Kidde

Technology that saves lives

Two-wire Duct Smoke Detector
SuperDuct Series

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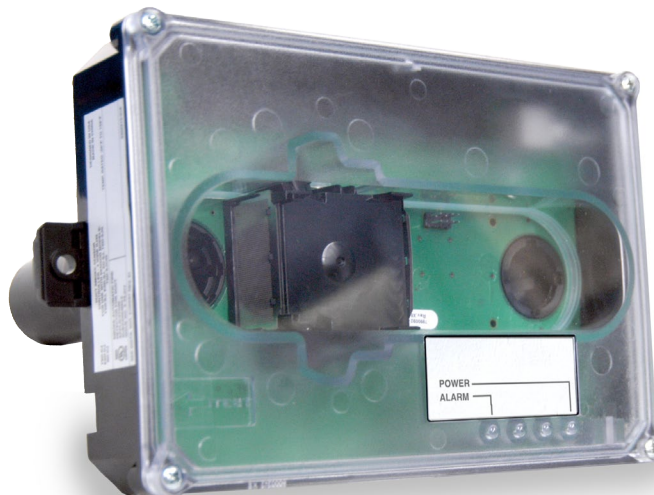
Overview

SuperDuct is slim feature-rich alternative to bulky duct smoke detectors. Designed for easy installation and superb reliability, *SuperDuct* represents the perfect balance of practical design and advanced technology.

SuperDuct **detectors** feature a unique design that speeds installation and simplifies maintenance. Removable dust filters, conformally coated circuit boards, and optional water-resistant gaskets keep contaminants away from components, ensuring years of trouble-free service. When cleaning is required, the assemblies come apart easily and snap back together in seconds.

SuperDuct detectors use differential sensing to prevent gradual environmental changes from triggering false alarms. A rapid change in environmental conditions, such as smoke from a fire, causes the detector to automatically signal an alarm condition but dust and debris accumulated over time does not change alarm sensitivity.

The detector assembly cover provides easy access to the smoke sensor, its wiring connections, sample and exhaust tube fittings, and the smoke chamber itself. Air enters the detector's sensing chamber through a sampling tube (ordered separately) that extends into the duct and is directed back into the ventilation system through an exhaust tube (included). The difference in air pressure between the two tubes pulls the sampled air through the sensing chamber. When a sufficient amount of smoke is detected in the sensing chamber, the detector initiates an alarm.

Standard Features

Smoke Sensor
- PCB mounted photoelectric detector with onboard intelligence
- Environmental compensation with differential sensing for reliable, stable, and drift-free sensitivity
- Wide 0.79% to 2.46% obscuration/ft. smoke sensitivity

Detector assembly
- Less than 2" deep for easy installation and applications where space is tight
- -4°F to 158°F (-20°C to 70°C) operating range with 100 ft/min. to 4,000 ft/min air velocity rating assures reliability under harsh environmental conditions
- Status LEDs remain visible through clear assembly cover
- Cover monitor switch for added security
- Standard sampling tube spacing for easy drop-in migration from other detectors
- Sampling tube can be installed with or without the cover in place and can be rotated in 45-degree increments to ensure proper alignment with duct airflow
- On-board Alarm, Trouble, and Dirty LEDs
- Magnet-activated test switch
- One Form C auxiliary alarm relay for controlling ancillary equipment (e.g., HVAC controls)
- Easy access to field connection terminals

