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IEC 61508 Functional Safety Capability Statement

Tyco Fire & Security GmbH (TFSG), Generation 6 P Detectors

Manufacturer:	Tyco Fire & Security GmbH (TFSG) Victor Von Bruns-Strasse 21, 8212 Neuhausen am Rheinfall, Schaffhausen, Switzerland
Product:	Fire Detector
Model:	Generation 6 850P, Generation 6 856P, Generation 6 840P, Generation 6 830P, Generation 6 835P, Generation 6 855P, Generation 6 FC460P, Generation 6 4098-6252 Optical and Generation 6 4098-6232 Optical

Application:	Low Demand Mode Safety Instrumented Function
Safety Function:	Upon detectors inability to detect 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
Systematic Capability:	Not Assessed
Applicable report:	Generation 6 P Review Report Iss3, by TFSG dated 02/07/2012 Generation 6 P FMEDA Iss2, by TFSG dated 06/06/2012

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)
850P / 855P Optical Smoke Detector with s/c Isolator	2.6E-07	3.2E-06	4.5E-07	92%	SIL 2
856P Optical Smoke Detector with s/c Isolator	2.6E-07	3.2E-06	4.5E-07	92%	SIL 2
840P Optical Smoke Detector	2.6E-07	3.2E-06	4.5E-07	92%	SIL 2
830P / 835P Optical Smoke Detector	2.6E-07	3.2E-06	4.5E-07	92%	SIL 2
FC460P Optical Smoke Detector	2.5E-07	3.0E-06	4.5E-07	92%	SIL 2

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Model No.	λDU (/hr)	λDD (/hr)	λS (/hr)	SFF	SIL AC (HFT = 0)
4098-6252 Optical Smoke Detector with s/c Isolator	2.6E-07	3.2E-06	4.5E-07	93%	SIL 2
4098-6232 Optical Smoke Detector	2.6E-07	3.2E-06	4.5E-07	92%	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), Generation 6 P Detectors. 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 Tyco Fire & Security GmbH (TFSG), Generation 6 P Detectors 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 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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