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IEC 61508 Functional Safety Capability Statement

SEFI, LEONIS Fire Control Panel

Manufacturer:	SEFI 782 Rue Duhamel du Monceau, 45300 Dadonville, France
Product:	LEONIS Fire Control Panel
Model:	LEONIS C SIL2, LEONIS U SIL2, LEONIS S 12U SIL2, LEONIS SIL2 IT, LEONIS SIL2 BE, LEONIS SIL2 EN, LEONIS-4-SIL2-M, LEOA5-SIL2

Application:	Low Demand Mode Safety Instrumented Function
Safety Function:	Upon failure to transmit output signal (via relay output) on acquisition of input signal (alarm – fire detection or detection device offline), action is initiated (Sensing 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:	ERM Report: H187_FM002 rev. 1 ERM Report: H187_SM004 rev. 1 ERM Report: H187_SM005 rev. 1 ERM Report: H187_SM006 rev. 1

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)	SIL SC
LEONIS Fire Control Panel – with 1 MPE Board	6.5E-08	2.0E-06	1.9E-07	97%	SIL 2	SC 2
LEONIS Fire Control Panel – with 2 MPE Boards	6.5E-08	2.1E-06	1.9E-07	97%	SIL 2	SC 2
LEONIS Fire Control Panel – with 1 MPE Board + Additional M1NR and MPS Boards	9.0E-08	3.0E-06	3.9E-07	97%	SIL 2	SC 2
LEONIS Fire Control Panel – with 2 MPE Boards + Additional M1NR and MPS Boards	9.0E-08	3.0E-06	3.9E-07	97%	SIL 2	SC 2

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

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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.

The analysis was conducted on the following versions on the sub-assemblies that make up the FCP:

Module / Card Reference	Description of Module	Hardware Version	Software Version
MPE	Main Control Unit	2H	3.38
ELFP	Front Panel Board	3I	N/A
ELOT	1 TNET Loop Module	6H	1.58
BPS	Backplane Module	1B	3.00
M10R	10 Relays Module	5G	1.10
MPS	Gateway Module	2F	1.17
M1NR	Board used for distributed CIE and Networked CIE with fibre optic link	5J	1.07

IMPORTANT: It should be noted that this assessment considers only the SEFI, LEONIS Fire Control Panel, and does not include confirmation of the response time of the device(s).

The SEFI, LEONIS Fire Control Panel 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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