



DOR-4046

ADDRESSABLE MULTI-STATE OPTICAL SMOKE DETECTOR

Overview

The DOR-4046 processor based optical smoke detector is designed to detect a visible smoke at a start of a fire's flameless stage when material starts to smoulder, and therefore, a long time prior to the appearance of an open flame and a noticeable rise in temperature.

The DOR-4046 is an analogue detector with automatic sensitivity self-compensation that is it maintains constant sensitivity during progressing dirt build-up in the measuring chamber and during changes of air pressure and vapour condensation. The DOR-4046 optical smoke detector can operate only in lines/loops of the addressable POLON 4000 fire alarm system panels

Principles of operation

The DOR-4046 is a Tyndall effect optical smoke detector. Its operation is based on measuring the infrared (IR) radiation scattered by smoke (aerosol) particles. The main element of the detector is an optical module, consisting of an electroluminescence diode emitting infrared (IR) radiation and a photodiode acting as the receiver of the radiation. The optical module is protected by a labyrinth, damping both external light and direct light from the emitting diode. When smoke particles enter the optical module area, infrared radiation scatters on smoke particles. Part of this scattered radiation reaches the photodiode that generates an alarm signal.

The DOR-4046 detector contains self-compensation circuits, which maintain constant sensitivity during progressing dirt build-up inside the measuring chamber. After exceeding a pre-set threshold of dirt build-up, the detector emits a fault signal denoting the necessity for servicing and cleaning works. The detector has a replaceable optical chamber, which can be cleaned or replaced with a new one.

A failure to perform the servicing works before self-regulation is completely exhausted (e.g. for a few weeks) can cause an initiation of false alarms sending to the control panel.

The built-in microprocessor device and the appropriate detector software guarantee that the entire phenomenon accompanying a fire within the vicinity of the detector will be analysed quickly 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.

Besides 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 DOR-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 from the control panel level – the address code is saved in its non-volatile memory.

The detectors are equipped with internal short circuit isolators.

They are installed in the non-addressable G-40 bases.

An additional optical alarm signal of a detector or a group of detectors can be obtained by connecting the WZ-31 alarm indicator.

The DOR-4046 detectors meet the requirements of the PN-EN 54-7 European standard.

Technical specifications

Operation voltage	16.5 ÷ 24 V
Max. quiescent current	≤ 150 µA
Number of programmable sensitivity levels	3
Detectable test fires	from TF2 to TF5
Programming of detector address	from control panel level
Operation temperature range	from -25 °C up to +55 °C
Dimensions (with base)	∅ 115 x 54 mm
Mass	0.2 kg