



BOSCH FAA-440-B6 Analog Detectors and Bases Installation Guide

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BOSCH FAA-440-B6 Analog Detectors and Bases



This document covers mounting and wiring for the FAP-440 Series bases and detector heads. For proper installation, read and understand NFPA-72, The National Fire Alarm Code before installation.

NOTICE!

Any information on the operation and maintenance of the devices is described in the Operation Guide F.01U.173.498, which is available for download at www.boschsecurity.us.

NOTICE!

Install the device according to this Installation Guide, NFPA 72, Local Codes and the Authority Having Jurisdiction (AHJ). Failure to follow these procedures may cause the device to not function properly. Bosch Security Systems is not responsible for any devices that are improperly installed.

CAUTION!

Do not paint the detectors. Paint or other foreign matter can prohibit detection.

CAUTION!

Do not remove the dust cap until all onsite construction work has been completed and the fire panel network has been commissioned.

Product Types

Product Type	Description
FAP-440	Analog Photoelectric Detector
FAP-440-D	Analog Dual-Photoelectric Detector
FAP-440-T	Analog Multisensor Detector Photo/Heat
FAP-440-DT	Analog Multisensor Detector Dual-Photo/Heat
FAP-440-TC	Analog Multicriteria Detector Photo/Heat/CO
FAP-440-DTC	Analog Multicriteria Detector Dual-Photo/Heat/CO
FAH-440	Analog Heat Detector, configurable fixed temperature/rate-of-rise
FAA-440-B4	Analog Standard Base 4 inches
FAA-440-B6	Analog Standard Base 6 inches
FAA-440-B4-ISO	Analog Isolator Base 4 inches
FAA-440-B6-ISO	Analog Isolator Base 6 inches

Table 2.1 List of Products

NOTICE!

The CO sensor detects carbon monoxide as a by-product of combustion. It has not been evaluated for its ability to detect hazardous CO gas. Do not use the FAP-440-TC and FAP-440-DTC as stand-alone CO detector.

WARNING!

The FAH-440 heat detectors are not life safety devices.

Mounting

NOTICE!

Smoke detectors are not to be used with detector guards unless the combination has been evaluated and found suitable for that purpose.

- Follow NFPA-72 guidelines for mounting locations. For commercial and industrial installations, 30 ft. (9 m) spacing between smoke detectors is recommended.
- The electrical boxes must be large enough to accommodate the number and size of conductors as specified by the National Electrical Code or the local Authorities Having Jurisdiction (AHJ).

