TFO-480AU

TELEFIRE

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Analog Addressable Photoelectric Smoke Detector

Technical Manual

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Revision Table					
Date	**Revision**	**Description**	**Written by**	**Reviewed by**	**Approved by**
	1.03	**2nd revision**	Ami Holtzman	Boris Gitelman	Dov Zelig
Signature					
Date					

i **Note**

The intent and meaning of the term "**Trouble**" are as used in **NFPA 72** guideline and **UL** standard.

i **Note**

Do not attempt to install, operate, maintain or inspect this product until you have read through this instruction manual and appended documents carefully and can use the equipment correctly. Do not use this product until you have a full knowledge of the equipment, safety information and instructions.

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1 Introduction

TELEFIRE's **TFO-480AU Analog Addressable Photoelectric Smoke Detector (AAPS Detector)** is an advanced detector that offers the following advantages:

- It is considered “green” (environment friendly) as it does not contain radioactive materials;
- The AAPS Detector contains a powerful microprocessor that performs initial signal processing locally. The final processing and decision making are performed by the control panel;
- The AAPS Detector's microprocessor offers a high level of noise immunity and performs interactively with the control panel drift compensation in order to overcome environmental changes and dust accumulation in the chamber. Once the AAPS Detector is no longer able to compensate the control panel will display a trouble signal “maintenance” - requesting cleaning. The microprocessor performs also signal processing, enables accurate control of the photoelectric chamber, according to parameters set at the control panel, and manages the communication process with the control panel;
- The AAPS Detector excels in sensing smoldering smoke and smoke from the burning of various materials;
- Soft-set address – the AAPS Detector’s address is programmed into its memory without the use of mechanical switches or moving parts;
- The AAPS Detector can be tested directly with a test magnet or remotely from the control panel;
- The AAPS Detector’s chamber and labyrinth can be cleaned in the field by authorized people.

The AAPS Detector consists of a vented chamber (labyrinth), an infrared transmitter and a receiver that detects light scattering from the smoke particles in the chamber.

The sensitivity of the AAPS Detector can be adjusted from the control panel within the range of 0.8% – 2.0%/foot (obscuration) in 0.2% increments. Please refer to the appropriate control panel manual for details.

The AAPS Detector contains an alarm LED indication that has 360° visibility. This LED flashes during normal operation and is latched on during an alarm.

2 Compatibility

2.1 Control Panels

The AAPS Detector is compatible with **TELEFIRE**'s ADR-7000/3000 Analog Addressable Control Panel.

2.2 Bases

The AAPS Detector is compatible with **TELEFIRE**'s TFB-180 Standard Detector Base.

Warning

Do not connect these detectors to control panels made by manufacturers other than TELEFIRE.

3 Installation

Planning of quantity and location of AAPS Detectors shall be done according to the local codes and regulations and in accordance to the planning consultant's requirements.

3.1 Pre-Installation Planning

3.1.1 Capacity Planning

Ensure that the total number of initiating devices (detectors, switches, call point, etc.) does not exceed the maximum allowed per detection zone, floor area, or other limitations as specified by the applicable standards and regulations. Ensure that the ADR-7000 has an available address for each AAPS Detector.

3.1.2 Cabling Planning

The AAPS Detector is connected to the control panel via a TFB-180 standard detector base via a two-wire connection (the control panel's SLC loop). It is recommended that you use a twisted pair cable for SLC connection.

3.2 Connecting to the ADR-7000/3000 SLC Line

Connect the bases to the SLC loop as per the following figure.

