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IEC 61508 Functional Safety Capability Statement

Linesense Fire Detection Ltd, Digital Location Interface (Part No: 52100-005/Z/G)

Manufacturer:	Linesense Fire Detection Ltd Archway House, Bath Road, Padworth, RG7 5HR
Product:	Digital Location Interface
Model:	52100-005/Z/G
Application:	Low Demand Mode Safety Instrumented Function
Safety Function:	Upon detection of a failure/fault of the fire detection unit, action is initiated (Additional sensing, 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:	ERM Report: M092_FM002 rev. 2
Assessment Route:	1_H
Hardware Fault Tolerance:	0
Type:	B
Application restrictions:	This FMEA analysis has been conducted on the listed device manufactured by Linesense Fire Detection Ltd and not on any external equipment (i.e. the zener / galvanic barriers). Therefore, it is recommended that any external equipment to be used with the Linesense Fire Detection Ltd 52100-005/Z/G for hazardous areas must be assessed with regards to its suitability for use as a Safety Function with these devices.

Model No.	λDU (/hr)	λDD (/hr)	λS (/hr)	SFF	SIL AC (HFT = 0)
52100-005/Z/G	1.2E-08	7.3E-08	2.5E-07	96%	SIL 2

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

The system assessed comprises the following modules:

- 52100-005 Module;
- Linear Heat Detecting Cable:
  - 51100-068 Model H8040N Digital LHDC. Alarm temperature 68°C, max ambient 45°C. Black nylon outer sheath;
  - 51100-085 Model H8045N Digital LHDC Alarm temperature 85°C, max ambient 45°C. Black nylon outer sheath;
  - 51100-105 Model H8028 Digital LHDC. Alarm temperature 105°C, max ambient 70°C. Black PVC outer sheath;

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- 51100-176 Model H8069 Digital LHDC. Alarm temperature 176°C, max ambient 105°C. Red PVC outer sheath;
- 51100-240 Model H9650 Digital LHDC. Alarm temperature 240°C, max ambient 200°C. White fluoropolymer outer sheath.

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.

This certificate is applicable to the 52100-005-Z and 52100-005-G, with the letter prefix at the end indicating that these devices are to be used to monitor a hazardous environment from a safe area via zener barrier or a galvanic barrier.

IMPORTANT: It should be noted that this assessment considers only the Linesense Fire Detection Ltd, Digital Location Interface (Part No: 52100-005/Z/G) and does not include confirmation of the response time of the device(s).

The Linesense Fire Detection Ltd, Digital Location Interface (Part No: 52100-005/Z/G) 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 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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