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MYC-YT2HX System-On-Module Overview

- ✓ *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*
- ✓ *Power Management IC (PMIC)*
- ✓ *336-pin Expansion Interface via 192-Pin LCC + 144-Pin LGA Package Configuration*
- ✓ *Supports Working Temperature Ranging from -40° C to 85° C*
- ✓ *Supports Linux 5.10*

Measuring 50mm by 52mm, the MYC-YT2HX is a high-performance and compact System-On-Module (SoM) built around the advanced Renesas RZ/T2H microprocessor. It integrates a 1.2GHz quad-core Arm Cortex-A55 processor for high-level application tasks alongside a 1.0GHz dual-core Cortex-R52 processor for deterministic real-time control all within a single chip. In addition to the RZ/T2H, the MYC-YT2HX incorporates a Power Management IC (PMIC), 2GB LPDDR4 memory, 8GB eMMC storage, and a 16MB QSPI Nor Flash. It provides extensive peripheral and I/O connectivity via a 336-pin expansion interface (192-pin LCC + 144-pin LGA), including 4x 10/100Mps Ethernet, 2x CAN FD, 1x USB 2.0 HOST/OTG, along with multiple UART, I2C, SPI, PWM, ADC, and PCIe interfaces. The module also supports 30-channel Delta-Sigma interface (DSMIF) and a 24-bit RGB display for for demanding data acquisition and visualization tasks. It is ready-to-use Linux 5.10 support for accelerated software development.

With its rich feature set and compact footprint, the MYC-YT2HX provides a versatile and scalable solution for next-generation industrial applications, including industrial robots, collaborative robots, multi-axis servo drives, motion controllers, and PLCs.

