MYiR Make Your Idea Real

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Make Your Idea Real

MYC-YR3562
System-On-Module
Overview

- ✓ Rockchip RK3562/RK3562J Processor based on Up to 2.0GHz Quad ARM Cortex-A53 Cores
- ✓ Neural Processing Unit (NPU) Operating at Up to 1 TOPS (Only for RK3562 CPU)
- ✓ 3D GPU with Support for OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1
- ✓ Supports 4K 30fps H.265, 1080p 60fps H.264 Decoder and 1080P 60fps H.264 Encoder
- ✓ 1GB/2GB LPDDR4, 8GB/16GB eMMC, 32Kbit EEPROM
- ✓ Power Management IC (PMIC)
- ✓ 1.0 mm pitch 164-pin Castellated-Hole and 58-pin LGA expansion interfaces
- ✓ Supports for Linux 6.1.99 OS

The MYC-YR3562 System-On-Module (SOM), measuring just 43mm by 45mm, is powered by the Rockchip RK3562 / RK3562J - a high-performance, low-power quad-core Arm Cortex-A53 processor family designed for consumer electronics equipment. It features a 1TOPS NPU (only for RK3562 CPU), a G52 3D GPU, and supports 1080p@60fps H.264 decoding, 4K@30fps H.265 decoding, and 1080p@60fps H.264 encoding. Available with 1GB/2GB LPDDR4 and 8GB/16GB eMMC, it includes a 32Kbit EEPROM and a Power Management IC (PMIC). The module features a 222-pin expansion interface with 164-pin Castellated-Hole and 58-pin in LGA package, which simplifies soldering onto base boards, enabling a range of I/O functionalities. It runs Linux 6.1.99 and comes with comprehensive documentation and software packages, making it suitable for applications such as smart electric devices, industrial IoT, robotics, and advanced industrial systems.
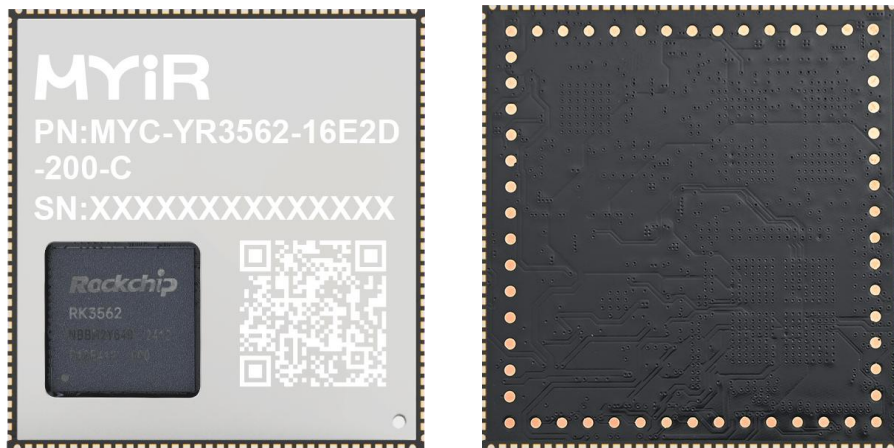

