ENGINEERING SAFETY CONSULTANTS

The Global Provider of Functional Safety Expertise and Technical Consultancy

Random Hardware Reliability Certificate

Functional Safety of Safety-Related Programmable Electronic Systems

The **Hochiki Europe (UK) Ltd, Intelligent Analogue Addressable multi-criteria detector** for use in fire detection and alarm systems has been assessed and is considered capable for use in a low demand Safety Function up to (and including) SIL 2, with respect to random hardware failures and architectural constraints.

The assessment was based on the assumptions, data provided, and recommendations given in:

- **Engineering Safety Consultants Ltd Report: C003_SV001 rev. 6;**
- **Renewal letter from Hochiki Europe (UK) Ltd, signed by Shane Bartlett, Compliance Manager Engineer, dated: 03/10/2022.**

The system was assessed against the following failure mode:

- **Failure to communicate fire condition to the host system.**

Subject to the following requirements detailed in report C003_SV001 rev. 6:

- **Host system will be configured to detect and alarm on loss of communications to the detector (loss of response to polls).**

The following product variants are also covered under this certificate, with the product labels being the only difference:

- ACC-E(WHT);
- ACC-EN;
- ACC-EN(WHT);
- ACC-EN/SIL;
- ACC-EN(WHT)/SIL;
- ACC-EN(WHT)/RWY.

The assessment was carried out to determine compliance with IEC 61508 (2010 Edition) with regards to:

- ACC-E (Optical Function): SIL 2 with a HFT = 0 via Route $1_{H;}$
- ACC-E (Heat Function): SIL 2 with a HFT = 0 via Route $1_{H;}$
- ACC-E (Optical and Heat Function): SIL 2 with a HFT = 0 and SIL 2 with a HFT = 1 via Route $1_{H;}$
- Architectural Constraint (Type B, SFF 90%, ≤99%).

ENGINEERING SAFETY CONSULTANTS LTD
2nd Floor, Exchequer Court, 33 St. Mary Axe,
London, EC3A 8AA UK
Telephone/Fax: +44 (0)20 8542 2807
E-Mail: info@esc.uk.net Web: www.esc.uk.net
Registered in England and Wales: 7006868
Registered Office: 33 St. Mary Axe, London EC3A 8AA

Model no.		λ(/hr)	λDU (/hr)	λDD (/hr)	λS (/hr)	SFF	Device Type	Estimated SIL Capability
ACC-E	Optical Function	5.0E-07	1.1E-08	4.9E-07	2.4E-09	98%	B	SIL 2
	Heat Function	3.4E-07	2.5E-08	3.1E-07	2.4E-09	93%	B	SIL 2

Note: The PFD or PFH of a complete SIF (inclusive of sensor, logic solver and final element subsystems) must be determined, considering any redundancy, Proof Test Interval (PTI), Proof Test Coverage (PTC), Mission Time and Mean Time To Restoration (MTTR) for all elements. Each subsystem should be verified to ensure compliance with the minimum HFT requirements.

IMPORTANT: It should be noted that this assessment does not include confirmation of the response time of the device. For response times (along with any relevant assumptions) reference should be made to the Safety Manual of each device and the total SIF response time **MUST** be compared against the process safety time for the specific application.

Managing Director: Simon Burwood
Assessment Date: February 2014
Renewal Date: October 2022, valid to October 2024
Certificate: C003_CT003 rev. 7

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