Mounting the Detector

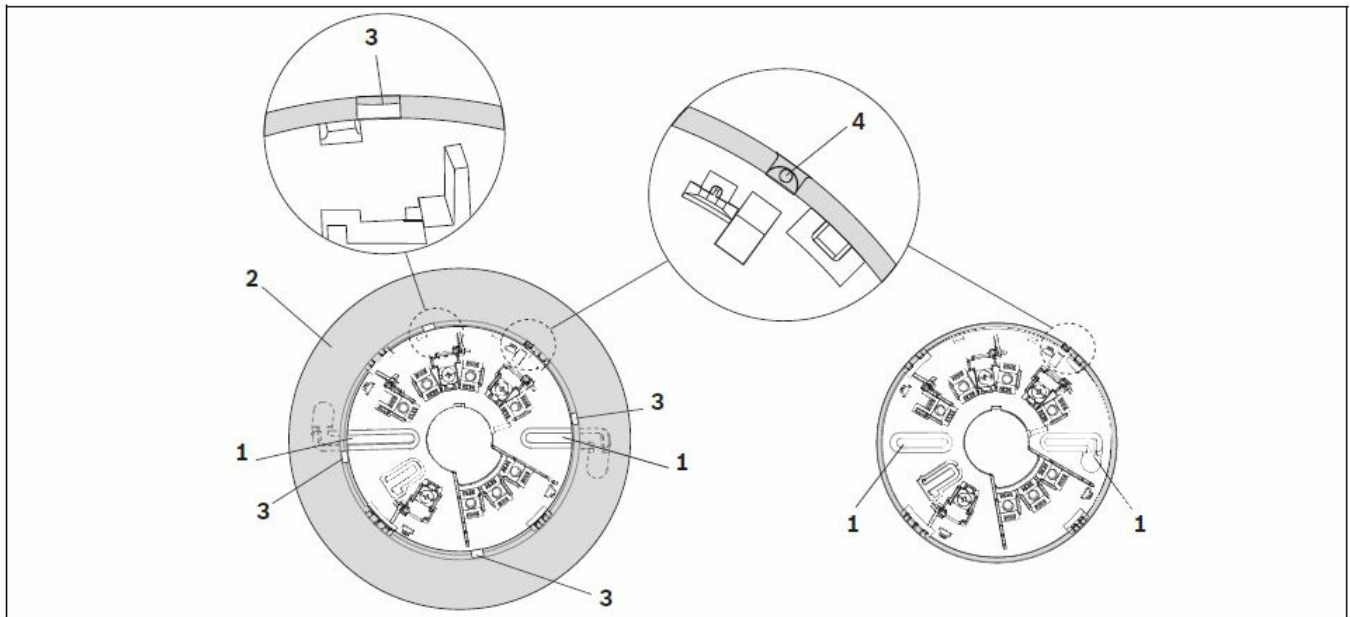


Figure 3.1 6-inch and 4-inch Mounting Bases

Position	Description
1	Mounting holes
2	Base skirt
3	Release tabs
4	Semicircle notch

1. Mount the base using the two oblong mounting holes (see Figure 3.1, Position 1). If you mount the detector with a 6-inch base, first remove the base skirt (2) from the mounting base using a screwdriver to release the 4 tabs (3).
2. Tighten the base to the mounting surface. Do not over-tighten. If you use a 6-inch base, fit the base skirt onto the mounting base.
3. Turn clockwise until the detector head locks into place and aligns with the semi-circle notch (4).

Locking and Releasing the Detector

The detector bases are supplied with a snap-off locking bar (X) as part of the base molding to prevent malicious removal of the detector. The locking mechanism is selectable and is activated by shifting the U-shaped locking bar (X) into the position as shown in Figure 3.2.

1. Remove the U-shaped locking bar by breaking it from its holder.
2. Tuck it into the opening next to it by pushing hard.
3. Insert the detector head into the base.

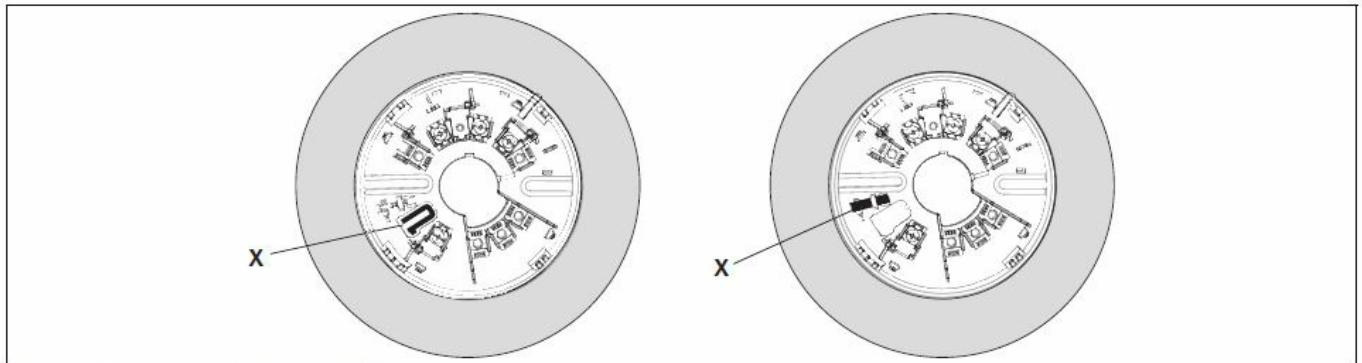


Figure 3.2 Activating the Locking Mechanism

Release the locked detector head by pushing hard through the dimple (O) on the detector's outer rim with a screwdriver (see Figure 3.3) and at the same time, turning the detector head to the left.

