TSP-8003
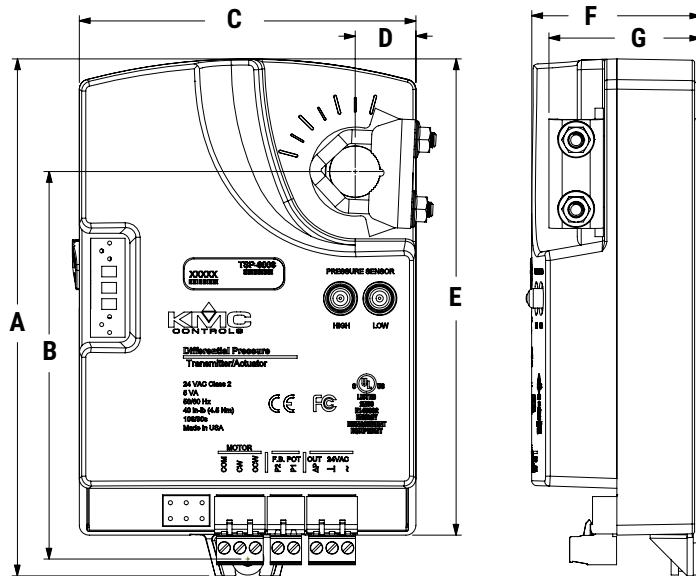## (Dual Duct) Tri-State Actuator with Pressure Sensor

DESCRIPTION

The KMC Conquest™ TSP-8003 is a 40 in-lb. tri-state actuator with an integrated differential air pressure sensor, typically used in Conquest VAV (Variable Air Volume) or CAV (Constant Air Volume) dual-duct applications as a secondary actuator.

The TSP-8003 connects directly to a Conquest BAC-9001 VAV controller-actuator for easy installation. Setup for the TSP-8003 is done through the connected BAC-9001.

With integrated actuator and air pressure sensor, it is ideal for new installations and upgrades of less-efficient equipment. It easily mounts to terminal boxes by securing a "V" clamp on the shaft and securing a single-screw, integrated anti-rotation bracket. A gear disengagement lever makes manual adjustments of damper position easy. Removable screw terminal blocks for power, outputs, and inputs make wiring easy.
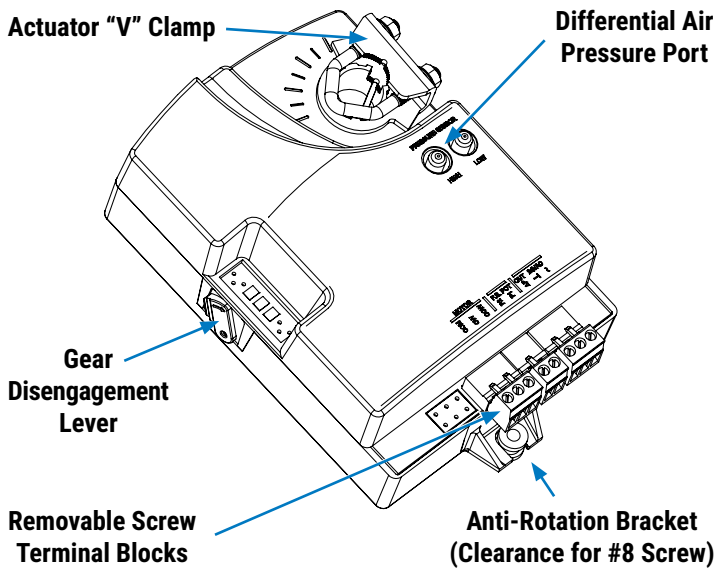
SPECIFICATIONS

	DIMENSIONS	
A	6.531 inches	166 mm
B	4.891 inches	124 mm
C	4.250 inches	108 mm
D	0.766 inches	19 mm
E	6.000 inches	152 mm
F	2.141 inches	54 mm
G	1.917 inches	49 mm

APPLICATIONS

Application options include:

- Dual duct VAV or CAV (see **Sample Installation on page 3**)
- Bypass damper*
- Economizer damper*
- Building pressure control damper*
- Supply/exhaust tracking*

*NOTE: Requires custom programming in the controller.

Actuator "V" Clamp

Differential Air Pressure Port

Gear Disengagement Lever

Removable Screw Terminal Blocks

Anti-Rotation Bracket (Clearance for #8 Screw)

Inputs and Outputs

Inputs on Terminal Blocks

Actuator control	CW/CCW/COM
Wire size	12–24 AWG, copper, in removable screw terminal blocks

Outputs on Terminal Blocks

∆ pressure range	0 to 2" wc (0 to 500 Pa) = 2 to 10 VDC; 8K ohm min. load impedance
Damper position	Position feedback with integrated 10K ohm potentiometer (10K ohms full CW and 0 ohms CCW), 1/3 watt
Wire size	12–24 AWG, copper, in removable screw terminal blocks

Integrated Air Pressure Sensor

∆ pressure range	0 to 2" wc (0 to 500 Pa)
Sensor accuracy	±4.5% of the reading or (when near zero) 0.0008" wc (0.2 Pa), whichever is greater (@ 25° C); internally linearized and temperature compensated
Connections	Barbed for 1/4 inch FR tubing

Integrated Tri-State Actuator

Torque	40 in-lb. (4.5 N•m)
Angular rotation	0 to 95°; adjustable end stops at 45 and 60° rotation
Motor timing	90 sec. for 90° at 60 Hz; 108 sec. for 90° at 50 Hz
Shaft type/size	See **Enclosure and Mounting**
Noise level	<35 db(A) @ 1 meter (3.3 feet)

