



The manufacturer
may use the mark:



Revision 1.0 March 31, 2021
Surveillance Audit Due
September 1, 2024



Certificate / Certificat Zertifikat / 合格証

CRO 21-01-151 C001

exida hereby confirms that the:

FGard IR3 Flame Detector

**Crowcon
Oxfordshire, UK**

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 2_H

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

Safety Function:

The Flame Detector will sense the presence of flame via multi-spectrum IR measurements and signal the 0 – 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.



Evaluating Assessor

Certifying Assessor

Certificate / Certificat / Zertifikat / 合格証

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Random Capability: Type B Element

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FGard IR3 Flame
Detector

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. This element meets *exida* criteria for Route 2_H.

IEC 61508 Failure Rates in FIT*

Product	λ_{SD}	λ_{SD}	λ_{SD}	λ_{SD}
IR3 Flame Detector	0	42	544	117

* 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:

CRO 21-01-151 R001 V1R0 IR3 Flame Detector

Safety Manual:

Flame detector IR3 (FGard IR3) – FD-AC-07; Issue 1 or later



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Sellersville, PA 18960

T-013, V7R1