Application

The *SuperDuct* two-wire duct smoke detector is ideally suited to applications where early indication of combustion is required within the confined space of ventilation ductwork. Its primary purpose is to provide early warning of an impending fire and to prevent smoke from circulating throughout the building. It is typically used to detect smoke in the supply side of the HVAC system but can provide supervision of the return side as well.
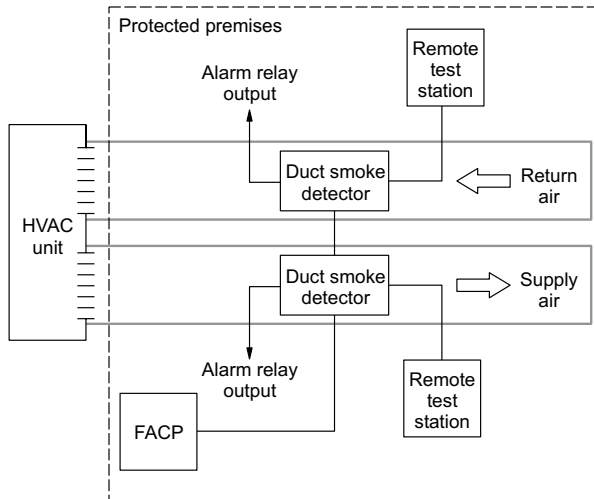
SuperDuct detectors continually sample air flow in the HVAC duct and initiate an alarm condition whenever smoke is detected. An alarm is activated when the quantity (percent obscuration) of combustion products in that air sample exceeds the detector's sensitivity setting.

Air velocity in the duct as low as 100 ft/min. maintains adequate air flow into the sensor smoke chamber through air holes in the air sampling tube and discharges through the exhaust tube. *SuperDuct* air sampling tubes must be installed with the inlet holes facing the airstream. Sampling tubes may be rotated in 45-degree increments so that air-holes can be aligned to allow the unit to be mounted in virtually any angle relative to the airflow.

The sampling tube may be installed from either the duct side of the assembly or from inside the sensor compartment, as preferred by the installer. (The exhaust tube must be installed from the duct side.) Sampling tubes may be rotated in 45-degree increments so that air-holes can be aligned to allow the unit to be mounted at virtually any angle relative to the air flow.

SuperDuct sensors are engineered to operate optimally under the harsh environmental conditions frequently found in HVAC ductwork. Nonetheless, before installing the detector, test the duct air velocity, temperature, and humidity to verify that it is within the operating range of the *SuperDuct* detector. Consult the *SuperDuct* installation sheet for details.
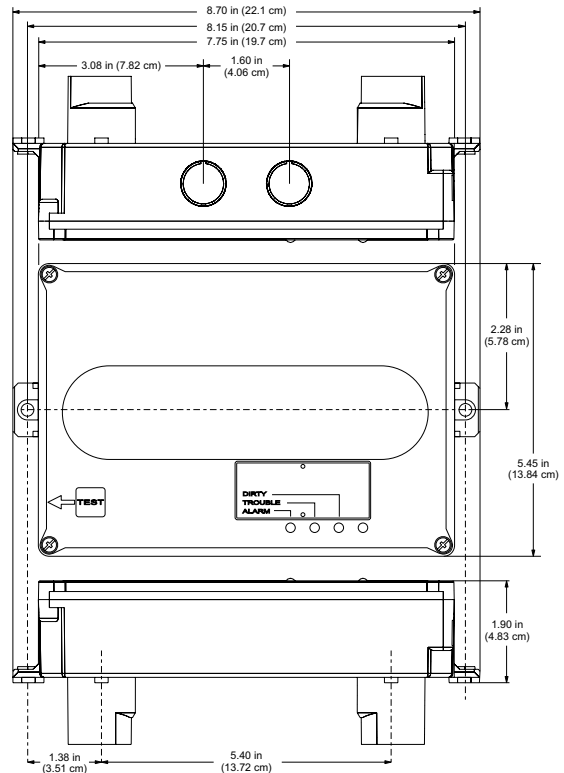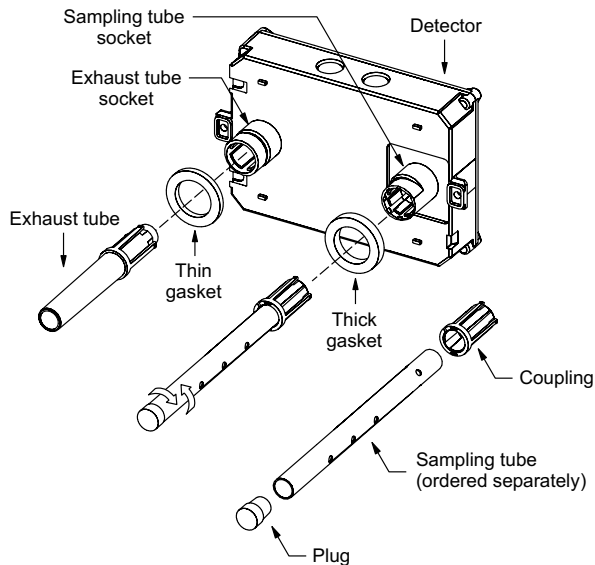
Remote Test, Reset, and Alarm Stations