Installation

Power

Supply voltage	24 VAC (−15%, +20%), 50/60 Hz, Class 2 only; non-supervised (all circuits, including supply voltage, are power limited circuits)
Required power	5 VA

Enclosure and Mounting

Weight	0.83 lb. (0.38 kg)
Case material	Green and black flame retardant plastic
Mounting	Directly mounts on 3/8 to 5/8 inch (9.5 to 16 mm) round or 3/8 to 7/16 inch (9.5 to 11 mm) square damper shafts with 2 inch (51 mm) minimum shaft length

Environmental Limits

Operating	32 to 120° F (0 to 49° C)
Shipping	−40 to 140° F (−40 to 60° C)
Humidity	0 to 95% relative humidity (non-condensing)

Warranty and Approvals

Warranty

KMC Limited Warranty	5 years (from mfg. date code)

Approvals

UL	UL 916 Energy Management Equipment
CE	CE compliant
RoHS 2	RoHS 2 compliant
FCC	FCC Class B, Part 15, Subpart B and complies with Canadian ICES-003 Class B*

*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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

ACCESSORIES

NOTE: For accessory details, see the respective product data sheets and installation guides.

Differential Air Pressure Sensors

SSS-1012	Sensor, 3-5/32 inches (80 mm) length
SSS-1013	Sensor, 5-13/32 in. (137 mm) length
SSS-1014	Sensor, 7-21/32 in. (194 mm) length
SSS-1015	Sensor, 9-29/32 in. (252 mm) length

Miscellaneous Hardware

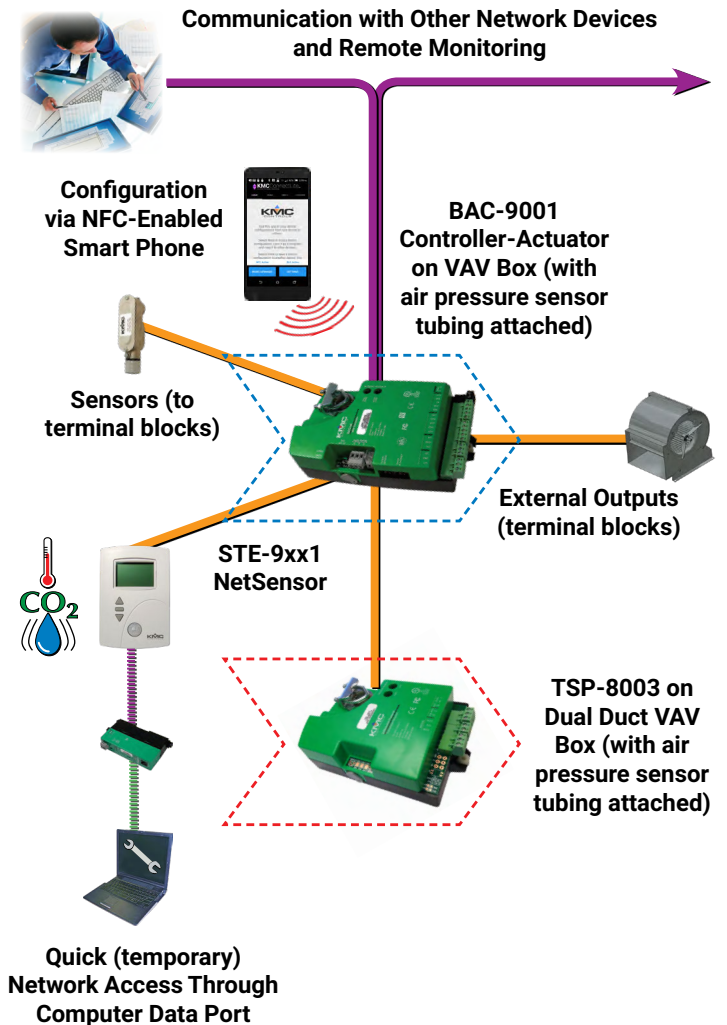|	
HPO-9901	Controller replacement parts kit with terminal blocks (1 gray, 1 black, 2 green 3-terminal, 4 green 4-terminal, 2 green 5-terminal, 2 green 6-terminal) and DIN clips (2 small for router and 1 large for controllers)
SP-001	Screwdriver (KMC branded) with a hex end (for NetSensor cover screws) and a flat blade end (for controller terminals)

Transformers, 120 to 24 VAC

XEE-6111-050	50 VA, single-hub
XEE-6112-050	50 VA, dual-hub

SAMPLE INSTALLATION

Communication with Other Network Devices and Remote Monitoring

Configuration via NFC-Enabled Smart Phone

BAC-9001 Controller-Actuator on VAV Box (with air pressure sensor tubing attached)

Sensors (to terminal blocks)

External Outputs (terminal blocks)

STE-9xx1 NetSensor

TSP-8003 on Dual Duct VAV Box (with air pressure sensor tubing attached)

Quick (temporary) Network Access Through Computer Data Port

For more information about installation and operation, see:

- TSP-8003 Dual Duct Actuator Installation Guide
- KMC Conquest Controller Application Guide

SUPPORT

Additional resources for installation, configuration, application, operation, programming, upgrading, and much more are available on the web at **www.kmccontrols.com**. Log-in to see all available files.