Blade 3

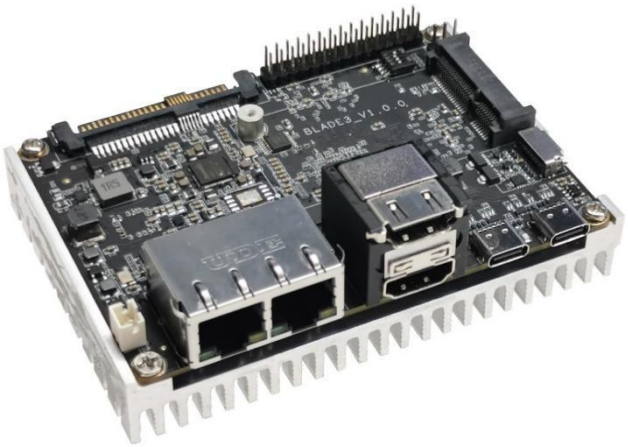
Internet of Things SBC

MIXTILE

High-Performance Stackable SBC

Mixtile Blade 3 is a low-cost, low-power single-board computer (SBC) powered by the cutting-edge, 8-nanometer Rockchip RK3588 CPU. This power-efficient chipset makes Blade 3 ideal for quick development, AI-application prototyping, and edge computing. You can easily scale your deployment by clustering multiple Blade 3 boards together via the four-lane PCIe Gen3 port. This enables flexible, high-performance edge computing while maintaining a minimal carbon footprint.

Blade 3 Case is designed specifically for the needs and functionality of the Mixtile Blade 3. Integrating M.2 NVMe SSD support, this case has built-in fans for heat dissipation.



Highlights

- Strong scalability and wide applications

  The mini PCIe interface and 30-pin GPIO header allow for easy expansion. The U.2 edge connector provides 12 V power, PCIe Gen 3.0 x 4, and SATA signals to interface with other Mixtile boards and build clusters. This makes Mixtile Blade 3 ideal for AI, edge computing, and image data processing applications requiring high bandwidth and scalability.

- Rich display interfaces, up to 8K video decoding

  The HDMI 2.1 output port enables up to 8K@60fps display, while the HDMI 2.0 input port allows for up to 4K@60fps capture. Two 1.4a DisplayPorts over Type-C provide additional display connectivity at up to 8K@30fps. For video input, the 4-lane MIPI-CSI interface is included.

  Powerful H.265/VP9 hardware decoding up to 8K@60fps and H.264/H.265 encoding up to 8K@30fps enables real-time video processing on the board.

