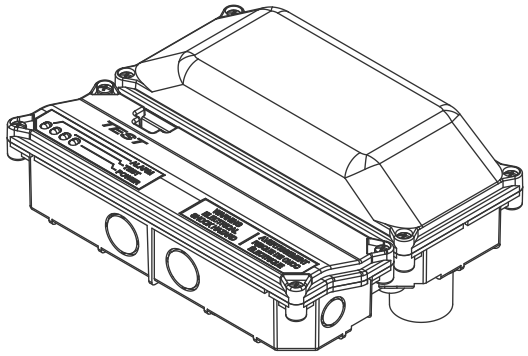
KIR-DDOS Intelligent Duct Smoke Detector Installation Sheet



Description

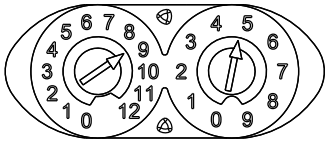
KIR-DDOS Intelligent Duct Smoke Detectors detect the presence of smoke in a building's HVAC system under extended temperature ranges. Their primary purpose is to provide early warning of an impending fire and to prevent smoke from circulating throughout the building.

KIR-DDOS duct smoke detectors consist of an optical tube assembly and an interface board assembly mounted in a single housing, an exhaust tube, and a sampling tube. Sampling tubes are ordered separately.

KIR-DDOS duct smoke detectors provide the following status indicators:

- A green power indicator
- An amber test indicator
- A red alarm indicator

KIR-DDOS duct smoke detectors are manually addressable. The address switches are on the interface board.



To set the address switches, use a small screwdriver to set the TENS rotary switch (0 through 12) for the 10s and 100s digit, and the ONES rotary switch for 0 through 9. For example, for a device address of 21, set the TENS rotary switch to 2 and set the ONES rotary switch to 1.

For information regarding operation, testing, and maintenance refer to *KIR-DDOS Intelligent Duct Smoke Detector Technical Bulletin* (P/N 3102782).

Duct smoke detector limitations

Duct smoke detectors will not operate without electrical power. As fires frequently cause power interruption, discuss further safeguards with the local fire protection specialist.

Duct smoke detectors will not operate as designed outside of the listed electrical and environmental specifications.

Duct smoke detectors will not sense smoke if the ventilation system is not working properly.

Duct smoke detectors are not intended as substitutes for open area protection.

Packing list

KIR-DDOS duct smoke detectors ship with the following hardware:

- An exhaust tube
- A conduit ground plate
- A test magnet
- A sampling tube coupler
- A cap plug for the sampling tube
- Two bug screens
- Two silicone gaskets for the air sampling and exhaust tubes
- Sheet metal mounting screws
- A drill template

Installation

Install this device in accordance with applicable national and local codes, ordinances, and regulations.

Caution: Risk of equipment damage. Using excessive force to tighten screws may damage the product. Tighten screws firmly, but do not overtighten. Do not use power tools to tighten screws.

Notes

- Install the duct smoke detector on a flat section of the HVAC duct between six and ten duct widths from any bends or obstructions.
- Install supply-side duct smoke detectors downstream from the supply fan and after the air filter.
- Install return-side duct smoke detectors before the return air stream is diluted by outside air.
- Sampling tubes must extend at least two-thirds across the width of the air duct. Sampling tubes longer than 36 inches must be supported at both ends.

To install the device:

1. Drill a small hole in the HVAC duct at the point where the duct smoke detector is being installed.

   Using the SD-VTK Air Velocity Test Kit (ordered separately) and a suitable air velocity meter, verify that the air velocity in the HVAC duct falls within the specified operating range of the detector and note which direction the air flows.

   If the air velocity does not fall within the specified range, relocate the duct smoke detector, and then seal the hole in the HVAC duct.
2. Attach the drill template to the HVAC duct, and then drill (or punch) the mounting holes where indicated. Remove any rough edges from the holes.
3. Assemble the duct smoke detector. See Figure 1.

   Rotate the sampling tube so the inlet holes face the direction of airflow.
4. Attach the duct smoke detector to the HVAC duct. See Figure 2.

   Secure the duct smoke detector using two sheet metal mounting screws provided in the hardware kit.