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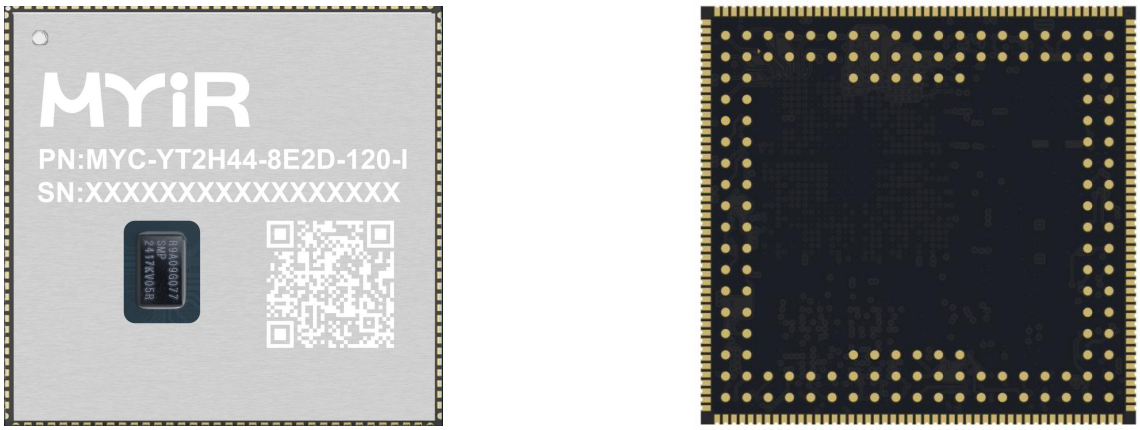
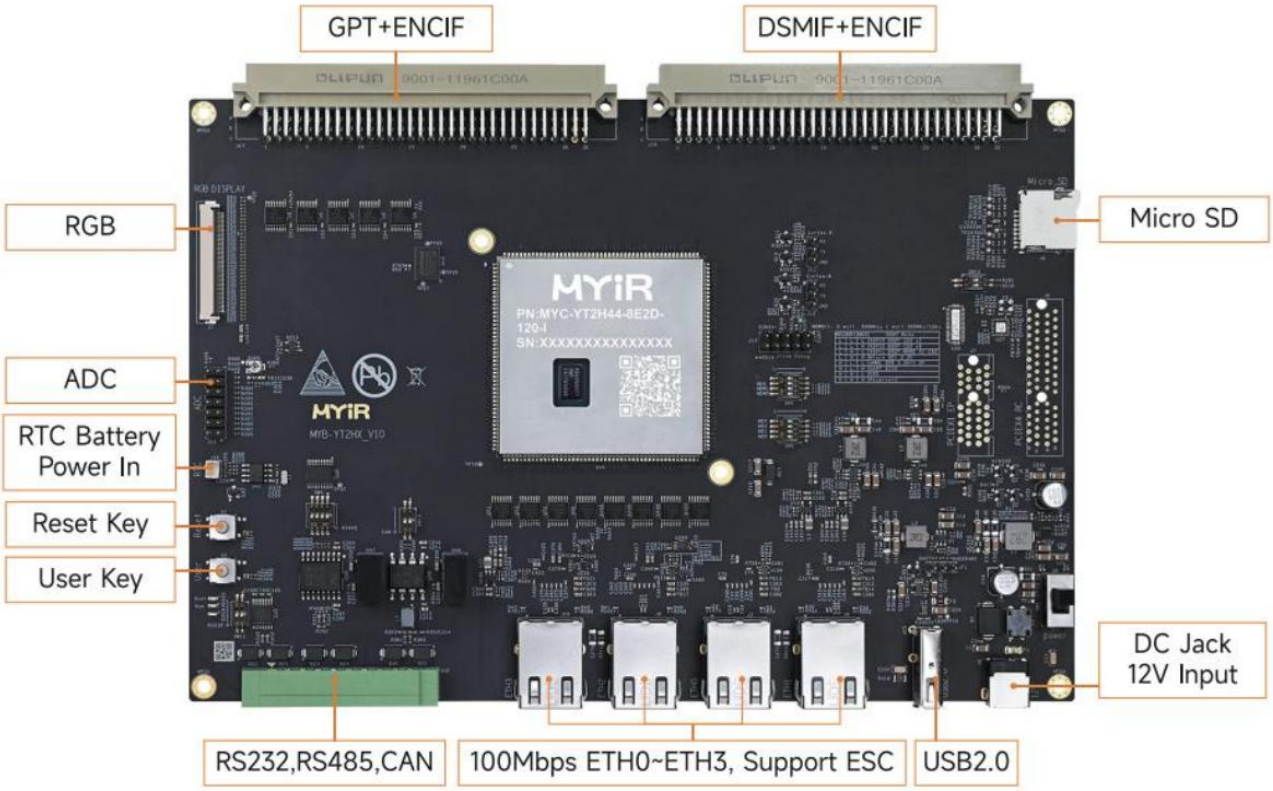
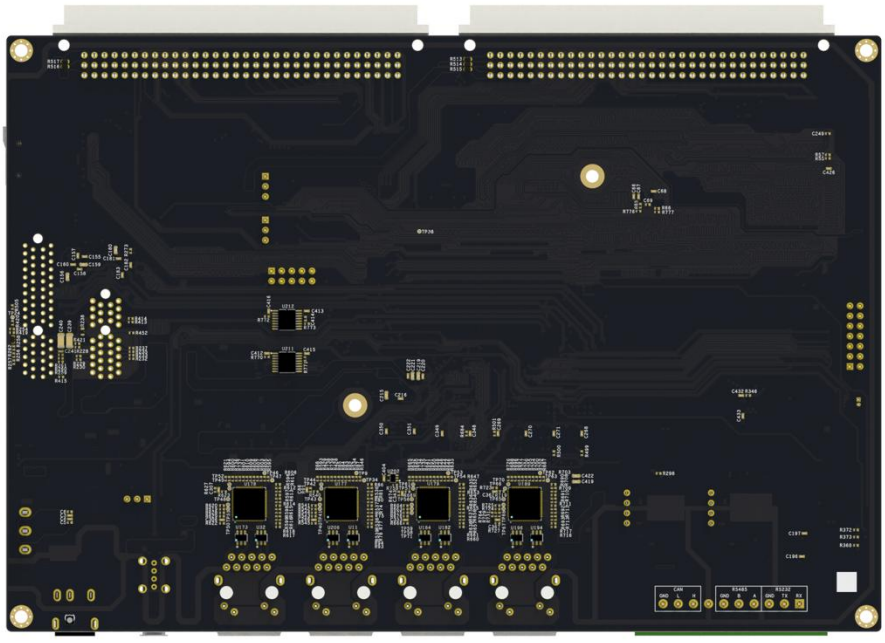


