SIEMENS



**Technical Specification Sheet**
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# Siemens TEC Dual Duct Two Air Velocity Sensors Controller


The Siemens TEC Dual Duct Controller - Two Air Velocity Sensors controller provides high performance Direct Digital Control (DDC) technology for room temperature control in Dual Duct Variable Air Volume (VAV) systems or air volume setpoints and room temperature control in Constant Volume (CV) systems. The DDC and related components provide a totally electronic control system. The DDC can operate independently, stand-alone or networked to perform complex HVAC control, monitoring and energy management functions. This controller is designed to reside on any Siemens Building Technologies control system.

## Features

- Advanced PID algorithm for the temperature control loops is employed to provide stability and to reduce unnecessary changes in the Flow setpoint when the room temperature is at or near the room temperature setpoint.
- Unique control algorithms for specific applications.
- Plenum rated controller.
- Setpoints and control parameters assigned and changed locally or remotely.
- Setpoints and control parameters stored in Electrically Erasable Programmable Read Only Memory (EEPROM)—no battery backup required.
- Returns from power failure without operator intervention.
- No calibration required, thereby reducing maintenance costs.
- Reports airflow in cfm (lps).
- Meets low duct static pressure requirements.
- Separate minimum and maximum air volume setting for heating and cooling modes.
- Separate air volume setpoints for occupied and unoccupied modes (CV Applications only).

## Applications

- Two Inlet Sensors with Optional Reheat (Application 2237)
- One Inlet and One Outlet Sensor with Optional Reheat (Application 2238)
- Variable Air Volume – Two Inlet Sensors with Optional Reheat (Application 2267)
- Variable Air Volume – One Inlet and One Outlet Sensor with Optional Reheat (Application 2268)
- Variable Air Volume with Changeover (Application 2269)

Control algorithms are preprogrammed. The controller is ready to operate after selecting the application. If

desired, the operator may adjust the air volume setpoints in cfm (lps), room temperature setpoints and other parameters. The controller is designed for operation and modification without vendor assistance.

# Hardware

## Controller Board

The Siemens TEC Dual Duct Controller - Two Air Velocity Sensors consists of an electronic controller assembly and on-board differential pressure transducer(s).

This controller provides all wiring terminations for system and local communication and power. The cable from the room sensor (purchased separately) connects to an RJ-11 jack on the controller. All other connections are removable terminal blocks. The controller assembly is mounted on a plastic track that mounts directly on the terminal box. An optional enclosure (P/N 550-002) protects the controller assembly.

Autozero Modules are available for mounting on the controller for those applications where uninterrupted airflow is necessary. A Pneumatic Transducer provides control of pneumatic damper and valve actuators.

The controller interfaces with the following external devices:

- Averaging air velocity sensors provided by VAV terminal unit manufacturers
- Floating control valve and damper actuators
- Temperature sensors (room, duct, immersion, and outside air)
- Service and commissioning tools
- Digital input devices (dry contacts from motion sensors, alarm contacts)
- Digital output devices (fan, stages of electric heat)

## Room Sensor

The room sensor connection to the controller board consists of a quick-connect RJ-11 jack. This streamlines installation and reduces controller start-up time.

# Specifications

| | |
|---|---|
| Dimensions | 4-1/8" W × 11-1/4" L × 1-1/2" H |
| Weight | approx. 3 lbs (1.35 kg) |
| Controlled Temperature Accuracy, Heating or Cooling | ±1.5°F (0.9°C) |

| **Power Requirements** | |
|---|---|
| Operating Range | 18 to 28 Vac, 50 or 60 Hz |
| Power Consumption | 4.4 VA (plus 12 VA per DO) |

| **Inputs** | |
|---|---|
| Analog | 1 room temperature sensor<br>2 velocity sensors<br>1 setpoint (optional)<br>1 auxiliary temperature sensor<br>2 selectable 0-10 Vdc/4-20 mA |
| Digital | 3 dry contacts |

