

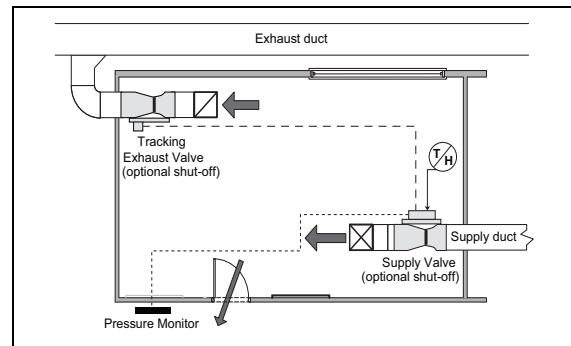
Phoenix Controls venturi valves with Traccel<sup>®</sup> BACnet valve controllers are designed for ventilation requirements in life science lab facilities where ventilation zone control, energy savings, and reducing maintenance costs are important to operations.

These valve controllers provide a safe, comfortable working environment for research in a single standalone lab or an entire research complex. Flexibility, airflow turndown, and added configuration options make it an ideal solution for modular mixed-use facilities.

Life science research spaces designed with an open lab and fume hood alcoves require a unique ventilation control solution. As airflow or pressurization requirements change, the impact on adjacent spaces (work areas, offices, common corridors) directly contributes to the balance of the entire lab. Traccel controllers are a cost-effective platform for ventilation control applications in these adjacent spaces using BACnet<sup>®</sup> MS/TP Communication Protocol for the desired research space control strategy.

## PRODUCT MODELS

MODEL	DESCRIPTION
<b>Traccel TP</b>	Traccel-TP features tracking valve pairs that maintain a prescribed CFM offset enabling accurate space pressurization and complete room climate control.
<b>Traccel TX</b>	For tracking pair applications that require some additional features like humidity control and shut-off capabilities.
<b>Traccel TX-EXH</b>	With many of the standard TX tracking pair features, TX-EXH also provides the ability to locally control an additional exhaust valve without an additional controller (3 valves - 1 controller) - an ideal solution for spaces that have an additional BSC or 2-state hood.
<b>Traccel TX-RTN</b>	Similar feature set to the TX-EXH. The TX-RTN provides the ability to add an optional return valve (Ratio Metric) without an additional controller (3 valves - 1 controller). This is also an ideal Pandemic Mode control.
<b>Traccel SO</b>	In VAV applications where ducted exhaust is sufficient to meet local codes and engineering guidelines, Traccel SO provides a cost-effective main valve when no tracking valve is required.
<b>Traccel EO</b>	Traccel EO provides an additional exhaust valve with controller to allow 2-state LED control from a switch (Min or Max flow limits), shut-off, and alarming for a 2-state hood, snorkel, or Bio Safety Cabinet.
<b>Programmable</b>	Programmable TSV (standalone or controlling) or TEV (standalone only) valve.



Traccel-TX controllers can maintain a positive, negative, or neutral directional airflow with variable air volume (VAV), temperature, and humidity control.

## System Benefits

- Factory characterization reduces commissioning time.
- Pressure-independent valves avoid rebalancing costs.
- No flow sensors to maintain.
- High turndown ratios to help reduce energy costs.
- Flexibility to handle space configuration changes.
- B-ASC level device.

### OSHPD Certified\*

This device is certified for OSHPD Seismic Certification Preapproval per 2013 CBC, 2012 IBC, ASCE 7-10, and IEC-ES-AC-156. OSHPD Special Certification number OSP-0290-10.

### NVLAP Accreditation

All venturi valves are characterized on NVLAP Accredited Airstations, Lab Code 200992-0. NVLAP is administered by the National Institute of Standards and Technology (NIST).

### ISO

Phoenix Controls Designs, Develops, Manufactures, and sells products, systems, and service to control the environment and airflow of critical spaces. Phoenix Controls is registered to ISO 9001:2015.

