



The manufacturer
may use the mark:



Valid until January 1, 2018
Revision 1.2 July 22, 2015



ANSI Accredited Program
PRODUCT CERTIFICATION
#1004

Certificate / Certificat Zertifikat / 合格証

DET 1106065 C001

exida hereby confirms that the:

X2200/5200/9800 Flame Detectors **Detector Electronics Corporation** **Minneapolis, MN - USA**

Have been assessed per the relevant requirements of:

IEC 61508 : 2010 Parts 1-7

and meets requirements providing a level of integrity to:

Systematic Capability: SC 2 (SIL 2 Capable)

Random Capability: Type B Element

SIL 2 @ HFT=0; SIL 3 @ HFT = 1; Route 1_H

**PFD_{AVG} and Architecture Constraints
must be verified for each application**

Safety Function:

The Flame Detectors will sense the presence of flame via UV and/or IR measurements and signal the 4 – 20 mA or relay output to indicate a potentially dangerous condition.

Application Restrictions:

The unit must be properly designed into a Safety Instrumented Function per the Safety Manual requirements.



Griff Francis

Evaluating Assessor

[Signature]

Certifying Assessor

Certificate / Certificat / Zertifikat / 合格証

DET 1106065 C001

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X2200/5200/9800
Flame Detectors

Detector Electronics
Corporation

Minneapolis, MN - USA

Systematic Capability:

The Product has met manufacturer design process requirements of Safety Integrity Level (SIL) 2. These are intended to achieve sufficient integrity against systematic errors of design by the manufacturer.

A Safety Instrumented Function (SIF) designed with this product must not be used at a SIL level higher than stated.

Random Capability:

The SIL limit imposed by the Architectural Constraints must be met for each element.

IEC 61508 Failure Rates in FIT*

Device	λ_{SD}	λ_{SU}	λ_{DD}	λ_{DU}	SFF
X2200 UV Relay	208	78	501	72	91.6%
X2200 UV Current	0	75	704	61	92.7%
X2200 UV mA w/HART	0	67	877	73	92.8%
X5200 UV/IR Relay	248	102	591	85	91.7%
X5200 UV/IR Current	0	98	834	74	92.6%
X5200 UV/IR mA w/HART	0	90	1007	86	92.7%
X9800 IR Relay	220	95	412	79	90.2%
X9800 IR Current	0	93	628	68	91.4%
X9800 IR mA w/HART	0	84	800	80	91.7%

* FIT = 1 failure / 10⁹ hours

SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFD_{AVG} considering redundant architectures, proof test interval, proof test effectiveness, any automatic diagnostics, average repair time and the specific failure rates of all products included in the SIF. Each element must be checked to assure compliance with minimum hardware fault tolerance (HFT) requirements.

The following documents are a mandatory part of certification:

Assessment Report: DET 11/06-065 R004 V1 R3

Safety Manual: 95-8672-1.1, Rev 8/11



64 N Main St
Sellersville, PA 18960

T-013, V3R7