DF1151-Ex

Infrared flame detector

Interactive, for explosion-hazard areas of zones 1 and 2

- For inside and outside applications
- Triple-sensor evaluation
  - Detection in various wavelengths
  - Microprocessor-controlled signal evaluation
- Selective evaluation of flicker frequency
- Selectable application algorithms
- Excellent immunity to false alarms thanks to a combination of patented fuzzy logic and Wavelet analysis
- Highest resistance to
  - electromagnetic influence
  - sunlight and heat radiation
  - humidity and corrosion
- Wide operating temperature range
- Connectable to interactive fire detection systems
Characteristics

- **Environmental**
  - ecologically processing
  - recyclable materials
  - electronic and synthetic material simple separable

- **Characteristics**
  - the detector housing made of aluminum also serves as a screen against electromagnetic interference (EMB)
  - the base housing consists of a robust, glass-fiber reinforced synthetic material
  - protected electronics
  - built-in alarm indicator (AI)
  - interactive signal processing

- **Explosion protection category**
  - The infrared flame detector DF1151-Ex is designed to the explosion protection category 'Intrinsic safety' EEx i. The standards which cover this are EN50014 (IEC60079-0) und EN50020 (IEC60079-11)

Function

- Patented signal evaluation

    ![Diagram](image.png)

    - 3 Sensors
    - Infrared radiation
    - Sensor A: The pyroelectric sensor A reacts to infrared flame gas in the characteristic CO2 spectral range between 4.0...4.8 µm.
    - Sensor B: The pyroelectric B measures the infrared radiation of sources of interference in the range between 5.1...6 µm
    - Sensor C: The silicon photo diode measures the solar radiation in the range between 0.7...1.1 µm

    - One sensor measures the hot carbon dioxide in a specific flame wavelength; the two other sensors simultaneously measure the interference radiation in other wavelengths.
    - With intelligent signal processing through fuzzy algorithms and wavelet analysis, the DF1151-Ex achieves excellent detection reliability while maintaining the highest immunity to interference radiation and sunlight.
    - In order to safeguard against a possible decision emergency, the detector contains an additional emergency activation channel.

- **Application**
  - Chemicals production plants, chemicals stores
  - Oil refineries
  - petrol storage and pump stations
  - Natural gas transfer points
  - Propane and butane filling installations
  - All explosion-hazard areas in which flaming fires involving carbonaceous materials are to be expected
Installation in explosion-hazard areas

Equipment installed in explosion-hazard areas must always comply with local national regulations.

The SB3 shunt Zener diode barrier is used as an interface between explosion-hazard and non-hazardous areas.

<table>
<thead>
<tr>
<th>Non-hazardous area</th>
<th>Explosion hazard-area, of zones 1 and 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shunt Zener diode barrier SB3</td>
<td>Flame detector DF1151-Ex</td>
</tr>
<tr>
<td>Line module E3M171</td>
<td></td>
</tr>
<tr>
<td>Equipotent bonding ground</td>
<td>Alarm indicator DJ11xx-Ex, AJUT24-Ex</td>
</tr>
</tbody>
</table>

Further details can be found in the document
- 'Fire protection in explosion-hazard areas', no. 1204

Accessories

- Mounting bracket MV1
- Ball and socket joint MWV1
- Rain hood DFZ1190
- Test lamp StabexHF

Is used to make a performance check on the flame detector. It must be held in front of the detector (see document 252).

Design

- easy installation of the housing on stable, vibration-free surfaces; the detector is only inserted after installation check, shortly before commissioning
- 6 threads M20 for screwed cable glands
- connection via two-wire installation with the control unit
- ext. alarm indicator connectable
- pluggable connection between flame detector and base
- mounting bracket MV1 for room surveillance to fix the detector at the right inclination angle
- ball and socket joint MWV1 for the orientation to an object
- rain hood DFZ1190 for outside applications
### Dimensions

![Diagram of DF1151-Ex Flame Detector](image)

- Detector base: 135
- Detector: 135
- M20: 45
- 77

### Technical data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm indicator (AI) ext. connectable and programmable</td>
<td>2</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-35...+70 °C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40...+75 °C</td>
</tr>
<tr>
<td>Humidity</td>
<td>≤95 % rel. (no heavy condensation of window)</td>
</tr>
<tr>
<td>Connection factor IMK</td>
<td>3</td>
</tr>
<tr>
<td>Connection terminals</td>
<td>0.2...2.5 mm²</td>
</tr>
<tr>
<td>Color</td>
<td>white, ~RAL 9010</td>
</tr>
<tr>
<td>Protection category</td>
<td>EN 60529 / IEC 60529</td>
</tr>
<tr>
<td>Standards</td>
<td>EN 54-10, EN 54-17</td>
</tr>
<tr>
<td>– for flame detector</td>
<td>EN 50014 (IEC 60079-0), EN 50020 (IEC 60079-11)</td>
</tr>
<tr>
<td>– for explosion-hazard area</td>
<td>EN 50014 (IEC 60079-0), EN 50020 (IEC 60079-11)</td>
</tr>
<tr>
<td>Ex classification</td>
<td>II 2 G EEx ib IIC T4 (-35 °C ≤ Ta ≤ 70 °C)</td>
</tr>
<tr>
<td>Approvals</td>
<td>PTB 02 ATEX 2159</td>
</tr>
<tr>
<td>Compatibility</td>
<td>Compatible with interactive fire detection system S11</td>
</tr>
<tr>
<td>Operation with stub lines only</td>
<td></td>
</tr>
<tr>
<td>Max. 32 detectors with IMK1 per E3M171</td>
<td></td>
</tr>
</tbody>
</table>

Siemens Schweiz AG, Theilerstrasse 1a
CH-6300 Zug

Technical data: see doc. 001673

DF1151-Ex - Flame detector incl. short-circuit isolator for use in fire detection and fire alarm systems installed in buildings.

The declared performance and conformity can be seen in the Declaration of Performance (DoP) and the EU Declaration of Conformity (DoC), which is obtainable via the Customer Support Center: Tel. +49 89 9221-8000 or https://siemens.com/bt/download

DoP No.: 0786-CPR-20496; DoC No.: CED-DF1151-Ex
Details for ordering

<table>
<thead>
<tr>
<th>Type</th>
<th>Part no</th>
<th>Designation</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>DF1151-Ex</td>
<td>BPZ:5357820001</td>
<td>Infrared flame detector</td>
<td>0.500 kg</td>
</tr>
<tr>
<td>FDB1190</td>
<td>BPZ:5165360001</td>
<td>Base</td>
<td>0.250 kg</td>
</tr>
<tr>
<td>–</td>
<td>A5Q00004478</td>
<td>Screwed cable gland M20 x 1.5</td>
<td>0.039 kg</td>
</tr>
<tr>
<td>MV1</td>
<td>BPZ:3950450001</td>
<td>Mounting bracket</td>
<td>0.285 kg</td>
</tr>
<tr>
<td>MWV1</td>
<td>BPZ:3674840001</td>
<td>Ball and socket joint</td>
<td>0.860 kg</td>
</tr>
<tr>
<td>DFZ1190</td>
<td>BPZ:5302660001</td>
<td>Rain hood</td>
<td>0.640 kg</td>
</tr>
<tr>
<td>Stabex HF</td>
<td>BPZ:4620910001</td>
<td>Test lamp</td>
<td>0.250 kg</td>
</tr>
</tbody>
</table>

Disposal

The device is considered an electronic device for disposal in accordance with the European Guidelines and may not be disposed of as domestic garbage.

- Dispose of the device through channels provided for this purpose.
- Comply with all local and currently applicable laws and regulations.