TECHNIS

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CERTIFICATE of RELIABILITY and FUNCTIONAL SAFETY

This is to certify that

The **Series of Reed Switch Detection Devices (as a group)** provided by **ELFAB Ltd, Alder Road, North Shields, Tyne & Wear NE29 8SD.** has been assessed and is considered suitable for use in a low demand safety function:

- **As unvoted items (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) based on returns (warranty) data alone from 2004 to 2014. The assessment was based on the assumptions, proven-in-use data provided, and recommendations given in Technis Report T730 (Issue 1.0). The product was assessed against the failure modes:

- **Failure to Indicate a Burst**
- **Spurious Indication of Bursting**

Integrity in respect of failure to burst	SIL 2
Total Failure Rate	0.1345 pmh
"hazardous" failure rate (unrevealed)	0.0512 pmh
"safe" failure rate (revealed)	0.0833 pmh
System Type	A
Hardware Fault Tolerance	0
Safe Failure Fraction	>66%
PFD (hazardous failure)	2.2×10^{-3}
Proof Test Interval	Up to 10 years
Includes: FTICA (Flo-Tel); PGFT-VGFT)	

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 T730-015) – 7 June 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