### Warranty

Phoenix Controls Warrants all venturi valves against defects in material and workmanship for a period of 5 years. In addition, all other equipment manufactured by Phoenix Controls, such as sash sensors, fume hood displays, and equipment supplied but not manufactured by Phoenix Controls is covered by a 3 year warranty.

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## SPECIFICATIONS

### Construction: A and S valve designs

- 16 ga. spun aluminum valve body with continuous welded seam
- Valve bodies available as uncoated aluminum or with corrosion-resistant baked phenolic coatings
- Shaft bearings are polypropylene (Class A, B, and C) or PTFE Teflon (Class D)
- Spring grade stainless steel spring and PPS slider assembly
- Supply valves insulated with 3/8"(9.5 mm) flexible closed-cell polymer-based foam; flame/smoke rating 25/50; density is 1.5 lb/ft<sup>3</sup> (24.0 kg/m<sup>3</sup>)

### Construction: Low-leakage L valve designs

(Same as above with the following added)

- Cone gasket material:
  - Class A: Viton
  - Class B: Viton
- Seal wheel material: Polypropylene

### Operating Range

- 0-158 °F (-17-70 °C) ambient
- 0-95% non-condensing RH

### Performance

- Pressure independent over a 0.3"-3.0" WC (74-747 Pa) drop across valve.
- Volume control accurate to ±5% of airflow command signal.
- No additional straight duct runs needed before or after valve.
- Available in flows from 35-10,000 CFM (59-16,990 m<sup>3</sup>/hr).
- Response time to change in command signal:
  - Standard (Design A)
    - < 40 seconds: Control Type L
    - < 1 minute: Control Type H (with 60 Hz power) and I (except dual 14")
    - <= 2 minutes: Control Type I on dual 14"
  - Shut-off (Designs S and L)
    - < 50 seconds: Control Type L
    - < 1.5 minute: Control Type H (with 60 Hz power) and I (except dual 14")
    - <= 2.5 minutes: Control Type I on dual 14"
- Response time to change in duct static pressure: <1 second.

### Power

- 24 Vac (±15%)
- Binary output loads:
  - TP, TX, TX-EXH, TX-RTN, Programmable: 100 VA max
  - SO, EO: 80 VA max
- Power consumption (singles and duals)
  - SO, EO (one controller/one actuator): 10 VA
  - TP, TX (one controller/two actuators): 12 VA
  - TX-EXH, TX-RTN (one controller/three actuators): 15 VA
  - Programmable: Same as above based on quantity of actuators

### Notes:

1. All power consumption VA ratings listed here are based on fully-loaded I/O except for floating point reheat actuators.
2. VA ratings for floating point reheat actuators must be factored in separately.

### Sound

Designed for low sound power levels to meet or exceed ASHRAE noise guidelines.

### Temperature/Humidity/CO<sub>2</sub> Sensor Inputs

- Space Temperature Sensors
  - 10K, Type 2 Thermistor (AI1 input, pin 3)
- Space Humidity Sensors
  - Humidity Sensor (Multi-Use Input, 0-5VDC, 2-10VDC, 0-10VDC, 4-20mA)
- Space CO<sub>2</sub> Sensors
  - Any Multi-Use Input, 0-5VDC, 2-10VDC, 0-10VDC, 4-20mA

- Duct Temperature and Humidity Sensors
- Any Multi-Use Input: 0-5VDC, 2-10VDC, 0-10VDC, 4-20mA

### BACnet® Controller Inputs

See Available Inputs and Outputs tables to determine whether I/O is Field Configurable or Factory Configured.