| **Outputs** | |
|---|---|
| Analog | 3 0-10 Vdc, 5mA maximum |
| Digital | 8 DO 24 Vac optically isolated solid state switches @ 0.5 amp |

| **Communications** | |
|---|---|
| Remote | 9600 bps to 76800 bps LAN Trunk |
| Local | WCIS |

| **Ambient Conditions** | |
|---|---|
| Shipping & Storage Temperature | -13°F to 158°F (-25°C to 70°C) |
| Operating Temperature | 32°F to 122°F (0°C to 50°C) |
| Humidity Range | 5 to 95% rh (non-condensing) |

| **Agency Listings** | |
|---|---|
| UL Listing | UL 916, PAZX |
| cUL Listed | Canadian Standards C22.2 No. 205-M1983, PAZX7 |
| FCC Compliance | 47 CFR Part 15, Class A |

# Differential Pressure Sensor

The differential pressure sensor is easily connected to the box's air-velocity sensing elements to provide measurement of the differential pressure. The measured value is converted to actual airflow in cfm (lps) by the controller.

### Differential Pressure Sensor Specifications

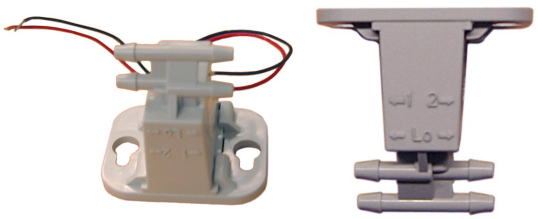
| | |
|---|---|
| Temperature Range | 32°F to 122°F (0°C to 50°C) |
| Measurement Range | 0 to 5200 fpm (0 to 26 m/s) |

# Autozero Module

The optional Autozero Module (see Figure *Autozero Module*) is required when continuous operation at occupied flow is required for an area. The Autozero Module is connected to the air velocity inlet ports of the controller and provides periodic recalibration of the air velocity transducer without changing air volume being delivered to a room. This recalibration ensures long-term precise airflow delivery.

### Autozero Module Specifications

| | |
|---|---|
| Power Consumption | .75 VA @ 24 Vac max. |
| Dimensions | 2" W x 1.51" H x 1.89" D<br>(58 mm x 78 mm x 29 mm) |
| Weight | 1.3 oz. (36.9 g) |



**Autozero Module.**

# Product Ordering Information

| Description | Product Part Number |
|---|---|
| Siemens TEC Dual Duct Controller - Two Air Velocity Sensors | 540-506N |
| Large enclosure for electronic controller without damper actuator (long board). | 550-002 |

# Document Information

| Technical Specification Sheets/Technical Instructions | Document Part Number |
|---|---|
| Room Temperature Sensors – Series 2200 | 149-820 |
| Room Temperature Sensors – Series 2000 | 149-321 |
| Duct Temperature Sensor | 149-134P25 |
| Low Limit Detection Thermostat | 155-016P25 |
| Analog Sensors – 100 K Ohm Thermistor | 149-708 |
| **Siemens Valves** | **Document Part Number** |
| 599 Series Zone Valves 2-Way, 3-Way Zone Valve Electric and Thermic Actuators | 154-034 |
| 599 Series Zone Valves and Actuators – Modulating, On/Off Spring Return, 2-Position Control | 154-063 |
| **Siemens Electronic Actuators** | **Document Part Number** |
| OpenAir Electronic Damper Actuators, GDE/GLB Series Non-spring Return Rotary 24 Vac – Modulating Control 0 to 10 Vdc | 155-187P25 |
| OpenAir Electronic Damper Actuators, GDE/GLB Series Non-spring Return, 24 Vac Floating Control, Rotary | 155-188P25 |
| OpenAir GEB Series Non-spring Return, 24 Vac, 132 lb-in Rotary Electronic Damper Actuators | 155-318P25 |