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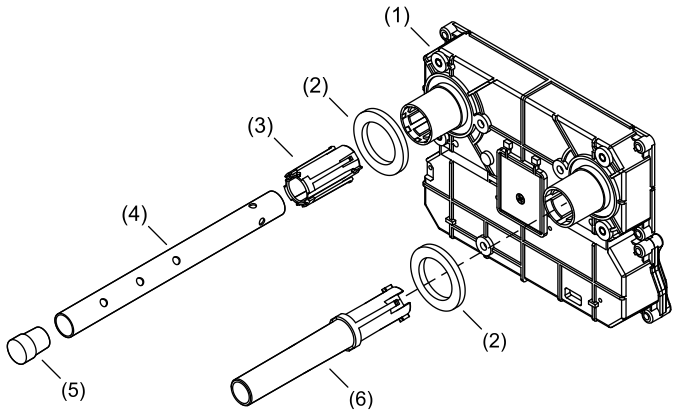
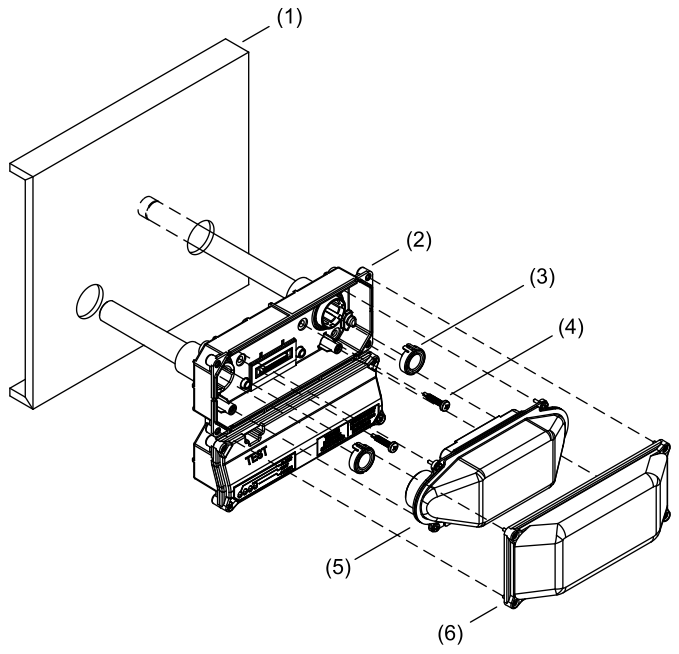
5. Using a suitable air pressure differential meter, verify that the air pressure differential between the sampling tube opening and the exhaust tube opening is within the duct smoke detector's operating specifications. "Specifications" on page 3.
6. Attach the optical tube assembly and optical tube assembly cover. See Figure 2.
7. Set the address switches on the interface board.
8. Wire the duct smoke detector. See "Wiring" below
9. Test for proper operation. See "Testing" on page 3.

Figure 1: Assembly diagram



(1) Duct smoke detector
(2) Gasket (2X)
(3) Sampling tube coupling
(4) Sampling tube (ordered separately)
(5) Cap plug
(6) Exhaust tube

Figure 2: Mounting diagram



(1) HVAC duct
(2) Duct smoke detector
(3) Bug screens (2X) (optional)
(4) Mounting screws (2X)
(5) Optical tube assembly
(6) Optical tube assembly cover

Wiring

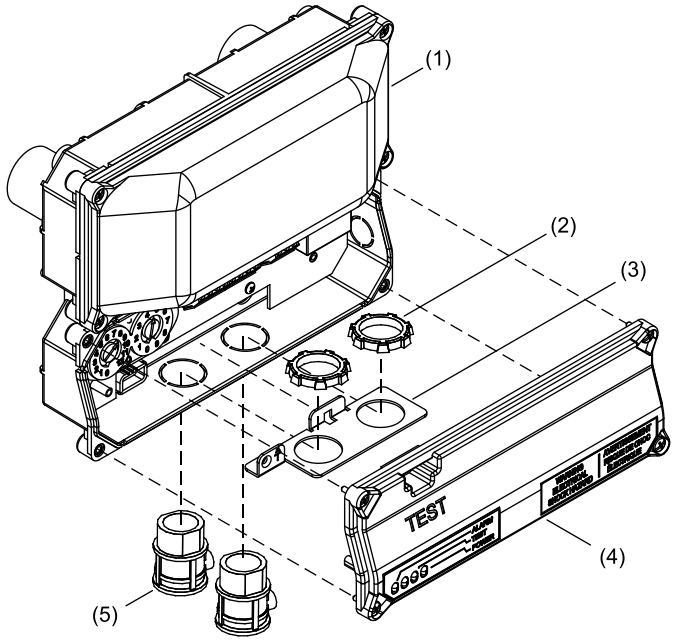
Notes

- Signaling line circuit wiring is power-limited and supervised.
- Accessory module circuit wiring is power-limited and not supervised. Maximum wire resistance is 10 ohms per wire.
- Auxiliary relay circuit wiring is not supervised and power-limited only when connected to a power-limited source.
- Do not connect more than one test station or remote alarm indicator to the duct smoke detector at the same time.
- Always maintain a 1/4-inch separation between power-limited and nonpower-limited wiring.

