



Conventional Duct Detector

D300A



BOSCH

en Installation Guide

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1 Notice

Use these instructions when installing the D300A Conventional Duct Detector in a system controlled by a fire alarm control panel (FACP). Install, test, and maintain the D300A according to these instructions, NFPA72, local codes, and the Authority Having Jurisdiction (AHJ).

**NOTICE!**

- Failure to follow these instructions can cause the device to not properly operate.
- Bosch is not responsible for improperly installed, tested, or maintained devices.
- NFPA 72 requires a complete, system-wide Functional Test be performed after making modifications, repairs, upgrades, or adjustments to the system's components, hardware, wiring, programming, software, or firmware.
- The D300A is not intended for open area protection. Refer to the NFPA90A and NFPA72E, for general and additional duct smoke detector operation and installation.

**DANGER!**

Follow the procedures in these instructions to avoid personal injury and/or damage to the equipment.

2 Overview

The D300A Conventional Duct Detector Housing unit is an accessory device complete with a photoelectric smoke detector head used in HVAC duct works. It can be powered by 24 VAC, 24 VDC, or 115 VAC. Air sampling is accomplished by two tubes that protrude into the duct. An exhaust tube of one standard length is supplied in the installation kit with the duct detector housing unit. Once the duct width is determined, the air intake sampling tubes must be ordered. Sampling tubes are supplied in three standard lengths and cut to size to fit the duct. The air samples are collected by positive pressure to the detector head. Output terminals are provided for remote accessories such as remote status indicators (LEDs), reset keyswitches, and push buttons.

3 Mounting

**CAUTION!**

To prevent false alarms, do not mount the D300A Duct Detectors in areas:

- of extreme high or low temperatures,
- where high humidity exists,
- where duct air might contain gases or excess dust.

Refer to NFPA90A, NFPA72E, and NFPA101.

3.1 Preparing the Duct

When preparing the duct, refer to *Figure 3.1* on page 5.

1. Remove the paper backing from the mounting template included in the Installation Kit.
2. Attach the template to the duct at the desired location.
3. Using the template as a guide, drill four mounting holes (3/32 in. [2.38 mm] diameter) for the duct mounting screws (four #12 x 1/2 in. [1.27 cm] sheet metal screws packaged in installation kit).
4. Drill or punch holes for the sampling tubes in the air duct (1.375 in. [3.49 cm])
5. Clean all holes.

3.2 Verifying Air Flow and Direction

Use the D300A in ducts with air velocities between 300 ft to 4000 ft (91 m to 1219 m) per minute. Verify the air velocity by checking the duct installation specifications, or by using an Alnor Model 6000P (or equivalent) velocity meter. Refer to *Figure 3.2* on page 5 for sampling tube orientation to air flow direction.

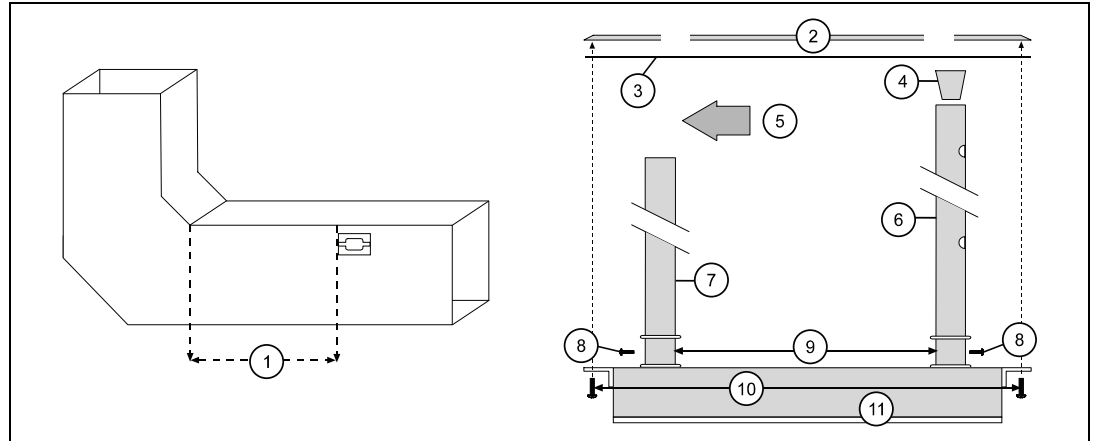


Figure 3.1 Mount the Duct Housing

- | | |
|--|---|
| 1 - Six duct widths (minimum) from any bend or other obstruction | 7 - Exhaust tube |
| 2 - Air duct (number varies according to tube length) | 8 - Set screws (2) |
| 3 - Template | 9 - Intake sampling tube connectors (2) |
| 4 - Stopper | 10 - Duct mounting screws (2) |
| 5 - Air flow for this illustration | 11 - Top of the D300A Housing |
| 6 - Intake sampling tube | |

