

Functional Safety

Certificate No. SHFS2307000281MD ISSUE1

Certificate Holder: Shenzhen Yuejiang Technology Co., Ltd.
Room 1003, Building 2, Chongwen Park, Nanshan iPark,
No.3370, Liuxian Blvd, Nanshan District, Shenzhen City,
Guangdong Province, China.

Manufacturer: Same as Applicant

Trademarks: 

Certified Product: Collaborative robots

Model (s) No. / Series: CR3A; CR5A; CR7A; CR10A; CR12A; CR16A; CR20A;
CR3AS; CR5AS; CR7AS; CR10AS; CR12AS; CR16AS

Assessment Performed: ISO 13849-1:2015

Conclusion: The safety architecture and performance level meet PL d
with category 3 according to ISO 13849-1:2015, detail
information of safety function items is shown in
APPENDIX.

Additional Information: Safety functions of Collaborative robots were defined in
ISO 10218-1:2011.

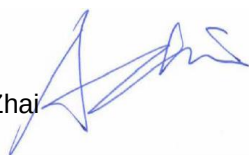
As shown in the technical report number(s): SHFS230700028171

This certificate confirms the achievement of the requirements of functional safety based on
proofs of the safety-related parameters (failure rate, DC / SFF, 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.

Authorized by:

Issued Date: 21st August 2023

Andrew Zhai
Certifier



Expired Date: 21st August 2028

*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.*

Certification Body

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

APPENDIX

Supplementary of Functional Safety Certificate

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Summary of Safety Functions:

SF	Item & Description	PL Achieved	MTTF _D (years)	PFH _D	Safe State
SF1	System Emergency Stop	PL d with Cat. 3, DC ≥ 60%	94.78	1.14x10 ⁻⁷	Cat. 1 Stop
SF2	User Emergency Stop		94.90	1.14 x10 ⁻⁷	
SF3	Estop Digital Output		53.40	2.93 x10 ⁻⁷	The robot system will output a low signal
SF4	Safeguard Stop		50.52	2.93 x10 ⁻⁷	Cat. 2 Stop
SF5	Safeguard Reset Input		276.78	1.01x10 ⁻⁷	The robot system will output a low signal
SF6	Safeguard Stop Status Output		207.22	1.01x10 ⁻⁷	
SF7	Joint Position Limit (soft axis limiting)		342.65	1.01x10 ⁻⁷	Cat. 1 Stop
SF8	Joint Speed Limit		342.65	1.01x10 ⁻⁷	
SF9	TCP Speed Limit		184.73	1.01x10 ⁻⁷	
SF10	Joint Speed Limit in Teaching Mode		342.65	1.01x10 ⁻⁷	
SF11	TCP Speed Limit in Teaching Mode		184.73	1.01x10 ⁻⁷	
SF12	Force torque limit		184.73	1.01x10 ⁻⁷	
SF13	TCP Force Limit		184.73	1.01x10 ⁻⁷	
SF14	Pose Limit A (Safety Planes)		184.73	1.01x10 ⁻⁷	
SF15	Pose Limit B (Safety Planes)		184.73	1.01x10 ⁻⁷	
SF16	Reduced Mode Input		50.52	2.93 x10 ⁻⁷	Reduced mode
SF17	Reduced Digital Output		171.38	1.01x10 ⁻⁷	The robot system will output a low signal
SF18	Safe Home Position Output		171.38	1.01x10 ⁻⁷	The robot system will output a high signal
SF19	Moving Digital Output		171.38	1.01x10 ⁻⁷	The robot system will output a low signal
SF20	Not stopping Digital Output		171.38	1.01x10 ⁻⁷	
SF21	Collision detects		52.93	2.93 x10 ⁻⁷	Cat. 2 Stop

Note: Only CR3AS, CR5AS, CR7AS, CR10AS, CR12AS, CR16AS apply for SF21.

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