

TECHNIS

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CERTIFICATE of RELIABILITY and FUNCTIONAL SAFETY

This is to certify that

The 5100-05-IT H₂S, 5100-04-IT CO and 5100-06-IT CL₂ Detectors provided by Sierra Monitor Corporation 1991, Tarob Court, Milpitas CA95035 USA have been assessed and are considered suitable for use in a low demand safety function:

- As an unvoted item (ie hardware fault tolerance of 0) at SIL 2

This claim is in respect of random hardware failures and architectural constraints (ie safe failure fraction). The assessment was based on the assumptions, proven-in-use data provided, and recommendations given in Technis Report T736 (Issue 1.0). The product was assessed against the failure modes:

- Failure to provide a 4-20mA signal in response to a predetermined level of H₂S gas (hazardous)
- Spurious indication of H₂S gas (perceived to be safe)

Integrity in respect of failure to release	SIL 2
Total Failure Rate	2.5 pmh
"hazardous" failure rate (revealed)	1.6 pmh
"hazardous" failure rate (unrevealed)	0.15 pmh
"safe" failure rate (revealed)	0.43 pmh
"safe" failure rate (unrevealed)	0
Diagnostic Coverage	91.3%
System Type	B
Hardware Fault Tolerance	0
Safe Failure Fraction	>92%
PFD (hazardous failure)	7.3 x10 ⁻⁴
Proof Test Interval	Up to 1 year

The products include the following:

- The 27072/21828/21838 Interface boards with electrochemical sensor
 - The 27073 Interface board
 - The 21825 Interface board
- The 21824 Transmission board

The assessment was carried out having regard to the guidance in IEC 61508 [2010] and the related body of guidance in respect of:

- Random Hardware Failures and Architectural Constraints [route 1_H]

Signed:  (Certificate No T736-021) – 18 July 2014)

Dr David J. Smith BSc, PhD, CEng, FIEE, FIQA, HonFSaRS, MIGasE

This certificate does not warrant fitness for any specific applications related purpose and is based on probabilistic and statistical assessment