To wire the duct smoke detector:

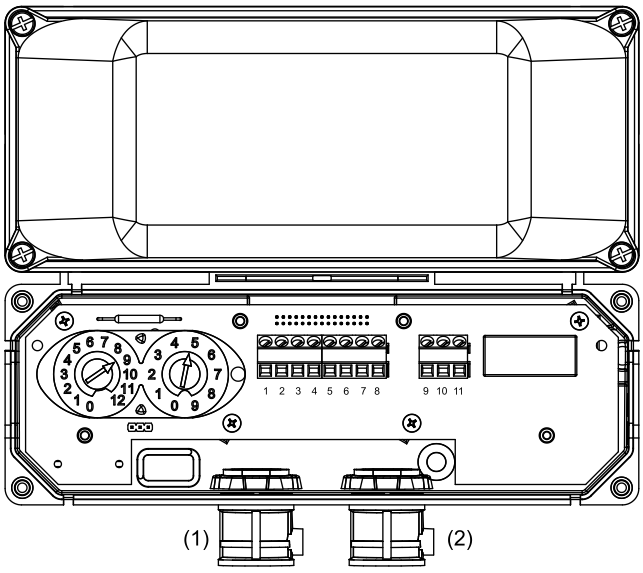
1. Unscrew the four captive screws on the interface board cover, and then remove the cover from the duct smoke detector. See Figure 3.
2. Attach the conduit ground plate and conduit couplings.
3. Bring all field wiring into the detector as shown in Figure 4.
4. Connect field wiring as shown in Figure 5.
5. Using the four captive screws, secure the interface board cover to the duct smoke detector.

Figure 3: Conduit plate installation



(1) Duct smoke detector
(2) Coupling nut (2X, supplied by installer)
(3) Conduit ground plate
(4) Interface board cover
(5) Conduit coupling (2X, supplied by installer)

Figure 4: Field wire openings



(1) Power-limited wiring only
(2) Power-limited or nonpower-limited wiring, but not both

Testing

After completing the installation, test the duct smoke detector to ensure that it is operating correctly. For details, refer to *KIR-DDOS Intelligent Duct Smoke Detector Technical Bulletin* (P/N 3102782).

Specifications

Operating voltage	15.20 to 19.95 VDC
Operating current	
Standby	50 µA
Alarm	60 µA
Ground fault impedance	10 kΩ
Smoke detection method	Photoelectric
Air velocity	100 to 4,000 ft./min (0 to 20.32 m/s)
Air pressure differential	0.01 to 0.83 inches of water
Sensitivity	0.5 to 4.5 %/ft obscuration
Alarm test response time	5 seconds
Environmental compensation	Automatic
Auxiliary relay	
Quantity	1
Operation	Zone/Programmable
Contact form	Form C
Contact rating	30 VDC, 3.0 A, 0.35 PF 120 VAC, 3.0 A, 0.35 PF 240 VAC, 1.5 A, 0.35 PF
Compatible accessories	See Table 1
Dimensions	See Figure 6
Knockouts	
Quantity	2
Size	1/2-inch (16 mm) trade size
Wire size	14 to 22 AWG (0.34 to 2.5 mm^2)
Screw torque	
Covers	6.0 +/− 0.5 in-lb (6.9 +/− 0.5 kgf cm)
Optical tube assembly	5.0 +/− 0.5 in-lb (5.7 +/− 0.5 kgf cm)
Interface board	3.0 +/− 0.5 in-lb (3.5 +/− 0.5 kgf cm)
Operating environment	
Temperature	32 to 122°F (0 to 50°C)
Relative humidity	0 to 93% noncondensing
Storage temperature	32 to 122°F (0 to 50°C)

Table 1: Compatible accessories

Model number	Description
SD-T8	Sampling tube, 8-inch
SD-T18	Sampling tube, 18-inch
SD-T24	Sampling tube, 24-inch
SD-T36	Sampling tube, 36-inch
SD-T42	Sampling tube, 42-inch
SD-T60	Sampling tube, 60-inch
SD-T78	Sampling tube, 78-inch
SD-T120	Sampling tube, 120-inch
GSA-LED	Remote alarm indicator
SD-TRK	Remote test station, key switch
SD-TRM	Remote test station, magnetic
SD-MAG	Test magnet
KIR-DDOSIB	Replacement interface board
KIR-DDOS-ROT	Replacement optical tube assembly
DDOS-RET	Replacement exhaust tube

