



DPR-4046

ADDRESSABLE MULTI-STATE MULTI-SENSOR DETECTOR

Overview

The DPR-4046 microprocessor based multi-sensor detector is designed for detection of a visible smoke and a flame, concurrent with an early stage of an open fire ignition. The detector has two types of built-in sensors (smoke and flame). It enables detection of a fire at its beginning stage that is when material starts to smoulder, accompanied by a visible smoke or a rise in temperature or when both these physical phenomena are present.

The DPR-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 also during changes of air pressure and vapour condensation. The DPR-4046 detector can operate in lines/loops of the addressable POLON 4000 system fire alarm panels.

Principles of operation

The DPR-4046 detector is equipped with two sensors (a visible smoke and a flame sensor). The DPR-4046 is a Tyndall effect optical smoke detector. Its operation is based on measuring of infrared (IR) radiation scattered 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 on smoke particles. Part of this scattered radiation reaches the photodiode that generates an alarm signal.

Similarly, a flame flickering is received by the open flame detecting part of the detection system and after processing the signal reaching the detector, an evaluation of a fire hazard takes place.

The DPR-4046 detector contains self-compensation circuits, which maintain constant sensitivity during progressing dirt build-up inside the measuring chamber. After exceeding a pre-set contamination threshold, 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 cause triggering of false alarms by the dirt contaminated detector. The built-in microprocessor device and the appropriate detector software guarantee that the entire phenomenon accompanying a fire in 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 the current fire factor's analogue value measurements.

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 the operation of the short circuit isolator are indicated by the same (two-colour) LED diode flashing a yellow light.

The DPR-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 and they can operate 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 DPR-4046 detectors meet the requirements of the PN-EN 54-7 European standard.

Technical specifications

Operation voltage	16.5 ÷ 24 V
Max. quiescent current	< 170 µA
The number of operating variants	3
Programming of detector address	from the control panel level
Detectable test fires:	from TF1 up to TF5 and TF8
Operation temperature range (according to operating variant):	from -25 °C up to +50 °C
View angle	120 °
Dimensions (with base)	∅ 115 x 69 mm
Mass	0.15 kg

CAUTION

The DPR-4046 detector is NOT a flame detector but a smoke detector, and thus is NOT suitable for detection of TF6 test fire.