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IEC 61508 Functional Safety Capability Statement

Pneumatrol Ltd, Modular Redundancy Control System (MRCS) – Screw Isolation Variant

Manufacturer:	Pneumatrol Ltd Blackburn Rd, Oswaldtwistle, Accrington BB5 4WZ
Product:	Modular Redundancy Control System (MRCS)
Model:	Screw Isolation Low Flow and High Flow

Application:	Low Demand Mode Safety Instrumented Function
Safety Function:	Upon failure to de-energise the output signal of the manifold on loss of more than 2 control valves, action is initiated (Sensing, logic solver and additional final element subsystems not part of this analysis)
Applied standard:	IEC 61508 Ed2 2010 Parts 1-3
Systematic Capability:	Not Assessed
Applicable report:	ERM Report: G210_SV001 rev. 6

Assessment Route:	1_H
Hardware Fault Tolerance:	0
Type:	A
Application restrictions:	None

Model No.	λDU (/hr)	λDD (/hr)	λS (/hr)	SFF	SIL AC (HFT = 0)
MRCS Block – Screw Isolation Variant (Low Flow) (E series valves not included)	2.1E-08	0.0E+00	8.0E-08	80%	SIL 2
MRCS Block – Screw Isolation Variant (High Flow) (E series valves not included)	8.5E-09	0.0E+00	6.8E-08	89%	SIL 2

SIL AC (Architectural Constraints): Represents the maximum allowable SIL of each hardware element, assuming Hardware Fault Tolerance (HFT) =0.

It should be noted that for a device to meet a specified SIL, SIL AC and SIL SC of the device needs to both be met. In addition to this, the required Probability of Failure on Demand (PFD) value for the complete Safety Instrumented Function (SIF) needs to adhere to the SIL PFDavg ranges.

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IMPORTANT: It should be noted that this assessment considers only the Pneumatrol Ltd Modular Redundancy Control System (MRCS) – Screw Isolation Variant and does not include confirmation of the response time of the device(s).

The Pneumatrol Ltd Modular Redundancy Control System (MRCS) – Screw Isolation Low Flow and High Flow Variants have been assessed and are considered capable for use in a low demand mode safety function up to (and including) SIL 2 with regards to random hardware failures and architectural constraints.

Note 1: The SIL of a complete SIF (sensor, logic solver and final element subsystems) must be verified to calculate the required PFD / Probability of Failure per Hour (PFH), considering any redundancy, Proof Test Interval (PTI), Proof Test Coverage (PTC), Mission Time and Mean Time To Restoration (MTTR) for all elements included in the SIF. Each subsystem should be verified to ensure compliance with the minimum HFT requirements.

Chantal Sealey FS Eng (TÜV Rheinland) Assessor chantal.sealey@erm.com	Simon Burwood FS Expert (TÜV Rheinland) Assessment Authority simon.burwood@erm.com