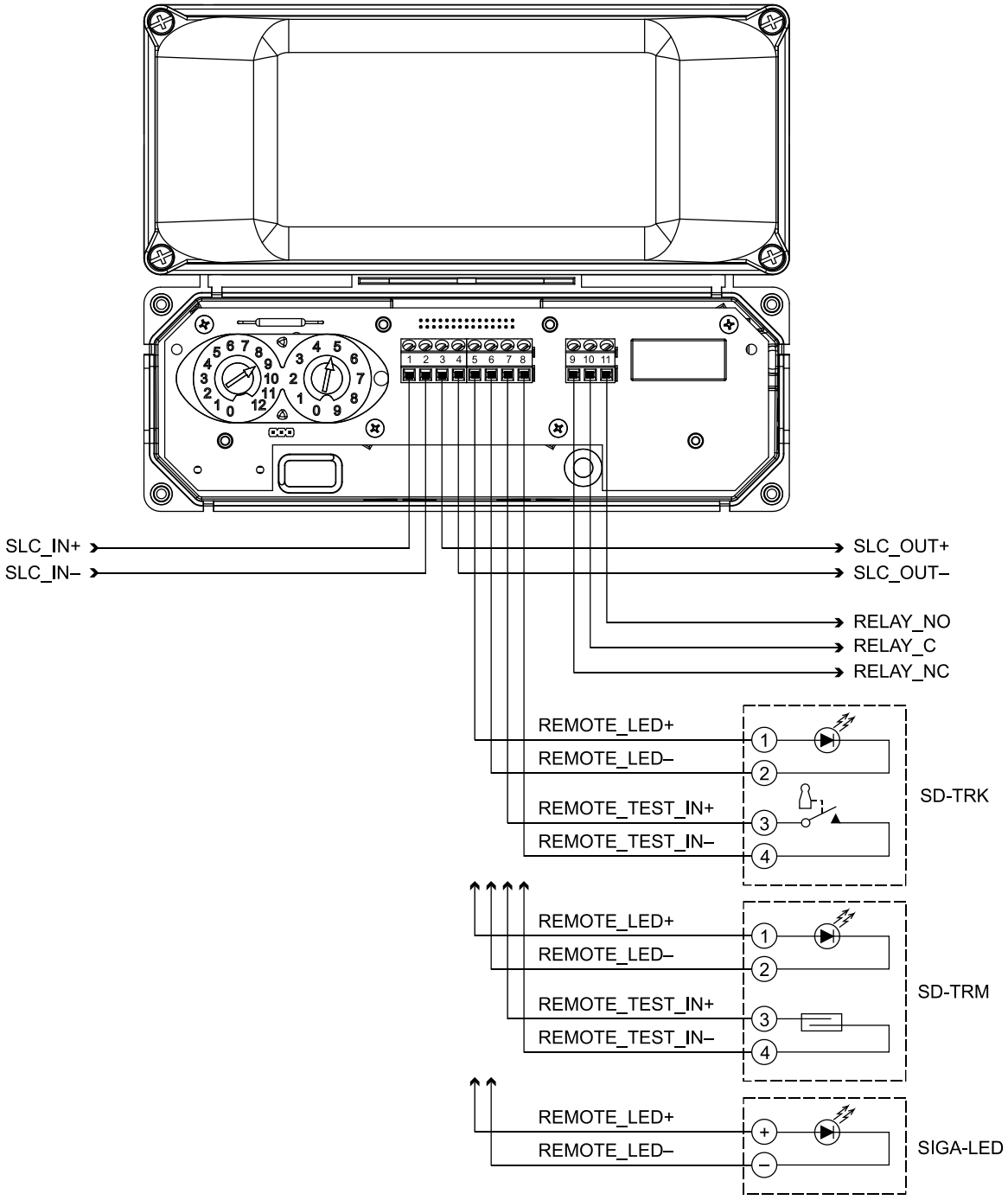
Regulatory information

FCC compliance	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.
Industry Canada compliance	This Class A digital apparatus complies with Canadian ICES-003.

Contact information

For contact information, see www.kiddefx.kidde.com.

