MYiR 米尔电子
Make Your Idea Real

MRC-B5760 IPC Box Overview



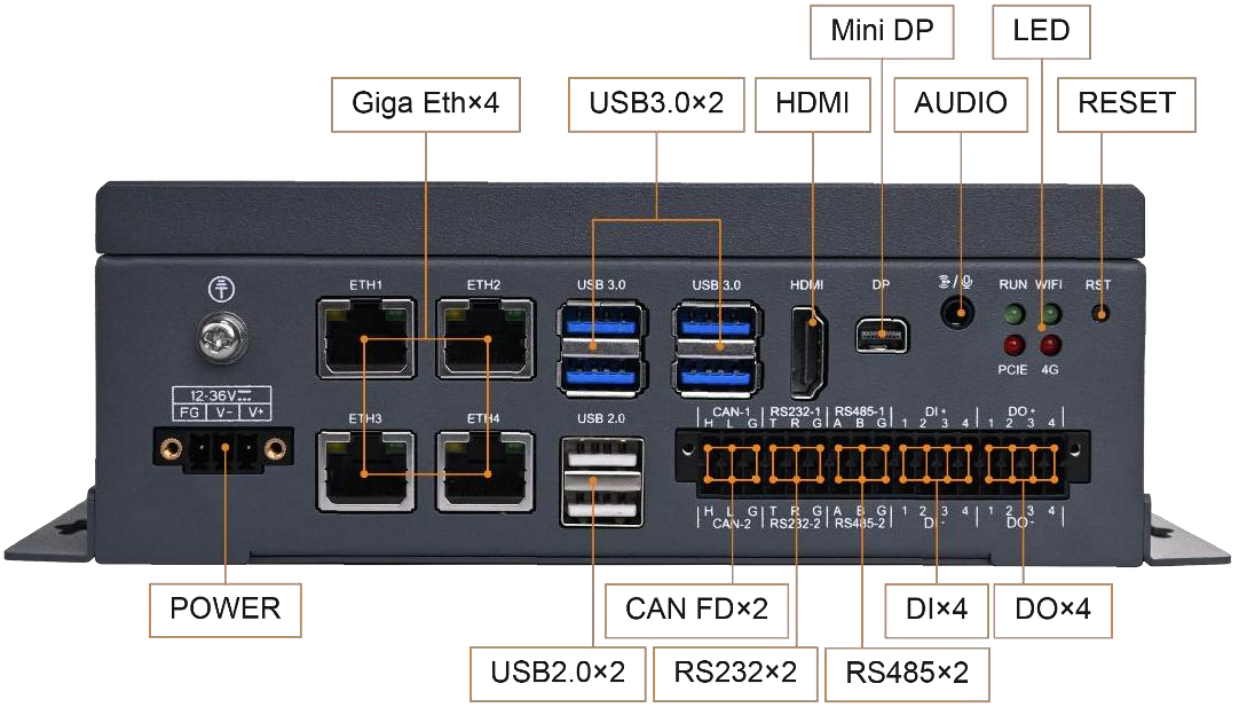


- ✓ Rockchip RK3576J industrial processor: octa-core (4x Cortex-A72 @1.6GHz + 4x Cortex-A53 @1.4GHz)
- ✓ 6 TOPS (INT8) NPU and 3D GPU for on-device AI inference and robot vision
- ✓ 4GB/8GB LPDDR5, 32GB/64GB eMMC (optional 128GB UFS), 4KB EEPROM
- ✓ 4x Gigabit Ethernet, 4x USB 3.0 + 2x USB 2.0, onboard Wi-Fi 6 & Bluetooth 5.4
- ✓ Onboard M.2 2280 (PCIe) for SSD or AI accelerator cards, Mini-PCIe + Micro SIM for 4G/5G modules
- ✓ Supports 8x AHD camera inputs, HDMI + Mini DP dual display for robot vision, teaching and monitoring
- ✓ Fully isolated interfaces: 2x CAN FD, 2x RS485, 2x RS232, 4x DI and 4x DO
- ✓ Debian with ROS2 SDK support for fast secondary development of robot control software and algorithms
- ✓ Rugged fanless aluminum enclosure, operating temperature -40° C ~ +85° C
- ✓ Typical applications: embodied AI robots, service robots, AGV/AMR, robotic lawn mowers & vacuum robots, vision-guided robotics, construction vehicles

The MRC-B5760 is a purpose-built industrial robot controller (IPC Box) engineered for demanding AI edge computing and robotics applications. It is powered by the industrial-grade Rockchip RK3576J processor, delivering an octa-core CPU (4x Cortex-A72@1.6GHz + 4x Cortex-A53@1.4GHz, with an overclock mode up to 2.1GHz/1.9 GHz), a 6 TOPS (INT8) NPU and a Mali-G52 MC3 GPU. Combined with up to 8GB of LPDDR5 memory and flexible storage options (32GB/64GB eMMC or 128GB UFS), the platform provides solid computing and AI inference performance. The onboard M.2 M-Key 2280 (PCIe) slot supports both high-capacity SSDs and AI accelerator cards such as RK1828, RK1820, Hailo or DeepX.

