



CERTIFICATE OF COMPLIANCE

Certificate No. MDC 2457

SGS Reference: **CST277535/1**
 Date of Issue: **09th March 2020** Issue No.: **1** Expiry Date: **08th March 2025**
 Scope of certification: **Assessment of the compliance of machinery with the Essential Health and Safety Requirements of the Machinery Directive 2006/42/EC and EN ISO 13849-1:2015**
 Client/Applicant: **Shanghai JAKA Robotics Ltd.
 1st Floor, No.1 building, No. 251 Yaohua Road, China (Shanghai) Pilot Free Trade Zone**
 Manufacturer: **Same as above**
 Designation of Machinery: **JAKA Zu Cobot**
 Type(s)/Model(s): **JAKA Zu 3, JAKA Zu 7, JAKA Zu 12, JAKA Zu 18**
 Serial Number(s): **N/A**
 Trade Mark/Name: **JAKA**
 Technical File Reference: **TCF-SHES2003002830, Dated 05th March 2020**
 Safety System Revision: **JAKA ZuSafe Safety System G2**
 Compliance Approach: **The Technical File has been assessed against the Essential Health and Safety Requirements of Annex I of 2006/42/EC and relies on the application of Harmonised Standards as a means for demonstrating compliance, the following Standards having been applied, EN ISO 13849-1:2015**

Conclusion: **In the opinion of SGS United Kingdom Limited, the machinery type referred to above satisfies the Essential Health and Safety Requirements of Annex I of the Machinery Directive 2006/42/EC and EN ISO 13849-1:2015 (SF1, SF2, SF4, SF5, SF8-SF10, SF12, SF13, SF15, SF19-SF25: PL=d, CAT 3; SF3, SF6, SF7, SF11, SF14, SF16-SF18: PL=d, CAT 2)**

Authorised Signature
 Daniele Paoli
 Machinery Manager



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The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.



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Summary Description of SF1~25

SF	Item& Description	Group	Description	Assessment Result
SF1	Emergency Stop with Estop Button on the control box	Emergency Stop	Pressing the Estop button on the control box results in a safe state.	PLd / Cat.3
SF2	Emergency Stop with External Estop Button	Emergency Stop	Pressing the external Estop button results in a safe state. External Estop Button can only be bypassed by short circuit.	PLd / Cat.3
SF3	Safeguard Stop (Protective Stop)	Safeguard Stop	This safety function is initiated by an external protective device using safety inputs which will initiate a safe state. Safeguard Stop input can only be bypassed by short circuit.	PLd / Cat.2
SF4	Joint Position Limit (Soft axis limiting)	Joint Limit	Exceeding the joint position limit results in a safe state. Each joint can have its own limit.	PLd / Cat.3
SF5	Joint Speed Limit	Joint Limit	Exceeding a joint speed limit results in a safe state. Each joint can have its own limit.	PLd / Cat.3
SF6	Joint Torque Limit	Joint Limit	Exceeding the joint torque limit results in a safe state. Each joint can have its own limit.	PLd / Cat.2
SF7	Joint Power Limit	Joint Limit	Exceeding the joint power limit results in a safe state. Each joint can have its own limit.	PLd / Cat.2
SF8	Power Limit	Electrical Limit	Robot arm power consumption is calculated by Summation of joints' power and by product of DC Bus voltage*current. Exceeding power limit results in a safe state.	PLd / Cat.3
SF9	TCP Speed Limit	Kinematic Limit	Exceeding the TCP speed limit (not in hand guiding mode) results in a safe state.	PLd / Cat.3
SF10	Tool Orientation Limit	Kinematic Limit	Extending the tool orientation limit results in a safe state.	PLd / Cat.3
SF11	TCP Position Limit (Safety Planes)	Kinematic Limit	Planes can be defined to limit TCP position. TCP exceeding a Safety Plane results in a safe state.	PLd / Cat.2
SF12	TCP Position Mismatch Limit	Kinematic Limit	TCP real time position and instructional position are calculated and compared, if the mismatch exceeds position mismatch limit, a safe state is initiated.	PLd / Cat.3
SF13	Hand Guiding Mode TCP Speed Limit	Kinematic Limit	Exceeding the TCP speed in Hand Guiding mode results in a safe state.	PLd / Cat.3

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SF14	Collision protection	Dynamic Limit	Detection of collision initiates a safe state.	PLd / Cat.2
SF15	Additional Emergency Stop Input	Safety Digital Input	Additional Estop input pairs can be configured to initiate a safe state.	PLd / Cat.3
SF16	Additional Safeguard Stop Input	Safety Digital Input	Additional safeguard stop input pairs can be configured to initiate a safe state.	PLd / Cat.2
SF17	Safeguard Reset Input	Safety Digital Input	If Reset input is configured for Safeguard, robot exit Safeguard Stop state after Safeguard Stop input signal valid and a Safeguard Reset input signal valid pulse.	PLd / Cat.2
SF18	Reduced Mode Input	Safety Digital Input	Reduce Mode Input pairs can be configured, and then invalid of these inputs results in a reduce mode state.	PLd / Cat.2
SF19	Estop Button State: Digital Output	Safety Digital Output	Estop Button State Output pairs can be configured. When Estop Button on the control box is pressed, these output pairs turn invalid. Emergency stop with External Estop Button and Additional Emergency Stop input take no effect to these outputs.	PLd / Cat.3
SF20	System Estop State: Digital Output	Safety Digital Output	System Estop State output pairs can be configured. When the system turns into Estop state, these output pairs turn invalid. Estop Button on the control box, Emergency stop with External Estop Button and Additional Emergency Stop input all take effect to these outputs.	PLd / Cat.3
SF21	System Safeguard State: Digital Output	Safety Digital Output	System Safeguard State output pairs can be configured. These outputs turn invalid when the system goes into safeguard stop mode by any reasons.	PLd / Cat.3
SF22	Robot Moving: Digital Output	Safety Digital Output	Robot Moving output pairs can be configured. Whenever the robot is moving (motion underway), these outputs goes invalid.	PLd / Cat.3
SF23	Robot Not Stopping: Digital Output	Safety Digital Output	Robot Not Stopping output pairs can be configured. Whenever the robot is in process of stopping or in a stand-still condition, these outputs goes valid.	PLd / Cat.3
SF24	Robot Reduced Mode: Digital Output	Safety Digital Output	Robot Reduced Mode output pairs can be configured. These outputs turn valid when the system is in reduced mode.	PLd / Cat.3
SF25	Robot Not in Reduced Mode: Digital Output	Safety Digital Output	Robot Not IN Reduced Mode output pairs can be configured. These outputs turn invalid when the system is in reduced mode.	PLd / Cat.3

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