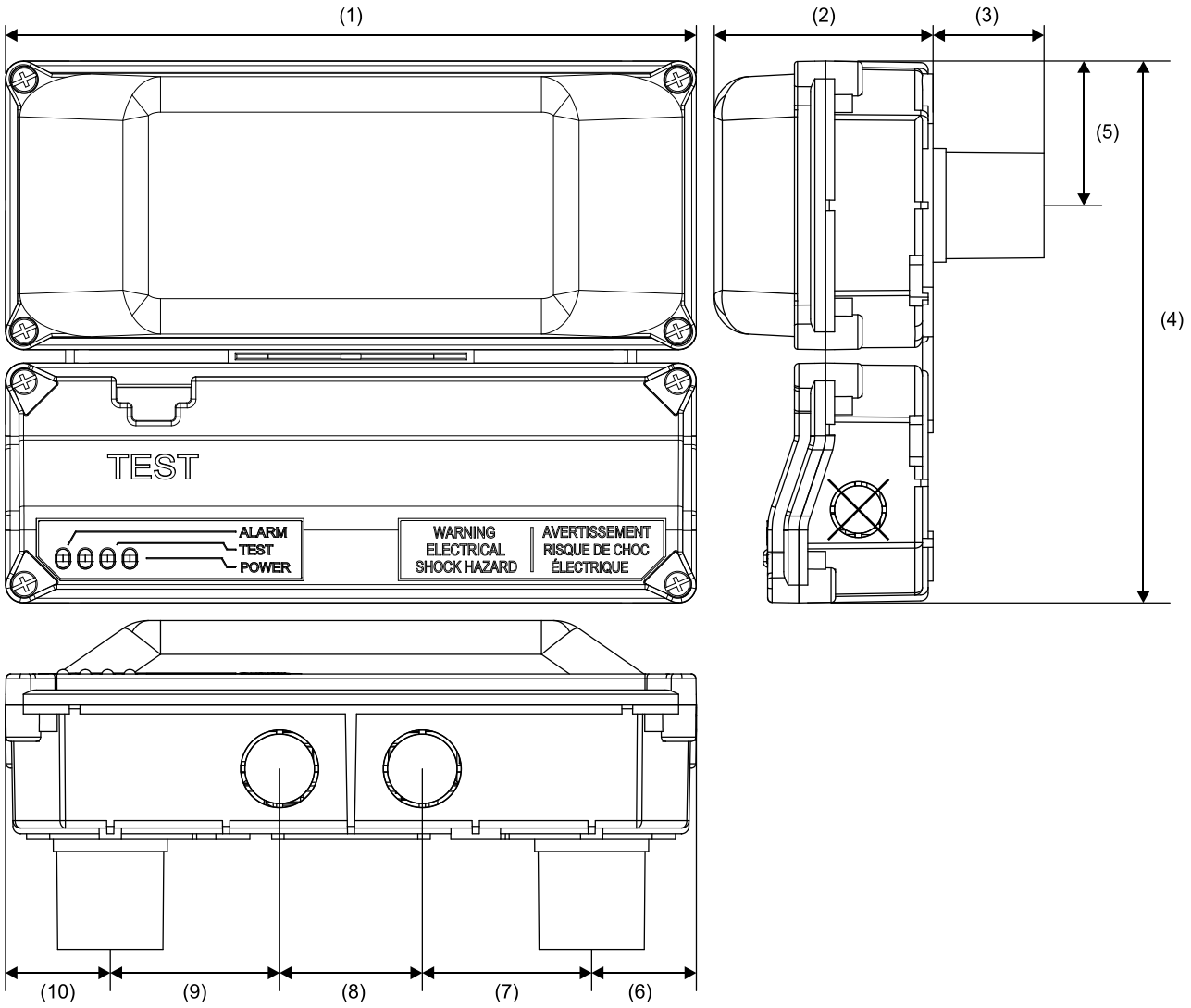
Figure 5: Wiring diagram



Terminal block detail

Number	Signal name	Number	Signal name
1	SLC_IN+	7	REMOTE_TEST_IN+
2	SLC_IN−	8	REMOTE_TEST_IN−
3	SLC_OUT+	9	RELAY_NC
4	SLC_OUT−	10	RELAY_C
5	REMOTE_LED+	11	RELAY_NO
6	REMOTE_LED−		

Figure 6: Dimensions



(1) 7.75 in. (16.69 cm)
(2) 2.50 in. (6.35 cm)
(3) 1.25 in. (3.18 cm)
(4) 6.10 in (15.49 cm)
(5) 1.63 in. (4.14 cm)
(6) 1.175 in. (2.98 cm)
(7) 1.90 in. (4.83 cm)
(8) 1.60 in. (4.06 cm)
(9) 1.90 in. (4.83 cm)
(10) 1.175 in. (2.98 cm)