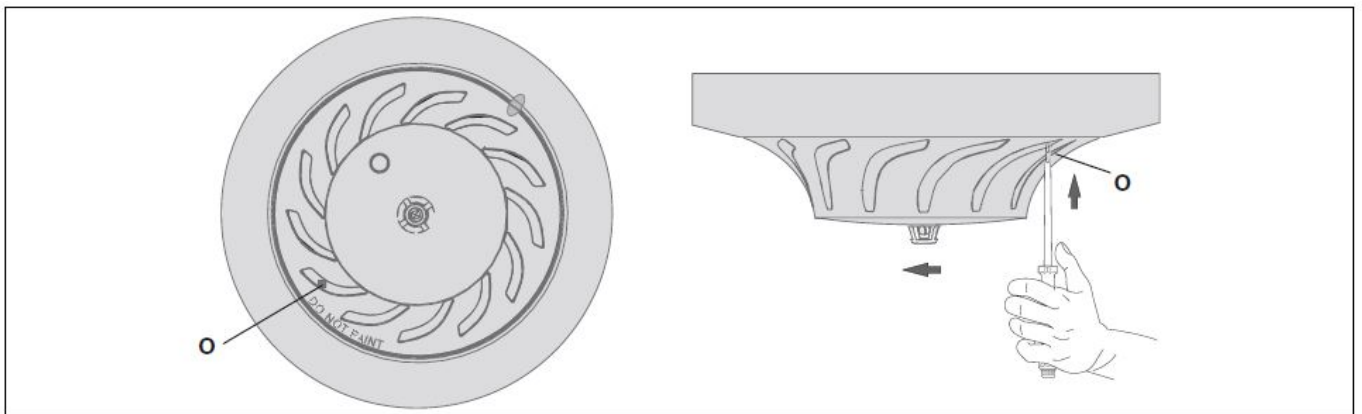


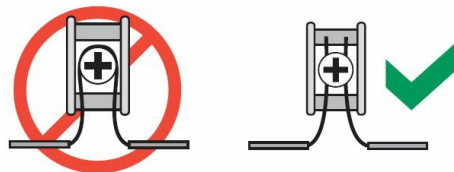
Figure 3.3 Releasing the Detector

Wiring and Addressing Information

Wiring Information

WARNING!

Do not twist or loop the wires around the terminals. In and out wires for the terminal connection must be cut, stripped, and inserted as individual ends.



The following wire gauges and maximum line lengths are tested and approved.

- 18 AWG (0.8 mm²) -> 4000 ft (1200m)
- 16 AWG (1.3 mm²) -> 6225 ft (1900m)
- 14 AWG (2.1 mm²) -> 7200 ft (2200m)
- 12 AWG (3.3 mm²) -> 9850 ft (3000m)

Standard non-twisted, non-shielded wiring (plain old wire) for the SLCs is recommended.

NOTICE!

Voltage drop calculations along with anticipated wire distance should be considered to ensure a voltage supply of at least 24 V at every detector.

Terminal Lettering	Terminal Function
SC	SLC bus – IN/OUT
S	SLC bus + IN/OUT
Sin	SLC bus + IN
Sout	SLC bus + OUT
C	Remote output

