FLN is RS-485, RTS is RS-232. Digital Inputs (DI) are dry contacts.

See the following documents for more information on configuring smoke control applications:

- *Smoke Control Systems Application and Engineering Manual (*125-1806)
- *Smoke Control System Application Guide (*125-1816)
- *NFPA and UL Standards Relevant to Smoke Control System Application Guide (*125-1817)

NOTE:
The 24 Vac relay module is not applicable for smoke control application.

Wiring Diagram

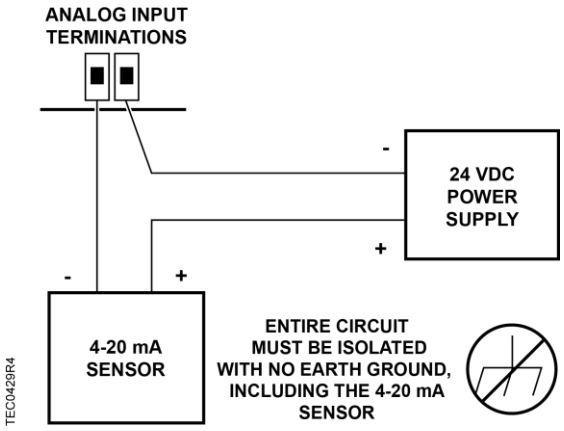
NOTE:
The controller's DOs control 24 Vac loads only. The maximum rating is 12 VA for each DO. An external interposing relay is required for any of the following:

• VA requirements higher than the maximum

• 110 or 220 Vac requirements

• DC power requirements

• Separate transformers used to power the load
(for example part number 540-147, Terminal Equipment Controller Relay Module)



Wiring for AI with a 4 to 20 mA Sensor.

⚠ CAUTION

Each 4-20 mA sensor requires a SEPARATE dedicated power limited 24 VDC power supply.

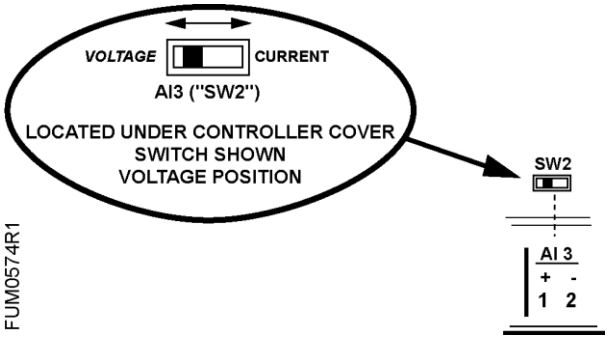
DO NOT use the same transformer to power both the sensor and the controller.

⚠ ATTENTION

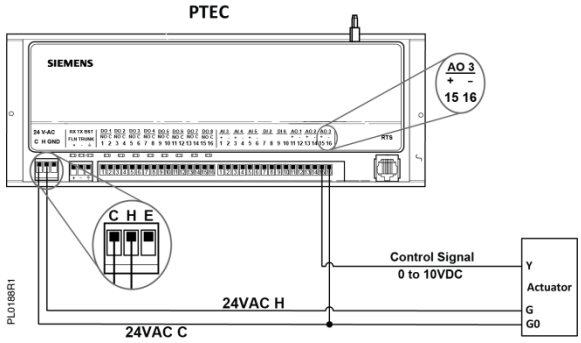
Chaque capteur 4-20 mA nécessite un source d'alimentation SÉPARÉE limitée à 24 VDC.

NE PAS utiliser le même transformateur pour alimenter le capteur et le contrôleur.

NOTE:
If the voltage/current switch is set to current and a 4 to 20 mA sensor is connected to an AI, then special wiring requirements must be followed.

