seeed studio

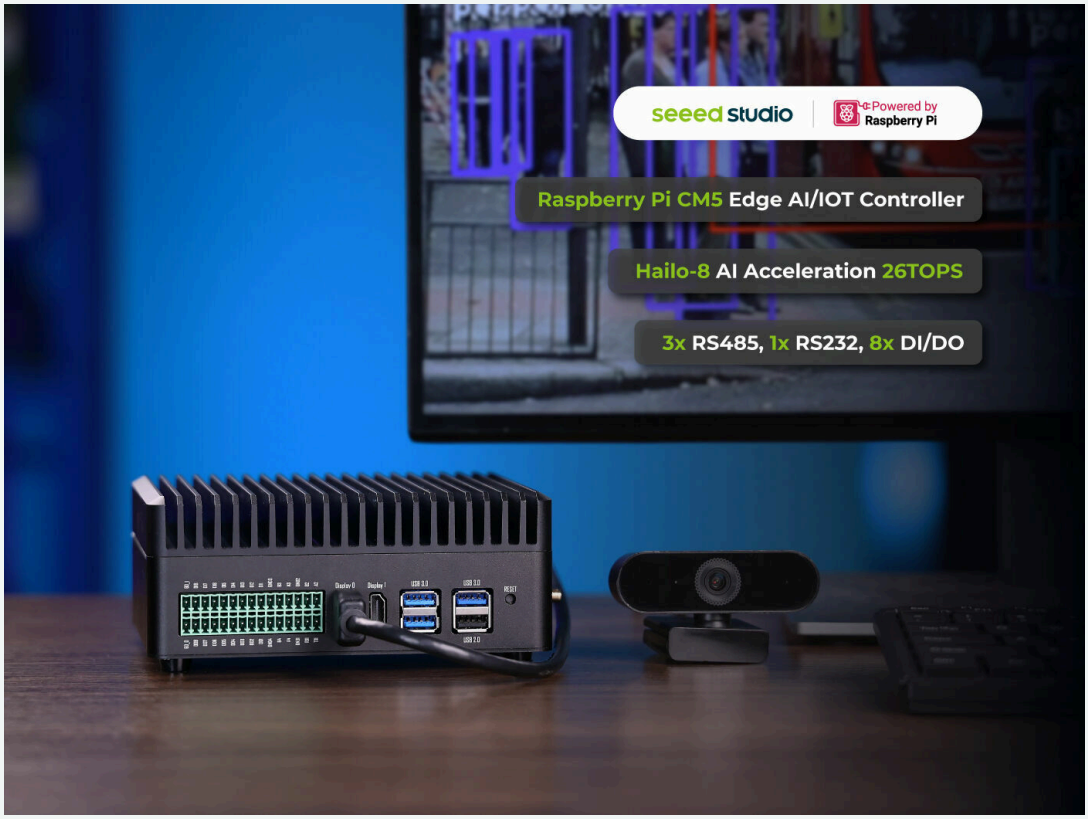
INDUSTRIAL PRODUCT DATASHEET

reComputer Industrial R2046-12 - The Most Reliable and Powerful Raspberry Pi Edge AI/IOT Controller

The reComputer Industrial R2046-12 is a reliable and powerful Raspberry Pi CM5 Edge AI/IoT controller with optional Hailo-8 up to 26 TOPS, isolated industrial interfaces, PoE, and fanless -20°C to 65°C operation.

SKU	UPDATED	PRICE
100091575	2026-10-10 10:06:46	$839.00(Excl. VAT)

Overview



The reComputer Industrial R2046-12 is a Raspberry Pi CM5-based Edge AI/IoT controller featuring a Broadcom BCM2712 quad-core Arm Cortex-A76 64-bit SoC at 2.4GHz, up to 16GB RAM and 32GB eMMC, fanless cooling from -20°C to 65°C, and optional Hailo-8 AI acceleration up to 26 TOPS. It offers isolated industrial I/O (3x RS485, 1x RS232, 8x DI, 8x DO), PoE Gigabit Ethernet, USB/HDMI connectivity, optional TPM/ATECC608A, watchdog, RTC, IP40 aluminum enclosure with DIN-rail/wall mounting, and is suited for manufacturing automation, AI-powered video analytics, smart transportation, smart building, and smart retail applications.

Key Features

Note: Options marked with * require additional purchase according to the bundle.

