

Pyrotector

Instructions

Explosion Proof Smoke Detector
30-3013



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Pyrotector

INSTRUCTIONS

Explosion Proof Smoke Detector 30-3013

WARNING

Be sure to read and understand the entire instruction manual before installing or operating the smoke detection system. Any deviation from the recommendations in this manual may impair system performance and compromise safety.

OVERVIEW

The 30-3013 Explosion Proof Smoke Detector has Division and Zone explosion-proof ratings and is suitable for industrial and commercial applications. The detector is designed to operate effectively with smoldering and rapidly growing fires and contains the ability to annunciate faults ensuring no undisclosed failures. The 30-3013 Smoke Detector outputs include 0-20 mA, a localized LED, and relays.

Typical applications that use the 30-3013 include:

- Combustible storage facilities
- Munitions manufacturing
- Volatile chemical storage
- Chemical processing plants
- Petroleum refineries
- Turbine enclosures
- Battery rooms
- HVAC applications

The hot-swappable sensor module is intrinsically safe and allows live maintenance while under power, without de-classifying the hazardous area. The integrated junction box is available in a variety of port configurations for simplified wiring and installation. See Figure 1 for all the 30-3013 Smoke Detector components.



FEATURES

- FM Approved for use in Class I, Division 1 hazardous locations
- FM Approved for smoke detection performance
- IECEx Zone approved
- Trouble-free photoelectric operation
- 0-20 mA output for DCS integration
- Self-checking circuitry ensures reliable smoke detection
- Alarm, Auxiliary, and Fault relays for controlling annunciating devices or fire panel interface
- LED provides a visual indication that an alarm has occurred
- IP44 ingress protection level suitable for onshore or offshore requirements

BENEFITS

- Ideally suited for classified areas in the petrochemical, oil, and gas industry
- DCS, PLC, integration with milliamp or relay outputs
- Rugged design for environmental extremes
- Visual confirmation of detector alarm
- Detects smoldering fires
- No undisclosed failures

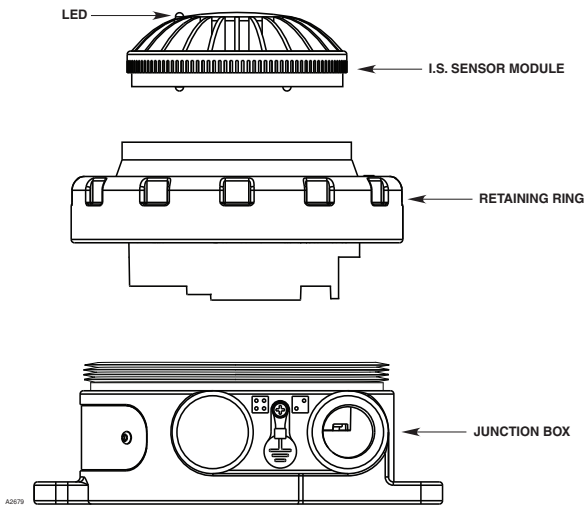


Figure 1—30-3013 Components

SPECIFICATIONS

OPERATING VOLTAGE—
12-30 Vdc (24 Vdc nominal)

SMOKE DENSITY—
1.5% - 2.5% obscuration per foot
(4.9% - 8.2% obscuration per meter)

POWER CONSUMPTION—
3.5 watts maximum (2.75 Watts at 24 Vdc)
0.674 Watts with no relays energized
1.23 Watts with one relay energized
2.12 Watts with two relays energized
2.68 Watts with three relays energized

OUTPUT RELAYS—
Smoke alarm relay, Form C, 5 amperes at 30 Vdc:
The smoke alarm relay has normally open/normally closed contacts and normally de-energized operation

Fault relay, Form A, 5 amperes at 30 Vdc:
The fault relay has normally open contacts and normally energized operation

Auxiliary relay, Form C, 5 amperes at 30 Vdc:
The auxiliary relay has normally open/normally closed contacts and normally de-energized operation

TEMPERATURE RANGE—
Operating: -20°C to +65°C (-4°F to +149°F)
Storage: -55°C to +70°C (-67°F to +158°F)

HUMIDITY RANGE—
5 to 95% relative humidity

INGRESS PROTECTION—
IP44

Note: Applicable to ceiling mount only

CURRENT OUTPUT—
0-20 mA (± 0.3 mA) dc current, with maximum loop resistance of 300 ohms from 12-17.9 Vdc, 500 ohms from 18 to 19.9 Vdc, and 600 ohms from 20-30 Vdc

TERMINALS—
UL/CSA rated for 14-18 AWG or 2.5-0.75 mm² wire

THREAD OPTIONS—
3/4 inch NPT or M25
Multi-port models available

ENCLOSURE MATERIAL—
Polycarbonate / ABS - Smoke Detector
Copper-free aluminum (painted) - Junction Box

SHIPPING WEIGHT (Approximate)—
7.85 lbs (3.56 kg)

WARRANTY PERIOD—
1 year

DIMENSIONS—
See Figure 2

CERTIFICATION—
For complete approval details, refer to the appropriate Appendix:



OPERATION

WARM UP

When the detector is initially powered up, a warm-up period of one – two (1-2) seconds is allotted for internal checks and communication. During this time, the LED is off and the current level is 3 mA. After the checks are completed, normal operation will be indicated by the LED flashing every four seconds (current level is 4 mA).