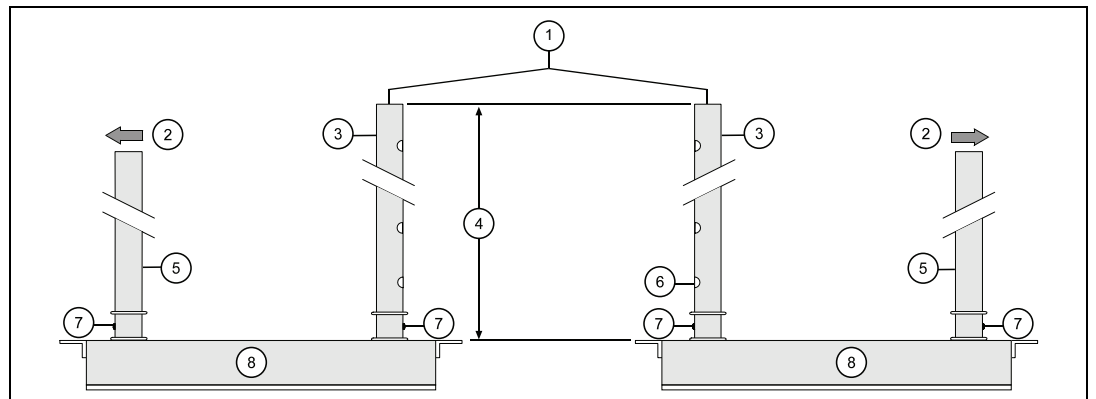


Figure 3.2 Intake Sampling Tube Orientation

- | | |
|---|---|
| 1 - Insert stopper at this end of the intake sampling tube. | 5 - Exhaust tube (2) |
| 2 - Air flow | 6 - Air hole (number varies according to tube length) |
| 3 - Intake sampling tube (2) | 7 - Set screws (4) |
| 4 - Duct width* | 8 - Top of the D300A Housing |
- * Support the intake sampling tube where the duct width is greater than 3 ft (91 cm).

3.3 Assembling the Intake Sampling Tubes

The intake sampling tube is a piece of steel piping with a series of holes drilled along its entire length, extending the entire width of the duct. Ensure the holes face into the airflow. Exhaust tubes are pieces of steel piping approximately 7.5 in. (19 cm) long. The sampling tubes come in the standard lengths shown in the *table 3.1*. You need to cut them to fit in the duct.

Model Number	Sampling tube length
FAA-325-2.5	2.5 ft (76 cm)
FAA-325-5	5 ft (152.5 cm)
FAA-325-10	10 ft (305 cm)

Table 3.1 Intake Sampling Tube Standard Lengths

1. Prepare the intake sampling tubes by cutting them to the desired lengths.
2. Insert the stopper, included in the Installation Kit, into the end of the intake sampling tube.

3.4 Mounting the Intake Sampling Tubes

The intake sampling tube connectors are equipped with set screws that allow you to mount the tubes only in the directions shown in *Figure 3.2* on page 6. Consider the airflow direction when orienting the intake sampling tubes.

1. Insert the intake sampling tubes and exhaust tubes into the connectors.
2. Align the set screws to the set screw holes in the tubes and tighten.

Refer to *Figure 3.1* on page 5 for mounting details.

3.5 Mounting the Detector

1. Position the detector and intake sampling tube assembly in the desired location.
2. Using four duct mounting screws (four #12 x ½ in. [1.27 cm] sheet metal screws included in the installation kit), secure the detector and the intake sampling tube assembly to the duct.