MYC-YR3562 System-On-Module Top-view and Bottom-view

MYIR's MYD-YR3562 Development Board is designed for evaluating the MYC-YR3562 SOM. It features a base board with two USB3.0 ports, one Gigabit Ethernet, two 10/100Mbps Ethernet interfaces, onboard WiFi/Bluetooth, a Micro SD card slot, and an M.2 NVMe SSD-compatible PCIe slot. The board includes a variety of multimedia interfaces such as HDMI, MIPI-DSI, three MIPI-CSI video inputs, and audio. It also offers expansion flexibility through the RPI Interface (GPIO/I2C/UART/SPI/CAN-FD) and the MiFAN Interface (GPIO/I2C/UART/SPI/USB), enabling users to tailor their development projects.
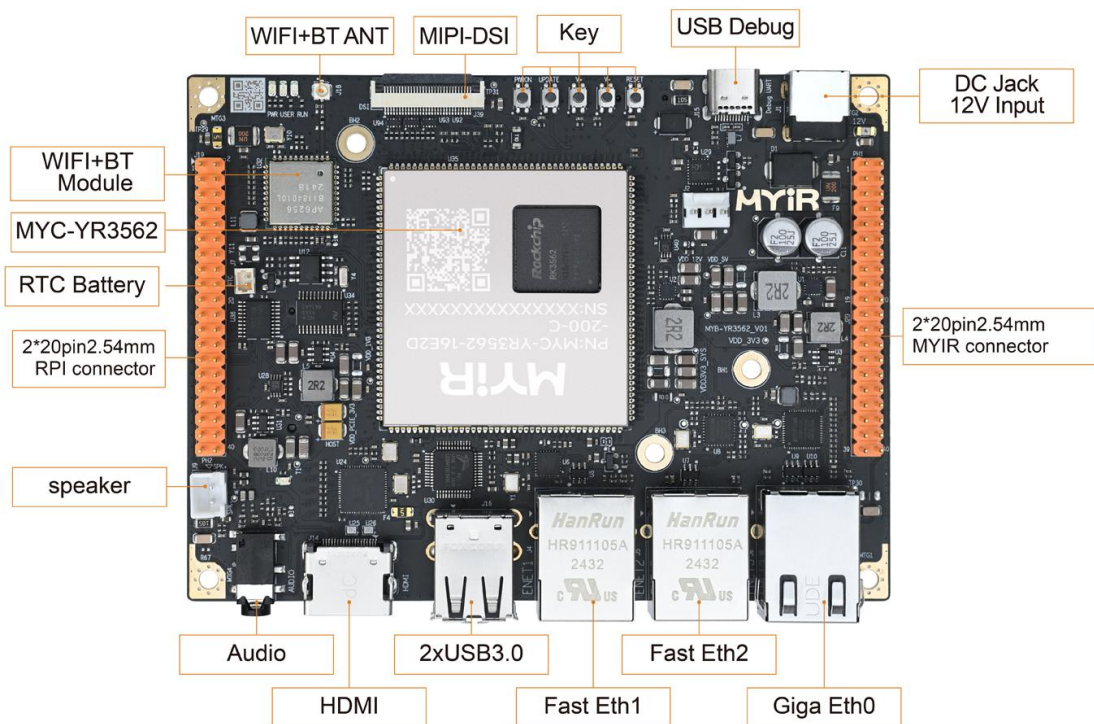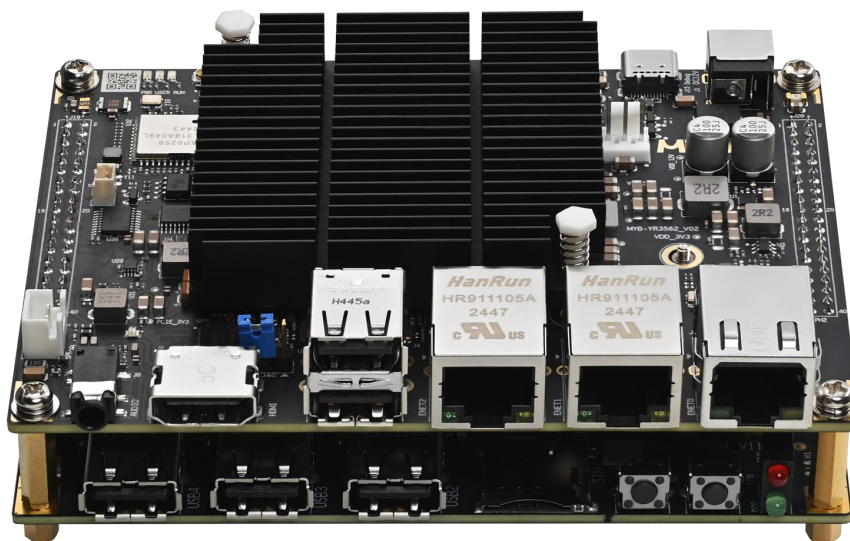

