Rules for mounting, starting, testing, maintenance, repairs and hints on troubles

1. Mounting

When mounting the flame detector the optical location angle has to be observed. The location angle is

vertical approx. 180°
horizontal approx. 180°

The sensitivity will decrease to the sides. Therefore adjust the flame detector directly to the project to be monitored. The flame detection is depending of the intensity of the flame, the distance between flame and flame detector. Due to this fact, the flame detector has to be mounted close to the project. For monitoring of a room the optical location angle of the detector has to be observed.

If the unit will be mounted in the open air or in covered halls (petrol depot monitoring, gas stations etc.) it has to be observed that flames of the flare of excess gas also if the flames are far away, gas and welding flames, and the electric arcs of electric welder and electric trains can cause a release of the detector. If these cases the sensitivity adjustment has to be disputed prior to mounting of the unit.

In room with contaminated air (dusty or greasy air) the detector has to be mounted so, that it is ventilated with fresh air to avoid depositing of dust or oil on the inspection glass.

Attachment dimensions:
Refer to Dimension Drawing No. 4.4286.1

2. Starting

Connect the detector corresponding to the Connection Diagram Check 24 VDC power supply and signal lines.

3. Functional Test

3.1 Voltage Monitoring/Failure

After connection of the 24 VDC corresponding to the connection diagram gets the failure relay K2 energized in the undisturbed state. The change-over contact opens the connection terminal 3 - 4 and closes 3 - 5.

3.2 Fire Alarm

Flame detector tested by the use if our UV-tester UVG 93 or an open flame can be used for testing (matches, gas lighter etc.)
The time till giving alarm is depending of
- the intensity of the UV- radiation (tester or flame)
- the distance between radiation source and detector
- the response sensibility of the detector (delay of fire alarm signal)
- the contamination of the optic (if necessary clean before test)

The relay K1 will be actuated in case of fire alarm.
The change-over contact opens terminal 6 - 7 and closes terminal 6 - 8.
Simultaneously the red LED lights up.

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3.2.1 Reset of Fire Alarm Signal

If the alarm of the detector is according to vote with the manufacturer set on continuous alarm, reset can be effected only by short disconnection of the 24 VDC power supply (e.g., by an external reset push button). As long as this reset will be actuated, there will be given a failure signal.

If the alarm of the detector is according to vote with the manufacture set on time-limited alarm, reset of the alarm will be automatically after run down of the adjusted time.

3.2.2 Automatic Test (by the integrated test electronic of the detector) and functional Test

Connect the +24 VDC of the detector via a push button (normal open contact) to terminal 9. By actuating of the push button is the test electronic switched on.
Functional sequence: see attached description.

ATTENTION !

Be careful when working on an open and connected detector!
The terminals of the UV- vacuum tube have a voltage of approx. 600 V!

4. Maintenance

a) In dusty atmosphere
The quartz glass head should be clean, so that of the UV- vacuum tube is visible. Otherwise clean the inspection glass by means of a soft grease- free cloth.
If necessary clean the exit of light of the UV-emitter.

b) In greasy atmosphere
No oil may be deposit on the glass, because a thin oil film can influence the sensibility of the detector. Therefore clean the glass more often by means of a soft and grease- free cloth, respect. Clean the glass by means of a grease solvent, and clean the exit of light of the UV- emitter.
Condensed water on the glass causes only a little influence to the sensitivity of the detector.

c) Electronic
The evaluation electronic is generally maintenance- free.
The UV- vacuum tube UVN 81-H should be checked at least every 2 years, and it is recommended to replace the tube every 4 years.

The DC/DC- transformer DC 880 generates the power supply for the UV- vacuum tube of 600 V +/- 5 % which can be checked by means of an oscilloscope (input resistance 20 MOhm) at pin 8.

The DC/AC- transformer 883-T generates the power supply for the UV- emitter which can be checked by means of a oscilloscope (input resistance 20 MOhm) at pin 4. The operating voltage for the UV- emitter is 250 VAC (ignition voltage 700 VAC).

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The time of life of the UV- emitter TE 883 is depending for the test time and test sequence and is at 1 test per hour (6 sec.) approx. 3 years.
A reduction of the UV- radiation capacity or a defect at the DC/AC- transformer will be indicated by a longer time between test release and alarm signal or under certain conditions that the failure counter on the evaluation board will be released and with this a failure signal is given, even if the optic has been cleaned.