#### SO, EO

- 8 universal inputs with 10-bit resolution
- 5 binary outputs — 24 Vac, 0.5 A
- 3 analog outputs with 8-bit resolution — selectable 0-10 or 2-10 Vdc, or 4-20 mA
- Two 20 Vdc outputs — up to 100 mA of 20 Vdc to power trans devices or other devices

TP, TX, TX-EXH, TX-RTN, Programmable

- 11 universal inputs with 10-bit resolution
- 8 binary outputs - 24 VAC, 0.5 A
- 8 analog outputs with 8-bit resolution — selectable 0-10 or 2-10 Vdc, or 4-20 mA
- Three 20 Vdc outputs — up to 100 mA of 20 Vdc to power trans devices or other devices

### Input Accuracy

Voltage, current, resistance: ±1% full scale

### Output Accuracy

- 0 to 10 Vdc: ±1% full scale into 10 KΩ minimum
- 4 to 20 mA: ±1% full scale into 500 Ω +0/-50 Ω

### Full Span Travel Time

- Standard (Design = A) valves
  - Control Type L: 40 seconds @ 50 or 60 Hz
  - Control Type H: 60 seconds @ 60 Hz; 70 seconds @ 50 Hz; Single 8, 10, and 12" only
  - Control Type I:
    - 60 seconds @ 50 or 60 Hz; All singles and 10 and 12" duals
    - 120 seconds @ 50 or 60 Hz; 14" duals
- Shut-off (Design = S or L) valves
  - Control Type L: 50 seconds @ 50 or 60 Hz
  - Control Type H: 90 seconds @ 60 Hz; 110 seconds @ 50 Hz; Single 8, 10, and 12"
  - Control Type I:
    - 90 seconds @ 50 or 60 Hz; All singles and 10 and 12" duals
    - 150 seconds @ 50 or 60 Hz; 14" duals

### Interoperability

- B-ASC level device
- BACnet® compliant on MS/TP LAN at up to 76.8 Kbps
- See Protocol Implementation Conformance Statement (PICS)



BACnet® is a registered trademark of ASHRAE

### Compliance



WEEE Directive 2012/19/EC Waste Electrical and Electronic Equipment directive  
At the end of the product life dispose of the packaging and product in a corresponding recycling centre. Do not dispose of the unit with the usual domestic refuse. Do not burn the product.

- RoHS
- FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

- EU Contact Address:  
Pittway Tecnologica Srl  
Via Caboto 19/3  
34147 Trieste TS  
Italy

