

# TECHNIS

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## CERTIFICATE of RELIABILITY and FUNCTIONAL SAFETY

### This is to certify that

The 5100-28-IT Infra Red Gas Detector provided by Sierra Monitor Corporation 1991, Tarob Court, Milpitas CA95035 USA has been assessed and is 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 T738 (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 gas (hazardous)
- Spurious indication of gas (perceived to be safe)

Integrity in respect of failure to release	SIL 2
Total Failure Rate	0.45 pmh
"hazardous" failure rate (revealed)	0.31 pmh
"hazardous" failure rate (unrevealed)	0.014 pmh
"safe" failure rate (revealed)	0.026 pmh
"safe" failure rate (unrevealed)	0
Diagnostic Coverage	95.7%
System Type	B
Hardware Fault Tolerance	0
Safe Failure Fraction	>95%
PFD (hazardous failure)	$7.5 \times 10^{-5}$
Proof Test Interval	Up to 1 year

The products include the following:

- The 21818 Interface board with IR sensor
  - The 21808 Interface Board
  - The 21825 Interface board
  - The 21806 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<sub>H</sub>]

Signed:  (Certificate No T738-023) – 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*