If the detector is unable to reach the normal operating mode, the warm-up period may extend to five seconds, followed by a critical fault or an advisory fault (see Table 1 for all current levels). If the problem persists, check for any loose wiring connections, ensure that the voltage supply is sufficient, and cycle power if necessary.

OUTPUTS

Relays

The 30-3013 detector is furnished with smoke alarm, fault, and auxiliary relays. All three relays are rated to 5 amperes at 30 Vdc.

The smoke alarm relay has a single set of terminals and normally open / normally closed contacts, and normally de-energized operation.

The fault relay has a single set of terminals and normally open contacts, and normally energized operation.

The auxiliary relay has a single set of terminals and normally open / normally closed contacts, and normally de-energized operation.

IMPORTANT

The auxiliary relay functions as pre-alarm.

0 to 20 mA Output

This 30-3013 provides a 0 to 20 mA dc current for transmitting detector status information to other devices. The circuit is wired in a non-isolated configuration and can drive a maximum loop resistance of 300 ohms from 12 to 17.9 Vdc, 500 ohms from 18 to 19.9 Vdc, and 600 ohms from 20 to 30 Vdc. Table 1 defines the current levels and corresponding detector status. The output is calibrated at the factory, with no need for field calibration.

Table 1—Detector Status Conditions Indicated by Current Level

Current Level (±0.3 mA)	Detector Status	Recommended Action
0 mA	Power Fault	Verify 12-30 Vdc is applied to detector
1 mA	Critical Fault	Cycle power. If fault does not clear or returns, replace sensor module or return to factory for service.
2 mA	Power Advisory (<12 Vdc)	Input power at detector is <12 Vdc. Increase power supply to 12-30 Vdc.
3 mA	Warm up	-
4 mA	Normal	-
6 mA	Advisory Fault	Cycle power. If fault does not clear or returns, replace sensor module or return to factory for service.
16 mA	Pre-Alarm	Smoke present at sub-alarm level.
20 mA	Smoke Alarm	-

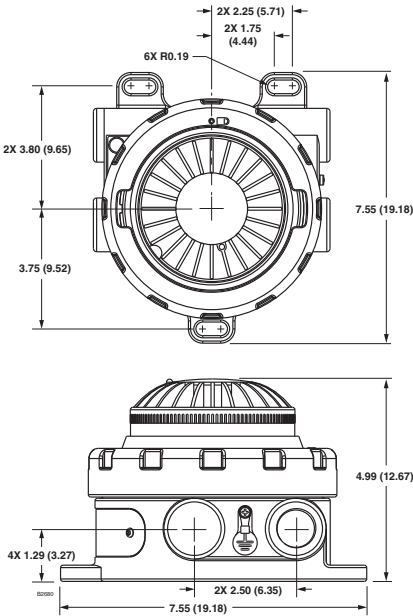


Figure 2—30-3013 Dimensions in Inches (cm)

NOTE

The output of the 0 to 20 mA current loop is monitored by the fault detection circuitry of the 30-3013. Therefore, an open circuit on the loop will cause the fault relay to change state.

An alarm will normally override a fault, unless the nature of the fault impairs the ability of the detector to generate or maintain an alarm output (i.e., loss of operating power)

INTEGRAL WIRING COMPARTMENT

All external wiring to the device is connected within the integral junction box. The detector is furnished with a maximum of four conduit entries, with either 3/4 inch NPT or M25 threads.

LED

An LED, located on the detector (see Figure 1), indicates normal operation and notifies personnel of an alarm. Table 2 indicates the condition of the LED for each status.

Table 2—Detector Status Indicator

Detector Status	LED Indicator
Power On / Normal Operation	Steady Off 1 blink on every 4 seconds
Alarm	Steady On

LATCHING

A detector configured for latching operation will remain in an alarm state indefinitely, after an alarm occurs.

NON-LATCHING

A detector configured for non-latching operation will check the alarm status of the detector once every 10 seconds. Once smoke falls below the alarm threshold, the alarm annunciation will clear within 10 seconds.