MYC-YT2HX System-On-Module (Top-view and Bottom-view)

The MYD-YT2HX is a comprehensive development board designed around the MYC-YT2HX System-on-Module (SoM), featuring a dedicated carrier board that fully extends the capabilities of the Renesas RZ/T2H processor. The board provides rich connectivity and interface options, including four 10/100 Mbps Ethernet ports, one USB 2.0 Host, and industrial RS232, RS485, and CAN interfaces accessible via robust Phoenix connectors. It also features a Micro SD card slot for storage expansion, a 24-bit RGB display interface (with support for MYIR's optional 7-inch MY-TFT070RV2 display), 12-channel ADC inputs, an RTC with battery backup interface, and a JTAG debug interface. Two 3x 32-pin expansion connectors expose the GPT, DSMIF, and ENC interfaces, which can be flexibly reconfigured for multiple functions to enhance overall system versatility. With its rich feature set and thoughtful design, the MYD-YT2HX provides an ideal hardware foundation for evaluating the RZ/T2H processor and accelerating the development of industrial and real-time control applications.



MYD-YT2HX Development Board (Top-view)



MYD-YT2HX Development Board (Bottom-view)

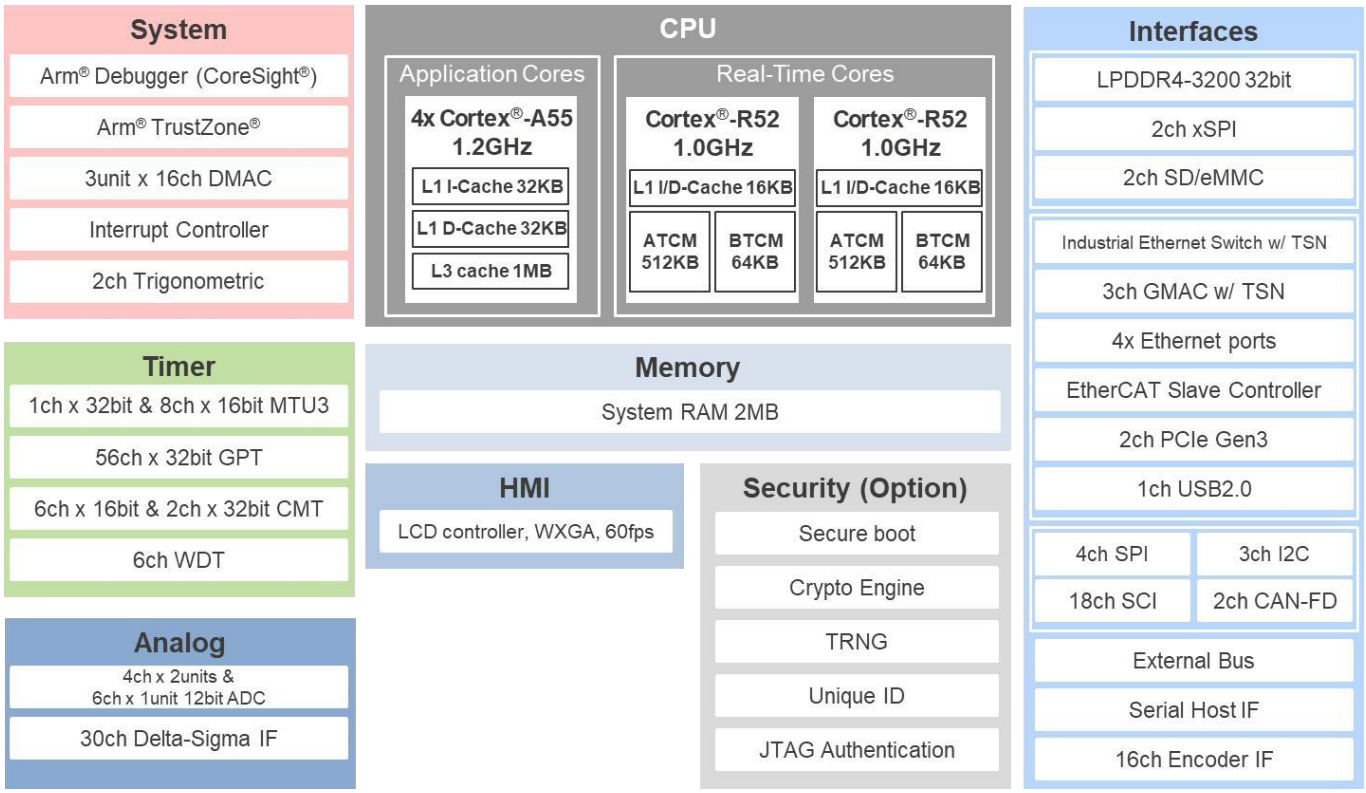
Hardware Specification

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 MYC-YT2HX takes full features of RZ/T2H processor and the main features are characterized as below:

Mechanical Parameters

- Dimensions: 50 mm x 52 mm
- PCB Layers: 12-layer design
- Power supply: +5V/2A
- Working temperature: -40~85 Celsius (industrial grade)

Processor

- Renesas RZ/T2H Processor (R9A09G077M44GBG)
  - Quad Core Cortex-A55 running up to 1.2GHz
  - Dual Core Cortex-R52 running up to 1.0GHz

Memory

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

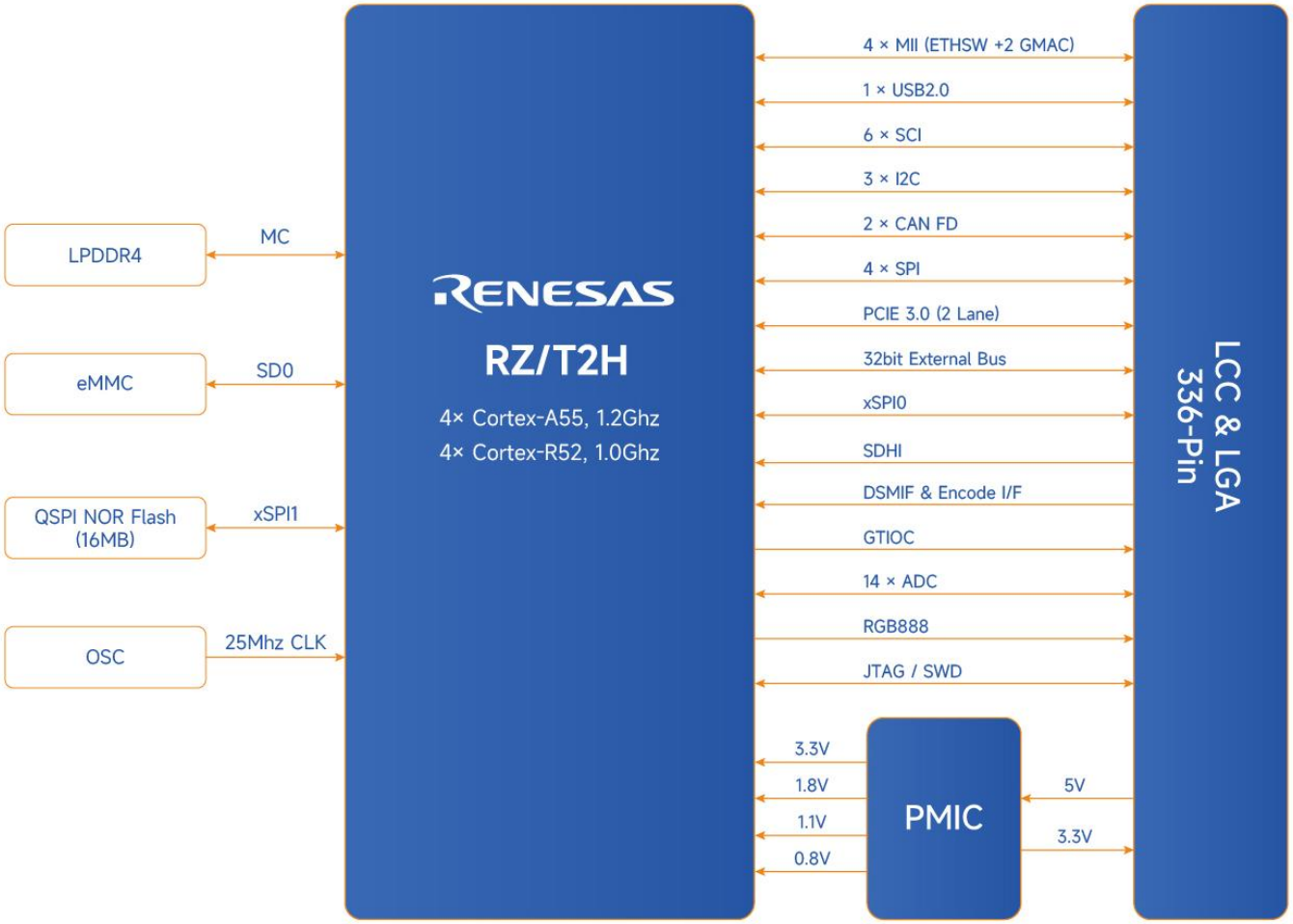
Power Management IC (PMIC)

