Certificate

No.: 968/V 1032.01/23

Product tested	Interface valve (Hydraulic block and bleed controller)	**Certificate holder**	Ruelco, Inc. 1209 Distributors Row New Orleans, LA 70123 USA
Type designation	8100, 8300		
Codes and standards	IEC 61508 Parts 1-2 and 4-7:2010		
Intended application	Safety Function: The Block and Bleed Controller changes states of the 3-way valve when pilot pressure drops. Changing states blocks the supply pressure and vents the output pressure through the outlet. The valves are suitable for use in a safety instrumented system up to SIL 2 (low demand mode) . Under consideration of the minimum required hardware fault tolerance HFT = 1 for the complete final element the valves may be used up to SIL 3.		
Specific requirements	The instructions of the associated Installation, Operating and Safety Manual shall be considered. It has to be ensure that manual override is secured against manipulation if used in safety applications.		

Summary of test results see back side of this certificate.

Valid until 2028-03-14

The issue of this certificate is based upon an evaluation in accordance with the Certification Program CERT FSP1 V1.0:2017 in its actual version, whose results are documented in Report No. 968/V 1032.01/23 dated 2023-02-09. This certificate is valid only for products, which are identical with the product tested. Issued by the certification body accredited by DAkkS according to DIN EN ISO/IEC 17065. The accreditation is only valid for the scope listed in the annex to the accreditation certificate D-ZE-11052-02-01.

TÜV Rheinland Industrie Service GmbH
Bereich Automation
Funktionale Sicherheit
Am Grauen Stein, 51105 Köln

Köln, 2023-03-14	Certification Body Safety & Security for Automation & Grid	Dipl.-Ing. (FH) Wolf Rückwart

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Holder: **Ruelco, Inc.**
1209 Distributors Row
NEW ORLEANS LA 70123
USA

Product tested: **Interface Block and Bleed Controller**
Type 8100 and 8300

Results of Assessment

Route of Assessment		2_H / 1_S	
Type of Sub-system		Type A	
Mode of Operation		Low Demand Mode	
Hardware Fault Tolerance	HFT	0	
Systematic Capability		SC 3	
Lambda Dangerous confidence level of calculation 1-α = 95 %	λ_D	2.32 E-07 / h	232 FIT
Lambda Dangerous Undetected assumed Diagnostic Coverage DC = 0 %	λ_{DU}	2.32 E-07 / h	232 FIT
Average Probability of Failure on Demand 1oo1 assumed Proof Test Interval T_1 = 730 h (once every month)	**$PFD_{avg}(T_1)$**	**8.48 E-05**	
Average Probability of Failure on Demand 1oo2 assumed Proof Test Interval T_1 = 730 h (once every month) assumed β_{1oo2} = 10 %	**$PFD_{avg}(T_1)$**	**8.49 E-06**	

Origin of failure rates

The stated failure rates are the result of the analysis of field feedback data.
Failure rates include failures that occur at a random point in time and are due to degradation mechanisms such as ageing.
The stated failure rates do not release the end-user from collecting and evaluating application-specific reliability data.

Periodic Tests and Maintenance

The given values require periodic tests and maintenance as described in the Safety Manual.
The operator is responsible for the consideration of specific external conditions (e.g. ensuring of required quality of media, max. temperature, time of impact), and adequate test cycles.