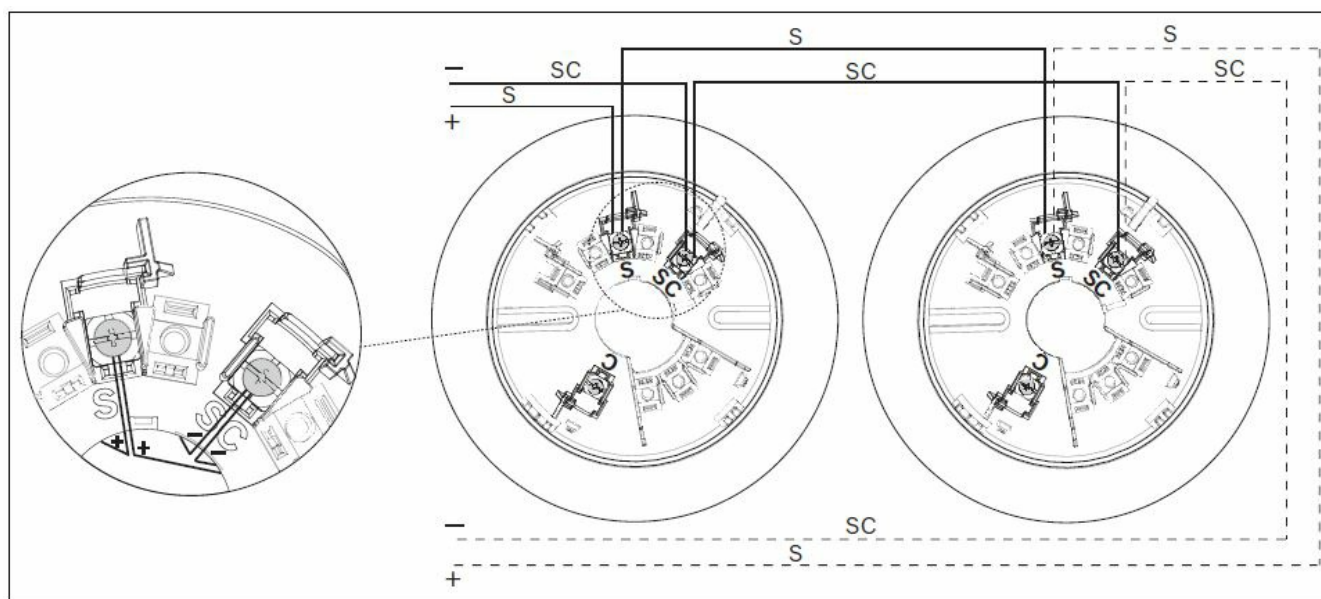


Figure 4.1 FAA-440-B6/-B4 Standard Base Class B Wiring (Class A Wiring Indicated by Dashed Wire)

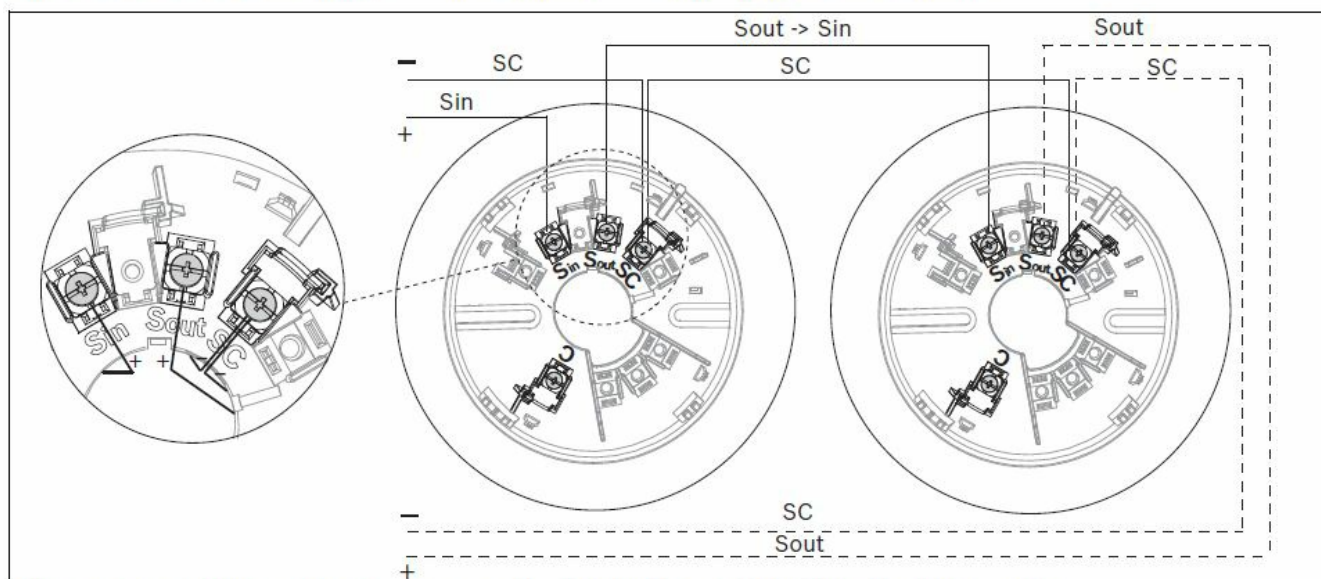


Figure 4.2 FAA-440-B6-ISO/-B4-ISO Isolator Base Class B Wiring (Class A Wiring Indicated by Dashed Wire)

