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IEC 61508 Functional Safety Capability Statement

Tyco Fire & Security GmbH (TFSG), 801PHEx I.S. Optical Smoke + Heat Detector

Manufacturer:	Tyco Fire & Security GmbH (TFSG) Victor Von Bruns-Strasse 21, 8212 Neuhausen am Rheinfall, Schaffhausen, Switzerland
Product:	IS Optical Smoke + Heat Detector
Model:	801PHEx

Application:	Low Demand Mode Safety Instrumented Function
Safety Function:	Upon detector unable to detect an alarm condition and process alarms over the addressable system, action is initiated (Logic solver and final element subsystems not part of this analysis)
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: D152_SV007 rev. 6, which includes details associated with the Safety Manual requirements in Appendix B Environmental Resources Management Ltd Report: D152_PU001 rev. 5

Assessment Route:	1_H
Hardware Fault Tolerance:	0
Type:	B
Application restrictions:	None

Model No.	λDU (/hr)	λDD (/hr)	λS (/hr)	SFF	SIL AC (HFT = 0)
801PHEx I.S. Optical Smoke + Heat Detector	1.4E-08	3.8E-07	1.6E-08	97%	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 Tyco Fire & Security GmbH (TFSG), 801PHEx I.S. Optical Smoke + Heat Detector. It does not cover opening and closing time requirements and a random hardware failures assessment must be conducted for

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the entire safety function for each application as per the appropriate Safety Requirements Specification.

The Tyco Fire & Security GmbH (TFSG), 801PHEx I.S. Optical Smoke + Heat Detector has been assessed and is 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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