



GAS & SPECIALTY SENSORS

DUCT SMOKE DETECTOR

SM-501 SERIES

DESCRIPTION

The **SM-501 Series Duct Smoke Detectors** provide early detection of smoke and combustion products present in air moving through HVAC ducts. Air sampling is accomplished by intake sampling tubes, which are ordered separately. A standard length exhaust tube is provided with each detector. The SM-501 Series is designed to operate in duct widths from 6" to 10.0' (15 cm to 3.05m) with an air velocity from 500-4000 fpm (2.5-20.3 mps). Complete systems may be shut down in the event of smoke detection.

OPERATION

The **SM-501 Series** will operate on any one of four input voltages: 24 VAC, 24 VDC, 115 VAC, or 230 VAC. It uses either photoelectric or ionization smoke detector heads. Each detector contains two alarm contacts, which transfer in the event of smoke, and one trouble contact, which supervises the presence of input power and removal of the detector head. A manual test/reset switch and visual indicators of pilot and alarm are provided on the front of the detector. Up to 30 **SM-501 Series** units may be wired to use a common test/reset function and to alarm simultaneously when a single unit alarms. If remote signal devices such as horns or strobes are used, up to 15 detectors may be interconnected to operate with a single alarm.



SM-501



CSFM Listed

FEATURES

- **Universal voltage: 24 VAC, 24 VDC, 115 VAC, or 230 VAC**
- **Remote reset, alarm, and indication available**
- **Two alarm contacts and one trouble contact**
- **Interchangeable "plug-in" photoelectric or ionization heads**
- **Compatible with building automation and fire alarm systems**
- **Dust filtering included in detector head**
- **Interconnect up to 15 detectors for common functions**

SPECIFICATIONS

Power requirements 50/60 Hz (without accessories)

24 VAC	@ 35 mA standby, 74 mA alarm
24 VDC	@ 15 mA standby, 56 mA alarm
115 VAC	@ 25 mA standby, 32 mA alarm
230 VAC	@ 12 mA standby, 16 mA alarm

Relay contact rating Alarm

2-SPDT, 10A, 115 VAC,
resistive

Trouble

1-SPDT, 10A, 115 VAC,
resistive

Radioactive element

For SM-501-N only
Americium 241, 0.9 µCi

Air velocity Wiring

500-4000 fpm (2.5-20.3 mps)
Solid or stranded, 12 to 22 AWG
terminals

Agency approvals

UL & cUL listed UL268A; UROX, UROX7, File
#S2829

CSFM listed 3240-1004:108

MEA approved 73-92-E, Vol. 26

Ambient temperature

SM-501-N 32° to 158°F (0° to 70°C)

SM-501-P 32° to 140°F (0° to 60°C)

Humidity

10% to 85% RH noncondensing

Material

18-gauge steel back box,
clear plastic cover (94V-0)

Finish

Gray paint with clear cover

Hardware

7" (17.8 cm) exhaust tube, sampling
tube end cap, template and mount-
ing hardware supplied

Dimensions

9.13"H x 7.25"W x 2.25"D
(23.19 x 18.42 x 5.72 cm)

Weight

4.0 lb (1.8 kg)

Warranty

1 year



MOUNTING

Mount the detector in an air duct using the provided template and four sheet metal screws. Detector must be mounted at least six duct widths from the fan or other sources of turbulence with airflow from 500-4000 fpm (2.5-20.3 mps). The intake sampling tube has holes drilled the entire length of the tube and should extend the entire width of the duct. The holes must be facing into the airflow (see Figure 1 to the right). The exhaust tube is a piece of steel piping approximately 7" long (17.8 cm).