Labor-saving Remote Test/Reset stations provide alarm testing and indication from the convenience of a remote location. Tests can be performed quickly and safely – without having to climb to the roof. Magnetically-operated and key-operated one-gang models are available. Two-wire SuperDuct detectors are also compatible with EC-LED remote alarm LEDs.

WARNING: Duct detectors have specific limitations. Duct detectors are not a substitute for an open area smoke detector. Duct detectors are not a substitute for early warning detection or a replacement for a building's regular fire detection system. Smoke detectors are not designed to detect toxic gases which can build up to hazardous levels in some fires. These devices will not operate without electrical power. As fires frequently cause power interruptions, Kidde suggests you discuss further safeguards with your local fire protection specialist.
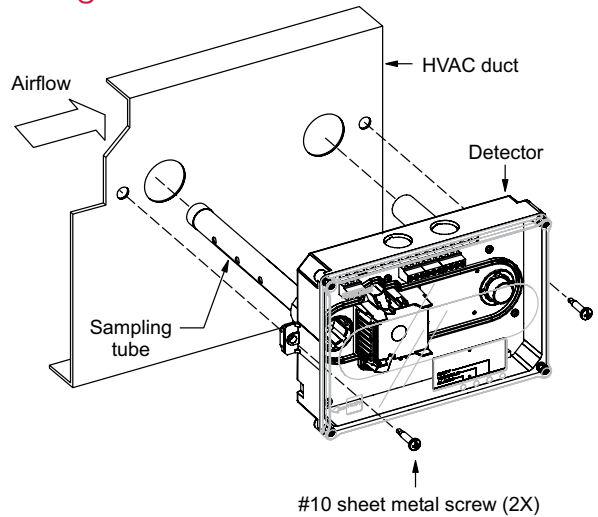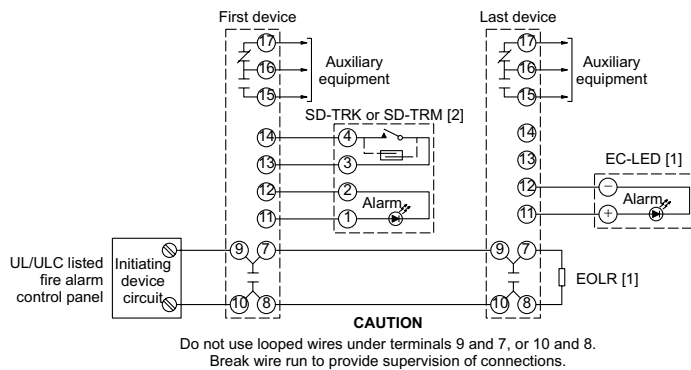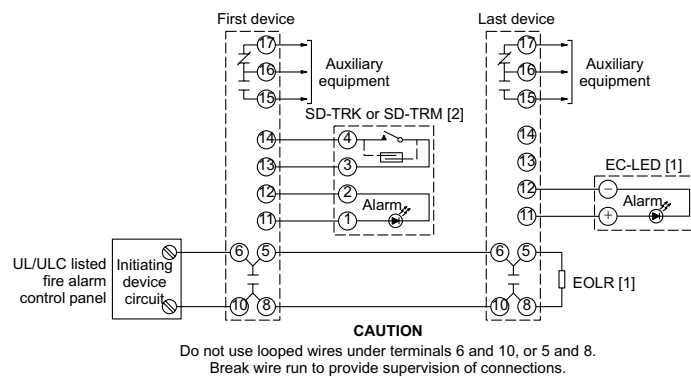
Dimensions

