MYiR 米尔电子
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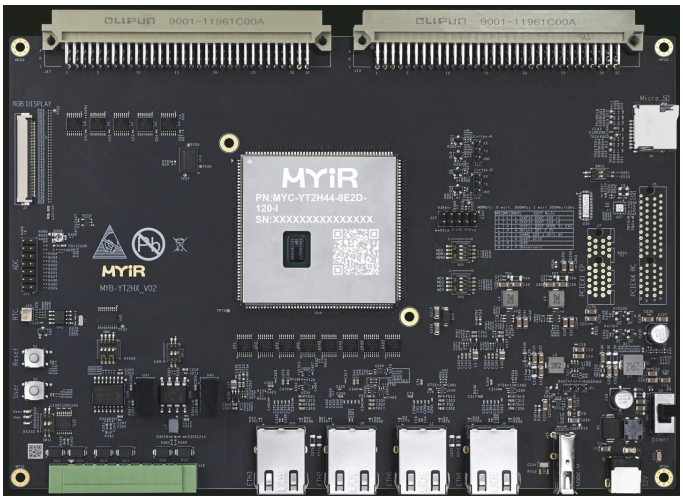
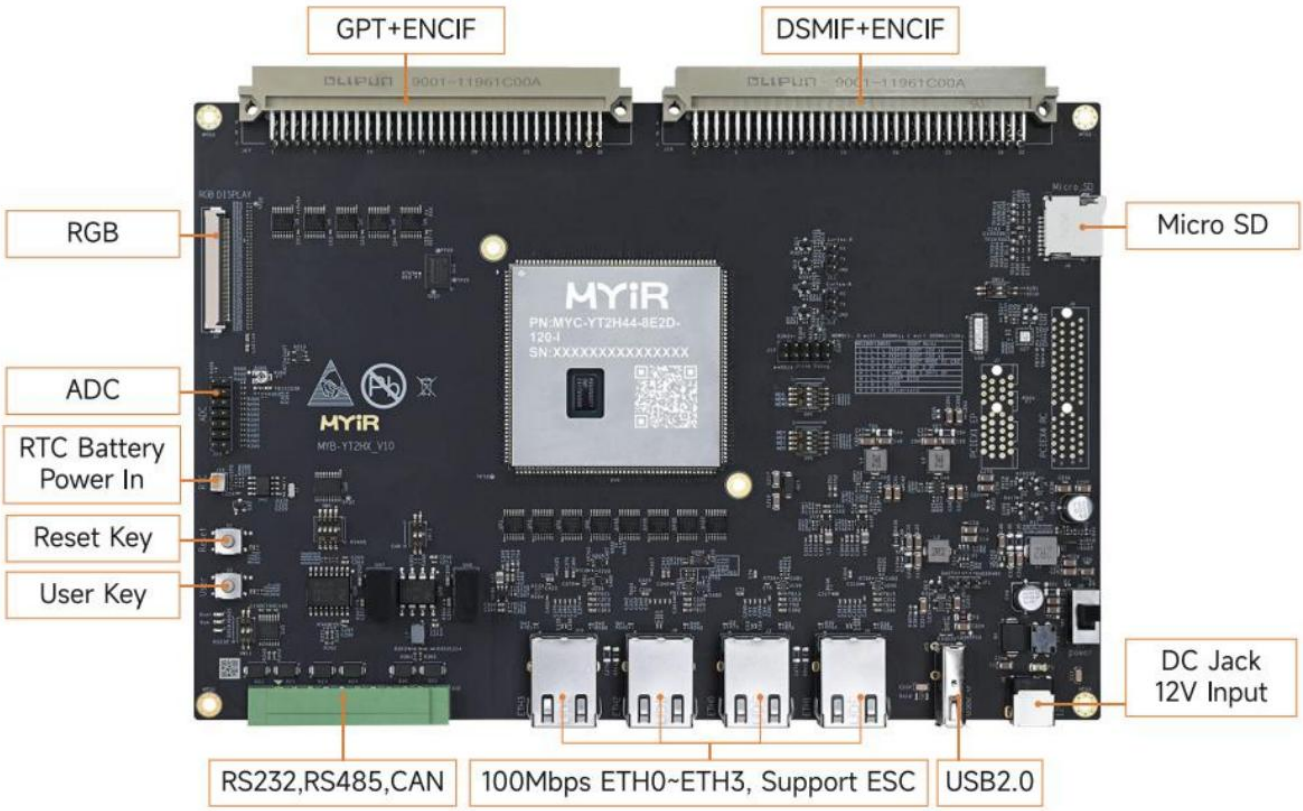
MYD-YT2HX Development Board Overview