MYD-YR3562 Development Board Top-view (RK3562 CPU)
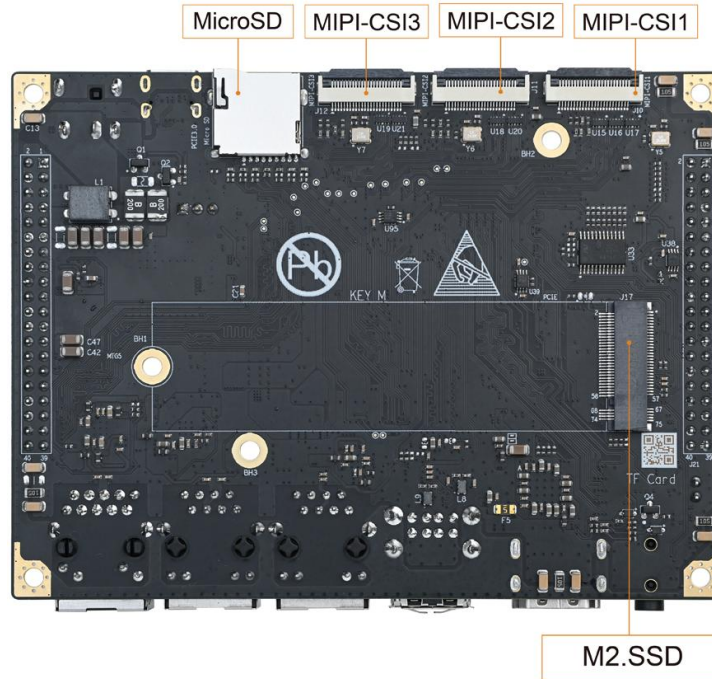
MYD-YR3562 Development Board Top-view (RK3562 CPU)

The MYD-YR3562 is equipped with a 12V/3A power adapter, a USB Type-C cable, a WiFi/Bluetooth antenna, and a quick start guide. MYIR provides optional accessories, such as the MY-CAM004M 4AHD-to-MIPI Camera Module, MY-CAM005M MIPI Camera Module, and MY-MIPI101C 10.1-inch LCD Module. The MYD-YR3562J-GK kit, featuring the RK3562J CPU, includes the MY-ICEB001 expansion board, which adds three USB2.0 ports, one RS232 port, two RS485 ports, two CAN interfaces, and an M.2 Socket for a USB-based 4G/5G LTE Module with a SIM card holder, operating within a temperature range of -40 to 85 degrees Celsius. These enhancements substantially broaden the board's functionality, providing users with the flexibility to tailor the solution to their unique project needs.

the MYD-YR3562 Development Board (RK3562J version) Integrates with the MY-ICEB001 Expansion Board
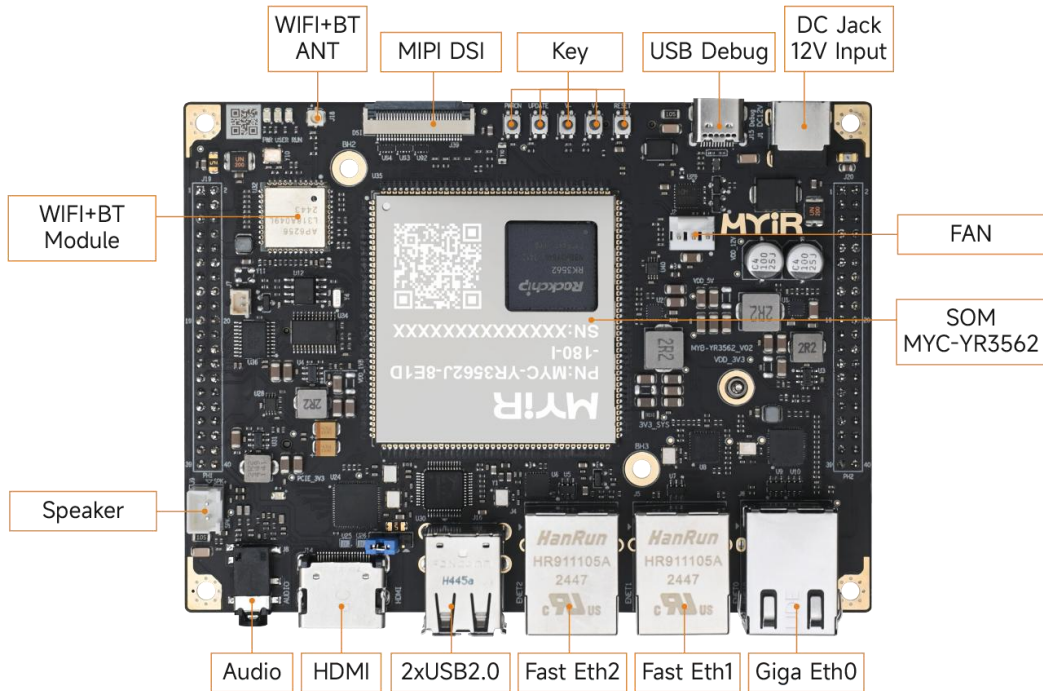
MYD-YR3562 Development Board (RK3562J version) Top-view

