

IEC 61508 Functional Safety Capability Statement

Apollo Fire Detectors Ltd, Marine DIN Rail Zone Monitor, Marine Mini Switch Monitor and Marine DIN Rail Dual Isolator

Manufacturer:	Apollo Fire Detectors Ltd 36 Brookside Rd, Havant PO9 1JR
Product:	Marine DIN Rail Zone Monitor, Marine Mini Switch Monitor and Marine DIN Rail Dual Isolator
Model:	55000-770mar, 55000-773mar, 55000-775mar
Application:	Low Demand Mode Safety Instrumented Function
Safety Function:	Refer to ERM report
Applied standard:	IEC 61508 Ed2 2010 Parts 1-3 & IEC 61511 Ed1
Systematic Capability:	Suitable up to SIL 2
Applicable report:	Environmental Resources Management Ltd Report: E046_PU001 rev. 9
Assessment Route:	1 _H
Hardware Fault Tolerance:	0
Type:	B
Application restrictions:	The certified devices can only achieve SIL 2 if used in conjunction with a fire alarm control panel that supports all elements of the Apollo protocol, including full fault diagnostic Safety Manual for each product covered by this document should provide a reference to the ERM assessment report

Model No.	λ_{DU} (/hr)	λ_{DD} (/hr)	λ_S (/hr)	SFF	SIL AC (HFT = 0)	SIL SC
55000-773mar Marine DIN Rail Zone Monitor	1.0E-08	3.6E-08	4.1E-08	93%	SIL 2	SC 2
55000-775mar Marine Mini Switch Monitor	2.6E-09	8.5E-08	0.0E+00	97%	SIL 2	SC 2
55000-770mar Marine DIN Rail Dual Isolator	1.5E-08	1.6E-07	0.0E+00	91%	SIL 2	SC 2

SIL AC (Architectural Constraints): Represents the maximum allowable SIL of each hardware element, assuming Hardware Fault Tolerance (HFT) = 0.

SIL SC (Systematic Capability): A measure of confidence (expressed on a scale of SC 1 to SC 4) of the confidence that the systematic safety integrity of a device meets the requirements of the specified SIL.

It should be noted that for a device to claim compliance with a specified SIL, the SIL AC and SC of the device needs to both be met. In addition to this, the required Average Probability of Failure on Demand (PFDavg) value for the complete Safety Instrumented Function (SIF) needs to adhere to the SIL PFDavg ranges.

IMPORTANT: It should be noted that this assessment considers only the Apollo Fire Detectors Ltd, Marine DIN Rail Zone Monitor, Marine Mini Switch Monitor and Marine DIN Rail Dual Isolator. It does not cover opening and closing time requirements and a random hardware failures assessment must be conducted for the entire safety function for each application as per the appropriate Safety Requirements Specification.

The Apollo Fire Detectors Ltd, Marine DIN Rail Zone Monitor, Marine Mini Switch Monitor and Marine DIN Rail Dual Isolator have been assessed and are considered capable for use in a low demand mode safety function up to (and including) SIL 2 with regards to random hardware failures, architectural constraints and systematic capability.

Note 1: The SIL of a complete SIF (sensor, logic solver and final element subsystems) must be verified to calculate the required PFD / Probability of Failure per Hour (PFH), considering any redundancy, Proof Test Interval (PTI), Proof Test Coverage (PTC), Mission Time and Mean Time To Restoration (MTTR) for all elements included in the SIF. Each subsystem should be verified to ensure compliance with the minimum HFT requirements.



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