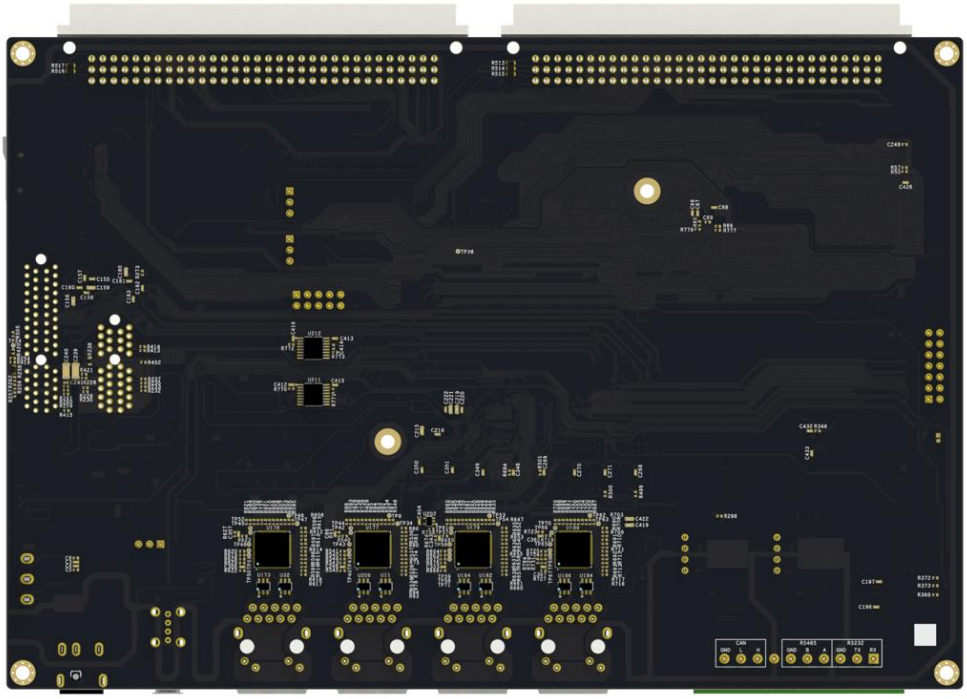
- ✓ *MYC-YT2HX System-On-Module as Controller Board*
- ✓ *Renesas RZ/T2H Processor based on 1.2GHz Quad ARM Cortex-A55 and 1.0GHz Dual ARM Cortex-R52 Cores*
- ✓ *2GB LPDDR4, 8GB eMMC, 16MB QSPI NOR Flash*
- ✓ *4x 100Mbps Ethernet, USB 2.0 HOST, RS232, RS485, CAN, Micro SD card Slot, ADC, JTAG, RGB Display Interface*
- ✓ Two 3x 32-pin Expansion Connectors Providing Interfaces for GPT, DSMIF, and ENC
- ✓ *Supports Running Linux 5.10*
- ✓ *Optional MY-TFT070RV2 7-inch LCD Modules*

The MYD-YT2HX development board consists of the MYC-YT2HX System-on-Module (SOM) soldered onto the MYB-YT2HX baseboard via an LCC+LGA surface-mount assembly. Powered by the Renesas RZ/T2H microprocessor, it features a quad-core Arm Cortex-A55 running at 1.2GHz for application processing and dual-core Arm Cortex-R52 running at 1.0GHz for real-time control. The SOM integrates the RZ/T2H processor with 2GB LPDDR4, 8GB eMMC, 16MB QSPI NOR flash and a dedicated Power Management IC (PMIC). The baseboard provides extensive I/O through various connectors, including four 100Mbps Ethernet ports, a USB 2.0 Host, RS232, RS485, CAN, and a Micro SD card slot. Display connectivity is available via an RGB888 interface that is compatible with the optional 7-inch MY-TFT070RV2 LCD module. Additional interfaces include ADC, RTC, JTAG, and two expansion connectors that expose GPT, DSMIF, and ENC interfaces to meet the demands of advanced motor control.