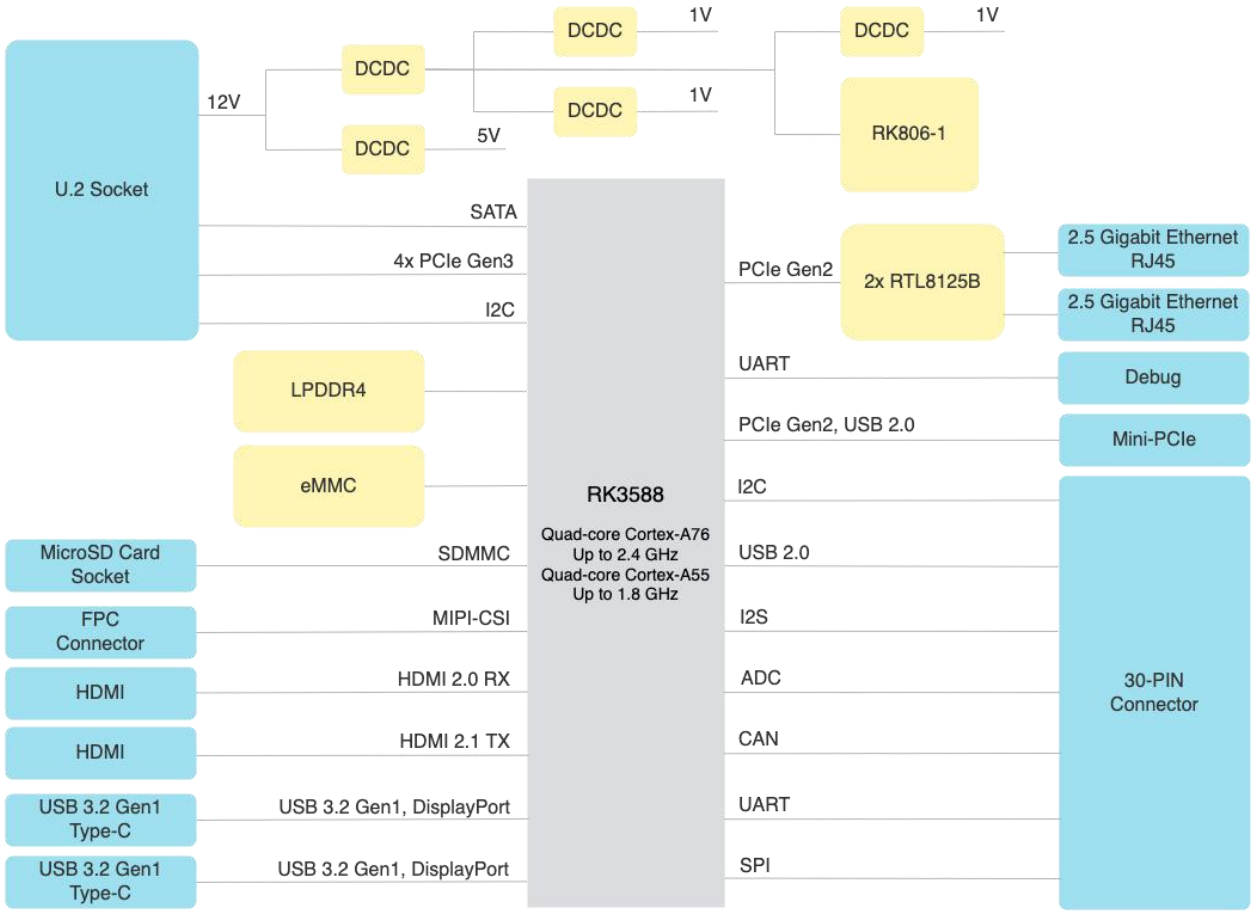
- Wide range of OS compatibility

Mixtile Blade 3 offers compatibility with various operating systems, including Ubuntu, Armbian, and Debian. Upcoming support for Android and OpenWrt will open up even more possibilities.

- Portable 2.5-inch Pico-ITX Mainboard

With a standard Pico-ITX mainboard (100 x 72 mm) and standard interfaces, Mixtile Blade 3 is designed for space-constrained embedded applications. The compact form factor meets the growing market demand and highly customized requirements of the Industrial IoT industry.

Block Diagram



Technical Specifications

CPU	Rockchip Octa-core Cortex-A76/A55 SoC processor RK3588
NPU	Up to 6 TOPS
Memory	32 GB LPDDR4 memory
Storage	256 GB eMMC storage
HDMI interface	• HDMI 2.1 output (8K @ 60 FPS or 4K @ 120 FPS) • HDMI 2.0 input (4K @ 60 FPS)
Video encoder	H.264/H.265 video encoder up to 8K @ 30 FPS
Video decoder	H.265/H.264/VP9 video decoder up to 8K @ 60 FPS
Camera Input	4-lane MIPI-CSI
PCIe expansion	Mini-PCIe socket with PCIe Gen 2.1, USB 2.0 support
Storage expansion	• 4-lane PCIe Gen 3 in U.2 port • SATA 3.0 in U.2 port, Micro-SD 3.0 flash socket
Ethernet expansion	Dual 2.5 Gigabit Ethernet ports
USB	Dual USB 3.2 Gen 1 Type-C ports, DisplayPort 1.4 A
GPIOs	40-pin GPIO socket: Digital I/O, I²C, USB 2.0, TTL UART, SPI, I²S
Software support	Preloaded customized Debian 11, other Linux distributions and Android 12
Power	USB Type-C port-1 supports USB PD 2.0 protocol (Optional: 12 V DC standard SATA power input via U.2 port) Note: The power adapter must support PD2.0 or PD3.0 protocol. Use a USB C to USB C cable for connection.
Output Voltage	5 V DC
Operating Current	Maximum 3 A @ 20 V DC
Blade 3 dimensions	2.5-inch Pico-ITX form factor, 100 x 72 mm
Blade 3 Case material	Aluminium alloy, black anodized
Blade 3 case dimensions	112.4mm x 89mm x 27.4mm
Operating temperature	0 to +80°C