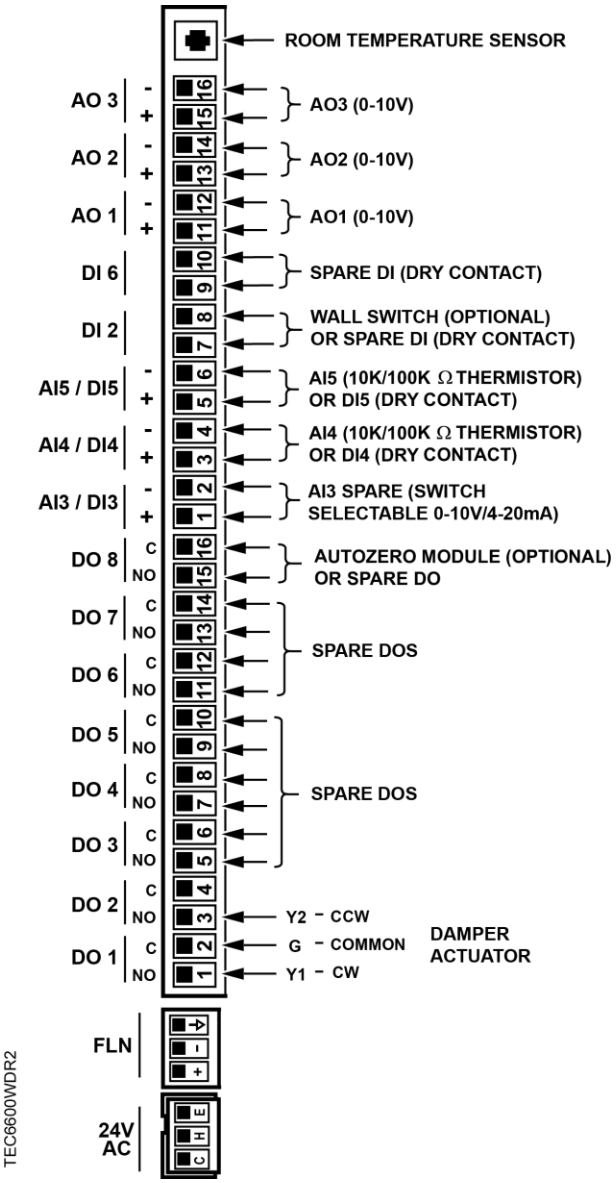


NOTE:
When wiring any actuator that uses a 0 to 10V control signal and ties AC neutral to DC common, an additional wire **must** connect the actuator AC neutral to the DC common of the PTEC/TEC AO being used to control the actuator.

