

# Certificate



Functional  
Safety

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**Nr./No.: 968/EL 623.04/22**

<b>Prüfgegenstand</b> <b>Product tested</b>	Flammenwächter Flame Detector	<b>Zertifikats- inhaber</b> <b>Certificate holder</b>	ABB Engineering (Shanghai) Ltd. Building 4, No. 10 Kechuang Tenth Street, BDA Beijing, 101111 P.R. China
<b>Typbezeichnung</b> <b>Type designation</b>	Uvisor SF810i-(LOS/FOC)-(IR/UV/UVIR)-(T/TX/TL/Q/QC/QE) Uvisor SF810i-(LOS/FOC)-(IR/UV/UVIR)-(T/TX/TL/Q/QC/QE)-L		
<b>Prüfgrundlagen</b> <b>Codes and standards</b>	IEC 61508 Parts 1-7:2010	EN 298:2012	
<b>Bestimmungsgemäße Verwendung</b> <b>Intended application</b>	Die Flammenwächter erfüllen die Anforderungen der EN 298 für den Einsatz im industriellen Bereich und SIL 2 nach IEC 61508 und können in Anwendungen bis SIL 2 im Anwendungsbereich der IEC 61511-1 u.a. eingesetzt werden. The flame monitors comply with the requirements of EN 298 for the use in industrial appliances and SIL 2 acc. to IEC 61508 and can be used in applications up to SIL 2 in the application area of IEC 61511-1 and others.		
<b>Besondere Bedingungen</b> <b>Specific requirements</b>	Die Hinweise in der zugehörigen Installations- und Betriebsanleitung sowie des Sicherheitshandbuchs sind zu beachten. Der Flammenwächter ist nicht für die direkte Ansteuerung von Absperrventilen ausgelegt. The instructions of the associated Installation, Operating and Safety Manual shall be considered. The flame detector is not designed for direct control of shutoff valves.		

Der Ausstellung dieses Zertifikates liegt eine Prüfung zugrunde, deren Ergebnisse im Bericht Nr. 968/EL 623.04/22 vom 31.05.2022 dokumentiert sind.

Dieses Zertifikat ist nur gültig für Erzeugnisse, die mit dem Prüfgegenstand übereinstimmen.


The issue of this certificate is based upon an examination, whose results are documented in Report No. 968/EL 623.04/22 dated 2022-05-31.

This certificate is valid only for products which are identical with the product tested.

**TÜV Rheinland Industrie Service GmbH**  
Bereich Automation  
Funktionale Sicherheit

Köln, 2022-06-15

Certificate Body Safety & Security for Automation & Grid

  
Dipl.-Ing. (FH) Wolf Rückwart

### Summary of the characteristic data for use of the product in safety-related applications

Product: Flame Detector SF810i

Safety function: Flame detection; Status of flame is signalized using relay contacts.

#### 1. Characteristic data acc. to IEC 61508-1 till -7

##### 1.1 Data for use of the product as a subsystem in safety functions

Characteristics as per IEC 61508	Value
SIL	SIL 2 (single-channel architecture 1oo1, HFT = 0)
HFT	0
Device Type	B
SFF	96,8%
Recommended time interval for proof-testing T1	3 years
PFD <sub>avg</sub> for T1 = 3 year	3.0 E-03 - 30 % of SIL 2
$\lambda_{sd}$	406 FIT
$\lambda_{su}$	5467 FIT
$\lambda_{dd}$	402 FIT
$\lambda_{du}$	208 FIT
$\lambda_{tot}$	6483 FIT

**Remark:** At a PFH value, which is < 1 % of the allowed SIL-threshold, the performance of special Proof Tests within the mission time of the product is regarded as not necessary.

Source of failure rate data: SN 29500, so far no data from the component manufacturer were available.

Max. average ambient temperature: 40°C

General assumption that 50 % of the component failures are dangerous failures ( $\lambda_d = 0,5 \lambda$ ,  $MTTF_d = 2 MTTF$ ), so far no further information was available.

**Remarks:** The flame detector is not designed for direct control of shutoff valves.

EN 60730-2-5:2002+A1:2004+A11:2005+A2:2010 (electrical equipment)

Deviating from the requirements of the listed standard EN 298:2012 the system was tested by NEMO according to the electrical requirements of EN 61010. Due to the use in industrial appliances, the approval is acceptable see also previous report [R6].