- For 4G functionality, both a 4G module and a 4G antenna must be selected.
- For GPS functionality, both a 4G module and a GPS antenna must be selected.
- For LoRaWAN® functionality, LoRaWAN® module must be selected.
- **Price Increase Announcement**

Date: March 2, 2026

Due to increased demand for modules and SSDs, reComputer' pricing is expected to rise by approximately \$20–\$80 in the coming weeks. Please confirm your orders and requirements accordingly to help secure availability.

- **Powerful Performance with Raspberry Pi CM5:** Broadcom BCM2712 quad-core Arm Cortex-A76 64-bit SoC @ 2.4GHz. Features up to 16GB RAM and 32GB eMMC.
- **Robust Heat Dissipation:** High-performance fanless cooling, engineered to handle the intense heat of AI workloads and ensure stable operation from -20°C to 65°C.
- **Industrial-Grade Reliability:** High Accuracy RTC, hardware watchdog and optional UPS supercapacitor. Optional TPM/ATECC608A. IP40, aluminum alloy enclosure provides industrial-grade protection. Supports DIN-rail and wall mounting. Guaranteed production until at least December 2036.
- **AI-Optimized Computing:** With the optional Hailo-8 AI accelerator, it delivers up to 26 TOPS, enabling real-time, high-performance AI vision processing across multiple channels.
- **Rich Industrial Connectivity:** 3x RS485, 1x RS232, 8x DI, 8x DO, all isolated. 1x 10M/100M/1000M Ethernet (PoE), 1x 10M/100M Ethernet. 2x HDMI 2.0. 3x Type-A USB3.0, 1x Type-A USB2.0, 1x Type-C USB2.0 (for OS update). 1x Nano SIM card slot.
- **Versatile Wireless Connectivity:** On chip Wi-Fi and BLE. Flexible expansion via Mini-PCIe for LTE, LoRa®, Zigbee. M.2 B-Key for 4G/5G.

Seeed Studio Tutorial of AI Kit with Raspberry Pi: From Zero to Hero

This course is designed to teach you how to harness the power of AI on the Raspberry Pi, with afocus on using an AI kit to performcomputer vision tasks. You'll learn how to integrate AI into real-world IoT applications, from object detection and image classification to more complex visual recognition tasks.

We will guide you step-by-step through setting up your Raspberry Pi, using AI frameworks, and deploying these models in various practical scenarios.

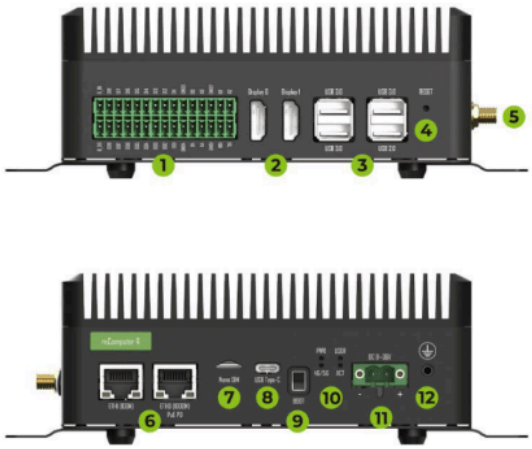
Product Gallery

Specification

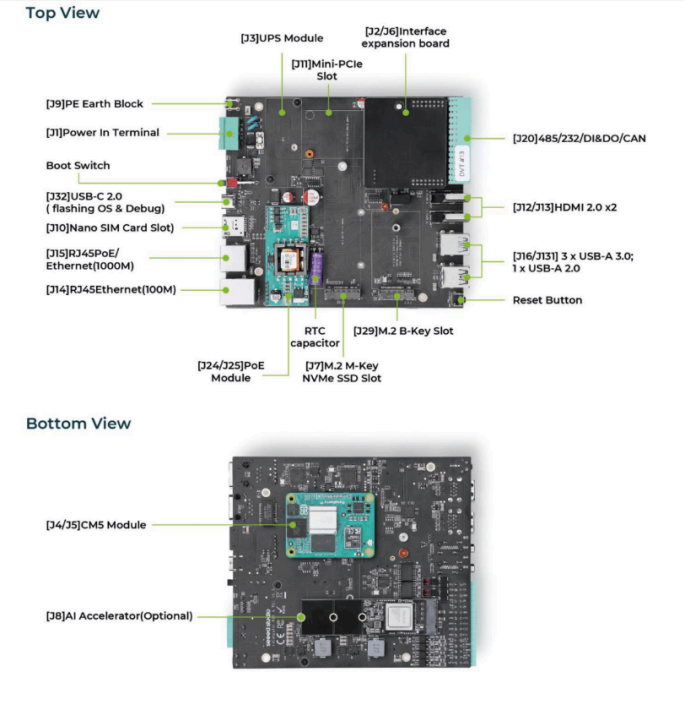
Hardware Specification		
Product Series	R20xx-12	R20xx-10
CPU	Raspberry Pi Compute Module 5, 2.4GHz quad-core 64-bit Arm Cortex-A76	
AI Processor	1x Pre-installed Hailo-8 M.2 AI Acceleration, 26TOPS	*
Operating System	Raspbian, Debian	
Memory & Storage	2GB/4GB/8GB/16GB RAM, 16GB/32GB/64GB eMMC	
System Specification		
Power Input	DC 9V~36V, 2-pin Terminal Block	
PoE(as powered device)	IEEE 802.3 at Standard 25.5W PoE	
Power Switch	No	
Reboot Switch	Yes	
Interface		
Ethernet & USB	1x 10/100/1000 Mbps(supports PoE PD); 1x 10/100 Mbps IEEE 802.3/802.3u	
	3x USB-A 3.0 Host; 1x USB-A 2.0 Host; 1x USB-C 2.0 (For flashing OS & Debug)	
COM and I/O	3x RS485(Isolated); 1x RS232(Isolated)	
	8x DI Ports(Isolated), input Voltage: 5~24V DC; 8x DO Ports(Isolated), output Voltage: <60V DC	
SIM Card	1x Nano SIM Card Slot	