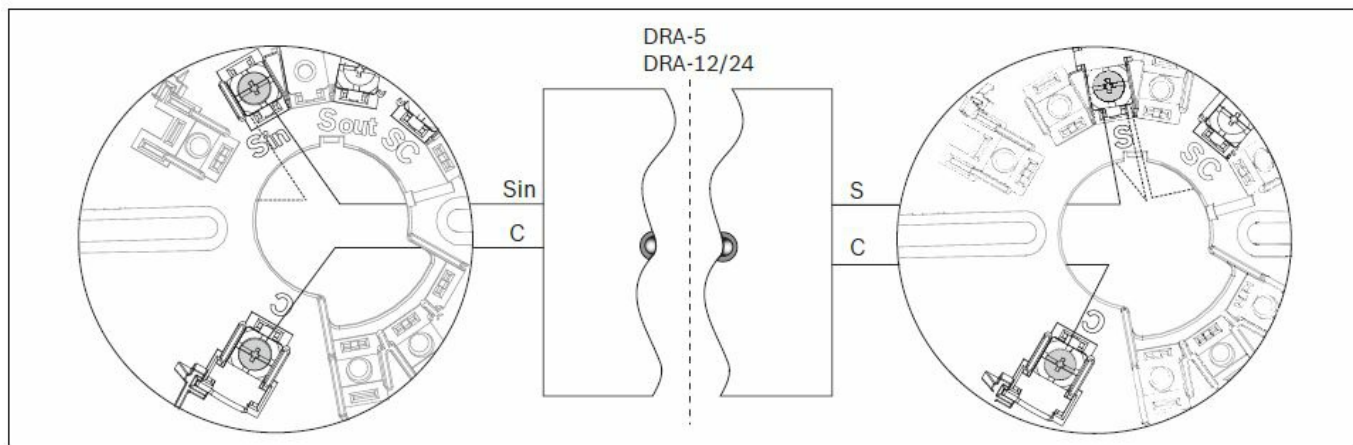


Figure 4.3 Optional Remote Annunciator Wiring, Isolator Base (Left) and Standard Base (Right); Sin and S = red wire, C = white wire

Addressing Information

The detector's address is set by positioning three rotary switches located on the back of the device (see Table 4.1). Use a flat-bladed screwdriver to position each switch. The switches will click when turned. The valid address range is 1 to 254.

Hundreds	Tens	Ones

Table 4.1 Rotary Switches (e.g. address is 131)

NOTICE!

Detectors that have no valid address will not be found during the auto-learn. After the auto-learn, perform functional testing for each detector to ensure that all detectors operate properly. If the rotary switch address does not match the internal address, please see the panels IOG for the matching procedure.

Testing the Installation

NOTICE!

Notify all concerned parties before any maintenance or testing of the fire alarm system and after completion of these activities.

1. Check the wiring from the control panel to each detector for proper polarity and continuity.
2. Apply power to the system. Check for alarms and troubles.
3. When the system is alarm-free, check each detector to ensure that the LED indicator flashes green. This verifies the detector is receiving power and operating properly. Depending on the number of detectors connected, the time between two flashes may be up to 8 seconds.

Magnet Switch Test

1. Holding a magnet at the test point centered over the semicircle notch on the head (see Figure 3.1, Page 7, Position
2. will cause the LED to flash red. If the magnet is held at the indicated location for more than 6 seconds, the unit will send an alarm signal to the panel and the LED will change to steady red until the unit is reset by the panel. If the magnet is removed before the period of 6 seconds is over, the unit will return to the state it was in and no alarm signals will be sent. Otherwise, you have to reset the unit.

Functional Testing

1. Set detectors in walk test mode at the fire panel before testing.
2. Test each detector to ensure it causes a control panel test alarm. After each test, the alarm is cleared automatically by the control panel within a few seconds, and you can proceed to the next detector.

NOTICE!

As soon as the walk test mode is started, a detector test must occur within 25 minutes of the last test. Otherwise, the control panel resets to normal operation.

