



ENGINEERING SAFETY CONSULTANTS

The Global Provider of Functional Safety Expertise and Technical Consultancy

Certificate of Conformity to IEC 61508 Safety Integrity Level (SIL) 1

Functional Safety of Safety-Related Programmable Electronic Systems

The Leakwise, Hydrocarbon (HC) Leak Detector (Model ID-221, ID-223/500, ID-223/2000, ID-223-2500 & ID-225) connected to the SLC-220 Controller have been assessed and are considered capable for use in a low demand Safety Function up to SIL 1.

The assessment was based on the assumptions, data provided, and recommendations given in:

- Engineering Safety Consultants (ESC) Ltd Report: L078_FM001 rev. 2.

The products were assessed against the following failure mode:

- Failure of the electronics to correctly process the signal to confirm the presence of a leak within the configured limits

The assessment was carried out to determine compliance with IEC 61508 (2010 Edition) with regards to:

- Random Hardware Failure (Predicted PFD as per table below, assuming a Mean Down Time (MDT) of 168 hours, a Proof Test Interval (PTI) of either 1 year, 9 months or 3 months, a Proof Test Coverage of 95% or 90% and a Mission Time of 10 years);
- Architectural Constraint (Type B, SFF 60%, $\leq 90\%$) for ID-225;
- Architectural Constraint (Type B, SFF 90%, $\leq 99\%$) for ID-221, ID-223/500, ID-223/2000 and ID-223/2500;
- Systematic Capability of SIL 1 against IEC 61511 (2016 Edition) Prior Use.

The assessment results are as follows:

Device	Proof Test Coverage (PTC)	Proof Test Interval (PTI)	Estimated Achieved PFD	SFF	Estimated Achieved SIL (Arch.)	Type	Estimated Overall SIL Capability
ID-221	95%	1 year	1.1E-02	90%	2	B	SIL 1
	90%	1 year	1.4E-02	90%	2	B	SIL 1
ID-223/500	95%	1 year	1.6E-02	91%	2	B	SIL 1
	90%	1 year	2.1E-02	91%	2	B	SIL 1
ID-223/2000	95%	1 year	2.6E-02	92%	2	B	SIL 1
	90%	9 months	2.9E-02	92%	2	B	SIL 1
ID-223/2500	95%	9 months	2.9E-02	92%	2	B	SIL 1
	90%	3 months	2.9E-02	92%	2	B	SIL 1
ID-225	95%	1 year	9.1E-03	89%	1	B	SIL 1
	90%	1 year	1.2E-02	89%	1	B	SIL 1

It should be noted that this assessment has been conducted based on the current version of the hardware and embedded software (Version 4.43) and is valid for this version only.

IMPORTANT: It should be noted that this assessment does not include confirmation of the response time of the device. For response times (along with any relevant assumptions) reference should be made to the Safety Manual of each device and the total SIF response time **MUST** be compared against the process safety time for the specific application.

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