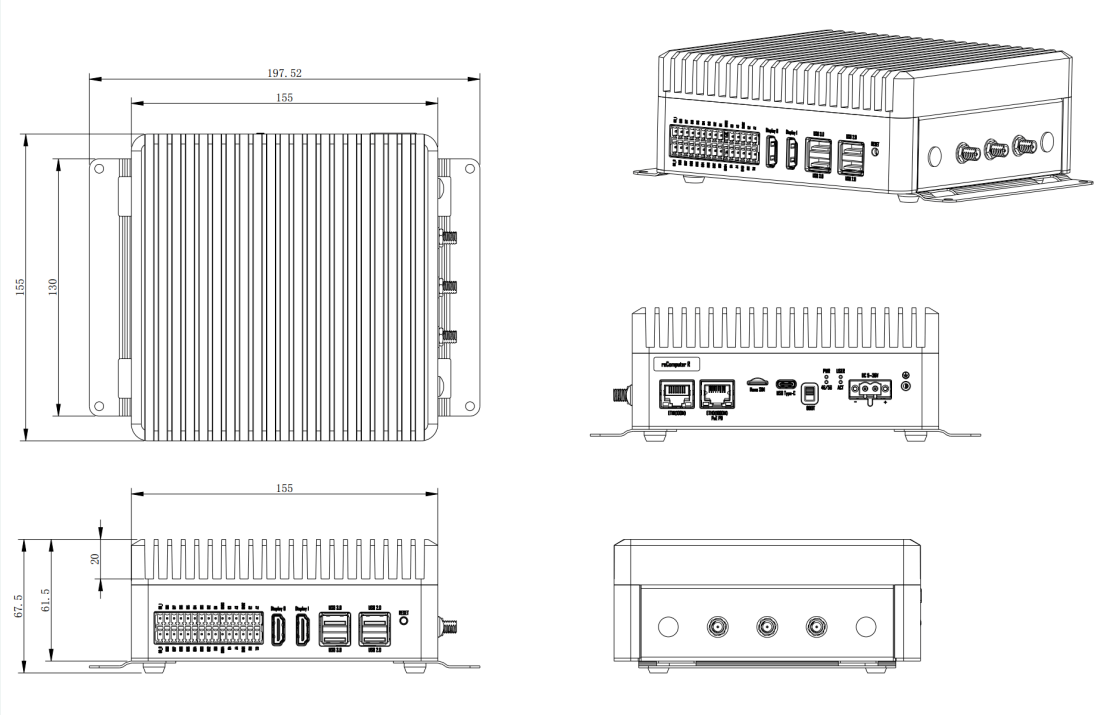
M.2 Slot	1x M.2 M-key 2280 Slot for NVMe SSD; 1x M.2 M-key 2280 Slot for AI Accelerator (pre-installed Hailo-8 M.2 AI Acceleration 26TOPS); 1x M.2 B-key 3042/3052 Slot for 5G/4G LTE	1x M.2 M-key 2280 Slot for NVMe SSD； 1x M.2 M-key 2280 Slot for AI Accelerator; 1x M.2 B-key 3042/3052 Slot for 5G/4G LTE
Mini-PCIe	1x Mini-PCIe for LoRa module	
Control & Indication	4x LEDs; 1x Buzzer; 1x Reset Button	
HDMI	2 x HDMI 2.0	
Wireless Communication	Wi-Fi 2.4/5.0 GHz(On-chip); BLE 5.0(On-chip);	
	USB LoRa®*/SPI LoRa®*	
	4G LTE/5G*	
	USB Zigbee*	
Standards		
EMC	ESD: EN61000-4-2, Level 3; EFT: EN61000-4-4, Level 2; Surge: EN61000-4-5, Level 2	
Certification	CE, FCC, TELEC, RoHS, REACH	
Device Specification		
Ingress Protection	IP40	
Temperature	Operating Temperature -20~65°C Storage Temperature -40~85°C	
Operating Humidity	10~95% RH	
Reliability	SuperCAP UPS LTC3350 Module*	
	Hardware Watchdog: 1~255s	
	High Accuracy RTC	
Security	Encryption Chip TPM 2.0*	
	ATECC608A*	
Heat Dissipation	Fanless	
Warranty	2 years	
Production Lifetime	Until December 2036	
Dimension(W x H x D) & Weight(Net)	197.5 mm x 155 mm x 67.5 mm, 1280g	
Enclosure	6063 aluminum alloy heat sink, 5052 aluminum alloy enclosure	
Mounting	DIN-rail/Wall	
Statement	Options marked with * require additional purchase according to the bundle.	