IMPORTANT

The latching or non-latching configuration must be specified during order placement. It is **not** field configurable.

Only the alarm annunciation can be configured for latching operation.

CONTINUOUS SELF-TEST

During normal operation, the detector performs the Self-Test function automatically in the background once per second. During the test, detection is not interrupted and no indication is given if the test passed. If the test fails, a critical fault will occur. If degradation is present and approaching critical levels, an advisory fault will occur.

MANUAL SELF-TEST

The Manual Self-Test function will immediately check the smoke chamber optics for degradation. Once initiated, there will be a one second delay before the result of the check is active. If there is a failure, the LED will shut off immediately after the one second test and a critical fault will occur. If the test passes, an alarm will be annunciated while the LED remains active.

For a latching detector, the alarm will continue until power is cycled to the unit. For a non-latching detector the alarm will clear after 10 seconds. If the test passes, but there is degradation present and approaching critical levels, an advisory fault will occur.

Magnetic Switch

The magnetic switch is used to initiate the Manual Self-Test (see Figure 3). Apply the magnet to the exterior housing and the LED will light to indicate that the magnet is detected. The LED will remain lit for at least one second during the test. After the initial delay, the test status will be indicated as described in the "Manual Self-Test" section.



Figure 3—Location of Magnetic Switch

IMPORTANT SAFETY NOTES

CAUTION

The wiring procedures in this manual are intended to ensure proper functioning of the device under normal conditions. However, because of the many variations in wiring codes and regulations, total compliance to these ordinances cannot be guaranteed. Be certain that all wiring complies with the NEC as well as all local codes. If in doubt, consult the authority having jurisdiction before wiring the system. Installation must be done by a properly trained person.

CAUTION

This product has been tested and approved for use in hazardous areas. However, it must be properly installed and used only under the conditions specified within this manual and the specific approval certificates. Any device modification, improper installation, or use in a faulty or incomplete configuration will render warranty and product certifications invalid.

CAUTION

The device contains no user serviceable components. Service or repair should never be attempted by the user. Device repair should be performed only by the manufacturer.

CAUTION

The 30-3013 is to be installed in locations where the risk of mechanical damage is low.

LIABILITIES

The manufacturer's warranty for this product is void, and all liability for proper function of the detector is irrevocably transferred to the owner or operator in the event that the device is serviced or repaired by personnel not employed or authorized by Detector Electronics Corporation, or if the device is used in a manner not conforming to its intended use.

NOTE

Observe precautions for handling electrostatic sensitive devices.

The 30-3013 should not be installed in areas in which ammonia, hydrogen sulfide and chlorine are normally present.

INSTALLATION

WARNING

All entries must contain appropriately rated plugs or fittings. It is required that each plug or fitting be wrench-tightened to an appropriate installation torque and meet the minimum thread engagement requirements per the applicable local standards, codes, and practices in order to retain the defined ratings. PTFE sealant or equivalent should be used on NPT threads.

NOTE

Detector housings must be electrically connected to earth ground. Internal and external earth ground terminals are provided. For AEx (United States Zone) installations the internal ground terminal shall be used for the equipment grounding connection. The external terminal can be used for supplementary bonding where local codes permit or require.

NOTE

The 30-3013 detector uses an internal Intrinsically Safe (I.S.) Barrier. Proper NEC I.S. grounding must be ensured.

GREASE/LUBRICATION

To ease installation and future removal, all threaded covers, stopping plugs, and thread adapters must be installed using thread lubricant. The recommended lubricant is a silicone-free grease, available from Det-Tronics.

For devices with NPT threads, Teflon tape or thread seal lubricant must be used for enhanced sealing capabilities.

IDENTIFICATION OF DETECTOR MOUNTING LOCATIONS

The most effective number and placement of detectors varies depending on the conditions on site. The individual designing the installation must often rely on experience and sound judgment to determine the detector quantity and best locations to adequately protect the area. Note that it is typically advantageous to locate detectors where they are accessible for maintenance.

For additional information on detector location and spacing, visit the National Fire Protection Association's website (www.nfpa.org) and refer to the National Fire Alarm and Signaling Code, NFPA 72, the standard on automatic fire detectors, or your local codes and standards.

PROTECTION AGAINST MOISTURE DAMAGE

It is important to take proper precautions during installation to ensure that moisture will not come in contact with the electrical connections of the system. The integrity of the system regarding moisture protection must be maintained for proper operation and is the responsibility of the installer.

If conduit is used, the use of proper conduit installation techniques, breathers, glands, and seals is required to prevent water ingress and/or maintain the explosion-proof rating.