Labels on top board: WIFI+BT ANT, MIPI DSI, Key, USB Debug, DC Jack 12V Input, WIFI+BT Module, FAN, SOM MYC-YR3562, Speaker, Audio, HDMI, 2xUSB2.0, Fast Eth2, Fast Eth1, Giga Eth0

MY-ICEB001 Expansion Board

Labels on expansion board: Power, RS232, RS485*2, CAN*2, 2*20pin2.54mm RPI connector, 2*20pin2.54mm MI Fans PI connector, miniPCIE for 4G, USB2.0, SIM Card, LED*2, Reset key, User key
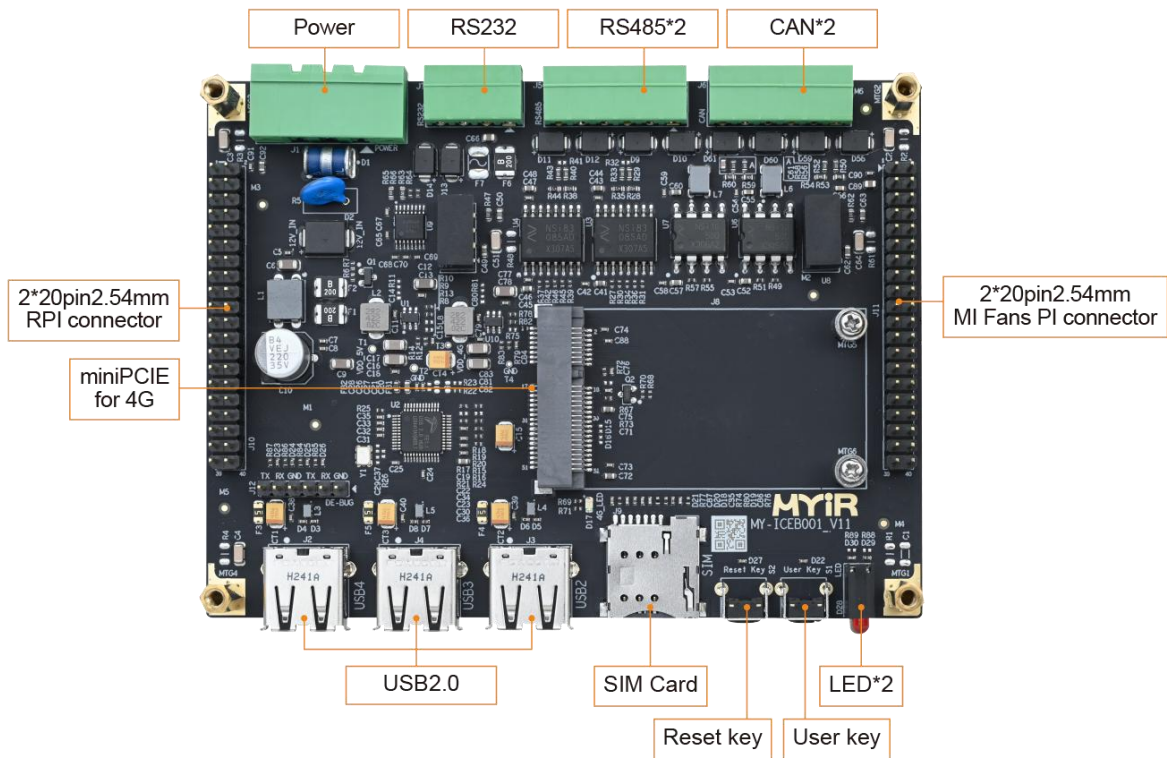
Hardware Specification

The RK3562 and RK3562J processors are high-performance, low-power solutions from Rockchip, designed for industrial automation and consumer electronics. The RK3562 supports a working temperature range from 0 to 70 degrees Celsius, whereas the RK3562J supports -40 to 85 degrees Celsius.

