ENGINEERING SAFETY CONSULTANTS
The Global Provider of Functional Safety Expertise and Technical Consultancy

Certificate of Conformity to IEC 61508 / IEC 61511 Safety Integrity Level (SIL) 1/2

Functional Safety of Safety-Related Programmable Electronic Systems

The **Apollo Fire Detectors Ltd, Fire Detector** has been assessed and is considered capable for use in a low demand Safety Function up to SIL 1 or SIL 2, in terms of random failure rate, architectural constraints and systematic capability.

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

- **Technis Report No. T617 Issue 3.0;**
- **Engineering Safety Consultants Ltd (ESC) Report: E046_PU001 rev. 6;**
- **Renewal Letter from Apollo Fire Detection Ltd, signed by Chris Ellis, Head of Compliance, dated 22nd September 2020.**

The certified device can only achieve SIL 1 if used in simplex or SIL 2 if two are used in a duplex configuration, the two interface units are configured so that any output command is sent to both interface units and either working will operate the required output device.

The certified device can only achieve SIL 1 or SIL 2 if used in conjunction with a fire alarm control panel that supports all elements of the Apollo protocol, including full fault diagnostic.

The Safety Manual for each product covered by this certificate should provide a reference to the ESC assessment report: E046_PU001 rev. 6.

The assessment was carried out to determine compliance with regards to:

- Probability of Failure on Demand (PFD) with a proof test interval (T_p) of one year, a proof test coverage (PTC) of 95% or 100%, an Overhaul Interval of 10 years and a repair time of a detected failure of 24 hours against IEC 61508 (2010 Edition) and IEC 61511 (2016 Edition);
- Architectural Constraints (SFF) for Type B equipment against IEC 61508 (2010 Edition);
- Systematic Capability against IEC 61511 (2016 Edition), prior use, suitable up to SIL 2.

Product Assessed	**PFD (T_p = 1 year, PTC = 100%)**	**PFD (T_p = 1 year, PTC = 95%)**	**SFF**
55000-774mar Marine Din Rail Input / Output Unit	1.4E-04	2.0E-04	60% to < 90%

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
Member of IEC 61508 (MT61808-1-2) & IEC 61511 (MT61511) Maintenance Committees
Assessment Date: May 2016
Renewal Date: October 2020, valid to October 2022
Certificate: E046_CT005 rev. 5

ENGINEERING SAFETY CONSULTANTS LTD is ISO9001-certified by Global Group, itself a UKAS-accredited ISO9001 certification body

Reg: 12Q12086

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