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IEC 61508 Functional Safety Capability Statement

Tyco Fire & Security GmbH (TFSG), Fire & Gas Detection Systems

Manufacturer:	Tyco Fire & Security GmbH (TFSG) Victor Von Bruns-Strasse 21, 8212 Neuhausen am Rheinfall, Schaffhausen, Switzerland
Product:	Fire & Gas Detection Systems
Model:	CP840Ex, DDM800, EXI800, SNM800, 801CHEx, 801Hex, 801PHEx, CPU801, TLI800EN, IOB800 and MX/ZX Fire Panel

Application:	Low Demand Mode Safety Instrumented Function
Safety Function:	Refer to relevant device SIL Capability Statement
Applied standard:	IEC 61508 Ed2 2010 Parts 1-3 & IEC 61511 Ed1
Systematic Capability:	Refer to relevant device SIL Capability Statement
Applicable report:	Refer to relevant device SIL Capability Statement

Assessment Route:	1_H
Hardware Fault Tolerance:	0 or 1 (Refer to relevant device SIL Capability Statement)
Type:	A or B (Refer to relevant device SIL Capability Statement)
Application restrictions:	None

Model No.	λDU (/hr)	λDD (/hr)	λS (/hr)	SFF	SIL AC (HFT = 0)	Type
CP840Ex – Weatherproof Break Glass Callpoint	1.9E-08	2.1E-07	1.0E-07	94%	SIL 2	B
DDM800 – Universal Fire & Gas Detector Module	5.3E-08	1.2E-06	3.1E-08	96%	SIL 2	B
EXI800 – IS Loop Interface Module	9.1E-09	3.1E-07	0.0E+00	97%	SIL 2	B
SNM800 – Sounder Notification Module	3.1E-07	3.3E-07	1.4E-07	60%	SIL 1*	B
801CHEx – IS Carbon Monoxide & Heat Detector	9.1E-09	3.0E-07	1.7E-08	97%	SIL 2	B
801HEx – IS Heat Detector	6.2E-09	2.5E-07	1.3E-08	98%	SIL 2	B
801PHEx – IS Optical Smoke & Heat Detector	1.4E-08	3.8E-07	1.6E-08	97%	SIL 2	B
CPU801	1.1E-07	2.6E-06	1.2E-10	94%	SIL 2	B
TLI800EN Network Module	8.3E-09	9.5E-07	0.0E+00	97%	SIL 2	B

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Model No.	λDU (/hr)	λDD (/hr)	λS (/hr)	SFF	SIL AC (HFT = 0)	Type
IOB800 Expansion Board (local audible output)	7.9E-08	9.9E-08	6.6E-08	67%	SIL 2	A
Overall MX/ZX Fire Panel (without local audible output)	2.6E-07	3.0E-06	0.0E+00	95%	SIL 2	B

*IMPORTANT: In order to the SNM800 module to achieve SIL 2 in terms of architectural requirements, at any one location a person in a given area should be able to hear at least two of the sounders (duplex configuration) to give a level of redundancy in the event of a fault in one sounder output.

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), Fire & Gas Detection Systems. 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.

This Functional Safety Capability Statement summarises the hardware failure data affecting the application of the Fire & Gas Detection Systems equipment as part of a Safety Instrumented Function, in order to comply with the requirement of IEC 61508. The Fire & Gas Detection Systems fulfil the requirements to achieve SIL 2 conformity.

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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