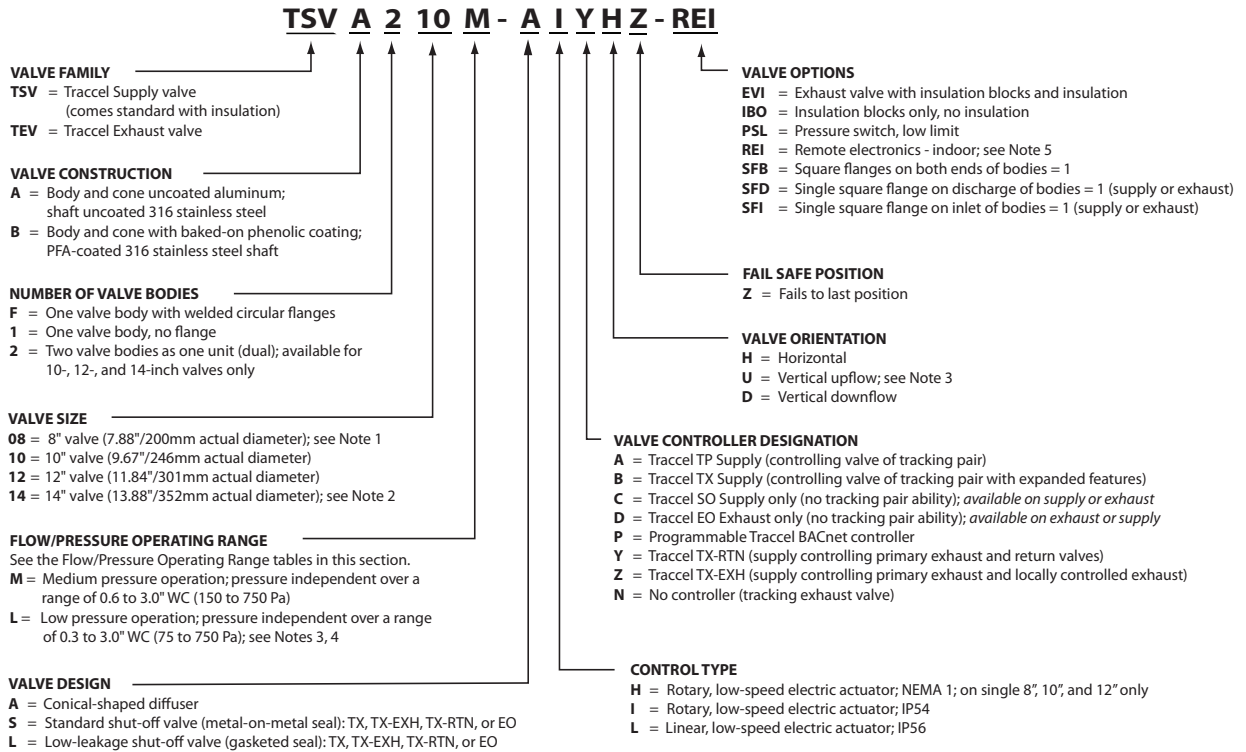
## FEATURES

Feature	Model	Description
Pressure independence	All	CFM airflow maintained regardless of changes in duct static pressure.
No flow sensors	All	Factory flow characterization eliminates the need for flow sensors.
Airflow offset maintained	TP, TX, TX-EXH, TX-RTN	Supply and exhaust CFM offset settings maintain accurate pressurization.
Temperature and occupancy control	TP, TX, TX-EXH, TX-RTN, SO,	Primary and secondary loops. Occupied or Unoccupied. Building Management System (BMS) or local set point input.
HVAC emergency modes	All	Four emergency modes available. Custom setup for each mode.
Multi-Use inputs	TP, TX (4 inputs)  TX-EXH, TX-RTN (2 inputs)	<ul style="list-style-type: none"> <li>• Humidity Sensor (TX, TX-EXH, TX-RTN)</li> <li>• Discharge Air Sensor (All)</li> <li>• Local Offset Selection Switch (All)</li> <li>• Emergency Switch (All)</li> <li>• Additional Flow Input (All)                             <ul style="list-style-type: none"> <li>• Supply Flow Input (All)</li> <li>• Exhaust Flow Input (All)</li> <li>• Exhaust Flow 2 Command (TX-EXH)</li> </ul> </li> <li>• Pressure Monitoring (All)</li> <li>• IAQ Control (TP, TX, TX-EXH)</li> <li>• Local Cooling Override (All)</li> <li>• Local Occupancy Sensor (All)</li> </ul>
	SO (3 inputs) EO (5 inputs)	SO provides 3 Multi-Use Inputs. EO provides 5 Multi-Use Inputs. Multi-Use Inputs are selectable as follows: <ul style="list-style-type: none"> <li>• SO Only IAQ Control, Local Cooling Override, Local Occupancy Sensor</li> <li>• SO and EO Additional Flow Input, Emergency Switch, Discharge Air Sensor, Pressure Sensor</li> <li>• EO Only (Humidity Sensor, 3 Way Switch, Sash Switch)</li> </ul>
Reheat (modulating)	TP, TX, TX-EXH, TX-RTN, SO	
Reheat (floating point)	TP, TX, TX-EXH, TX-RTN, SO	
Auxiliary temperature (modulating)	TP, TX, TX-EXH, TX-RTN	
Auxiliary temperature (two-state)	TP, SO	
Humidity control	TX, TX-EXH, TX-RTN	
Humidity monitoring	All except SO, TP	
Pressure monitoring	All	
Shut off	All except SO, TP	
IAQ Control	TP, TX, TX-EXH, SO	Volumetric IAQ sensor input
Zone Balance Control	TP, TX, TX-EXH, TX-RTN	<ul style="list-style-type: none"> <li>• Supply with tracking exhaust, CV, or additional supply or exhaust (TP, TX).</li> <li>• Supply with tracking exhaust, locally controlled exhaust, CV, or additional supply or exhaust (TX-EXH).</li> <li>• Supply with tracking exhaust, Ratio Metric RTN/Exhaust Control, CV, or additional supply or exhaust (TX-RTN).</li> </ul>
Accommodates 2- or 3-state control switch with binary outputs for status	EO	<ul style="list-style-type: none"> <li>• Nomal Status (Green)</li> <li>• Min Flow Status (Yellow)</li> <li>• Shutoff/Alarm (Red)</li> </ul>
Local Flow Control	EO TX-EXH (Exhaust 2)	Note: Local Cooling Override can be used on supply valves.