3.6 Verifying the Air Sampling

Use a Dwyer Model 4000 Differential Pressure Gauge or its equivalent to verify the correct air sampling. Ensure the pressure differential between the input sampling tube and exhaust tube is greater than 0.01 in. (0.25 mm) and less than 1 in. (3 cm) of water.

Refer to *Figure 3.2* on page 6 for the intake sampling tube orientation to air flow direction. If the pressure is more than this pressure range then cover holes uniformly across the length of the tube. If the pressure is too low then drill holes uniformly across the length of the tube. The holes should be the same size as the holes that exist.

4 Wiring



NOTICE!

Ensure that power is removed from all wiring before routing.
Observe polarity.

Wiring must conform to applicable local codes, ordinances, and regulations covering this type of device. Wire the detectors according to the engineering drawing for that particular job requirement. For D300A wiring details, refer to Figures 4.1 on page 8. Terminals are suitable for up to 14 AWG (1.8 mm) wire.



CAUTION!

Do not use looped wire under Terminals. Run break wire to provide supervision of connections.

To wire the D300A:

1. De-energize the power source.
2. Wire all connections according to the engineering drawings.
3. Verify the system wiring.
4. Energize the detector.

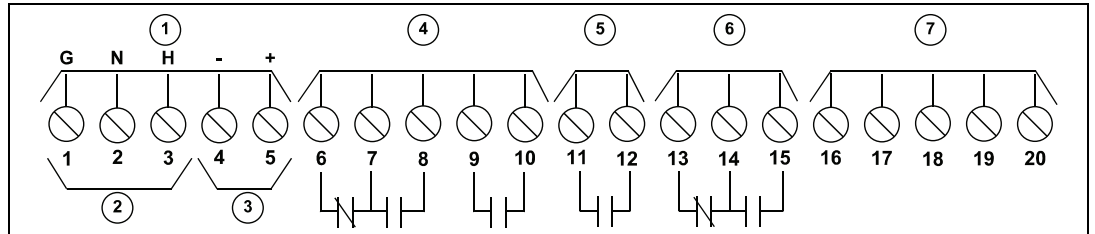


Figure 4.1 Wiring the D300A Terminals

- | | |
|---|---------------------------------------|
| 1 - Switched Power connections upon reset (connect items 2 or 3, not both) | 5 - Alarm contacts 1 A at 24 VDC |
| 2 - 115 VAC 60 Hz input at 0.1 A maximum | 6 - Trouble contacts 10 A at 115 VAC* |
| 3 - 24 VAC/VDC 60 Hz input at 0.1 A maximum (detector only). Up to 1.9 A for auxiliary outputs. | 7 - Remote accessories |
| 4 - Alarm contacts 10 A at 115 VAC | |

* Trouble contacts are shown in non-energized condition. Trouble contacts monitor power connected and head removed.

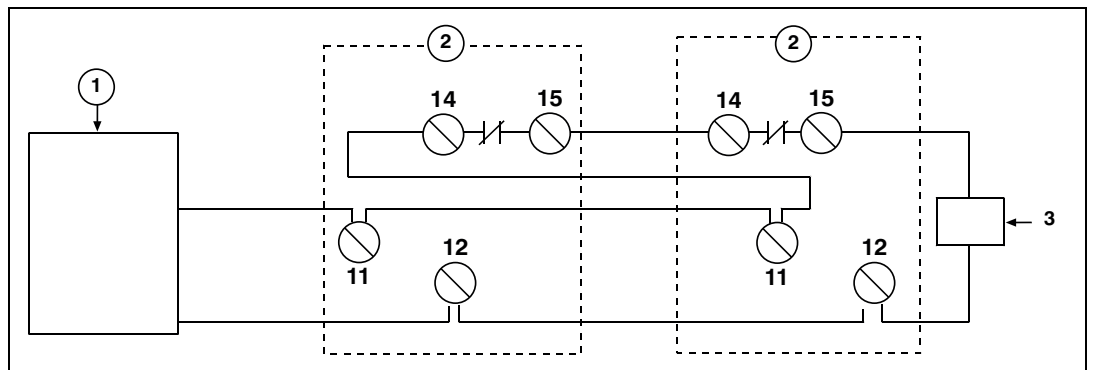


Figure 4.2 Wiring the D300A to an FACP

- | | |
|--------------------|----------------|
| 1 - UL Listed FACp | 3 - EOL Device |
| 2 - D300A Detector | |