Assembly

- Sampling tube socket
- Exhaust tube socket
- Detector
- Exhaust tube
- Thin gasket
- Thick gasket
- Coupling
- Sampling tube (ordered separately)
- Plug

Mounting

- Airflow
- HVAC duct
- Detector
- Sampling tube
- #10 sheet metal screw (2X)

Wiring

IDC short circuit current ≤ 100 mA (Compatibility 0.0)

First device — Auxiliary equipment (17, 16, 15)
SD-TRK or SD-TRM [2] (14/4, 13/3, 12/2, 11/1) Alarm
Last device — Auxiliary equipment (17, 16, 15)
EC-LED [1] (14, 13, 12/−, 11/+) Alarm
UL/ULC listed fire alarm control panel — Initiating device circuit (9, 7, 10, 8)
EOLR [1] (9, 7, 10, 8)

CAUTION
Do not use looped wires under terminals 9 and 7, or 10 and 8.
Break wire run to provide supervision of connections.

IDC short circuit > 100 mA (Compatibility 1.0)

First device — Auxiliary equipment (17, 16, 15)
SD-TRK or SD-TRM [2] (14/4, 13/3, 12/2, 11/1) Alarm
Last device — Auxiliary equipment (17, 16, 15)
EC-LED [1] (14, 13, 12/−, 11/+) Alarm
UL/ULC listed fire alarm control panel — Initiating device circuit (6, 5, 10, 8)
EOLR [1] (6, 5, 10, 8)

CAUTION
Do not use looped wires under terminals 6 and 10, or 5 and 8.
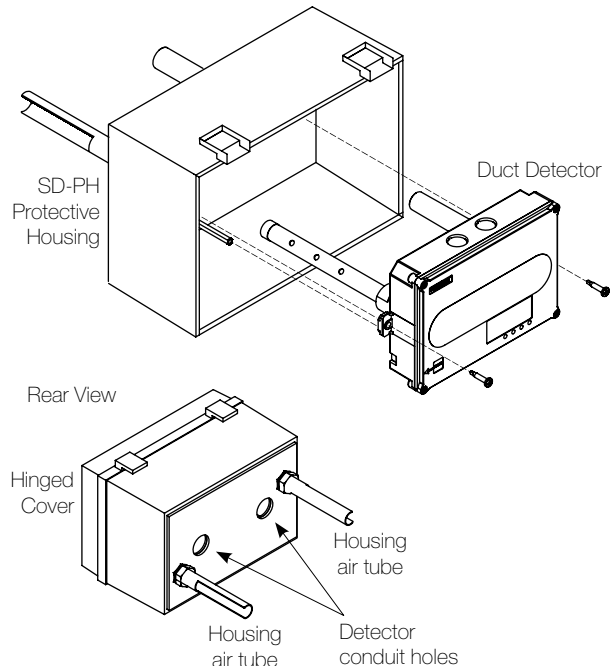Break wire run to provide supervision of connections.

Notes

[1] End-of-line resistor required on last controller only. Value is determined by the fire alarm control panel.

[2] No more than one remote test station can be connected at the same time. Wiring is nonsupervised. Maximum wire resistance is 10 ohms per wire.

(3) Only the first detector to go into alarm operates its alarm relay. Operation of the alarm relay can't be guaranteed if a manual initiating device or other detector on the same circuit is activated.

High-humidity environments

Use the SD-PH Protective Housing when installing SuperDuct detectors in high-humidity environments. The SD-PH is a weatherized housing that prevents condensation on the device by insulating the detectors and providing circulated air from the monitored HVAC duct. The SD-PH also adds a layer of protection against physical damage to the unit.

- SD-PH Protective Housing
- Duct Detector
- Rear View
- Hinged Cover
- Housing air tube
- Housing air tube
- Detector conduit holes

The SD-PH is easy to install and service. The hinged and transparent cover provides ready access to the detector, while keeping its status indicators visible at all times.