In walk test mode, the alarm is triggered quicker than during normal operation, allowing for faster and more efficient testing. There are the following options of functional testing:

- either alarm the detector by holding the magnet continuously at the indicated location for three red flashes (see Chapter 5.1), or
- carry out the test procedure(s) depending on the detector type:

Test procedure	(Dual-)Photo	Heat	(Dual-)Photo/Heat	(Dual-)Photo/Heat/CO
Aerosol test	X		X	X
Heat source test		X	X	X
CO gas test				X

Table 5.1 Suitable Test Procedures Depending on Sensors

Testing Equipment	
TRUTEST801	Sensitivity Tester for Analog Smoke Detectors
SMOKE400	Smoke Aerosol for TRUTEST801 Sensitivity Tester
SOLO330	Smoke Detector Tester
SOLOAEROSOLA4	Smoke Aerosol for SOLO330 Smoke Detector Tester
SOLO461	Cordless Heat Detector Tester
SOLOCOTESTGAS	Spray with CO Testing Gas for Multicriteria Detectors with CO Sensor
FME-TESTIFIRE	Multicriteria Detector Tester for Smoke, Heat and CO Testing

Table 5.2 List of Testing Equipment

Aerosol Test

Use a UL-listed aerosol smoke detector tester to simulate an alarm. Follow the instructions provided with the aerosol smoke detector tester.

Heat Source Test

Expose the thermistor to a heat source such as a hair dryer or a shielded heat lamp. Expose the thermistor until the detector alarms and the alarm LED lights.

CO Gas Test

Only when in walk test mode, if over 35 ppm CO is applied to the detector the detector will alarm.

NOTICE!

If any of the sensors fails the functional testing, the detector should be replaced.

Sensitivity Testing

Test the sensitivity of the smoke sensors using the TRUTEST801 Sensitivity Tester for Smoke Detectors and SMOKE400 Smoke Aerosol.

Specifications

These ratings apply to alarm and standby conditions.

NOTICE!

For the proper calculation of the total current consumption, you have to add both the general current consumption of the head and of the isolator base, if used in the circuit.

Operating voltage (SLC loop)	24 V DC to 41 V DC
Maximum current consumption detector head at 77 °F (25 °C) and 39 V bus voltage <ul style="list-style-type: none">– Standby– Alarm– When polled	170 µA 5 mA 22 mA ± 20%
Maximum allowable line resistance	50 Ω
Maximum airflow	4000 ft/min (20m/s)
Maximum current consumption isolator base at 77 °F (25 °C) and 39 V bus voltage <ul style="list-style-type: none">– Standby– Triggered	70 µA 10 mA
Sensitivity <ul style="list-style-type: none">– Smoke sensor– Heat sensor (FAP-440 detectors)– Heat sensor (FAH-440 heat detectors)	1.25%/ft to 3.5%/ft +135 °F (+57 °C) + RoR +135 °F to +194 °F (+57 °C to +90 °C), programmable +RoR

Installation temperature	+32 °F to +100 °F (0 °C to +38 °C) If the sensitivity temperature is programmed within a range of +175 °F to +249 °F (+79.4 °C to +120.6 °C), the maximum installation temperature is 150 °F (+66 °C).
Storage temperature	
– Without CO sensor	-13 °F to +176 °F (-25 °C to +80 °C)
– With CO sensor	+14 °F to +122 °F (-10 °C to +50 °C)
Humidity	< 95% (non-condensing)
Protection category	IP 42
Mounting locations and heights in general	Refer to NFPA-72
Maximum spacing between detectors	
– Smoke detector	30 ft.
– Heat detector	50 ft.
Minimum mounting distance to magnets (e.g. loudspeaker)	11.8 in. (30 cm)
Maximum wiring length to C point	9.8 ft. (3 m)
Dimensions (diameter x height)	
– Detector	4.4 in. x 2.0 in. (11.2 cm x 5.1 cm)
– Detector with 4-inch base	5.0 in. x 2.5 in. (12.7 cm x 6.4 cm)
– Detector with 6-inch base	7.0 in. x 2.5 in. (17.8 cm x 6.4 cm)
Housing material	Cyclopy/ABS

Table 6.1 Technical Specifications

Bosch Security Systems, Inc.

130 Perinton Parkway 14450Fairport, N.Y. USA www.boschsecurity.com Bosch Security Systems, Inc., 2012



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FAA-440-B6, FAA-440-B4, FAA-440-B6-ISO, FAA-440-B6 Analog Detectors and Bases, Analog Detectors and Bases, Detectors and Bases, Bases

References

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Manuals+.