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Raybot Smartworks
RB-C004 Robotic Cerebellum
RAYBOT



01

Powerful AI Computing for Edge-Level Intelligent Perception

The RB-C004 is powered by the NVIDIA Jetson Orin NX Super 16GB system-on-module, operating in Super performance mode to deliver a peak AI throughput of 157 TOPS (INT8 sparse). At its core sits an 8-core ARM Cortex-A78AE CPU paired with an Ampere-architecture GPU and dual NVDLA (Deep Learning Accelerator) engines, backed by 16GB of high-bandwidth LPDDR5 memory. This hardware configuration enables the stable local deployment of 7B and 13B large language models as well as multimodal vision models. The controller supports the concurrent execution of multi-channel image acquisition, object detection, environmental perception, and multi-sensor fusion tasks—serving as a powerful computational brain for next-generation robotic systems.

02

Integrated Robotic Architecture for Streamlined System Integration

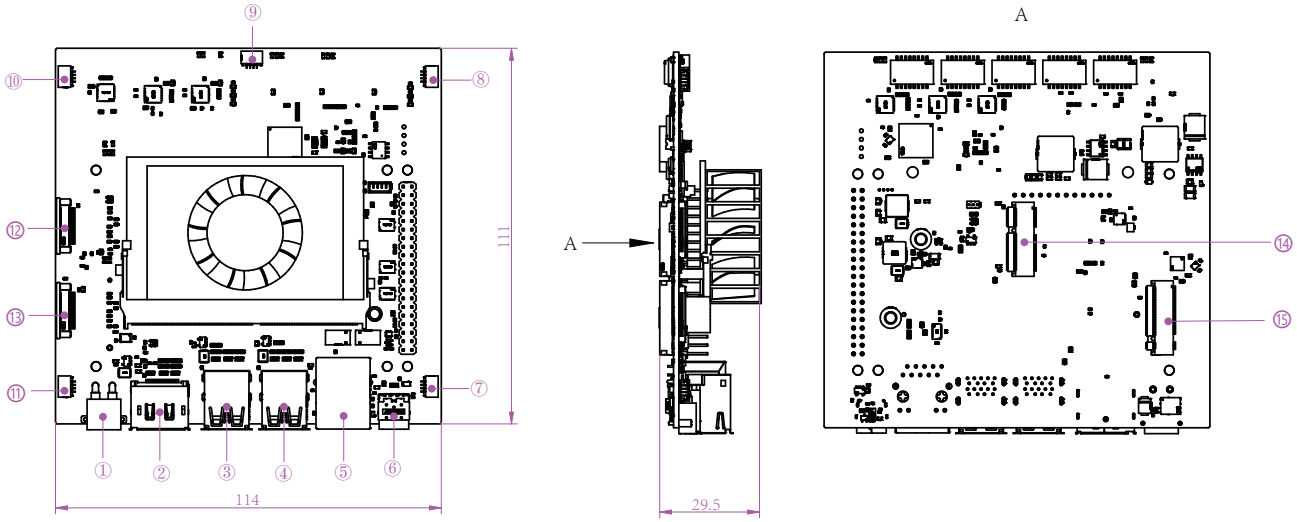
Designed specifically for robotic applications, the RB-C004 features native 48V DC input, allowing direct connection to the robot's traction battery without the need for external voltage conversion modules—thereby simplifying the power supply chain. The board integrates five independent EtherCAT interfaces, each capable of driving separate robotic subsystems such as the torso and limb actuators. This eliminates the need for external EtherCAT splitters, reducing the component count and cable harness complexity. The result is a cleaner wiring layout and a more compact robot body, enabling the development of structurally tight and aesthetically refined robotic platforms.

03

Out-of-the-Box Complete Delivery Kit for Accelerated Deployment

The RB-C004 ships with a pre-integrated ros2_control software stack, providing a complete software pipeline from low-level real-time communication to high-level robot control. The delivery package includes the control software, comprehensive technical documentation, interface specifications, and recommended network topology guidelines. This turnkey approach enables users to get up and running quickly, significantly reducing the time required for system integration and secondary development.

RB-C004 Robotic Cerebellum



Interface Definition		Interface Definition	
NO.	Connector Description	NO.	Connector Description
①	XT30 Interface	⑨	EtherCAT Interface
②	DisplayPort Interface	⑩	EtherCAT Interface
③	USB 3.1*2	⑪	EtherCAT Interface
④	USB 3.1*2	⑫	PoE Interface, 1×4pin
⑤	RJ45 Ethernet Interface	⑬	PoE Interface, 1×4pin
⑥	USB Type-C Interface	⑭	M.2 Key-E Socket (75-pin)
⑦	EtherCAT Interface	⑮	M.2 Key-M Socket (4-lane)
⑧	EtherCAT Interface		

Item	Description
Model	RB-C004
Core Module	Jetson Orin NX SUPER 16GB
Weight	198.2 g
Power Supply	DC 48V / 24V supported
AI Computing Power	157 TOPS
CPU Max Frequency	2 GHz
GPU	1024-core NVIDIA
Networking	1x Gigabit Ethernet
OS Support	Ubuntu 22.04
Flashing Interface	USB Type-C
EtherCAT Configuration	5x independent EtherCAT ports