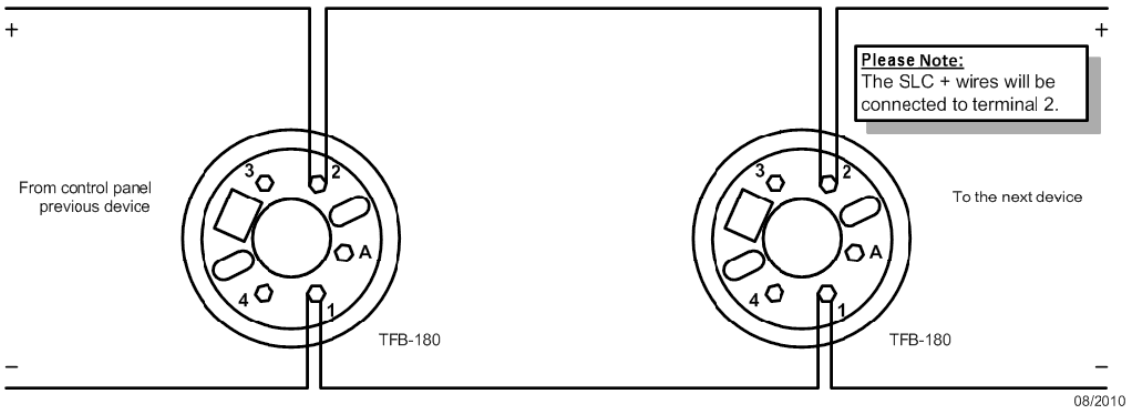

Figure 1 Connecting to the ADR-7000 SLC Line

3.3 Post-Installation Tests

Perform a walk test to ensure that the control panel receives alarm and trouble signals from the AAPS Detectors. Refer to the control panel's technical manual for a detailed explanation how to perform a walk test.

Note

Notify the operator or the security personnel that the system will be temporary disconnected before adding detectors to the control panel.

3.4 Installation

3.4.1 Address Programming

Assign the AAPS Detector's address in the range of 1 – 127 prior to installation by using the PROG-4000 Analog Addressable Detector and Accessory Programmer. Please refer to the PROG-4000 manual for additional details or prog on the ADR-7000/3000.

3.4.2 ADR-7000 Configuration

Configure the AAPS Detector as "**Photoelectric Detector**" in the ADR-7000/3000. Configure the AAPS Detector's sensitivity at the control panel ("0.8" – most sensitive, "2.0" – least sensitive"), if required.

Please refer to the ADR-7000/3000 technical manual for a detailed description of programming and configuration.

3.4.3 Location

The AAPS Detector is designed to protect indoor fire risk areas, except environments where smoke, steam, dust, or corrosive gasses are present under normal conditions.

Photoelectric smoke detectors should be used for detecting smoldering fires in corridors and along escape routes, wood- or paper stores, electric cabinets, etc., They should not be used in steamy, dusty, or smoky areas such as kitchens, bathrooms, saunas, laundries, etc.

Observe NFPA 72 guidelines and local fire codes when installing the TFO-480AU.

When installing an AAPS Smoke Detector on a slanted (up to 45°) ceiling that allows free flow of smoke (i.e., there are no beams or other obstacles) the AAPS Detector should be installed parallel to the flow line of the ceiling, and not horizontally. For ceilings with impediments to free smoke flow please refer to the relevant local fire code standard.

Use only **TELEFIRE**'s TFB-180 Standard Detector Base.

UL

UL Requirement

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

3.4.4 Connecting to the ADR-7000 SLC Line

Connect the SLC to the AAPS Detector's base. Refer to sections 3.2, 3.3 & 3.4 above and to the TFB-180 technical manual for wiring diagrams.

All wiring must conform to applicable local codes, ordinances and regulations.

Note

Measure the wiring to ensure there are no shorts before connecting the wiring to the control panel.

Connecting or adding AAPS Detectors to the control panel shall be done when all power to the control power (AC and batteries) is disconnected.

3.5 Post-Installation – Field Test

Perform a field test (also known as "Walk Test") to ensure that all AAPS Detectors function properly. Please see the control panel's manual for a detailed explanation on how to perform a field test.

Testing is automatic other than the activation of the AAPS Detector that is done manually by putting a magnet next to the AAPS Detector's test point. See section 4.1.1 for a detailed explanation on how to perform the test.

Ensure that the AAPS Detector functions properly and is included in the necessary activation matrices.

Warning

Do not apply naked flame to the detector!