Conduit drains must be installed at water collection points to automatically drain accumulated moisture. Conduit breathers should be installed at upper locations to provide ventilation and allow water vapor to escape. At least one breather should be used with each drain.

Conduit raceways should be inclined so that water will flow to low points for drainage and will not collect inside enclosures or on conduit seals. If this is not possible, install conduit drains above the seals to prevent the collection of water or install a drain loop below the detector with a conduit drain at the lowest point of the loop.

POWER SUPPLY REQUIREMENTS

Calculate the total detection system power consumption rate in watts from cold start-up. Select a power supply with adequate capability for the calculated load. Ensure that the selected power supply provides sufficient regulated and filtered output power for the entire system. If a back-up power system is required, a float-type battery charging system is recommended. If an existing source of power is being used, verify that system requirements are met.

TRANSPORT COVER

The Transport Cover (see Figure 4) keeps dust and particles out of the smoke chamber that may enter during transport, handling, or installation. It should remain fastened on the detector through the installation process.

IMPORTANT

*Remove the cover **only** after installation is complete and prior to powering the detector for the first time.*



Figure 4—30-3013 Transport Cover

MOUNTING LOCATION OPTIONS

Ceiling Mount

The 30-3013 is intended for surface mounting. It is normally mounted on the ceiling no less than six inches from a side wall (See Figure 5). The exact location of the detector must be determined by an evaluation based on engineering judgement, or if possible, by field tests.

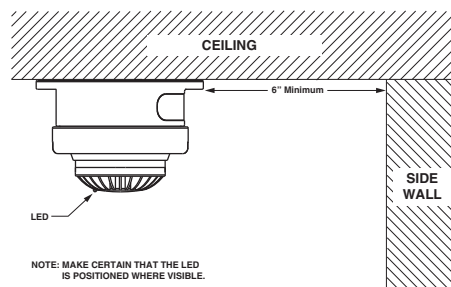


Figure 5—30-3013 Ceiling Mount

Wall Mount

The 30-3013 can also be mounted on a side wall (see Figure 6). The exact location of the detector must be determined by an evaluation based on supplemented engineering judgement, or if possible, by field tests.

IMPORTANT

Whenever possible, select a mounting orientation where the LED is visible to personnel within the area.

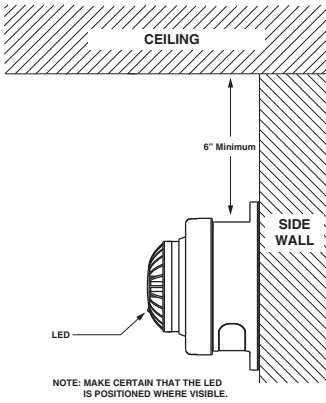


Figure 6—30-3013 Wall Mount

⚠ WARNING

For field connections, use wires/cables that are rated at 20°C greater than the maximum ambient temperature.

NOTE

In applications where the wiring is installed in conduit, dedicated conduit is recommended. Avoid low frequency, high voltage, and non-signaling conductors to prevent nuisance EMI problems.

JUMPER

Depending on the wiring option that is used, jumpers may be required. See Table 3 for the Jumper Usage Guide, and Figures 12 to 15 for wiring examples.

MOUNT THE DETECTOR

Using three No. 8 flat head screws (or equivalent) placed through the counter bored holes in the detector flange, secure the detector junction box to the surface location.

WIRING CABLE REQUIREMENTS

Always use proper temperature rated cabling type and diameter for input power as well as output signal wiring. 14 to 18 AWG (.75 - 2.5 mm²) shielded stranded copper wire is recommended.

The field wiring terminal connections are certified for a single wire in size from 12-24 AWG (0.2 to 2.5 mm² or two conductors with same cross section 0.2 to 0.75 mm²). The screws must be tightened down with a torque 4.4 - 5.3 in-lb (0.4 to 0.5 Nm). The metal housing must be electrically connected to earth ground.

A minimum of 12 Vdc must be present at the 30-3013 to ensure proper operation. The maximum cable length from power source to 30-3013 is 2000 feet (610 m). When the 30-3013 Smoke Detector is mounted remotely using an STB termination box, maximum cable length from 30-3013 to STB is 500 feet (150 m).

Table 3—Jumper Usage Guide

Wiring Option	0-20 mA		Relay	
	1	Used	No jumper required	Not Used
2	Used	No jumper required	Used	Jumper required in terminals 7 & 4 (P5)
3	Not Used	Jumper required in terminals 5 & 4 (P11)	Used	Jumper required in terminals 7 & 4 (P5)

WIRING PROCEDURE

Ensure that all cables are terminated properly. Conductor insulation should be stripped off with a bare conductor length of 0.28 inch (7 mm). Ensure that cable shield is properly terminated and that bare shield wire is not allowed to accidentally contact the metal housing or any other wire.