5. Repairs

Be careful at tests on the opened and connected detector, because the terminals for the UV- vacuum tube and the DC/DC- transformer DC 880 and DC 883-T have a voltage of approx. 600 V!

Replacement of Components/Order of Spare Parts

In case of spare parts order the following data must be given:

1. Type and serial number of the flame detector
2. Type of the electronic unit or assay according to wiring diagram.

For safety reasons the repairs should be limited to following components:

1. Fuse F1, M 0,2A, 250 C
2. Individual indication LED
3. Evaluation board Type U-880-A.F FLD 880
4. Test board Type TFP 80/1 9.85
5. UV- emitter Type TE 90-9
6. Relay board Type RP 80/1J 9.85
7. Quartz glass head Type HQK 28

The coder units BU1 and BU2 on the evaluation board and BU3 on the test board may be replaced only after consultation of the manufacturer and according to instructions.

6. Hints on Troubles and Signalling

General Signalling

Signal output: Voltage monitoring/failure

Relay K2

The relay is normally energized and drops out if

a) the 24 V supply has a breakdown
b) the fuse of the detector is defective
c) the internal 15 V supply is faulty or similar
d) the voltage generation of the DC/DC- transformer has a breakdown
e) the automatic test is faulty
f) the failure counter signal is given.

Signal output: Fire Alarm

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Relay K1
The relay gets energized at fire alarm

Individual indication LED
LED lights up
a) as long as fire alarm is signalled
b) short light up for approx. 0,1 sec, after finish of automatic test
c) continuous light up when failure counter signal is given

Hints on trouble shooting

1. At signal: "Failure" and LED in detector lights up.
   Cause: Failure counter has released.
   Reset can be effected by short disconnection of power supply.
   Possible Cause: Defective UV- vacuum tube defective evaluation electronic
   very low UV- radiation due to far flame.
   Check: Switch off voltage for the detector shortly. If the failure comes on again after some time (approx. 10 min. to 24 hr. or longer) replace UV- vacuum tube and check evaluation electronic

2. At Signal "Failure"
   Possible failure: Switched off 24 VDC power supply defective fuse F1
   defective electronic
   test failure
   Check: Switch off shortly power supply for detector. If the failure signal is still on check electronic and voltage.
   If the failure comes on again after min. 15 sec., check the optic of the detector for contamination, and check the function of the UV- emitter and the test electronic.

   If the detector is further on in operation after a test fault, this failure will be reset automatically after run down of the time interval and indicated again after min. 15 sec.

3. If the detector does not give an alarm at manual test or functional check with UV-tester UVG 93, check electronic and UV- vacuum tube.

Type FL 80/1FTN-N and type FL 80/1FTN-J flame detectors are equipped with an internal testing device, by means of which the detector can be tested while it is in operation.

The testing device is an ultraviolet emitter built into the detector.

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Description for function

The ultraviolet emitter is triggered with 24 V DC. The ultraviolet rays it generates are directed through a glass pane onto a lens system. The speed o detection depends on

1. the amount of dirt on the lens system of the detector and/or on the aperture of the emitter

2. the response sensitivity of the detector

3. the minimum response time of the detector (taking account of the delay in the activation of , the fire alarm)

4. the perfect functioning of the detector (UV detector tube and detection electronics)

5. the perfect functioning of the UV emitter and its power supply.

If the response sensitivity of the detector is at the normal setting, yet the detector fails to signal a "Fire Alarm" within 15 seconds, then it is not functioning properly.

If the detector has been set for minimum response duration (i.e., if the release of the fire alarm has been delayed by the detector), the UV emitter must be excited for a corresponding length of time (max. 115 seconds).

Flame detector type FL 80/1FTN-J has an additional integrated testing device which will release an ultraviolet signal through the glass pane and onto the UV detector tube at whatever regular interval is specified by the system user.

Operation Sequence

The control-time stage of the testing device locks the fire alarm relay at the start of the test. The UV emitter is then triggered.
The testing electronics determine whether or not this signal has been received by the UV detection tube and evaluated as a fire signal by the downstream evaluation electronics. If an "Evaluated" signal is not given within a specified period, then there is a fault report. If the UV signal is evaluated, the evaluation electronics are reset. The reset is then tested, and the fire-alarm relay is cleared. In other words, no fire alarm is released during testing.

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