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## 1. Broadcast Description

The flame detector reacts only upon the short-wave part of the UV range (UV-C 200 nm to 280 nm, where by the highest sensibility is between 210 +/- 10 nm) of an optical radiation of an open flame. Thus, an influence generally caused by embers and bulbs and at respective sensibility adjustment against solar radiation, special fluorescent lamps and discharge sparks will be avoided.

### **Attention!**

UV-radiating sources such as welding flames, special type lamps, arc lamps and ionizing radiation (radio-activity, x-rays) can cause a faulty alarm.

Reflected UV-radiation of high intensity will be sensed from the flame detector and will cause an alarm.

The time of response of the detector is depending of:

- ◆ Intensity and type of the flame
- ◆ Distance between flame and detector
- ◆ Evaluation circuit of the detector

## 2. Function of the Fire Detection

The UV-detector tube UVN 81-H will be supplied with 550 VDC from the DC/DC transformer in the detector. The emitting UV-radiation of an open flame will be determined by the UV-vacuum tube and transformed into rectangular wave pulses and from the Signal Unit like grounded base circuit 4.5317 interpreted.

## 3. Voltage Monitoring

Generating of the voltage for the detector tube will be continuously monitored.

## 4. Construction

In order to use the detector for all types of flame detection, the evaluation and detection electronic has been especially designed. The detection electronic is mounted on 2 circuit boards.

### 4.1. Relay board

On this board there are mounted the fuse, the detection relay respectively transistors for alarm and voltage monitoring and failure.

### 4.2. Evaluation Board (Signal Unit)

On this unit there are mounted the UV-vacuum tube, the power supply (DC transformer), The detection module with the belonging to electronic. The unit will be connected to the four sockets of the relay board. Therefore, in case of a failure neither the detector housing nor the cables must be dismantled, but only the signal unit must be removed and replaced.

The relay board, respectively the function of the relays can be checked in the build-in position as follows:

- ◆ Connection of socket L1 with L3 = the alarm relay get energized
- ◆ Connection of socket L1 with L4 = voltage monitoring relay/failure signal relay gets energized.

On the evaluation board (Signal Unit) there is mounted one 16-pole IC socket (BU1) and 14-pole socket (BU2).

#### 4.2.1 Function of the 16-pole BU1 with belonging to Coder Unit

In the coder unit belonging to the BU1 there are installed bridges and resistors which can influence as required the following functions of the detector:

1. Response sensibility of an open flame will be adjusted as required.

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Version 3

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## 4.2.2 Function of the 14-pole BU2 with belonging to Coder Unit

In the coder unit belonging to the BU2 there are installed bridges and resistors which can influence as required the following functions of the detector:

### 4.2.2.1 Alarm Signal

a.) Closed Circuit Operation

The relay is normally energized, but drops out in case of an alarm.

b.) Open Circuit Operation

The relay is normally reenergized, but get energized in case of an alarm.

c.) Continuous Alarm

The relay gets energized, the alarm is on until the power supply of the detector is shortly disconnected (+24 VDC).

d.) Time-Limited Alarm

The relay gets energized, the alarm will be reset automatically, (according to the adjustment to 95 sec.).

e.) Alarm so long as fire is detected.

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