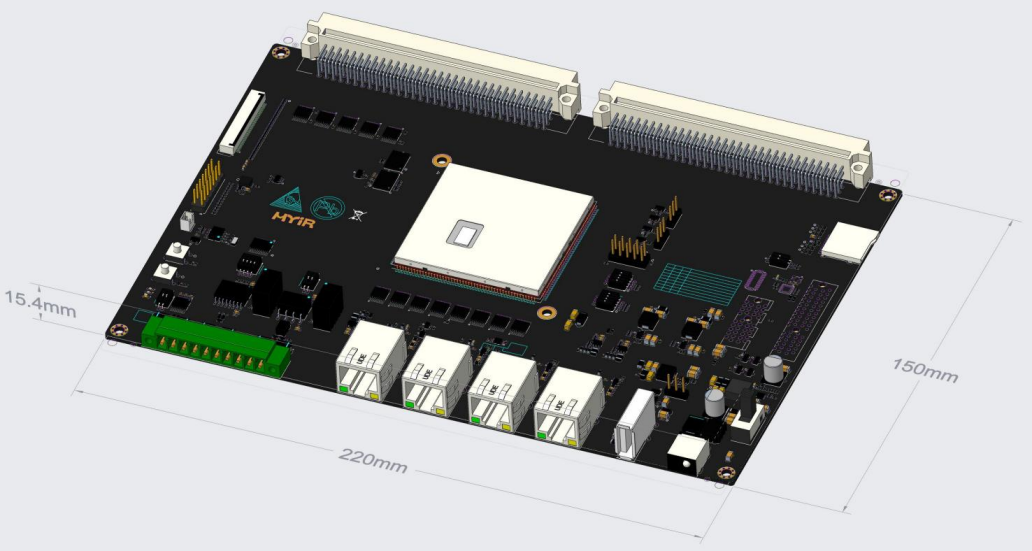
The MYD-YT2HX development board runs Linux 5.10 and comes with a complete software package including U-boot, kernel source, peripheral drivers, and development tools. The bundle includes a Quick Start Guide, USB Type-A to Type-C cable, 12V/2A power adapter, and a Phoenix connector.



MYD-YT2HX Development Board (Top-view)



MYD-YT2HX Development Board (Bottom-view)