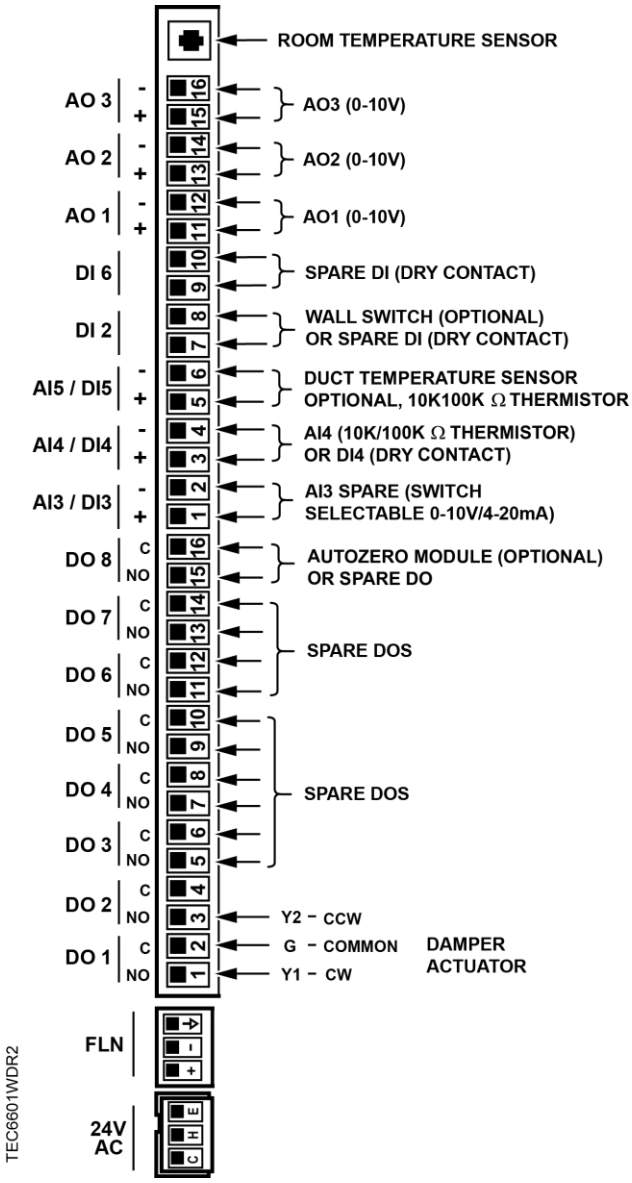


24 Vac Modulating Control.

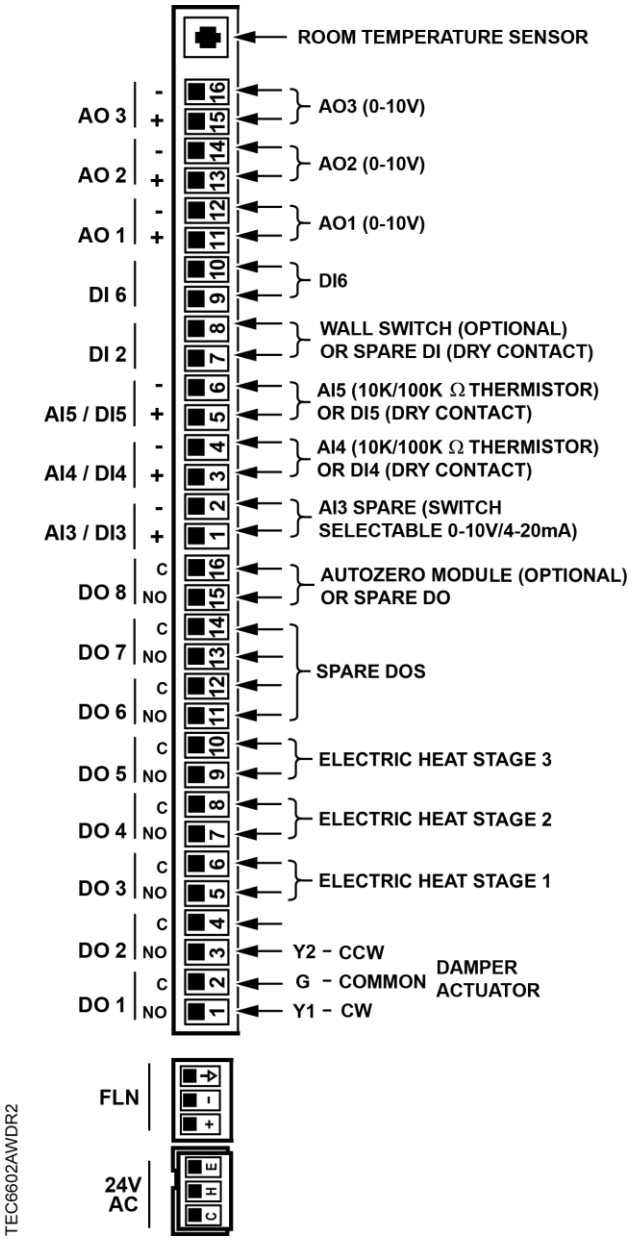
Actuator Symbol	TEC Connection	Function	Terminal Connection	Standard Color
1	H	Supply (SP)	G	Red
2	C	Neutral (SN)	G0	Black
8	AO3 – 15 (+)	0 to 10V input signal	Y	Gray
--	C to AO3 16 (-)	Common jumper	--	--



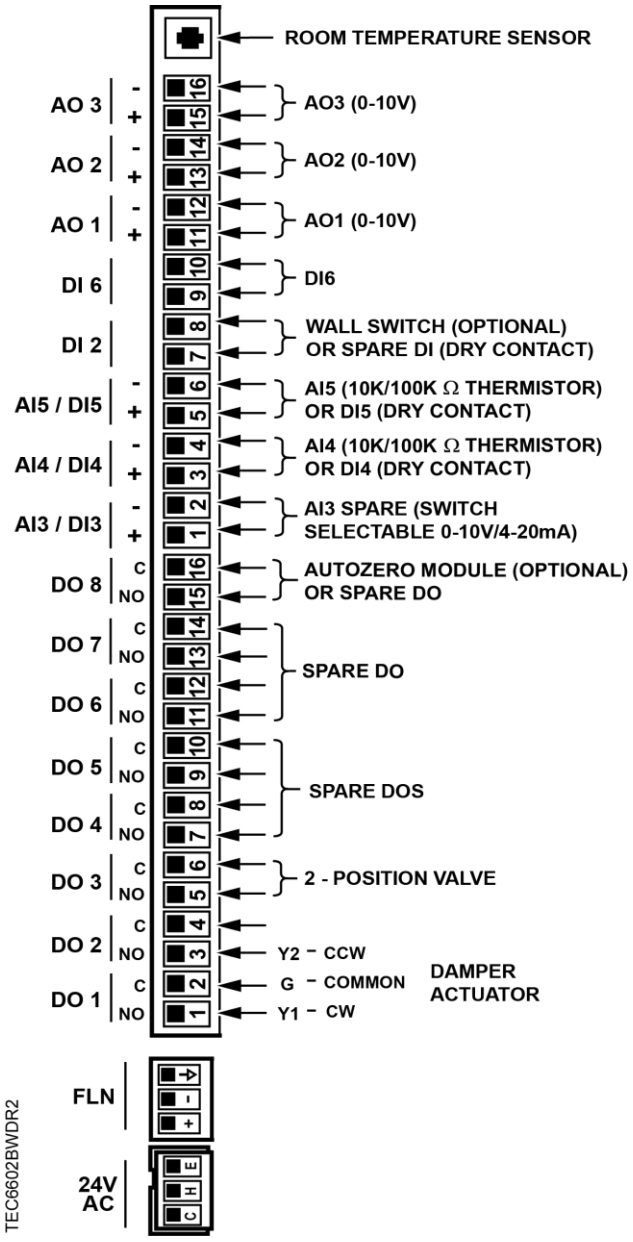
Application 6600 – Variable Air Volume Cooling Only.



