

Specification Sheet for ART7-R7 Robotic Arm Control Box

Classification	Project	Basic Specifications
Processor (Rockchip RK3588)	CPU Model	4 Cortex-A76 processors + 4 Cortex-A55 processors
	CPU clock speed	2.4 GHz
	NPU/GPU	Supports:NPU 6TOPS / GPU Mali-G610
Memory	RAM capacity	8GB LPDDR4X
IO Interface	Type-C1	Programming port supports USB 3.0
	Type-C2	The display port can be converted to HDMI, supporting USB 3.0
storage	eMMC	32GB eMMC
Ethernet	Network Interface (10/100/1000BASE-T)	2x Gigabit Ethernet ports (1x TSN network) +1x EtherCAT interface
Serial input	CAN	Support
	RS485	Support
Power Supply	Input Voltage	DC24V
Environment	Operating Humidity	95% @ 55°C (non-condensing)
	Operating Temperature	-10 ~ +55 °C
Mechanical property	Three-dimensional dimensions	40 × 80 × 100 mm
	Weight	0.37 kg
Operating system	operating system	Linux-based operating system

Application Advantages



- Standard rail clips enable simple and fast deployment**
The control box is designed with integrated rail clips, which can be directly clipped onto standard rails without additional tools or modification. The installation process is simple and reliable, significantly reducing integration and maintenance costs.
- Low power consumption and easy integration, enabling smooth deployment even in narrow spaces**
The entire device features a compact form factor, low power consumption, and excellent heat dissipation. It is particularly suitable for integration into space-constrained scenarios such as enclosed cabinets, narrow workshops, or mobile platforms, truly embodying the concept of "small size, great capability".

Fully supports the open-source ROS2 framework, and provides a complete SDK and secondary development interfaces

- Full force control topic output: All joint torques, collision detection, and impedance control are published via standard ROS2 topics without the need for secondary encapsulation
- Supports Humble + Ubuntu 22.04 Out Of The Box, with C++ examples provided
- Complete URDF, in-depth adaptation to MoveIt2, supporting multi-arm synchronous ROS2 nodes
- All advanced control interfaces are fully opened: force-position hybrid control, impedance control, compliant grinding, collision detection, drag teaching, load identification, and safety monitoring are all exposed as ROS2 services
- EtherCAT underlying real-time synchronization, with extremely low latency and industrial-grade stability

ART7-R7

Full-Joint Force-Controlled
Humanoid Robotic Arm

Lightweight Structure · Full-Joint Compliant Force Control · Industrial-Grade Reliability · Open and Easy to Integrate

Tier-1 supplier of full-stack solutions for humanoid robots



EtherCAT Branch

Project	Basic Specifications
Size	88*22*101mm
Installation Method	Support rail mounting
Bus protocol	EtherCAT Industrial Real-time Bus Protocol
Bus interface	6*RJ45 (1 in, 5 out)

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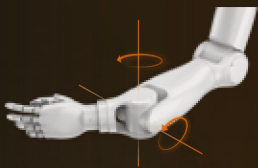
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Core Highlights

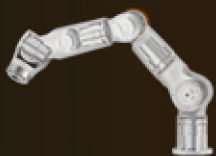
7-degree-of-freedom flexible movement

- Adopts a 7-axis design and a cross wrist configuration
- Excellent mobility and obstacle avoidance capability
- Significantly enhance the precision of teleoperation and adaptability to complex scenarios



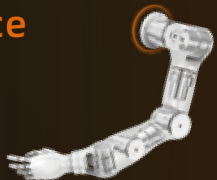
Full-joint compliant force control

- Each joint is built-in with a high-precision torque sensor
- Supports real-time force sensing and Self-Adaptation impedance adjustment
- Force control accuracy $\leq 0.15\text{ N}$, $\leq 0.1\text{ N}\cdot\text{m}$



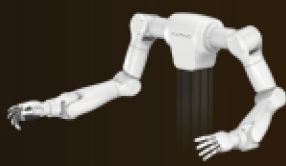
Adopts large hollow wiring design for the whole device

- The arm body adopts a fully hollow structure, which supports the internal routing of power cords and communication cables to avoid external tangling
- Quickly integrate peripherals such as binocular cameras and dexterous hands for application deployment



Lightweight integrated joint module

- Lightweight Design and Optimal Load-to-Weight Ratio
- High motion efficiency and low overall equipment energy consumption
- Support rapid maintenance via modularization



Highly Scalable Open Design

- It supports a rich array of communication interfaces and power supply interfaces, enabling quick integration with various end-effectors, mobile chassis and complete machine platforms. It also comes with a comprehensive SDK development toolkit to facilitate customers' secondary development and scenario customization

Industrial-grade reliable performance

- The high-rigidity body structure, paired with the precision compensation algorithm, effectively enhances the absolute positioning accuracy and operational stability, meeting the requirements for long-term continuous operation of industrial production lines

Technical Specifications of ART7-R7 Robotic Manipulator

Project	Basic Specifications
Rated Payload (Single Arm)	7kg
Reach	714mm
Degrees of Freedom (Single-arm)	7 rotational degrees of freedom
Repeatability	$\pm 0.03\text{mm}$
Working Range	J1: $\pm 175^\circ$
	J2: $\pm 112^\circ$
	J3: $\pm 175^\circ$
	J4: $-87^\circ, +112^\circ$
	J5: $\pm 175^\circ$
	J6: $\pm 72^\circ$
	J7: $\pm 90^\circ$
Brake	Full-joint brake
Typical TCP Speed	1.2m/s
Joint velocity	Not less than $150^\circ/\text{s}$
Wrist Configuration	crossed wrists
Noise Level	$< 65\text{dB}$
Installation Direction	any direction
Operating Temperature	$0\sim 45^\circ\text{C}$
Operating Humidity	90%RH (non-condensing)
Equipment Storage	$-20\sim 60^\circ\text{C}$
Power Input	DC48V
Joint Torque Sensor	Standard configuration
Force control accuracy	$\leq 0.15\text{N}$, $\leq 0.1\text{Nm}$
Overload capacity of force sensor	$\geq 300\%\text{F.S}$

Project	Basic Specifications	
Joint Force Control Accuracy	$\leq 1\%\text{F.S}$	
Force sensor sampling frequency	$\geq 5\text{KHz}$	
Force sensor sampling frequency(Single Arm)	Approximately 15kg	
Base outlet	Wiring method	wires exit from the center of the base bottom
	Main unit power supply specification	48VDC DC power supply
	Robot Body Communication	EtherCAT (RJ45 Interface)
	Output from user base	User power cord 24V 6A
End mechanical interface	Supports ISO 9409-1-50-4-M6	
End outlet	Standard configuration	2-channel 485; power output 24V 6A (rated current).Reserve one power line to run through from the base to the terminal end
	Optional	1-channel EtherCAT supported; 1-channel CAN supported
Drag Function & Dragging Entities to Buttons	Yes	
End-effector six-axis force sensor	Optional	
High-Precision Calibration Version	Optional	

ART7-R7 Dual-arm Robotic Manipulator



Application Scenarios



Industrial manufacturing



Scientific research and education



Commercial services



Public health

Optional configuration

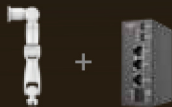
Configuration 1

Single arm
(left/right arm)



Configuration 2

Single arm (left/right arm)
+ control box



Configuration 3

Dual-arm



Configuration 4

Dual-arm + Control Box
+ Splitter