MYD-YT2HX Dimensions Chart

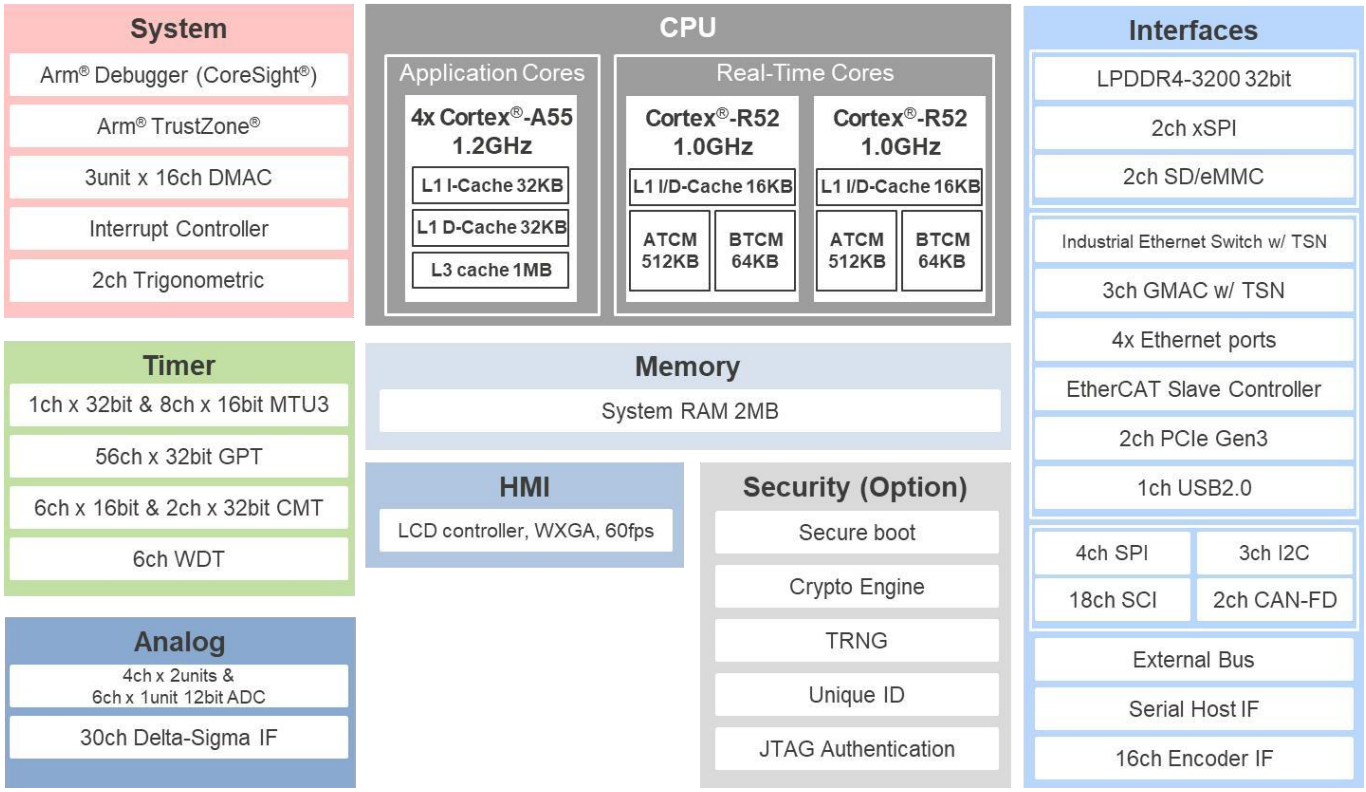
Hardware Specification

The MYC-YT2HX SOM populated on the MYD-YT2HX Development Board is using RZ/T2H, which is an advanced high-end microprocessor from Renesas designed for the industrial market. It integrates powerful application processing and high-precision real-time control on a single chip, supporting Linux operation.

It features a Quad-Core Arm® Cortex®-A55 CPU (up to 1200MHz) for complex application processing and Dual-Core Arm® Cortex®-R52 CPU (up to 1000MHz) for deterministic real-time control. For networking, it supports Time-Sensitive Networking (TSN) and various industrial Ethernet protocols, including EtherCAT, EtherNet/IP, and PROFINET RT/IRT. Leveraging the low-latency access of the Cortex®-R52 CPU, its peripheral functions enable the control of up to 9-axis motors.

The processor is equipped with a high-capacity LPDDR4 memory interface and non-volatile memory interfaces such as SD/eMMC, supporting widespread operating systems including Linux. Additionally, it provides 2x PCIe Gen3 channels, 2x xSPI channels, and other high-speed interfaces.

With its processing power and comprehensive peripheral functions, the RZ/T2H is ideal for controllers such as industrial robots, motion controllers, and programmable logic controllers (PLCs).



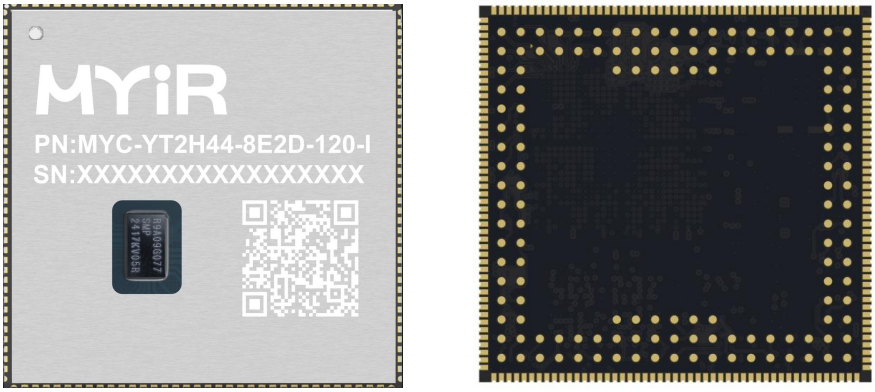
RZ/T2H Processor Block Diagram

The MYD-YT2HX Development Board is using the MYC-YT2HX System-On-Module as core controller board. It takes full features of RZ/T2H processor and the main features are characterized as below:

Mechanical Parameters

- Dimensions: 150mm x 220mm (base board), 52 mm x 50 mm (SOM)
- PCB Layers: 6-layer design (base board), 12-layer design (SOM)
- Power supply: 12V/2A (base board), 5V/2A (SOM)
- Working temperature: -40~85 Celsius (industrial grade)

The MYD-YT2HX Controller Board (MYC-YT2HX System-On-Module)



MYC-YT2HX (Top-view and Bottom-view)

Processor

- Renesas RZ/T2H Processor (R9A09G077M44GBG)
  - Quad-core Arm Cortex-A55 up to 1.2 GHz
  - Dual-core Arm Cortex-R52 up to 1GHz

Memory

- 2GB LPDDR4
- 8GB eMMC
- 16MB QSPI NOR Flash

Power Management IC (PMIC)

- Renesas DA9080-66FCBC

Peripherals and Signals Routed to Pins

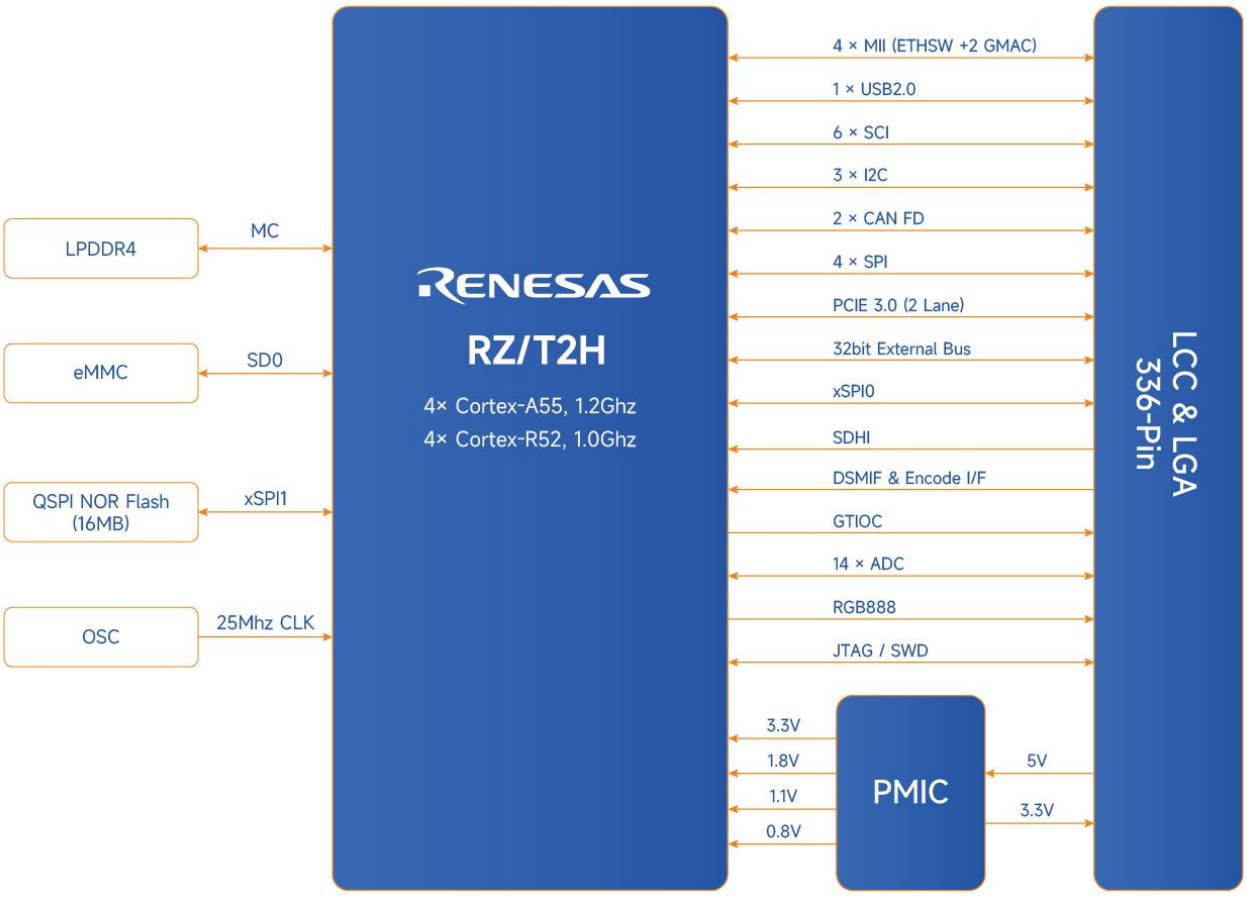
- 336-pin (192-pin LCC +144-pin LGA) Expansion Interface
  - 4 x MII
  - 1x USB 2.0 HOST/OTG
  - 1x SDMMC
  - 4x CS (8-bit/16-bit/32-bit External Bus)
  - UART (6*SCI+12*SCIE)
  - 2x CAN-FD
  - 3x I2C
  - 9-channel PWM MTU, 56-channel PWM GPT
  - 4x SPI