For robotics integration, the MRC-B5760 offers rich industrial I/O: 4x Gigabit Ethernet, 4x USB 3.0 + 2x USB 2.0, HDMI (4K@120Hz) and Mini DP (4K@60Hz) dual display outputs, a 3.5 mm audio jack, and 8x AHD camera inputs plus fully isolated 2x CAN FD, 2x RS485, 2x RS232, 4x DI and 4x DO. Wireless connectivity covers Wi-Fi 6 / Bluetooth 5.4, with 4G/5G cellular expansion via the onboard Mini-PCIe slot and Micro SIM slot. Wide-range DC 12V - 36V power input, a supercapacitor-based 5-second power-fail backup, an independent watchdog and an external RTC further enhance reliability in harsh environments.

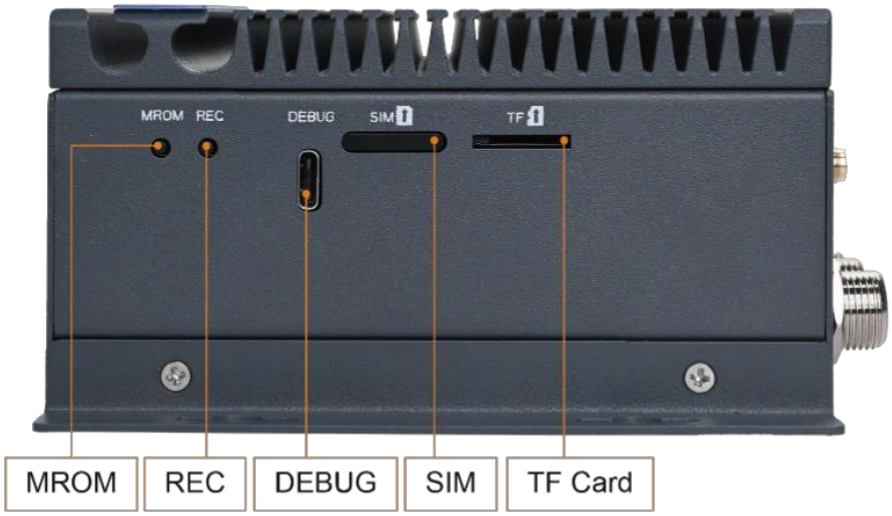
Enclosed in a rugged, fanless aluminum alloy chassis and rated for -40° C to +85° C operation, the MRC-B5760 ships with a complete software package that includes Debian 11 image based on Linux kernel 6.1, U-Boot, full source-level peripheral drivers and development tools, along with detailed documentation to accelerate secondary development. It is an ideal controller for industrial/collaborative robots, AGV/AMR, vision-guided robotics, construction machinery, and agricultural equipment.



