Functional Safety

Certificate No. FS/SHFS2404000162MD

Certificate Holder:	Schneider Electric Automation GmbH Schneiderplatz 1, 97828 Marktheidenfeld Bayern, Regierungsbezirk Unterfranken, Germany
Manufacturer:	Refer to technical report
Trademarks:	Schneider Electric
Certified Product:	Lexium Cobot
Model (s) No. / Series:	LXMRL03S0000, LXMRL05S0000, LXMRL07S0000, LXMRL12S0000, LXMRL18S0000 LXMRL03C1000, LXMRL07C1000, LXMRL12C1000, LXMRL00C2000
Assessment Performed:	ISO 13849-1:2023
Conclusion:	The safety architecture and performance level meet PL d with category 3 according to ISO 13849-1:2023, detail information of safety function items is shown in APPENDIX.

As shown in the technical report number(s): SHFS240400016271, SHFS240400016272

This certificate confirms the achievement of the requirements of functional safety based on proof of the safety-related parameters (failure rate, $MTTF_D$ / PFH, safety architecture etc), proofs that processes, and methods are established at the manufacturer guaranteeing that unexceptionable processes in terms of risk analysis, design, production, validation, modification and quality management comply with the standard.

This certificate is issued by the company under its General Conditions for Certification Services accessible at https://www.sgs.com/en/terms-and-conditions. Attention is drawn to the limitations of liability defined therein and in the Test Report here above mentioned which findings are reflected in this Certificate. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Authorized by: Effective date: 11/04/2024

Andrew Zhai
Technical Manager

SGS-CSTC Standards Technical Services Co., Ltd.
16/F, Century Yuhui Mansion, No.73 Fucheng Road, Beijing China 100036
Tel: (86-10)6845 669

Contact us to validate this document by email address: CN.DocCheck@sgs.com

PC-EEFS-SP-001-F01
Rev02/ Effective Date: November 20th, 2023

APPENDIX

Supplementary of Functional Safety Certificate

Certificate No. FS/SHFS2404000162MD

Summary of Assessment Result in ISO 13849-1 report:

SF (Note)	Item & Description	Response Time (ms)	LXMRL00C2000		LXMRL**C1000		Safe State
			$MTTF_D$ (years)	PFH (1/h)	$MTTF_D$ (years)	PFH (1/h)	
SF1	ESTOP with the ESTOP Button on the Control Stick	250	121.78	4.29×10^{-8}	126.47	1.01×10^{-7}	Cat. 1 stop
SF2	ESTOP with External Estop Button		196.00		88.08	1.35×10^{-7}	
SF3	Safeguard (Protective) Stop	350	78.49	6.62×10^{-8}	76.53	1.57×10^{-7}	Cat. 2 stop
SF4	Joint Position Limits (Soft Axis Limits)	250	199.52	4.29×10^{-8}	190.40	1.01×10^{-7}	Cat. 1 stop
SF5	Joint Speed Limit						
SF6	Joint Torque Limit		203.13		192.83		
SF7	Joint Power Limit						
SF8	Power Limit		72.30	7.68×10^{-8}	67.53	2.13×10^{-7}	
SF9	TCP Speed Limit		65.46	8.84×10^{-8}	62.22	2.13×10^{-7}	
SF10	Tool Orientation Limit						
SF11	TCP Position Limit (Safety Planes)						
SF12	TCP Position Mismatch Limit						
SF13	Hand-Guide Mode TCP Speed Limit	350					Cat. 2 stop
SF14	Collision Protection	350	72.30	7.68×10^{-8}	67.53	2.13×10^{-7}	
SF15	Additional Emergency Stop Input	250	196.00	4.29×10^{-8}	155.67	1.01×10^{-7}	Cat. 1 stop
SF16	Additional Safeguard Stop input	350	78.49	6.62×10^{-8}	76.53	1.57×10^{-7}	Cat. 2 stop
SF17	Safeguard Reset Input				155.67	1.01×10^{-7}	Reset from Cat. 2 stop
SF18	Reduced Mode Input				76.53	1.57×10^{-7}	Reduced mode
SF19	Estop Button State Output	250	105.19	4.29×10^{-8}	124.25	4.29×10^{-8}	Two-channel output signals with HIGH impedance state
SF20	System Estop State Output						
SF21	System Safeguard State Output	350	71.49	7.68×10^{-8}	75.72	6.62×10^{-8}	
SF22	Robot Moving Output	100	82.29	5.79×10^{-8}	89.25	5.79×10^{-8}	
SF23	Robot Not Stopping Output						
SF24	Robot Reduced Mode Output	350					
SF25	Robot Not in Reduced Mode Output						
SF26	TCP Force Limit		61.11	1.03×10^{-7}	60.14	2.52×10^{-7}	Cat. 2 stop
SF27	3-Position Enable Input		63.85	8.84×10^{-8}	68.84	1.84×10^{-7}	

Note: All of safety functions above achieved PL d with Category 3 according to ISO 13849-1:2023.

SGS-CSTC Standards Technical Services Co., Ltd.
16/F, Century Yuhui Mansion, No.73 Fucheng Road, Beijing China 100036
Tel: (86-10)6845 669

Contact us to validate this document by email address: CN.DocCheck@sgs.com

PC-EEFS-SP-001-F01
Rev02/ Effective Date: November 20th, 2023