

Certificate



Product Safety
Functional
Safety

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ID 0600000000

No.: 968/FSP 1269.00/16

Product tested	Toxic & Aromatic Open-Path Gas Detection System	Certificate holder	Spectrex Inc. 218 Little Falls Road Cedar Grove, NJ 07009 USA
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Type designation	SafEye Quasar 950/960
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Codes and standards	IEC 61508 Parts 1-7:2010 EN 60079-29-4:2010 EN 50402:2005+ A1:2008 + AC:2009 (in extracts)	EN 50271:2010 EN 50270:2015
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Intended application	The SafEye Quasar 950/960, Toxic & Aromatic Open-Path Gas Detection System complies with the requirements of the mentioned standards, esp. SIL 2 acc. to IEC 61508 and can be used in combination with an external safety device for the detection and monitoring of toxic gases, such as ammonia, H ₂ S and aromatics.
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Specific requirements	The instructions of the associated User's and Maintenance Manual shall be considered. Details see backside of this certificate.
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Valid until 2021-04-14

The issue of this certificate is based upon an examination, whose results are documented in Report No. 968/FSP 1269.00/16 dated 2016-04-14.

This certificate is valid only for products which are identical with the product tested. It becomes invalid at any change of the codes and standards forming the basis of testing for the intended application.

TÜV Rheinland Industrie Service GmbH
Bereich Automation
Funktionale Sicherheit
Am Grauen Stein, 51105 Köln

Köln, 2016-04-14

Certification Body Safety & Security for Automation & Grid

Dipl.-Ing. Stephan Häb

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TÜVRheinland
Precisely Right.

Safety function: The safety function of the Quasar 950/960 is defined by measuring of the level of toxic gases, such as ammonia, H₂S and aromatics and announces this over the 4 - 20 mA – interface. Output current <4 mA and >20 mA have to be treated as failure conditions by the downstream safety device.

Characteristics as per IEC 61508	Value
SIL	SIL 2 (single-channel architecture, 1oo1, HFT = 0)
HFT	0
Device Type	B
Mode of operation	Low demand mode and high demand mode or continuous mode
SFF	97 %
DC	94 %
Time interval for proof-testing T1	1 year
PFD _{avg} for T1 = 1 year	5.5×10^{-4} (5.5 % of SIL 2)
PFH	9.7×10^{-8} 1/h (9.7 % of SIL 2)
λ_s	1762 FIT
λ_{sd}	1661 FIT
λ_{su}	101 FIT
λ_d	1722 FIT
λ_{dd}	1625 FIT
λ_{du}	97 FIT
λ_{tot}	3484 FIT

1 FIT = 1×10^{-9} 1/h

Remark: Failure rates of the electronic components as per Siemens SN 29500, calculated based upon an ambient temperature max. 65 °C.