Use the following instructions when wiring the 30-3013 detector:

1. Slightly loosen the three setscrews located on the retaining ring (see Figure 7).

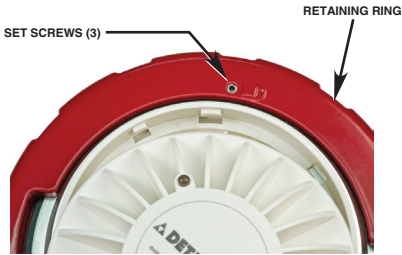


Figure 7—Setscrew Location

2. Unscrew the retaining ring to gain access to the wiring terminals (see Figure 8), and complete the installation of the system conduit. Feed the external wiring through the remaining junction box entry or M25 to 3/4 inch adapter. When installing the junction box, use care not to damage the wires and refrain from twisting them.

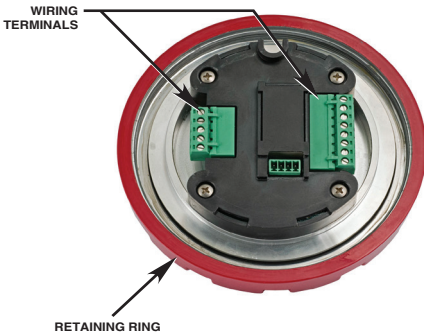


Figure 8—Location of Wiring Terminals

3. Connect the external wiring to the appropriate terminals.
 - Figure 9 shows the wiring terminals.

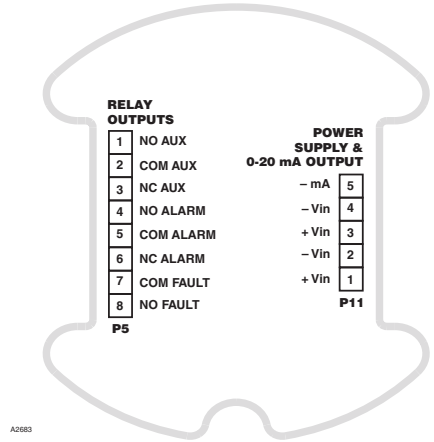


Figure 9—30-3013 Wiring Terminals

- Figure 10 shows the ground lug locations.
 - Figures 12 and 13 show wiring for single detector configurations.
 - Figures 14 and 15 show wiring for multiple detector configurations.
4. Re-install the assembly. Use the alignment guide (see Figure 11) to align the retaining ring with the junction box.
 5. Screw the retaining ring on to the junction box and re-tighten the three setscrews.

MAINTENANCE

WARNING

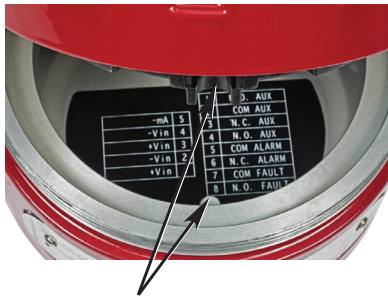
To avoid a potential electrostatic discharge (ESD), do not wipe or rub the surface of the 30-3013 sensor module.

NOTE

The 30-3013 Smoke Detector contains no user serviceable components and should never be opened. The 30-3013 wiring compartment is the only part of the smoke detector that should be opened by the user in the field.



Figure 10—Ground Lug Locations



ALIGNMENT GUIDE

Figure 11—Alignment Guide Location

ROUTINE INSPECTION

Regularly scheduled maintenance is not required, however, the 30-3013 cover and smoke chamber should be inspected periodically when detectors are located in abnormally dirty or dusty environments, to ensure the smoke chamber is not blocked by dirt or debris.

The smoke detector can be tested using the same methods employed for any photo-electric detector. Det-Tronics recommends using a test aerosol smoke dispenser for periodic maintenance of the detector.

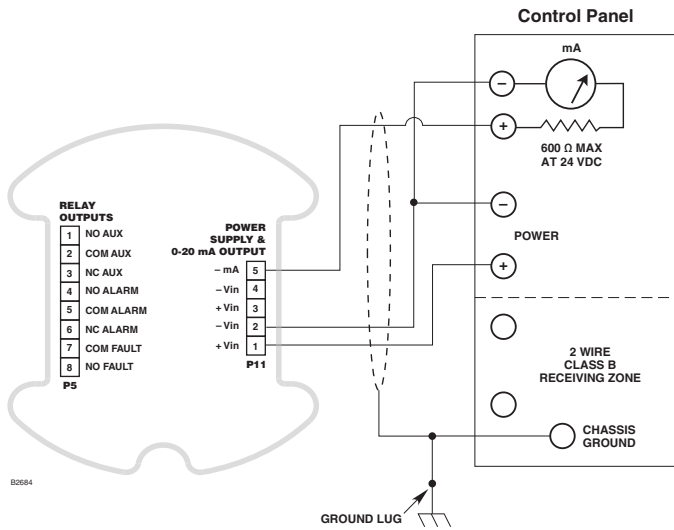


Figure 12—Single Detector Wiring (0-20 mA used, Relays not used)

