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IEC 61508 Hardware Safety Integrity Assessment

Patol Ltd, LDM-519-LP Monitor/Controller

Manufacturer:	Patol Ltd Archway House, Bath Rd, Reading RG7 5HR
Product:	Linear Heat Detector Interface & Fire Zone Monitor
Model:	LDM-519-LP

Application:	Low Demand Mode Safety Instrumented Function
Safety Function:	Upon detection of high temperature, action is initiated (Logic solver and final element subsystems not part of this analysis)
Applied standard:	IEC 61508 Ed2 2010 Parts 1-3 (Partial)
Systematic Capability:	Not Assessed
Applicable report:	Environmental Resources Management Ltd Report: C050_SV001_(6.0)

Assessment Route:	1_H
Hardware Fault Tolerance:	0
Type:	A
Application restrictions:	None
System Modules:	LDM-519-LP Module (Part No. 700-201) Analogue (Resettable) Linear Heat Detecting Cables: Red PVC 700-001 Red PVC S.S 700-005 Black Nylon 700-003 Black Nylon S.S 700-004 Red LS0H FRPE 700-001LS0H Red LS0H FRPE S.S 700-005LS0H

Model No.	λDU (/hr)	λDD (/hr)	λS (/hr)	SFF	SIL AC (HFT = 0)
LDM-519-LP-LHDC	3.5E-08	1.8E-07	3.8E-08	86%	SIL 2

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

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

IMPORTANT: It should be noted that this assessment considers only the Patol Ltd, LDM-519-LP Monitor/Controller. 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.

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The Patol Ltd, LDM-519-LP Monitor/Controller has 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 and architectural constraints.

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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