MRC-B5760 Front view



MRC-B5760 Rear view



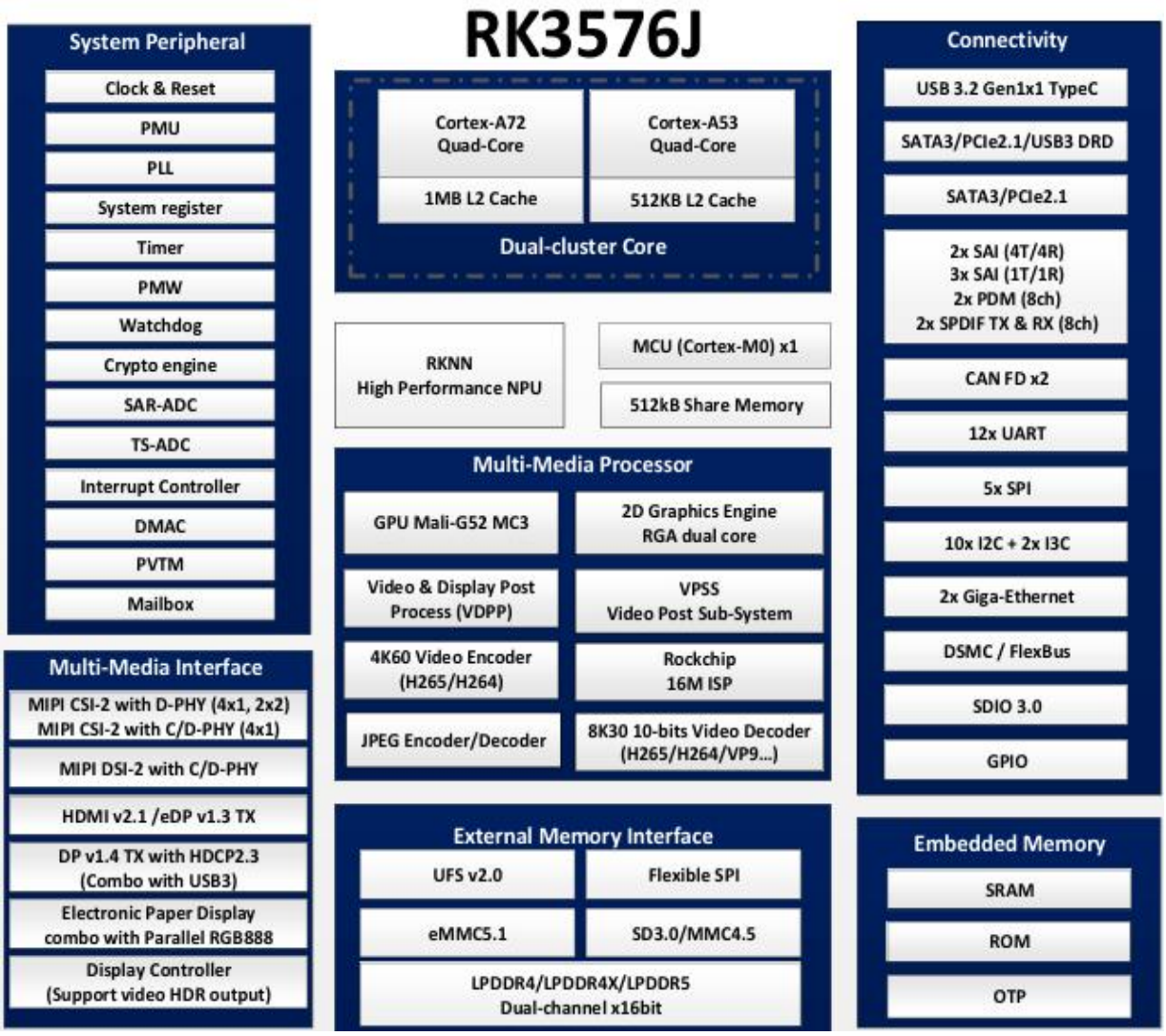
MRC-B5760 Side view

Hardware Specification

The MRC-B5760 IPC Box is built around the industrial-grade Rockchip RK3576J SoC. This processor is designed as a high-performance, low-power solution for AI edge computing, industrial control, robotics, and a wide range of intelligent multimedia applications.

It features an integrated octa-core architecture consisting of four Cortex-A72 cores running at 1.6 GHz and four Cortex-A53 cores at 1.4 GHz (boostable to 2.1 GHz / 1.9 GHz in overclock mode). The SoC is equipped with a 6 TOPS NPU that supports multiple data types including INT4, INT8, INT16, FP16, BF16 and TF32, enabling efficient multi-task AI inference. The embedded Mali-G52 MC3 3D GPU provides solid graphics performance and compatibility with OpenGL ES, OpenCL and Vulkan standards. A dedicated 2D hardware engine further optimizes display operations for smooth multi-screen output.

In addition, the RK3576J offers extensive high-speed peripheral and interface support, including four Gigabit Ethernet controllers, USB 3.0 / USB 2.0, PCIe (via M.2 M-Key 2280), Mini-PCIe, CAN FD, UART (RS232 / RS485), HDMI, Mini DP, AHD video inputs and multiple isolated digital I/O channels, making it well-suited for complex industrial and robotics applications.



RK3576 Processor Block Diagram

The MRC-B5760 IPC Box fully leverages the high performance of the Rockchip RK3576J processor. The main features are listed in the following table.