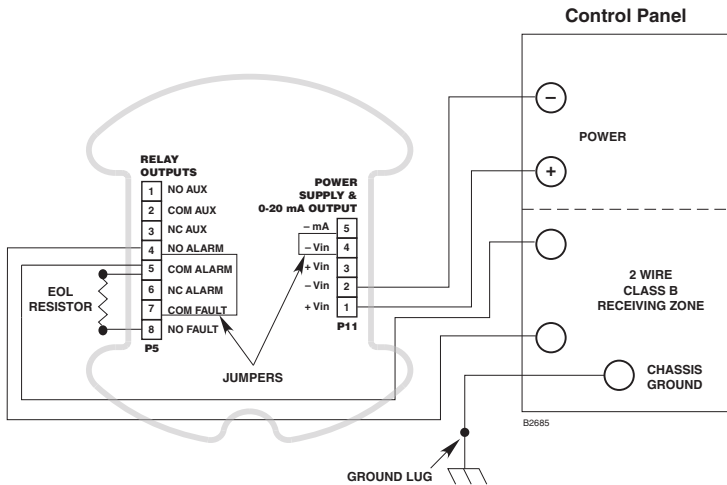


Figure 13—Single Detector Wiring (0-20 mA not used, Relays used)

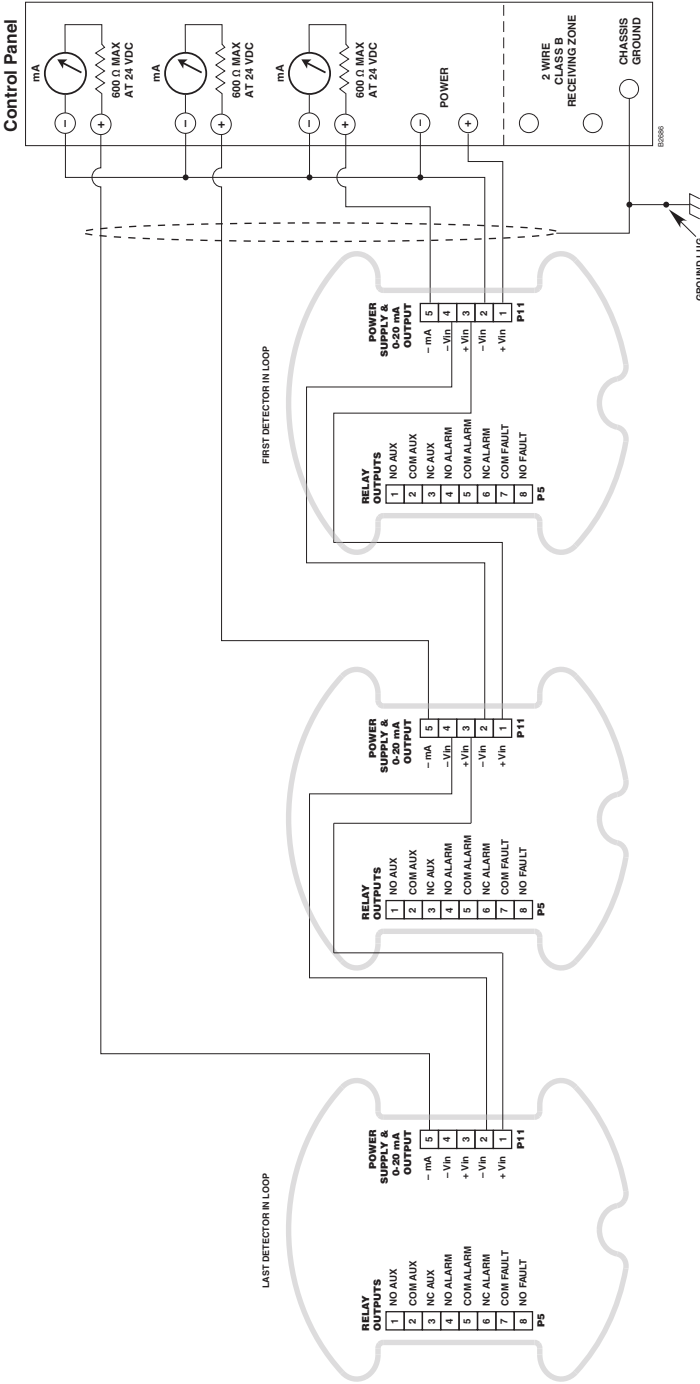


Figure 14—Multiple Detector Wiring (0-20 mA used, Relays not used)

