VERIFICATION OF COMPLIANCE

No.:	SHES1907019412MDC	Issue No:1
Date of Issue:	10th August 2020	Expiry Date: 09th August 2025
Applicant:	AUBO (Beijing) Robotics Technology Co., Ltd. The 3rd Floor, Sunshine Building, No.98 of Lianshihu West Road, Beijing, China	
Manufacturer:	AUBO (Jiangsu) Robotics Co., Ltd. The 3rd Floor, B Block of Zhongke Business Center, Changzhou Science and Education Town, Changzhou, Jiangsu, China	
Product Description:	AUBO Collaborative Robots	
Model No.:	AUBO-i3/AUBO-i5/AUBO-i7/AUBO-i10	
Hardware Version:	N/A	
Firmware Version:	N/A	
Trade Mark / Name:	N/A	
Assessment Performance:	PL=d, Cat.3 per EN ISO 13849-1:2015	
Conclusion:	In the opinion of SGS the submitted technical file satisfies the requirements of EN ISO 13849-1:2015 & EN 15194:2017,4.3.22.	
Test Report Number(s):	SHES190701941201	

This Verification of Compliance has been granted to the applicant based on the results of tests, performed by Laboratory of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. on sample of the above-mentioned product in accordance with the provisions of the relevant specific standards.

Andrew Zhai
E&E Safety Lab Technical Manager
SGS-CSTC

2020-08-10

Member of SGS Group (Société Générale de Surveillance)

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Summary of assessment:
The collaborative robot electrical & electronic control system mainly consists of the following parts: Robot Arm, Industrial System Unit, Safety Interface Board, teach pendant, Power Supply, Connecting cables, Software and optional accessories.

Item No.	Safety Function Definition	Required Performance Level	Technique Methods	Assessment Results
SF01	Emergency stop with Estop Press Button on the control box	Safety-related parts of control systems shall be designed so that they comply with PLr = d with structure, category 3 as described in ISO 13849-1	Dual channel with DC=90%	Pass
SF02	Emergency stop with Estop Press Button on teach pendant		1oo2 Redundancy with DC=90%	Pass
SF03	Emergency stop with External Estop Press Button		1oo2 Redundancy with DC=90%	Pass
SF04	Safeguard (Protective) Stop		1oo2 Redundancy with DC=90%	Pass
SF05	Joint Position Limit (Soft axis limiting)		1oo2 Redundancy with DC=90%	Pass
SF06	Joint Speed Limit and TCP Speed Limit		1oo2 Redundancy with DC=90%	Pass
SF07	Joint Torque Limit		1oo2 Redundancy with DC=90%	Pass
SF08	TCP Force Limit		1oo2 Redundancy with DC=90%	Pass
SF09	Momentum Limit		1oo2 Redundancy with DC=90%	Pass
SF10	Power Limit		1oo2 Redundancy with DC=90%	Pass
SF11	Robot Estop Output		Monitored outputs with DC=90%	Pass
SF12	Robot Moving: Digital Output		Monitored outputs with DC=90%	Pass
SF13	Robot Not Stopping: Digital Output		Monitored outputs with DC=90%	Pass
SF14	Robot Reduced Mode: Digital Output		Monitored outputs with DC=90%	Pass
SF15	Robot Not Reduced Mode: Digital Output		1oo2 Redundancy with DC=90%	Pass
SF16	Reduced Mode Input		1oo2 Redundancy with DC=90%	Pass
SF17	Safeguard Reset Input		1oo2 Redundancy with DC=90%	Pass
SF18	Position Enabling Device INPUT		1oo2 Redundancy with DC=90%	Pass
SF19	Mode Switch Input		1oo2 Redundancy with DC=90%	Pass
SF20	Hand Guiding		1oo2 Redundancy with DC=90%	Pass
SF21	Safety-rated Monitored Stop		1oo2 Redundancy with DC=90%	Pass
SF22	Power and force Limiting		1oo2 Redundancy with DC=90%	Pass
SF23	Speed and Separation Monitoring		1oo2 Redundancy with DC=90%	Pass
SF24	Non-Stop Continuous：Digital Output		Monitored outputs with DC=90%	Pass
SF25	AUBOPE Running: Digital Output		Monitored outputs with DC=90%	Pass

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Note:
All safety functions listed in above table are classified into 3 parts:
1) Emergency Stop, includes SF01~02, which PL=d with cat.3 have been completely achieved by robot control system;
2) Safety functions related with robot motor motion, includes SF05~10 & SF20~23, which PL=d with cat.3 have been completely achieved by robot control system;
3) Other safety functions related with digital I/O channels, includes SF03~04, SF11~19, SF24 & SF25, cat.3 structure has been designed in robot control system. Because the information of external input & output elements cannot be availiable, the exact performance level of these safety functions cannot not be evaluated.

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