

Certificate of Conformity to IEC 61508 Safety Integrity Level (SIL) 1/2

Functional Safety of Safety-Related Programmable Electronic Systems

The **Pneumatrol Ltd, Solenoid Valves Series C, E and T** have been assessed for use in a low demand Safety Function up to (and including) SIL 1 / 2.

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

- Random Hardware Failure (Predicted Probability of Failure on Demand (PFD) based on a 1-year proof test);
- Architectural Constraints;
- Systematic Capability of SIL 2 against IEC 61511 (2016 Edition) Prior Use.

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

- **Engineering Safety Consultants (ESC) Ltd Report: F127_SV001 rev. 3;**
- **Renewal letter from Pneumatrol Ltd, signed by Jamie C Dummer, Managing Director, dated: 14/06/2021.**

The products were assessed against its ability to move the valve to the designated safe state within the specified time for both De-Energise To Trip (DETT) and Energise To Trip (ETT).

The assessment results are as follows:

Model Series	Failure Mode	λ_{DU} (hr)	PFD Achieved	SFF	Type	Architecture (HFT=0)	Architecture (HFT=1)
C Series	DETT	7.2E-08	3.1E-04	85%	A	2	3
	ETT	3.7E-07	1.6E-03	2%	A	1	2
E Series	DETT	7.2E-08	3.1E-04	85%	A	2	3
	ETT	3.7E-07	1.6E-03	2%	A	1	2
T Series	DETT	7.2E-08	3.1E-04	85%	A	2	3
	ETT	3.7E-07	1.6E-03	2%	A	1	2

Note 1: The sensing, logic solver and remaining final element sub-system have been excluded for the analysis and subsequently 80% of the SIL band has been allocated for their inclusion (e.g. SIL 2 band is modified to $\geq 0.2E-03$ to $< 0.2E-04$).

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.



Managing Director: Simon Burwood
Member of IEC 61508 (MT61808-1-2) & IEC 61511 (MT61511) Maintenance Committees
Assessment Date: March 2017
Renewal Date: June 2021, valid to June 2023
Certificate: F127_CT001 rev. 6

ENGINEERING SAFETY CONSULTANTS LTD
is ISO9001-certified by Global Group, itself a
UKAS-accredited ISO9001 certification
body

Reg: 12Q12086

ENGINEERING SAFETY CONSULTANTS LTD
2nd Floor, Exchequer Court, 33 St. Mary Axe,
London, EC3A 8AA UK
Telephone: +44 (0)20 8542 2807
E-Mail: info@esc.uk.net Web: www.esc.uk.net
Registered in England and Wales: 7006868
Registered Office: 33 St. Mary Axe, London, EC3A 8AA