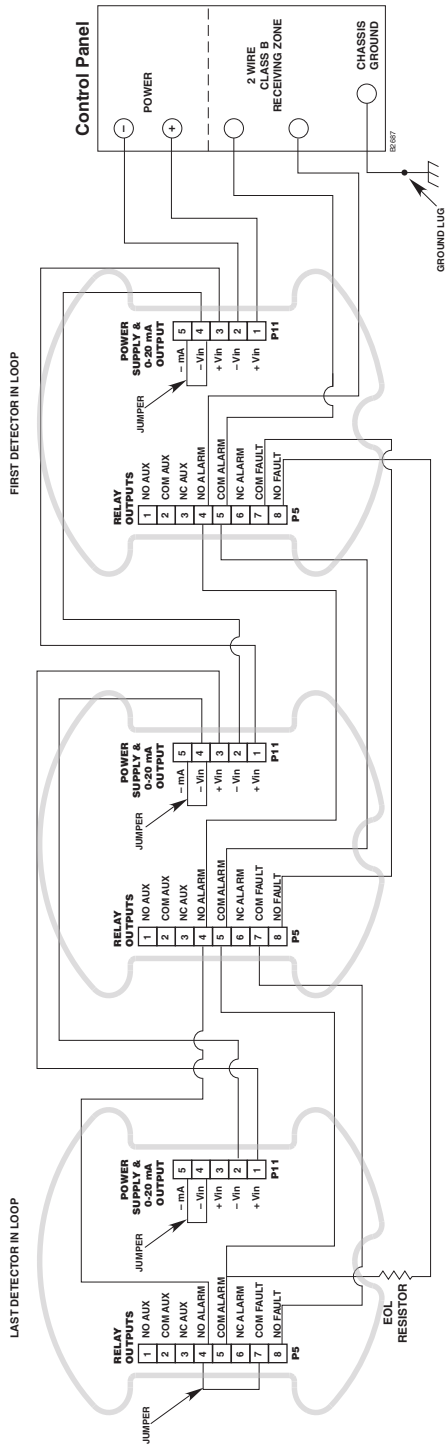


Figure 15—Multiple Detector Wiring (0-20 mA not used. Relays used)

DEVICE REPAIR AND RETURN

The detector is not designed to be repaired in the field. If it is determined that the problem is caused by an electronic defect, the device must be returned to the factory for repair. The sensor module is field replaceable in case of dirtiness, damage, or failures incurred in the field.

Prior to returning devices, contact the nearest local Det-Tronics office so that a Return Material Authorization (RMA) number can be assigned. **A written statement describing the malfunction must accompany the returned device or component to assist and expedite finding the root cause of the failure.**

Pack the unit properly. Always use sufficient packing material. Where applicable, use an antistatic bag as protection from electrostatic discharge.

NOTE

Det-Tronics reserves the right to apply a service charge for repairing returned product damaged as a result of improper packaging.

Return all equipment transportation prepaid to the factory in Minneapolis.

30-3013 MODEL MATRIX

MODEL	DESCRIPTION	
30-3013	Explosion Proof Smoke Detector	
	TYPE	MATERIAL
	A	Aluminum
	TYPE	PORT
	1	1 Port
	2	2 Port
	3	3 Port
	4	4 Port
	TYPE	THREAD
	M	Metric M25
	N	3/4" NPT
	TYPE	OUTPUT
	12	0-20 mA, Relay, Non-Latching
	13	0-20 mA, Relay, Latching
	TYPE	APPROVAL
	A	FM/IECEX/CSA

ORDERING INFORMATION

When ordering, please specify:
30-3013 Explosion Proof Smoke Detector
Refer to the 30-3013 Model Matrix for details.

For assistance in ordering a system to fit your application, please contact:

Detector Electronics Corporation
6901 West 110th Street
Minneapolis, Minnesota 55438 USA
Operator: (952) 941-5665 or (800) 765-FIRE
Customer Service: (952) 946-6491
Fax: (952) 829-8750
Web site: www.det-tronics.com
E-mail: det-tronics@carrier.com

SPARE PARTS

30-3013 Replacement Sensor Module
104286-001

ACCESSORIES

Canned Smoke	000119-008
	000119-046
Grease (silicone-free)	005003-001
Magnet	102740-002
Magnet with Extension Pole	007739-001
Stop Plug, 3/4" NPT, AL	101197-001
Stop Plug, M25, AL	101197-005
Q3013D-1 Duct Mount w/1 ft. tube	012894-001
Q3013D-1 Duct Mount w/3 ft. tube	012894-003
Q3013D-1 Duct Mount w/6 ft. tube	012894-006
Q3013D-1 Duct Mt. w/10 ft. tube	012894-010

