



The manufacturer may use the mark:



Valid until February 1, 2019  
Rev. 3.1 January 28, 2016



ANSI Accredited Program  
PRODUCT CERTIFICATION  
#1004

# Certificate / Certificat Zertifikat / 合格証

DET 1108054 C001

*exida* hereby confirms that the:

**X3301, X3302**

**Multispectrum IR Flame Detectors  
Detector Electronics Corporation  
Minneapolis, MN - USA**

Has 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; Route 1<sub>H</sub>**

**PFD<sub>AVG</sub> and Architecture Constraints  
must be verified for each application**

•Safety Function:

The Multispectrum IR Flame Detector will sense infrared emission from flame sources and signal the 4 –20 mA or relay output to indicate the potentially dangerous condition.

•Application Restrictions:

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



*John C. Yozallinas*  
Evaluating Assessor

*David G. Smith*  
Certifying Assessor

# Certificate / Certificat / Zertifikat / 合格証

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**Systematic Capability: SC 2 (SIL 2 Capable)**

**Random Capability: Type B Element**

**SIL 2 @ HFT=0; Route 1<sub>H</sub>**

**PFD<sub>AVG</sub> and Architecture Constraints  
must be verified for each application**

**X3301, X3302  
Multispectrum IR  
Flame Detectors**

## 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	$\lambda_{SD}$	$\lambda_{SU}$	$\lambda_{DD}$	$\lambda_{DU}$	SFF
X3301/X3302 Relay, FW Rev K	1777	360	634	124	95.7%
X3301/X3302 Current, FW Rev K	0	359	2448	116	96.0%
X3301/X3302 mA w/HART, FW Rev K	0	363	2615	133	95.7%
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X3301 Relay, FW Rev E	335	120	556	88	92.0%
X3301 Current, FW Rev E	0	106	920	75	93.2%
X3301 mA w/HART, FW Rev E	0	110	1146	93	93.1%

\* FIT = 1 failure / 10<sup>9</sup> hours

## SIL Verification:

The Safety Integrity Level (SIL) of an entire Safety Instrumented Function (SIF) must be verified via a calculation of PFD<sub>AVG</sub> 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: DET11-08-054 R003 V3 R1

Safety Manual: #95-8582, Rev 5.1 and later, or #95-8720, Rev 1.2 and later



64 N Main St  
Sellersville, PA 18960

T-013, V3R7