



ADR-20R OPTICAL SMOKE DETECTOR

Overview

The ADR-20R optical smoke detector is designed for detection of visible smoke at a start of a fire's flameless stage when material starts to smoulder, and therefore generally, a long time prior to the appearance of an open flame and a noticeable rise in temperature. The detector is intended to be installed in premises, in which, under normal conditions, smoke, dust or steam condensation are not present. The ADR-20R detector is intended to interoperate with detector lines of any burglar alarm system control panels.

Principles of operation

The ADR-20R is a Tyndall effect based optical smoke detector. Its operation is based on measuring infrared (IR) light scattered by smoke particles (aerosol) entering the measuring chamber which is inaccessible to external light.

A photodiode, a radiation receiver located inside the measuring chamber, does not detect infrared light emitted by a transmitter – an electroluminescent diode – until the moment when smoke particles scattering the infrared light enter the measuring chamber directing it at the receiver.

After exceeding the pre-set threshold value, the detector's electronic system activates an optical alarm and switches over the output contact of the alarm relay. Connecting a contact into the detector line of the burglar alarm control panel may require using appropriate resistors: alarm and end-of-line (EOL) resistors specific for a given control panel.

The detector relay in a monitoring state can operate in two modes:

- a voltage mode – the relay is continuously in a voltage mode and its contacts are switched once the detector activates itself and at the moment of a power outage (factory settings),
- a non-voltage mode – the relay contacts are switched only when the detector is activated.

Function

The ADR-20R detector is powered by burglar alarm system control panel.

The detector can be in one of the following modes:

- a monitoring mode – the LED diode flashes every 40 seconds confirming its proper operation;
- an alarm mode – signalled by a flashing LED diode and a modulated audio signal;
- a fault mode – brief audio signal emitted every 40 seconds without a flashing of the LED diode;
- an insufficient (low) voltage supply mode – brief audio signal

emitted every 40 seconds with a flashing of the LED diode.

The detector is equipped with a test button for testing the detector's proper operation. Pressing the test button activates the optical and audio signal, the same as in a case of an actual fire alarm.

In case of dirt accumulation in the measuring chamber, which may be a result of a long-term usage under adverse conditions, the chamber can be easily cleaned or replaced with a new one.

Installation

The ADR-20R detectors can be installed in all rooms susceptible to a fire hazard. An area protected by a single detector ranges between 60 m² and 80 m² depending on the height at which it is installed. The detectors should be installed on ceilings, above the centre of the room, and if it is not possible then a minimum 20 cm of unobstructed space from the detector should be allowed to enable free air flow. Detectors should not be installed in the vicinity of vents, air conditioning units, heaters, cookers or any areas where steam condensation or smoke are present.

Technical specifications

Power supply	12 V ± 20%
Quiescent current in modes:	
- non-voltage	≤ 500 µA
- voltage	≤ 17 mA
Alarm power current at 12 V in:	
- non-voltage	max 24 mA
- voltage	max 8 mA
Alarm relay	switch-over contact
Relay contact load capacity	1 A/30 V 0,5 A/125 V
Colour	white
Operation temperature range	from -10 °C up to +55 °C
Relative humidity	up to 95 % at 40 °C
Dimensions (with base)	Ø112 x 57 mm
Spacing of the installation holes	72 mm

IMPORTANT:

The ADR-20R detector is intended to operate in burglar alarm system control panel detector lines ONLY.