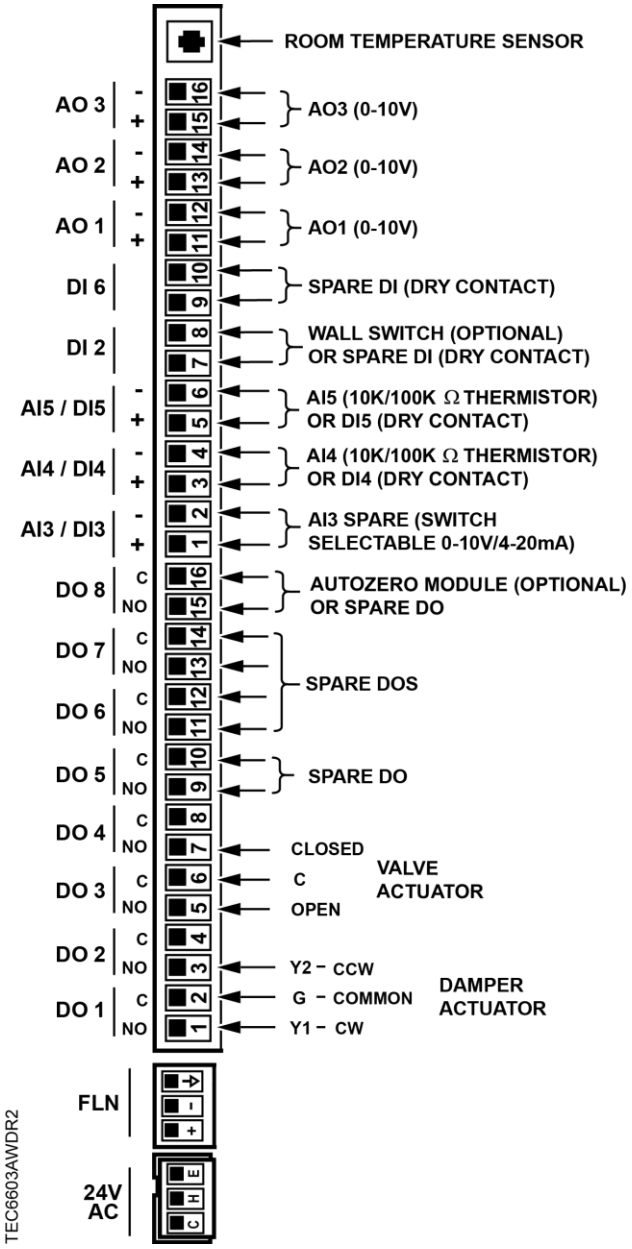
Application 6601 – Variable Air Volume Cooling or Heating.



