



### Yu+ 5/100: Technical Specification

Maximum payload	7 kg
Reach	Maximum reach 850 mm Maximum reach 1000 mm (with 5 kg payload)
Vision	Integrated 2D vision with two high-power LEDs
Sensitivity	Torque sensors in each axis
Machine learning and AI	Integrated neural processing unit (NPU)
Repeatability	0.05 mm
Typical velocity (TCP)	1.2 m/s
Maximum velocity (TCP)	2.0 m/s
Joint angle limits	Max. $\pm 220^\circ$ (depending on configuration)
Maximum joint velocity	Axis 1: 141 $^\circ$ /s Axis 2: 141 $^\circ$ /s Axis 3: 169 $^\circ$ /s Axis 4: 180 $^\circ$ /s Axis 5: 180 $^\circ$ /s Axis 6: 180 $^\circ$ /s
Weight	29 kg
Protection class (robot and controller)	IP 54
Power supply	200–253 VAC, 47–63 Hz
Average power consumption	250 W
Maximum current	8 A @ 230 VAC
Environmental conditions	Temperature: 5–40 $^\circ$ C Humidity: 80 % RH (non-condensing)

#### YUANDA ROBOTICS GMBH

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Safety functions	<p>ES: Emergency Stop including STO, SBC ED: Enabling Device OM: Operating Mode SLDS: Safely Limited Drive Speed SLDP: Safely Limited Drive Position SLDT: Safely Limited Drive Torque SLRP: Safely Limited Robot Power SLCP: Safely Limited Cartesian Position SLCO: Safely Limited Cartesian Orientation SLCS: Safely Limited Cartesian Speed SLCF: Safely Limited Cartesian Force PS: Protective Stop including STO, SBC, SS1, SS2</p> <p>Customisable Safe I/Os</p> <p>All safety functions are available in current system. A software update (supplied after certification in 01/2021, free of charge) will be necessary to finally comply with Pl d, Cat. 3. (will be provided free of charge after certification). Certification according to EN ISO 10218-1 and EN ISO 13849-1 Pl d, Cat. 3 will take place in 08/2021.</p>
Communication and protocols	<hr/> <p><u>Controller</u> 16 DI, 16 DO, 4 AI, 4 AO, Ethernet 8 SafeDI, 4 SafeDO (safe Ins- and Outs) Integrated OPC UA-Gateway (flexibly expandable thanks to the integrated Python-API)</p> <p><u>Media flange (2 A maxium current)</u> M8-Interface (8 Pin): 2 DI, 1 DO, 2 AI/ModbusRTU, 1DI/O/IOLink</p> <p>Spring-probe-interface (wireless connection): 2 DI, 3 DO, 2 AI/ModbusRTU, 1DI/O/IOLink Note: Modbus and IOLink ready, final functionality available from Q2/2021</p> <p>M8-Interface (6 Pin): Ethernet-Interface Note: Ethernet ready, final functionality available from Q2/2021</p> <hr/>

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Hand controller	Emergency stop
	Enabling button
	Operation mode switch
	ON/OFF button

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User interface	Device independent programming interface (browser based)
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### Collaborative Yuanda Robot: Software Functionality (excerpt)

- Contact/collision detection, collision reaction, environmental interaction
- Monitoring and avoidance of self-collision
- Zero gravity hand guiding
- Remote control (jogging, step-jogging) in different coordinate systems (robot, joint, tool, camera and customisable coordinate systems)
- Browser based, graphical robot user interface
  - Application manager (management of user-apps)
  - Programmable robot motions
    - Cartesian motions
    - PTP motions
    - Time-optimised positioning
    - Continuous blending of motion commands
  - Creation and management of user coordinate systems
  - Logic commands (if, wait, repeat, loop, group etc.)
  - Integrated vision commands
    - QR tag detection/localisation
    - Object detection/localisation
    - Object classification
    - Quality inspection and good/bad distinction
  - Palletising macros (1D-, 2D- and 3D-pattern)
  - I/O control (digital and analogue I/Os)
  - Variable manager (creation, integration and management)

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- Customisable tool interface with integration of arbitrary robot tools (gripper, screwdriver, glue dispenser, measuring equipment and customer specific tooling)
- Integrated Python-API including graphical UI-builder for
  - Development and graphical integration of customer specific functions
  - Realisation of communication protocols
  - Implementation of one's own vision algorithms
  - ...
- Definition and monitoring of custom working range (safe limitation of working range)
- Integrated digital twin for on-/ and offline visualisation and simulation
- Camera streaming including display of additional information
- Simulation mode for testing of programmes before usage (based on the integrated digital twin)
- Optional addition of external safety equipment (radar, light curtain etc.)

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