The RK3562 features a built-in NPU that supports hybrid operations with INT4/INT8/INT16/FP16 data types. Moreover, it offers strong compatibility with various frameworks, including TensorFlow, MXNet, PyTorch, and Caffe, facilitating easy conversion of network models.

Both processors are equipped with several embedded hardware engines to optimize performance for high-end applications. They support 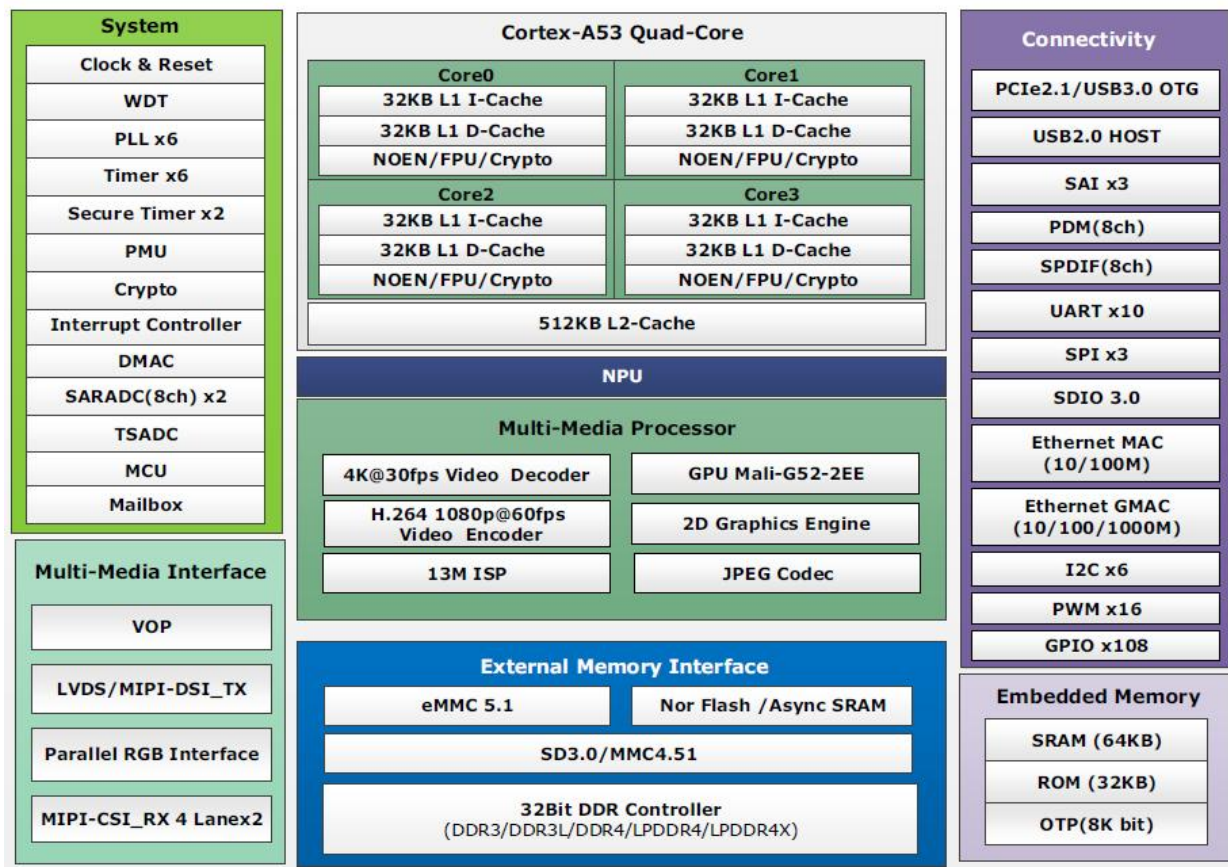nearly full-format H.264 decoding at 1080p@60fps, H.265 decoding at 4K@30fps, and H.264 encoding at 1080p@60fps. Additionally, they include a high-quality JPEG encoder and decoder. The processors come with an embedded 3D GPU that ensures complete compatibility with OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, and Vulkan 1.1. A special 2D hardware engine is also included to maximize display performance and ensure smooth operation.