- 14-channel ADC
- 30- channel Delta-Sigma IF
- PCIe (1-lane x2 ports or 2-lane x1 port)
- 1x JTAG
- 24-bit RGB supports WXGA (1280 * 800) @ 60 fps

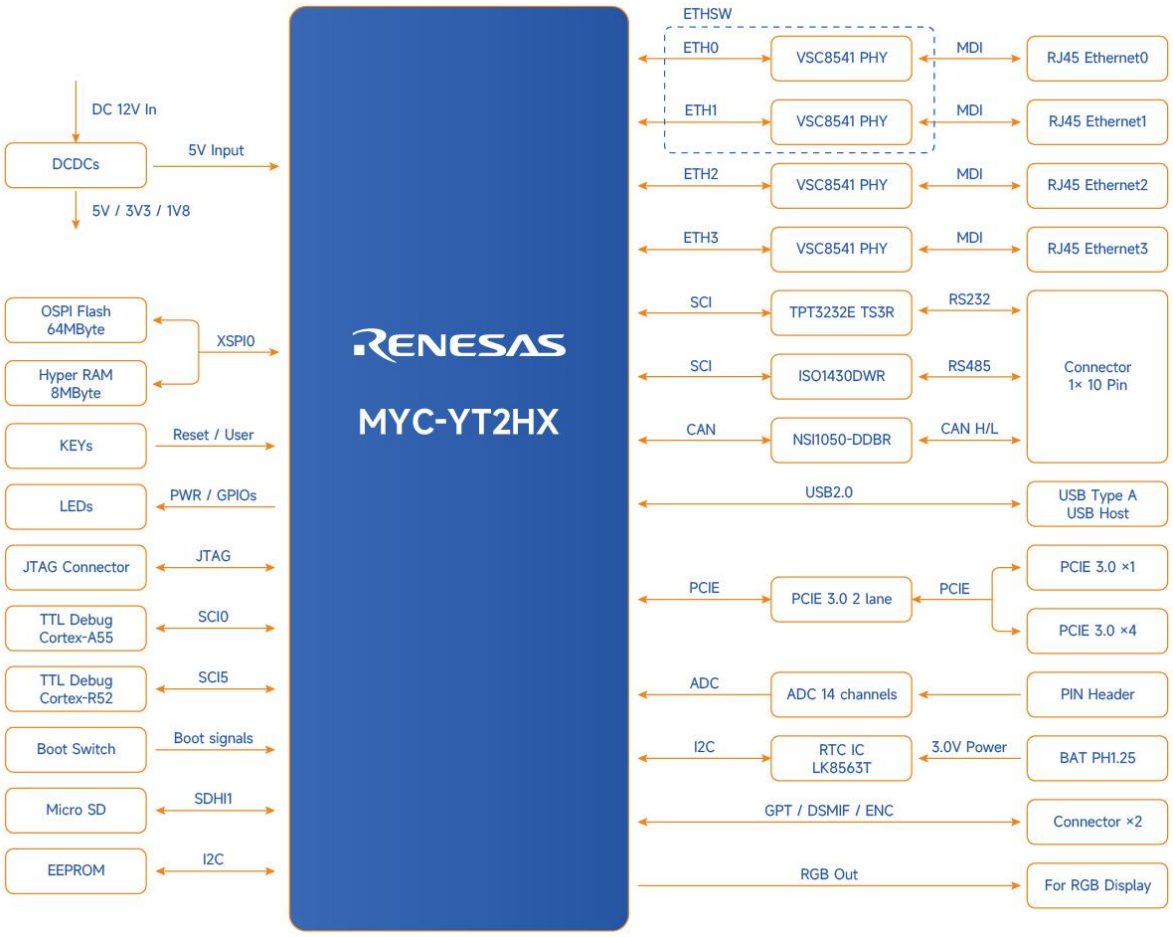
Note: the peripheral signals brought out to the expansion interface are listed in maximum number. Some signals are reused. Please refer to the processor datasheet and the SOM pinout description file.