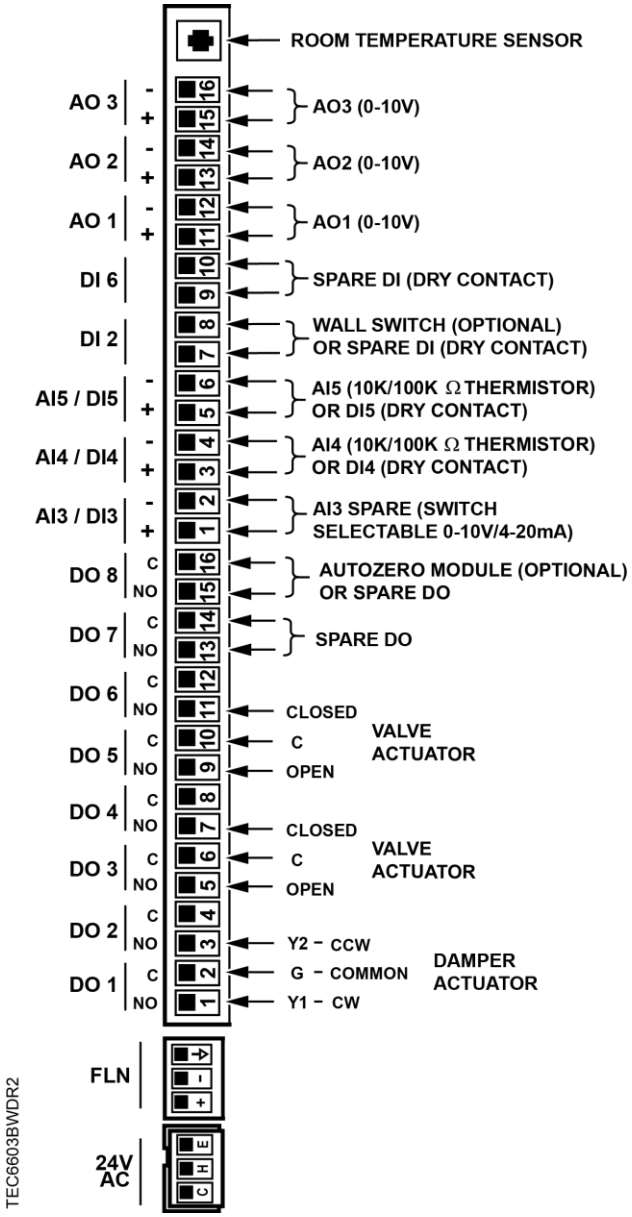
Application 6602 – Variable Air Volume with 3-Stage Electric Heat.



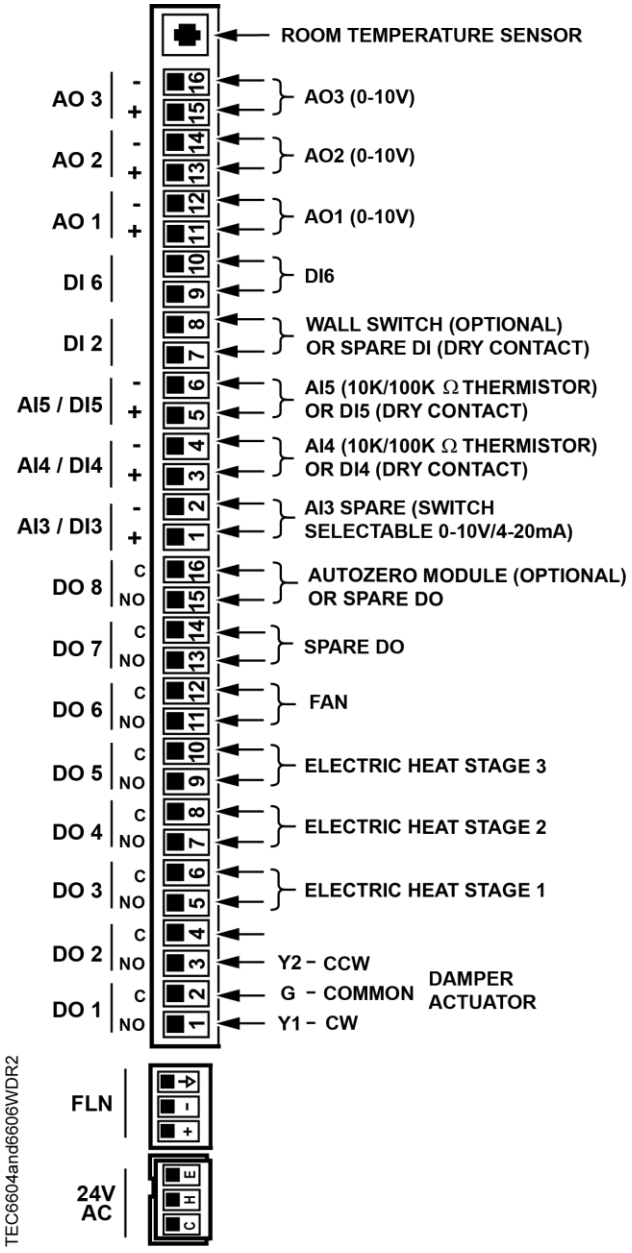
Application 6602 – Variable Air Volume with Baseboard Radiation.