They are suitable for next-generation smart power devices, industrial Internet of Things (IoT) devices, industrial control equipment, industrial robots, digital signage, touch all-in-one machines, engineering machinery, rail transit, and other advanced industrial applications.

RK3562

System	Cortex-A53 Quad-Core		Connectivity
Clock & Reset			PCIe2.1/USB3.0 OTG
WDT	**Core0** 32KB L1 I-Cache / 32KB L1 D-Cache / NOEN/FPU/Crypto	**Core1** 32KB L1 I-Cache / 32KB L1 D-Cache / NOEN/FPU/Crypto	USB2.0 HOST
PLL x6			SAI x3
Timer x6			PDM(8ch)
Secure Timer x2	**Core2** 32KB L1 I-Cache / 32KB L1 D-Cache / NOEN/FPU/Crypto	**Core3** 32KB L1 I-Cache / 32KB L1 D-Cache / NOEN/FPU/Crypto	SPDIF(8ch)
PMU			UART x10
Crypto	512KB L2-Cache		SPI x3
Interrupt Controller			SDIO 3.0
DMAC	NPU		Ethernet MAC (10/100M)
SARADC(8ch) x2	Multi-Media Processor		Ethernet GMAC (10/100/1000M)
TSADC	4K@30fps Video Decoder	GPU Mali-G52-2EE	I2C x6
MCU	H.264 1080p@60fps Video Encoder	2D Graphics Engine	PWM x16
Mailbox	13M ISP	JPEG Codec	GPIO x108

Multi-Media Interface	External Memory Interface		Embedded Memory
VOP	eMMC 5.1	Nor Flash /Async SRAM	SRAM (64KB)
LVDS/MIPI-DSI_TX	SD3.0/MMC4.51		ROM (32KB)
Parallel RGB Interface	32Bit DDR Controller (DDR3/DDR3L/DDR4/LPDDR4/LPDDR4X)		OTP(8K bit)
MIPI-CSI_RX 4 Lanex2			

RK3562 Processor Block Diagram

RK3562J

System	Cortex-A53 Quad-Core		Connectivity

System
- Clock & Reset
- WDT
- PLL x6
- Timer x6
- Secure Timer x2
- PMU
- Crypto
- Interrupt Controller
- DMAC
- SARADC(8ch) x2
- TSADC
- MCU
- Mailbox

Cortex-A53 Quad-Core

Core0	Core1
32KB L1 I-Cache	32KB L1 I-Cache
32KB L1 D-Cache	32KB L1 D-Cache
NOEN/FPU/Crypto	NOEN/FPU/Crypto

Core2	Core3
32KB L1 I-Cache	32KB L1 I-Cache
32KB L1 D-Cache	32KB L1 D-Cache
NOEN/FPU/Crypto	NOEN/FPU/Crypto

512KB L2-Cache

Multi-Media Processor
- 4K@30fps Video Decoder
- H.264 1080p@60fps Video Encoder
- 13M ISP
- GPU Mali-G52-2EE
- 2D Graphics Engine
- JPEG Codec

Multi-Media Interface
- VOP
- LVDS/MIPI-DSI_TX
- Parallel RGB Interface
- MIPI-CSI_RX 4 Lanex2

External Memory Interface
- eMMC 5.1
- Nor Flash /Async SRAM
- SD3.0/MMC4.51
- 32Bit DDR Controller (DDR3/DDR3L/DDR4/LPDDR4/LPDDR4X)

Connectivity
- PCIe2.1/USB3.0 OTG
- USB2.0 HOST
- SAI x3
- PDM(8ch)
- SPDIF(8ch)
- UART x10
- SPI x3
- SDIO 3.0
- Ethernet MAC (10/100M)
- Ethernet GMAC (10/100/1000M)
- CAN x2
- I2C x6
- PWM x16
- GPIO x108

Embedded Memory
- SRAM (64KB)
- ROM (32KB)
- OTP(8K bit)

RK3562J Processor Block Diagram

The MYC-YR3562 System-On-Module harnesses the full capabilities of the RK3562/RK3562J processor, highlighting the following key features:

Mechanical Parameters
- Dimensions: 43mm x 45mm
- PCB Layers: 10-layer design
- Power supply: +3.3V/2A
- Working temperature: -40~85 Celsius (industrial grade, with RK3562J CPU), 0~70 Celsius (commercial grade, with RK3562 CPU)