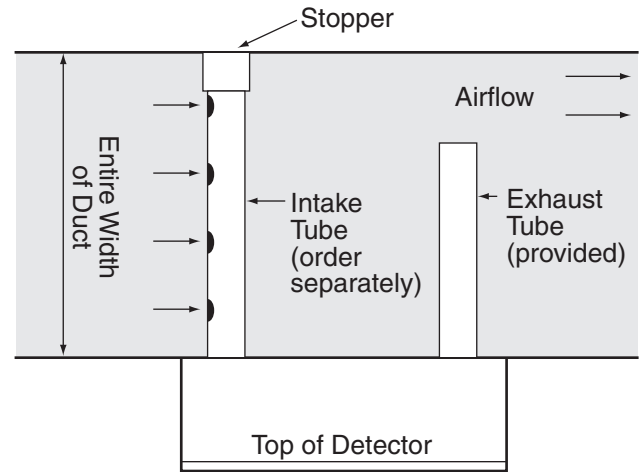
Intake Sampling Tube Lengths

Model	Duct Width
STS-2.5	6.0" to 2.5' (0.15 to 0.7m)
STS-5.0	2.5' to 5.0' (0.7 to 1.5m)
STS-10.0	5.0' to 10.0' (1.5 to 3m)

Installation

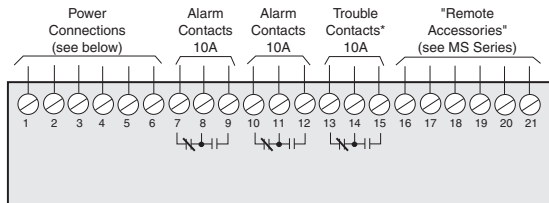
1. Cut the intake sampling tube to the desired length.
2. Firmly insert the stopper (provided with the detector) in the end of the intake sampling tube.
3. Follow instruction sheet provided with each detector.

FIGURE 1. TYPICAL DUCT INSTALLATION



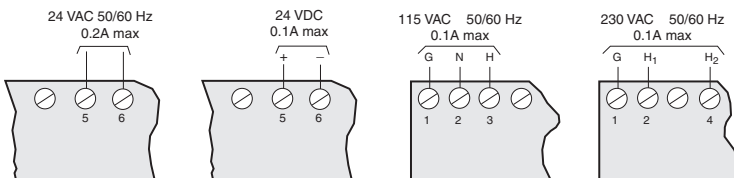
Note: Sampling tubes over 3' (0.9m) must be supported on the opposite side of the duct from the detector.

WIRING



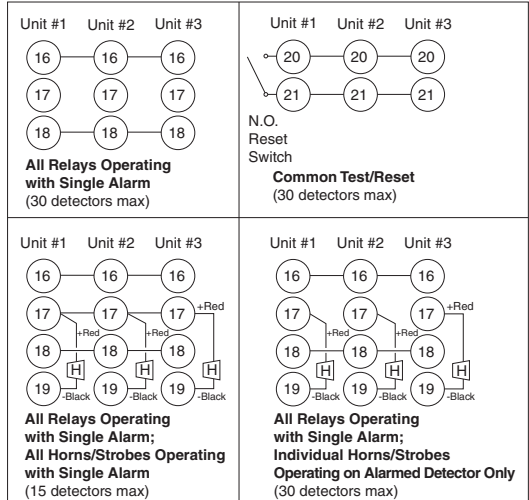
CAUTION: For terminals 7, 8, 9, 10, 11, and 12, do not use looped wire under terminals. Break wire run to provide supervision of connections.

*Trouble contacts are shown in non-energized condition. Under normal operation contacts will be reversed.



Power Connections

INTERCONNECTING WIRING



Note: Use a common independent power supply for all interconnected detectors.

ORDERING INFORMATION

MODEL

SM-501-N
SM-501-P
STS-2.5
STS-5.0
STS-10.0
WP-1
55000-225APO
55000-350APO
TG-1000

DESCRIPTION

Ionization duct smoke detector for 24 VAC, 24 VDC, 115 VAC, 230 VAC
Photoelectric duct smoke detector for 24 VAC, 24 VDC, 115 VAC, 230 VAC
Sampling tube for 6.0" to 2.5' (0.15 to 0.7m) duct widths
Sampling tube for 2.5' to 5.0' (0.7 to 1.5m) duct widths
Sampling tube for 5.0' to 10.0' (1.5 to 3m) duct widths
NEMA type 3R enclosure 12.0" x 12.0" x 4.0" (30.48 x 30.48 x 10.16 cm)
Replacement ionization smoke detector head only
Replacement photoelectric smoke detector head only
Aerosol test gas