Item	Features
SOC	Rockchip RK3576J processor - Octa-core Arm MPU with 4x Cortex-A72 cores, 4x Cortex-A53 cores (Normal mode: 4x Cortex-A72 @1.6GHz + 4x Cortex-A53 @1.4GHz) (Overdrive mode: 4x Cortex-A72 @2.1GHz + 4x Cortex-A53 @1.9GHz) - Arm Cortex-M0 MCU at 400MHz for user application - Arm Mali-G52 MC3 3D GPU - 6 TOPS NPU supports INT4/8/16/FP16/BF16/TF32
Memory	4GB/8GB LPDDR5
Storage	32GB/64GB eMMC (128GB UFS available as customization option) 4KB EEPROM 1x Micro SD card slot 1x M.2 (PCIe) M-Key 2280 slot for SSD storage and AI computing card expansion
Multimedia Interfaces	1x HDMI (supports up to 4K@120Hz) 1x Mini DisplayPort (supports up to 4K@60Hz) 1x 3.5mm Audio Jack (Audio IN / OUT) 8x AHD camera inputs
Communication Interfaces	1x Type-C USB Debug Interface 4x USB 3.0 Host Type-A Ports + 2x USB 2.0 Host Type-A Ports 4x 10/100/1000Mbps Gigabit Ethernet Interfaces Onboard Wi-Fi 6 / Bluetooth 5.4 Module (IEEE 802.11a/b/g/n/ac/ax) 1x Mini-PCIe Slot for 4G/5G Module, paired with 1x Micro SIM card slot Isolated 2x CAN FD, 2x RS485, 2x RS232
Others	External watchdog timer 1x External RTC (requires external 3V battery) 1x Super capacitor with 5-second holdup time after power loss 1x Onboard buzzer 4x Status LEDs (Power/System, Wi-Fi, PCIe, 4G/5G) 3x Buttons (Reset, REC, MASKROM) Fully Isolated 4x DI + 4x DO
Power Supply	DC 12V~36V wide voltage input
Dimensions	170mm x 120mm x 62mm (without mounting bracket) 200mm x 120mm x 62mm (with mounting bracket)
Operating Temp.	-40°C~+85°C (Industrial Grade)
Gross Weight	1,260g
Installation Method	Desktop / Wall mounted (can be customized for Rail mounted)

Features of MRC-B5760 IPC Box

.

Software Features

The MRC-B5760 supports the Debian operating system and is equipped with a comprehensive software package. To help customers accelerate project development, the full BSP source code is provided, including U-Boot, Linux kernel 6.1, and drivers for all major peripherals. Below is a brief overview of the key software features:

Item	Features	Description	Source Code
Bootloader	Pre-loader	First bootloader	NO
	U-boot	uboot 2017.09	YES
Kernel	Linux kernel	Customized based on official kernel version 6.1	YES
Drivers	EEPROM	Atmel, 24c32 driver	YES
	USB	USB driver	YES
	Ethernet	Native network port: motorcomm phy (YT8531SH) driver USB based network port: LAN7800 driver	YES
	HDMI	HDMI driver	YES
	DP	DP driver	YES
	MIPI DSI	MIPI DSI driver	YES
	Audio	ES8390 Audio Driver	YES
	RS232	RS232 driver	YES
	RS485	RS485 driver	YES
	CAN FD	CAN FD driver	YES
	GPIO	GPIO driver	YES
	RTC	RX8025 driver	YES
	Wi-Fi	AIC8800_SDIO driver	YES
	BT	AIC8800_SDIO driver	YES
	MIPI CSI	AHD Camera driver	YES
File System	myir-image-mrc-b5760-robot	Image built on Debian system	YES

MRC-B5760 Software Features

Order Information

Item	Part No.	Packing List
MRC-B5760 IPC Box	MRC-B5760-IB411000	✓ One MRC-B5760 IPC Box (4GB LPDDR5+32GB eMMC) ✓ One Quick Start Guide ✓ One Wi-Fi rod antenna ✓ One 3-pin female connector, 3.81mm pitch, black ✓ One 34-pin female connector, 3.5mm pitch, black
	MRC-B5760-IC811000	✓ One MRC-B5760 IPC Box (8GB LPDDR5+64GB eMMC) ✓ One Quick Start Guide ✓ One Wi-Fi rod antenna ✓ One 3-pin female connector, 3.81mm pitch, black ✓ One 34-pin female connector, 3.5mm pitch, black

MYIR Electronics Limited
Headquarter Address: Room 04, 6th Floor, Building No.2, Fada Road, Yunli Smart Park, Bantian, Longgang District, Shenzhen, Guangdong, China 518129

Factory Address: Room 201, Block C, Shengjianli Industrial Park, Dafu Industrial Zone, Guanlan, Longhua District, Shenzhen, 518110, China

Website: https://en.myir.cn
Email: sales@myir.cn
Tel: +86-755-22984836