The MYD-YT2HX Development Board Base Board

- 1x Power Jack (12V/2A)
- 2x TTL Debug serial ports (UART0 for Cortex-A55, UART5 for Cortex-R52)
- 1x JTAG interface (J13 for Cortex-R52)
- 1x USB 2.0 OTG (Type-A)
- 4x 10/100Mbps Ethernet
- 1x RS232
- 1x RS485
- 1x CAN
- 1x Micro SD card slot
- 1x RGB Display Interface (supports RGB888)
- 1x 12-channel ADC
- 1x RTC Battery interface
- 3x Buttons (one for USER, one for RESET, and one for POWER ON/OFF)
- 3x LEDs (Red LED - PWR, Green LED - RUN, Blue LED - USER)
- 1x BOOT Switch
- Two 3x 32-pin Expansion Connectors (GPT/DSMIF/ENC)



MYC-YT2HX Function Block Diagram



MYD-YT2HX Development Board Function Block Diagram

Software Features

The MYD-YT2HX provides abundant software resources to help customers quickly develop their products. Upon product release, you can obtain the complete BSP source code and a comprehensive software development manual.

Operating system image files:
myir-image-full-myd-yt2h.wic.gz: A GUI-enabled image built with Yocto, which includes all complete hardware drivers in the CORE, common system tools, debugging tools, etc., as well as the QT runtime libraries and an HMI interface developed based on QT. It supports application development using Shell, C/C++, QML, and Python.

myir-image-burn-myd-yt2h.wic.gz: An image designed for mass production burning. It boots from an SD card and automatically flashes the full image to the eMMC.

The key features of this software are summarized below.

Item	Features	Features	Source Code
Bootloader	U-boot	Boot program uboot_2021	YES
Kernel	Linux kernel	Customized based on official kernel_5.10 version	YES
Drivers	USB Host	USB Host driver	YES
	Ethernet	VSC8541 driver	YES
	RS232	TPT3232 driver	YES
	RS485	ISO1430 driver	YES
	CAN	NSI1050 driver	YES
	RTC	LK8563K driver	YES
	GPIO	Universal GPIO driver	YES
	ADC	ADC driver	YES
	RGB	RGB driver	YES
File system	myir-image-full-myd-yt2h	A Yocto-built image with a GUI	YES
	myir-image-burn-myd-yt2h	Production flash image built with Yocto	YES

MYD-YT2HX Software Features

Order Information

Product Item	Part No.	Packing List
MYD-YT2HX Development Board	MYD-YT2H44-8E2D-120-I	✓ One MYD-YT2HX Development Board (including MYC-YT2HX SOM) ✓ One USB Type A-to-C cable ✓ One 12V/2A Power adapter ✓ One Phoenix connector ✓ One Quick Start Guide
MYC-YT2HX System-On-Module	MYC-YT2H44-8E2D-120-I	✓ One MYC-YT2HX SOM
MY-TFT070RV2 7-inch LCD Module	MY-TFT070RV2	**Add-on Options** ✓ MY-TFT070RV2 7-inch LCD Module with Resistive Touch Screen
Note: *1. One MYD-YT2HX Development Board includes one MYC-YT2HX SOM mounted on the base board. If you need more SOMs, you can order extra ones.* *2. Bulk discounts are available. Please contact MYIR for inquiries.* *3. We accept custom design based on the MYD-YT2HX, whether reducing, adding or modifying the existing hardware according to customer's requirement.*		

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