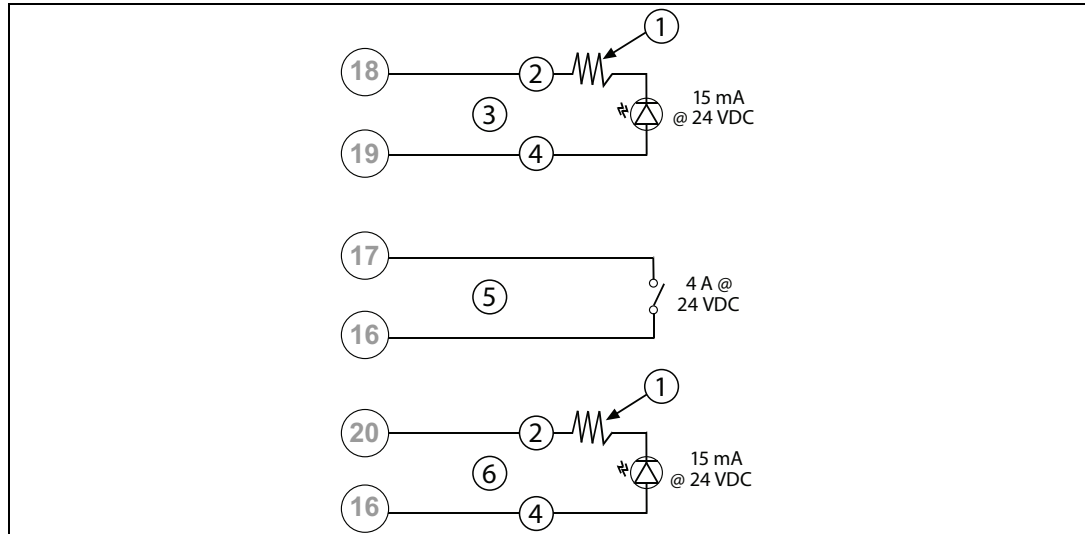


Figure 4.3 Remote Access Memory

- | | |
|--|--|
| 1 - 1.2 k Ω , 1 W current-limiting resistor | 4 - Red (+) |
| 2 - Black (-) | 5 - Key or push button "Test/Reset" switch |
| 3 - Red alarm LED | 6 - Green "Pilot" LED |

4.1 Testing

The D300A photoelectric detector has a built-in sensitivity window verification feature. If the detector is within its calibrated sensitivity range, the detector LEDs flash green in standby or normal operation. If the detector drifts outside its sensitivity range, the LEDs flash red to indicate an out of sensitivity condition. Bosch D1000 Calibrated Smoke Detector Tester may also be used to check sensitivity.

4.2 Replacing the Detector Head

If the detector head supplied with the D300A must be replaced, only replace the existing head with a D282A-DH Replacement Photoelectric Smoke Detector Head.

1. Remove the four screws holding the detector's cover.
2. Remove the existing detector head by twisting it counterclockwise.
3. Insert the D282A-DH and turn it clockwise.
4. Replace the detector's cover and tighten the screws.

5 Specifications

Standby Current	20 mA at 24 VAC 13 mA at 24 VDC 14 mA at 115 VAC
Alarm Current	95 mA at 24 VAC 60 mA at 24 VDC 28 mA at 115 VAC
Alarm Relay Contact Rating	10 A maximum at 125 VAC resistive
Trouble Relay Contact Rating	10 A maximum at 125 VAC resistive
Sensitivity Range (Factory Set)	1.5%/ft to ~2.75%/ft (4.8%/m to ~ 8.7%/m)
Differential Pressure	0.01 in. (0.25 mm) - 1 in. (3 cm) of water

Air Velocity	300 ft/min to 4000 ft/min (91 m/min to 1219 m/min)
Ambient Temperature	+32°F to +120°F (0°C to +49°C)
Humidity	10% RH to 85% RH (non-condensing)
Intake Sampling Tubes	FAA-325-2.5: 2.5 ft (0.8 m) FAA-325-5: 5.0 ft (1.5m) FAA-325-10: 10 ft (3m)
Replacement Detector Head	D282A-DH Replacement Photoelectric Smoke Detector Head

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