Hardware Overview



1. 3x RS485(Isolated) 8 x Isolated DI Ports
   1x RS232(Isolated) 8 x Isolated DO Ports
2. 2 x HDMI 2.0
3. 3 x USB-A 3.0 Host 1 x USB-A 2.0 Host
4. Reset Hole
5. 5 x Reserved Antenna Ports for Wireless
6. 1 x 10/100/1000 Mbps(supports PoE PD)
   1 x 10/100 Mbps IEEE 802.3/802.3u
7. Nano SIM Card Slot
8. USB-C 2.0 (For flashing OS & Debug)
9. Reboot Switch
10. 4 x LED indicators
11. DC 9V~36V, 2-pin Terminal Block
12. Grounding point





Applications

- **Manufacturing & Industrial Automation:** With rich industrial interfaces, the controller integrates seamlessly with different sensors, PLCs, and machinery, enabling efficient process monitoring and control. It supports multiple communication protocols for real-time data acquisition and remote equipment management, fostering a smarter and more efficient factory.
- **AI-Powered Video Analytics & Surveillance:** Integrated into NVR systems for real-time video analytics, including anomaly detection, object detection, crowd monitoring and behavior analysis, enhancing situational awareness and security efficiency.
- **Smart Transportation:** Acts as an AI/IoT gateway for real-time processing of visual data from multiple sensors and camera feeds at the edge, enabling intelligent traffic flow analysis and smart parking management to enhance transportation monitoring management capabilities.
- **Smart Building:** Integrates sensors and IoT devices to monitor and optimize building systems such as lighting, HVAC, and security. Uses AI for energy efficiency, predictive maintenance, and occupant comfort, enhancing building management.
- **Smart Retail:** Create innovative smart retail solutions using AI-driven features like real-time visual product recognition, personalized shopping experiences, and advanced customer behavior analytics for optimized store operations.

Part List

reComputer Industrial R2046-10	x 1
Mounting Bracket	x 2
Bracket Screw	x 4
DIN-rail Clip	x 1
DC Power Female Jack to Screw Terminal Adapter	x 1
12V/3A Power Adapter (with 4 interchangeable adapter plugs)	x 1
15*2-pin Terminal Block Connector (Male)	x 1
120Ω Resistor	x 5
Wi-Fi/BLE Antenna	x 1
User Manual	x 1

Compliance & Logistics

HSCODE	8471504090
USHSCODE	8517180050
UPC	
EUHSCODE	8471707000
COO	

FCC Requirement

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

15.21

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy.

If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Resource Links

- https://www.seeedstudio.com/reComputer-Industrial-R2046-12-p-6970.html
- Seeed Raspberry Pi Flyer
- reComputer_Industrial_R2000_User_Mannual
- reComputer_industrial_R2000_Schematic
- reComputer_Industrial_R2000/2100_3D_File
- Seeed Raspberry Pi Flyer-CN
- Seeed reComputer Industrial R Series Flyer

Seeed Technology Co.,Ltd.
9F, Building G3, International E City,
Zhongshanyuan Road, Nanshan, Shenzhen, China

Tel: +86 0755-80695676
Web: www.seeed.cc
Shop: www.seeedstudio.com