3.6 Documentation

Mark the AAPS Detector's address on the label.

4 Maintenance

The ADR-7000/3000 control panel monitors the AAPS Detectors continuously. Any abnormal condition in the AAPS Detector will cause a trouble signal to be displayed on the control panel.

When an AAPS Detector becomes contaminated to a value that cannot be compensated, the control panel will display a maintenance trouble signal. At this point the AAPS Detector must be cleaned.

Note

Please check the AAPS Detector’s value in the control panel’s MONITOR screen. If the value is higher than 103, replace the AAPS Detector. The AAPS Detector should be cleaned if it is lower than 61.

4.1 Periodic Testing

Fire alarm systems should be checked periodically. Please refer to NFPA and local fire codes to determine service frequency.

Use the control panel’s Walk Test mode to perform automatic reset. Please refer to the control panel’s manual for additional details on how to perform Walk Test.

4.1.1 Test Procedure – Locally

1. Apply a magnet to the side of the detector next to the LED for 3 – 5 seconds. This activates an internal monitor module that simulates presence of smoke in the AAPS Detector, tests the sensing mechanism and the AAPS Detector's electronic control module.

Warning

Do not apply naked flame to the detector!

2. The analog value representing the smoke level will be transmitted to the control panel for evaluation. The control panel will transmit a signal to the AAPS Detector to turn on its LED indicator. During the test the AAPS Detector's values may be observed at the control panel. Please refer to the ADR-7000/3000 manual for additional information.
3. Once the AAPS Detector is in alarm mode, it keeps the alarm condition until reset by the control panel. If the control panel is in "Walk Test" mode, it will reset the alarm after a few seconds. Please refer to the ADR-7000/3000 manual for instructions on how to conduct a walk test.

4.1.2 Test Procedure – From the Control Panel

It is also possible to test the AAPS Detector using the ADR-7000's/3000's "Monitor" option menu. Please refer to the ADR-7000/3000 manual for instructions on how to use and interpret the monitor screen.

Note

Testing detectors with an aerosol spray may cause increased contamination in the labyrinth chamber due to accumulation of oil residue and dust. This accumulation may shorten the detectors life-span and require it to be sent to the factory for cleaning.

4.2 Detector Cleaning

Contamination is a by-product of normal operation and may be caused by various sources, most of which are impossible to eliminate. Normal human activity creates a constant source of airborne dust and dirt that over a period of time may affect the AAPS Detector's performance.

AAPS Detectors should be cleaned when a maintenance signal appears on the control panel. Local regulations may specify an interval period for maintenance schedule.

The AAPS Detector's chamber is removable and can be cleaned or replaced. Cleaning should be done by qualified personnel in order to ensure that the AAPS Detector is properly handled, reassembled correctly and tested for proper operation.

5 Indications and Troubleshooting

The AAPS Detector includes an indicating red LED that flashes with every access from the control panel and is turned solid on during alarm.

A detailed message will also be displayed on the control panel and remote annunciators.

Please see the control panel's manual for a detailed explanation of alarm, trouble, and maintenance alarm indication.

6 Specification

Diameter ..... 101 mm including base
Height (including base and LED)..... 52 mm
Weight ..... 106 gr.
Operating Temperature Range ..... -10°C ~ +60°C (14°F ~ 140°F)
Relative Humidity Range ..... 10% – 93% non-condensing
Sensitivity Range (set at control panel)..... 0.8 – 2.0%/foot obscuration
Operating Voltage
(supplied by control panel via SLC)..... 21V, Modulated
Maximum Current Consumption:
Quiescence mode 290µA
Alarm mode (without Auxiliary Indicators) 2.6mA
Alarm mode (3 Auxiliary Indicators) 35mA
Maximum Current to auxiliary indicators 50mA
Local Indication……Local red LED indicator (light-emitting diode).

All values are nominal. Specifications are subject to change without prior notice

7 Certification

- **TELEFIRE**'s **TFO-480AU Analog Addressable Photoelectric Smoke Detector has the UL 268 Listed approval**.