TP = Tracking pair VAV  
SO = Supply-only VAV  
EO = Exhaust-only VAV

TX = Enhanced tracking pair VAV  
TX-EXH = 3-valve set, tracking pair with locally controlled exhaust  
TX-RTN = 3-valve set, tracking pair with return valve

# ORDERING GUIDE



**NOTES:**

1. 8-inch Shut-off Valves (Design = S or L) are available ONLY in Construction A (uncoated).
2. 14-inch Valves are currently NOT available as Low Leakage Shut-off (Design = L) with Medium Pressure (Range = M).
3. Low Pressure (Range = L), Standard Shut-off (Design = S) valves are NOT available in Orientation = U (vertical upflow).
4. Low Pressure (Range = L), Low Leakage (Design = L) valves are currently NOT available in any size.
5. Option REI: Remote Electronics, Indoor installations ONLY. The distance to the valve controller is limited to 150 feet (45.7 meters) of 22 gauge cable for low-speed electric actuators (Control Type = H, I, or L).

## ORDERING GUIDE (CONTINUED)

### Flow/Pressure Operating Range Tables

**FLOW/PRESSURE OPERATING RANGE FOR VALVE DESIGN A**

Designation	Size	Operating Range in CFM (m <sup>3</sup> /hr)		Pressure Drop Across Valve
		Single	Dual	
M = Medium pressure	08"	35-700 (60-1185)	—	0.6-3.0" WC (150-750 Pa)
	10"	50-1000 (85-1695)	100-2000 (170-3390)	
	12"	90-1500 (155-2545)	180-3000 (310-5090)	
	14"	200-2500 (340-4245)	400-5000 (680-8490)	
L = Low pressure	08"	35-500 (60-845)	—	0.3-3.0" WC (75-750 Pa)
	10"	50-550 (85-930)	100-1100 (170-1860)	
	12"	90-1050 (155-1780)	180-2100 (310-3560)	
	14"	200-1400 (340-2375)	400-2800 (680-4750)	

**FLOW/PRESSURE OPERATING RANGE FOR SHUT-OFF VALVE DESIGNS S AND L**

Designation	Size	Operating Range in CFM (m <sup>3</sup> /hr)		Pressure Drop Across Valve
		Single	Dual	
M = Medium Pressure	08"	35-600 (60-1015)	—	0.6-3.0" WC (150-750 Pa)
	10"	50-850 (85-1440)	100-1700 (170-2880)	
	12"	90-1300 (155-2205)	180-2600 (310-4410)	
	14"	200-1600 (340-2715)	400-3200 (680-5430)	
L = Low Pressure	08"	35-400 (60-675)	—	0.3-3.0" WC (75-750 Pa)
	10"	50-450 (85-760)	100-900 (170-1520)	
	12"	90-900 (155-1525)	180-1800 (310-3050)	
	14"	200-1000 (340-1695)	400-2000 (680-3390)	