Processor
- RockChip RK3562/RK3562J processor
  - Quad-core ARM Cortex-A53@2.0GHz (RK3562)
  - Quad-core ARM Cortex-A53@1.2GHz/1.8GHZ (RK3562J at normal mode/overdrive mode)
  - 3D GPU Mail-G52-2EE
  - 1080p@60fps H.264 decoding, 4K@30fps H.265 decoding, and 1080p@60fps H.264 encoding
 - Up to 1 Tops NPU (only for RK3562 CPU)

Memory and Storage
- 1GB/2GB LPDDR4
- 8GB/16GB eMMC
- 32Kbit EEPROM

Peripherals and Signals Routed to Pins

- Power Management IC
- 1.0 mm pitch 164-pin Castellated-Hole and 58-pin LGA expansion interfaces
  - 1x RGMII
  - 1x RMII
  - 1x USB3.0/2.0 OTG
  - 1x USB2.0 Host
  - 1x PCIE 2.1/USB3.0 (Multi-PHY)
  - 3x SPI
  - 2x SDIO 3.0
  - 10x UART
  - 2x CAN 2.0B
  - 5x I2C
  - 16x PWM
  - 2x SARADC
  - 2x MIPI CSI
  - 1x MIPI DSI
  - 1x 24-bit RGB
  - 1x LVDS
  - 3x SAI
  - 1x SPDIF
  - 1x 8-ch PDM

Note: the peripheral signals brought out to the expansion interface are listed in maximum number. Some signals are reused. Please refer to the processor datasheet and the SOM pinout description file.
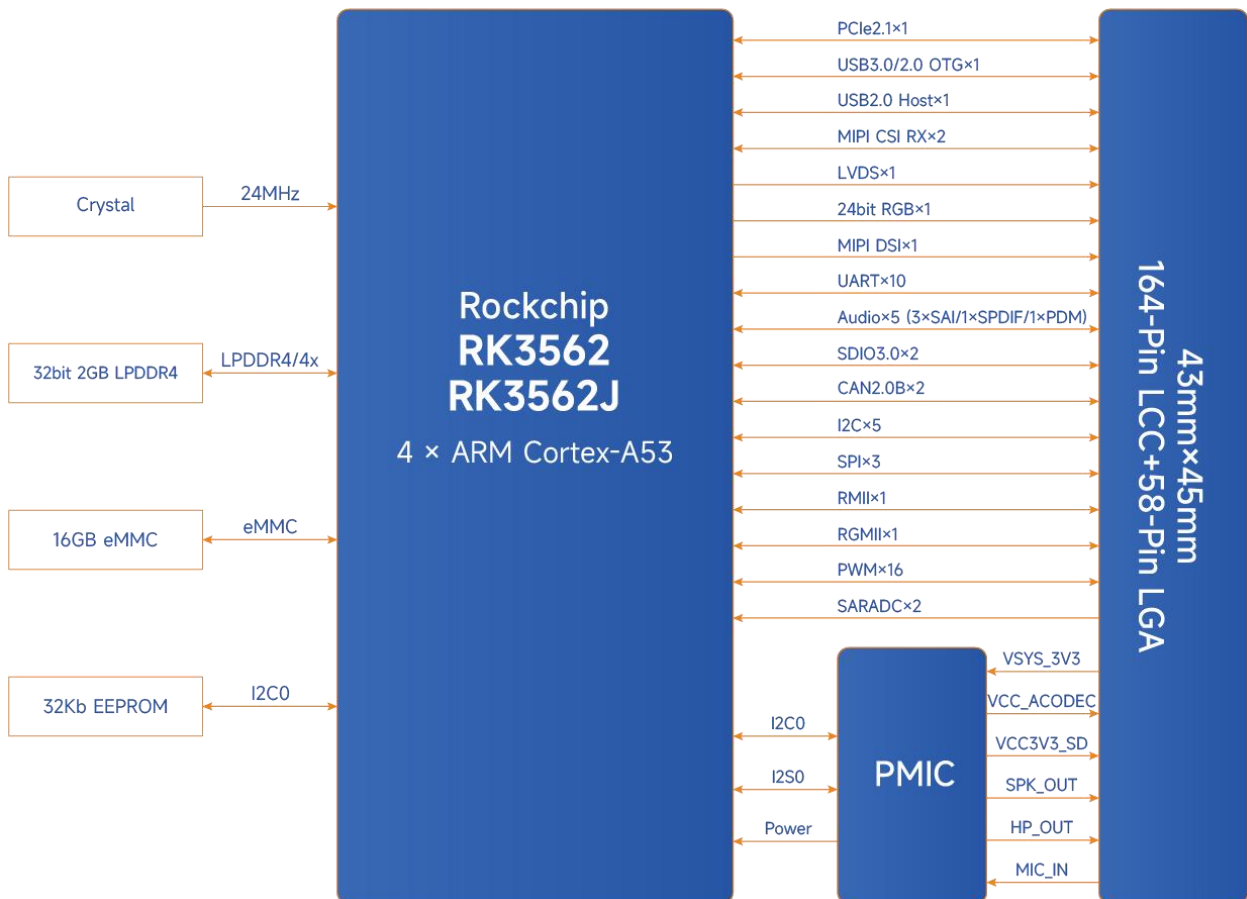
MYC-YR3562 Function Block Diagram