Note: The SD-PH Protective Housing is weatherized against outdoor air, but it is not intended for direct outdoor exposure.

Specifications, detector

Dimensions	8.70 x 5.45 x 1.90 inches (221 x 138 x 48 mm)
Wire size	14 to 22 AWG
Detection method	Photoelectric (light scattering principle)
Air velocity rating	100 to 4,000 ft/min and meets the required minimum air pressure differential
Air pressure differential	0.005 to 1.00 inches of water
Sensitivity	0.79 to 2.46 %/ft obscuration
Reset time	1 second, max.
Power up time	30 seconds, max.
Alarm test response time	5 seconds
LED indicators	Alarm (red), Trouble (yellow), Dirty (yellow)
Common alarm relay	Unsupervised and power-limited. Quantity: 1. Type: Form C. Ratings: 2.0 A at 30 Vdc (resistive)
Operating voltage	16 to 30 Vdc
Operating current	Startup: 200 µA. Standby: 70 µA. Alarm: 5 to 100 mA.
Alarm impedance	50 to 750 Ohm
Operating Environment	Temperature (UL): -4 to 158 °F (-29 to 70 °C). Temperature (ULC): -4 to 120 °F (-29 to 49 °C) Relative humidity: 10 to 93%, noncondensing
Humidity	93% RH, noncondensing
Compatibility ID	0.0: IDC short circuit current < 100 mA 0.0: IDC short circuit current = 100 mA 1.0: IDC short circuit current > 100 mA

Specifications, test stations

Remote Test/Reset Stations provide alarm test, trouble indication, and reset capability from a remote location. They include a one-gang plate, momentary SPST switch, red alarm LED, yellow trouble LED, and terminal block. Magnetically-operated models (TRM) or key-operated models (TRK) are available.

Compatible electrical boxes	North American 1-gang box Standard 4-in square box, 1-1/2 inches deep, with 1-gang cover
LED indicators	Alarm (red)
LED type	Clear lens
Wire size	12 to 22 AWG
Resistance per wire	10 Ohms, max.
Current requirements	See detector specifications
LED circuit ratings	Voltage: 3 Vdc, max. Current: 30 mA, max.
Switch ratings (SD-TRK)	Voltage: 125 Vdc, max. Current: 4 A, max.
Switch ratings (SD-TRM)	Voltage: 200 Vdc, max. Current: 0.5 A, max.
Compatible detectors	SuperDuct conventional two-wire and Signature duct smoke detectors
Operating environment	Temperature: 32 to 131 °F (0 to 55 °C) Humidity: 93% RH, noncondensing
Storage temperature	-4 to 140 °F (-20 to 60 °C)

Ordering Information

Catalog Number	Description	Ship Wt. lb. (kg)
SD-2W	Conventional SuperDuct Detector	2.4 (1.1)
Accessories		
SD-T8	8-inch sampling tube	0.5 (0.2)
SD-T18	18-inch sampling tube	1.5 (0.7)
SD-T24	24-inch sampling tube	2.7 (1.2)
SD-T36	36-inch sampling tube	3.0 (1.4)
SD-T42	42-inch sampling tube	3.5 (1.6)
SD-T60	60-inch sampling tube	5.8 (2.6)
SD-T78	78-inch sampling tube	7.5 (3.4)
SD-T120	120-inch sampling tube	11.5 (5.2)
SD-PH	Protective housing for high humidity areas	5.5 (2.5)
SD-TRM	Remote test station, magnetic	1.0 (0.5)
SD-TRK	Remote test station, keyed	1.0 (0.5)
EC-LED	Remote LED indicator	1.0 (0.5)
SD-VTK	Air velocity test kit (stoppers only, etc)	1.0 (0.5)
SD-GSK	Cover gasket kit	0.5 (0.2)
SD-MAG	Test magnet kit	0.5 (0.2)
SD-2WPCB	Replacement PCB, 2-wire sensor kit	1.0 (0.5)