APPENDIX A

FM APPROVAL DESCRIPTION

30-3013

Class I Div 1 Groups B, C, D T4
Class I Div 2 Groups A, B, C, D T4
Class I Zone 1 AEX db ia IIC T4 Gb
Tamb -20°C to +65°C
IP44

Q3013D Duct Mount Accessory

ANSI/UL 268A: 4th Edition Standard for Smoke Detectors for Duct Applications (only when installed on the vertical surface of the duct)

Applicable Documents:

FM 3810: 2005	Elec. and Electronic Test, Measuring, and Process Control Equipment
FM 3600: 2011	Electrical Equipment for use in Hazardous (Classified) Locations
FM 3610: 2010	Intrinsically Safe, Class I, II, III, Div I, Haz. Loc.
FM 3611: 2004	Elec. Equip. for use in Cl. I/II, Div. 2 and Cl. III, Div. 1/2 Haz. Loc.
FM 3615: 2006	Explosion proof Electrical Equipment
FM 3230: 2010	Smoke actuated detectors for automatic alarm signaling
ANSI/ISA 1010-1: 2004	Safety Requirements for Electrical Equipment for Measurement, Control, and Laboratory Use – Part 1: General Requirements
ANSI/IEC 60529: 2004	Degrees of Protection Provided by Enclosures (IP Code)
ANSI/ISA 60079-0: 2013	Explosive atmospheres – Part 0: Equipment – General Requirements
ANSI/ISA 60079-1: 2013	Explosive atmospheres – Part 1: Equipment protection by Flameproof Enclosures “d”
ANSI/ISA 60079-11: 2014	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i”

Special Conditions For Safe Use X:

1. The 30-3013 is to be installed in locations where the risk of mechanical damage is low.
2. Potential electrostatic charging hazard please see instructions for proper installation.
3. All unused device openings must be closed using a suitably certified plug.
4. For field connections, use wire rated 20°C greater than maximum ambient temperature.
5. For AEx d rated Model 30-3013 Smoke Detector, the flameproof joints are not allowed to be repaired per manufacturer's instruction manual.
6. The 30-3013 shall be used with the Q3013D Duct Mount Accessory for duct mount installations.

APPENDIX B

CSA APPROVAL DESCRIPTION

30-3013

Class - C481804 - Signal Appliances - Systems - For Hazardous Locations
Ex db ia IIC T4 IP44

Applicable Requirements

C22.2 No. 0-M91	General requirements - Canadian Electrical Code, Part II
C22.2 No. 60529: 2015	Degrees of protection provided by enclosures (IP Code).
C22.2 No. 610101-1: 2012	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General Requirements.
C22.2 No. 60079-0: 2015	Electrical apparatus for explosive gas atmospheres - Part 0: General Requirements
C22.2 No. 60079-1: 2016	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d".
C22.2 No. 60079-11: 2014	Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic Safety "i".

Special Conditions For Safe Use X:

1. Field wiring must be in accordance with CEC Part 1, Section 18.
2. The enclosure must be bonded to ground according to CEC Part 1, Section 18.
3. For enclosures with metric conduit entries certified metric to NPT adaptors shall be used.
4. All unused openings must be closed using suitably certified plugs.
5. A seal shall be installed within 18" of enclosure.
6. Measures must be taken to avoid ignition due to mechanical impact.
7. IPx4 maintained only when mounted on a ceiling.

APPENDIX C

IECEX APPROVAL DESCRIPTION

30-3013

IECEX FMG15.0014X
Ex db ia IIC T4 Gb
Tamb -20°C to +65°C
IP44

IEC Standards:

IEC 60079-0:2011	Electrical apparatus for explosive atmospheres, General Requirements
IEC 60079-1:2014	Electrical apparatus for explosive atmospheres, Flameproof enclosure "d"
IEC 60079-11:2011	Intrinsic Safety explosive atmospheres Equip protection by Intrinsic Safety

Special Conditions For Safe Use X:

1. The 30-3013 is to be installed in locations where the risk of mechanical damage is low.
2. Potential electrostatic charging hazard please see instructions for proper installation.
3. All unused device openings must be closed using a suitably certified plug.
4. For field connections, use wire rated 20°C greater than maximum ambient temperature.
5. For Ex d rated Model 30-3013 Smoke Detector, the flameproof joints are not allowed to be repaired per manufacturer's instruction manual.

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95-8746

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