Software Features

The MYC-YR3562 SOM supports for Linux OS and is furnished with comprehensive software packages. To facilitate clients in accelerating their projects, the kernel and numerous peripheral drivers are provided in source code format. The following is a concise overview of the software's key features:

Item	Features	Description	Source Code
Bootloader	SPL	First bootloader	YES
	U-boot	Second bootloader uboot_2017.9	YES
Linux kernel	Linux kernel	Customized base on official kernel_6.1.99 version	YES
Device driver	EEPROM	BL24C32F driver	YES
	USB Host	USB Host driver	YES
	USB OTG	USB OTG driver	YES
	I2C	I2C bus driver	YES
	SPI	SPI bus driver	YES
	Ethernet	YT8531SH-CA driver	YES
		SR9900AI driver	YES
		YT8512H driver	YES
	HDMI	LT8912B driver	YES
	RTC	LK8563T driver	YES
	GPIO	Generic GPIO driver	YES
	UART	RS232/RS485 driver	YES
	CAN	CAN driver	YES
	WiFi	AP6256 driver	YES
	BT	AP6256 driver	YES
	LED	GPIO LED driver	YES
	KEY	GPIO KEY driver	YES
File system	myir-image-linux	Linux image built with buildroot	YES

MYD-YR3562 Software Features

Order Information

Product Item	Part No.	Packing List
MYC-YR3562 System-On-Module	MYC-YR3562J-8E1D-180-I	✓ One MYC-YR3562 SOM
	MYC-YR3562J-16E2D-180-I	
	MYC-YR3562-16E2D-200-C	
MYD-YR3562 Development Board	MYD-YR3562-16E2D-200-C (2GB LPDDR4, 16GB eMMC, with NPU)	✓ One MYD-YR3562 Board ✓ One 12V/3A Power adapter ✓ One USB Type-C cable ✓ One WiFi/BT PCB antenna (with ipex connector) ✓ One Quick Start Guide
MYD-YR3562J-GK Development Kit	MYD-YR3562J-16E2D-180-I-GK (2GB LPDDR4, 16GB eMMC, without NPU)	✓ One MYD-YR3562 Board ✓ **One MY-ICEB001 Expansion Board** ✓ One 12V/3A Power adapter ✓ One USB Type-C cable ✓ One WiFi/BT PCB antenna (with ipex connector) One Quick Start Guide
MY-MIPI101C 10.1-inch LCD Module	MY-MIPI101C	**Add-on Options** ✓ MY-MIPI101C 10.1-inch LCD Module ✓ MY-CAM004M MIPI Camera Module ✓ MY-CAM005M MIPI Camera Module
MY-CAM004M Camera Module	MY-CAM004M	
MY-CAM005M Camera Module	MY-CAM005M	

Note:

1. One MYD-YR3562 Development Board comprises one MYC-YR3562 SOM mounted onto the base board. If you require additional SOMs, you may place orders for extras.

2. Bulk discounts are available. For inquiries, kindly contact MYIR.

3. We cater to custom design requests based on the MYD-YR3562, whether it involves reducing, adding or modifying the existing hardware components to suit the customers' specific needs.

MYIR Electronics Limited

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