- Renesas DA9080-66FCBC

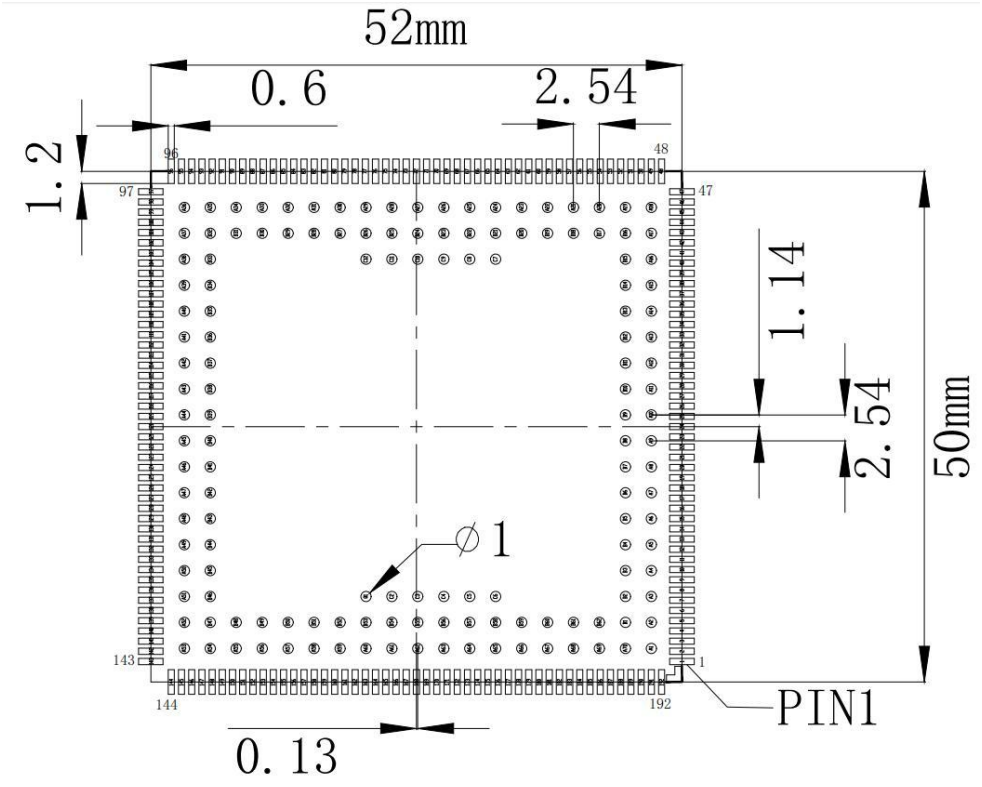
Peripherals and Signals Routed to Pins

- 336-pin (192-pin LCC +144-pin LGA) Expansion Interface
  - 4x 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.



MYC-YT2HX Function Block Diagram



MYC-YT2HX Dimensions Chart (Unit: MM)

Software Features

The MYC-YT2HX comes with 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

MYC-YT2HX Software Features

Order Information

Product Item	Part No.	Packing List
MYC-YT2HX System-On-Module	MYC-YT2H44-8E2D-120-I	✓ One MYC-YT2HX SOM
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 connectors ✓ One Quick Start Guide
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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