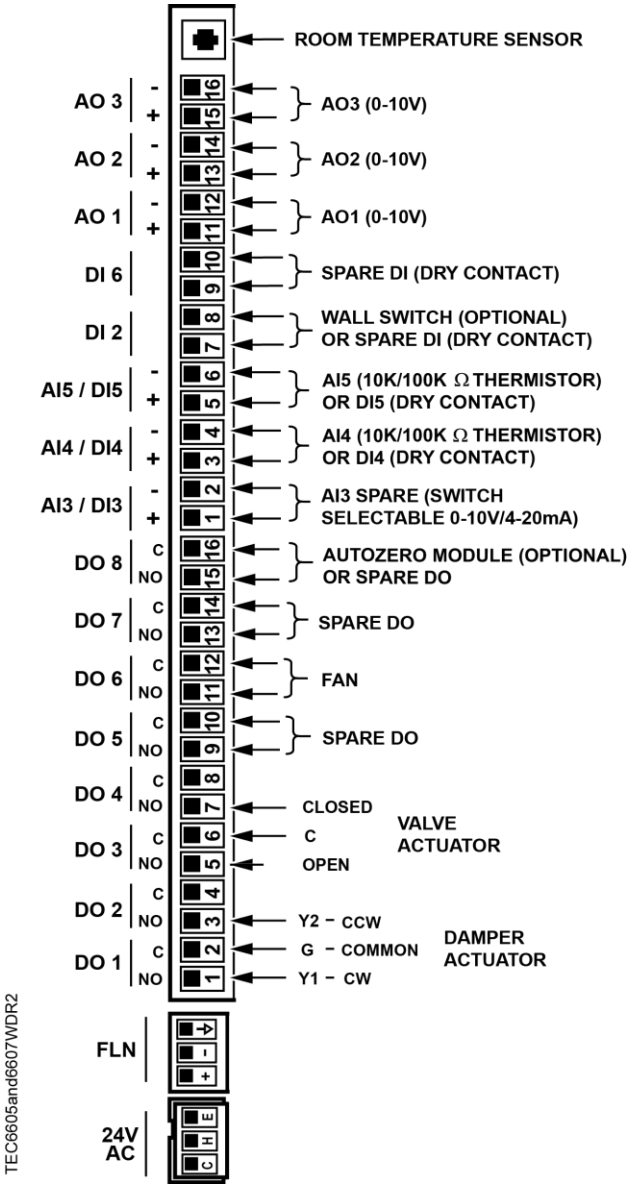
Application 6603 – Variable Air Volume with Hot Water Heat.



Application 6603 – Variable Air Volume with Hot Water Heat and 3 Motors.



Application 6604 and Application 6606 – Variable Air Volume with Series or Parallel Fan and 3-Stage Electric Heat.



Application 6605 and Application 6607 – Variable Air Volume with Series or Parallel Fan and Hot Water Heat.

Cyber security disclaimer

Products, solutions and services from Siemens include security functions to ensure the secure operation of building automation and control, fire safety, security management, and physical security systems. The security functions on these products, solutions and services are important components of a comprehensive security concept.

Drafting, implementing and managing a comprehensive and up-to-date security concept, customized to individual needs, is nevertheless necessary, and may result in additional plant- or site-specific preventive measures to ensure secure operation of your site regarding building automation and control, fire safety, security management, and physical security. These measures may include, for example, separating networks, physically protecting system components, user training, multi-level defensive measures, etc. For additional information on security as part of building technology and our product, solution and service offerings, please contact your Siemens sales representative or project department. We strongly recommend to always comply with our security advisories on the latest security threats, patches and other related measures. http://www.siemens.com/cert/en/cert-security-advisories.htm

Siemens Industry, Inc.
Building Technologies Division
1000 Deerfield Parkway
Buffalo Grove, IL 60089-4513
USA
Tel. 1 + 847-215-1000

Your feedback is important to us. If you have comments about this document, please send them to SBT_technical.editor.us.sbt@siemens.com.