DF1101-Ex

Infrared flame detector

Collective/SynoLINE 600
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
- Connection to the detection line via the DC1192 input/output module
  - for galvanic isolation and connection to the collective/SynoLINE 600, interactive or AnalogPLUS/SynoLOOP fire detection systems
- Connection to the detection line via the transponder FDCIO223
  - for galvanic isolation and connection to the addressable FDnet/C-NET fire detection system
**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)
  - collective signal processing

- **Explosion protection category**
  - The infrared flame detector DF1101-Ex is designed to the explosion protection category 'Intrinsic safety' Ex i. The standards which cover this are EN50014 (IEC60079-0) and EN50020 (IEC60079-11)

**Function**

- Patented signal evaluation

The detection elements of the infrared flame detector consist of two pyroelectric sensors and a silicon photo diode.

- **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 DF1101-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 DC1192/FDCIO223 input/output module and the series-connected SB3 shunt Zener diode barrier are used as a galvanic isolation 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>Application: AlgoRex, Synova</td>
<td>Input/output module DC1192</td>
</tr>
<tr>
<td>Application: Sinteso, Cerberus PRO</td>
<td>Transponder FDCIO223</td>
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<td></td>
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</tbody>
</table>

Further details can be found in the documents
- Fire protection in explosion-hazard areas, document no. 1204
- Input/output module DC1192, document no. 001571
- Transponder FDCIO223, document no. 009168
- Shunt Zener barrier SB3, document no. 001222

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

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

Is used to make a performance check on the flame detector.
Dimensions

![Diagram of the DF1101-Ex flame detector](image)

Technical data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Technical Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>DC 16...28 V</td>
</tr>
<tr>
<td>Operating current (quiescent)</td>
<td>0.5 mA</td>
</tr>
<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 KMK</td>
<td>6</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></td>
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<tr>
<td>- for flame detector</td>
<td>EN54-10</td>
</tr>
<tr>
<td>- for explosion-hazard areas</td>
<td>EN 50014 (IEC 60079-0),</td>
</tr>
<tr>
<td></td>
<td>EN 50020 (IEC 60079-11)</td>
</tr>
<tr>
<td>Ex classification</td>
<td>II 2 G Ex ib IIC T4 (-35 °C ≤Ta ≤70 °C)</td>
</tr>
<tr>
<td>Approvals</td>
<td>VdS G299085, PTB 02 ATEX 2161,</td>
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<tr>
<td></td>
<td>LPCB 126bb/01</td>
</tr>
<tr>
<td>Compatibility</td>
<td></td>
</tr>
<tr>
<td>- By using the DC1192 input/output module and SB3 shunt Zener diode barrier it is compatible with fire detection system control units with collective/SynoLINE600, interactive or AnalogPLUS/SynoLOOP signal evaluation.</td>
<td></td>
</tr>
<tr>
<td>- By using the FDCIO223 transponder and SB3 shunt Zener diode barrier it is compatible with fire detection system control units with FDnet/C-NET signal evaluation.</td>
<td></td>
</tr>
</tbody>
</table>

DF1101-Ex - Flame detector for use in fire detection and fire alarm systems installed in buildings.

305/2011/EU (CPR); EN 54-10 ; 2014/30/EU (EMC): EN 50130-4 / EN 61000-6-3 ; 2014/34/EU (ATEX): EN 60079-0 / EM 60079-11

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 9221-8900 or http://siemens.com/bt/download

DoP No.: 0786-CPR-20497; DoC No.: CED-DF1101-Ex

Siemens Schweiz AG, Theilerstrasse 1a  CH-6300 Zug
Technical data: see doc. 001673

08 CE 0786 DF1101-Ex
### Details for ordering

<table>
<thead>
<tr>
<th>Type</th>
<th>Part no</th>
<th>Designation</th>
<th>Weight</th>
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<tbody>
<tr>
<td>DF1101-Ex</td>
<td>BPZ:5166750001</td>
<td>Infrared flame detector</td>
<td>0.500 kg</td>
</tr>
<tr>
<td>DFB1190</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.