DOT-4046
ADDRESSABLE MULTI-STATE MULTI-SENSOR DETECTOR

Overview

The DOT-4046 processor based two-sensor detector is designed for detection of a smoke and a rise in temperature, concurrent with a fire at its early development stage. The detector has two built-in sensors: smoke and heat. This allows the use of the detectors in closed spaces where in case of fire there is a visible smoke or a rise in temperature or where both of these factors appear simultaneously. The DOT-4046 optical smoke detector can operate only in lines/loops of the addressable POLON 4000 system fire alarm panels.

Principles of operation

The DOT-4046 detector is equipped with two sensors (smoke and heat). The optical smoke sensor is based on the Tyndall effect – scattering of infrared (IR) radiation on smoke particles. The main element of the detector is an optical module, consisting of an electroluminescence diode emitting infrared radiation and a photodiode being the receiver of the radiation. The optical module is protected by a labyrinth, damping both external light and direct light of the emitting diode. When smoke particles enter the area of the optical module, infrared radiation is scattered by smoke particles. Part of this scattered radiation reaches the photo-diode that generates an alarm signal. The heat sensor reacts to a rise in temperature during a fire. The detector can be programmed for operating according to A1R or BR class pursuant to the PN-EN 54-5 European standard.
Information from both sensors is subjected to advanced signal analysis by an appropriately programmed processor, which evaluates a status of a fire hazard.
The DOT-4046 detector contains self-compensation circuits, which maintain its constant sensitivity during progressing dirt build-up inside the measuring chamber. After exceeding a set level of contamination, the detector emits a fault signal denoting the necessity for servicing and cleaning works. A failure to perform the servicing works before self-regulation is completely exhausted (e.g. for a few weeks) can trigger false alarms at the control panel.
The built-in microprocessor device and the proper detector software guarantee that the entire phenomenon accompanying a fire within the vicinity of the detector will be quickly analysed and false alarms will be eliminated.
After selecting a suitable alarm variant (from the control panel level), the detectors can operate in an interactive mode, one detector can communicate with others in the same zone. They can also provide currently measured analogue value of the fire factor.
Beside its own address, code type, alarm, and operation modes, the detector also transmits (into the detection loop) information about the servicing mode, a fault of internal devices, and operation of a short circuit isolator. The alarm mode is indicated by a flashing red (two-colour) LED diode. The fault status of the detector, service alarm, and operation of the short circuit isolator is indicated by the same (two-colour) LED diode flashing a yellow light.
The DOT-4046 detectors can be programmed to appropriate sensitivity in three modes: normal, increased, and decreased level. This makes it possible to adapt the detectors to specific conditions during operation in the protected area.
Coding of the detector address can be done automatically at the control panel level – the address code is saved in its non-volatile memory.
The detectors are equipped with internal short circuit isolators, and can operate installed in the non-addressable G-40 bases.
An additional optical alarm signal of a detector or group of detectors can be obtained by connecting the WZ-31 alarm indicator.

The DOT-4046 detectors meet the requirements of the PN-EN 54-7 and the PN-EN 54-5 European standards.

Technical specifications

Operation voltage	16.5 ÷ 24 V
Max. quiescent current	< 150 µA
The number of operating variants	4
Programming of detector address	from the control panel level
Detectable test fires:	from TF1 up to TF6 and TF8
Operation temperature range (according to operating variant):	from -25 °C up to +50 °C or from -25 °C up to +65 °C
Dimensions (with base)	Ø 115 x 69 mm
Mass	0.2 kg