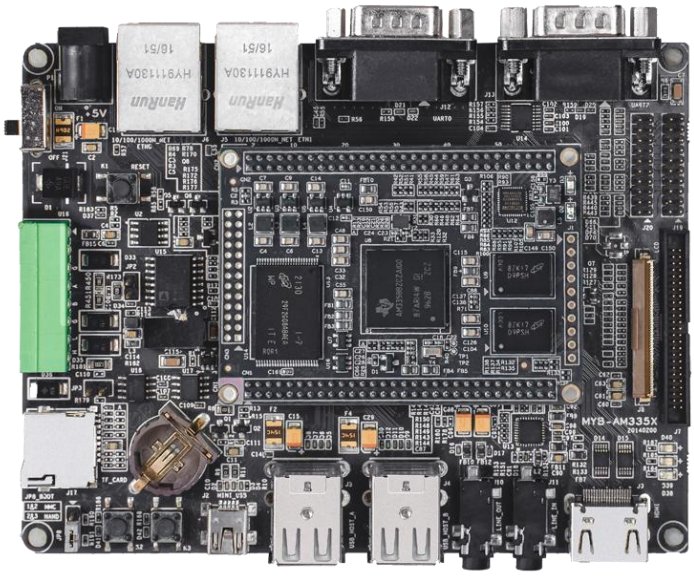
MYiR 米尔电子
Make Your Idea Real

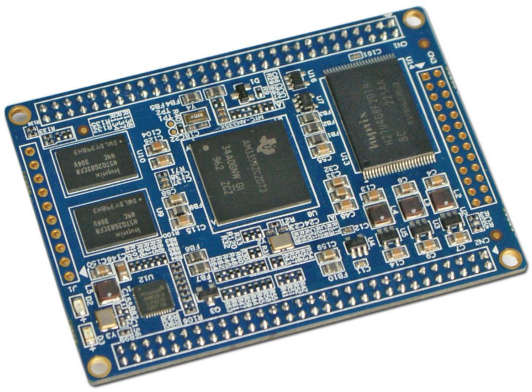
MYD-C335X-V4 Development Board Overview



- ✓ *MYC-AM335X CPU Module as Controller Board*
- ✓ *Up to 1GHz TI AM335x Series ARM Cortex-A8 Processors*
- ✓ *512MB (2*256MB) DDR3 SDRAM, 512MB Nand Flash*
- ✓ *Serial ports, 4 x USB2.0 Host, 1 x USB 2.0 OTG, 2 x Gigabit Ethernet, CAN, RS485, TF, Audio*
- ✓ *Supports HDMI and LCD Display*
- ✓ *Optional 4.3 or 7 inch LCD Module*
- ✓ *Ready to Run Linux 4.1.18*

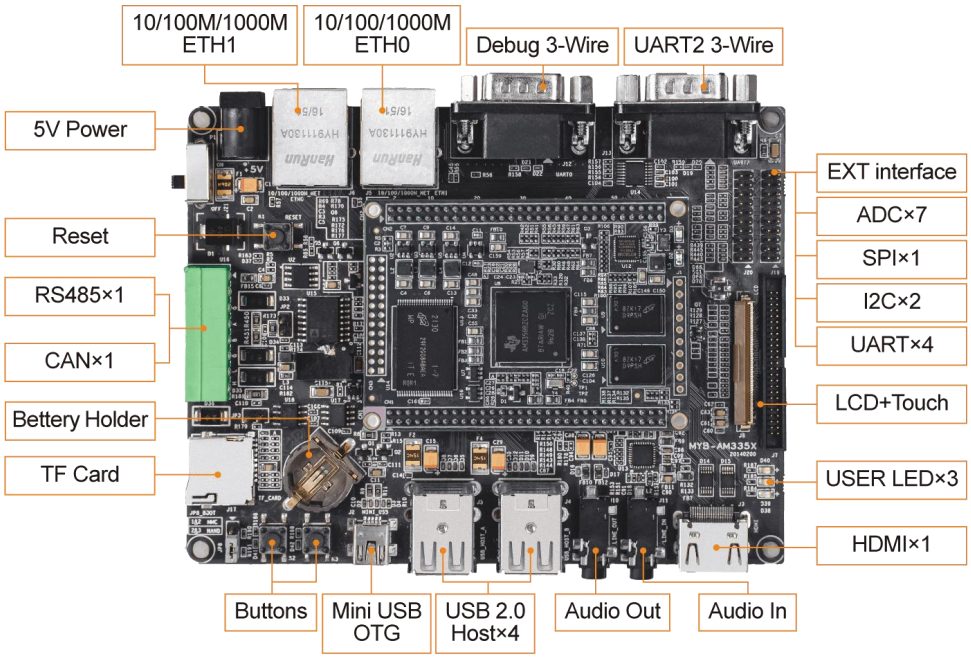
The MYD-C335X-V4 Development Board designed by MYIR is a high-performance ARM Evaluation Module (EVM) using the MYC-C335X-V4 SOM as the core controller board. It is based on up to 1GHz Texas Instruments (TI) Sitara **AM335x** family of ARM Cortex-A8 Microprocessors (MPUs) that deliver high DMIPs at a low cost while also delivering optional 3D graphics acceleration and key peripherals. These TI Cortex-A8 MPUs include industrial interface options, such as EtherCAT and PROFIBUS, and can support the Linux high-level operating system. The combination of graphics and connectivity support makes TI AM335x MPUs ideal for home automation, industrial automation, enterprise/educational tablets, portable navigation devices and networking. The board can work in harsh environment supporting -40 to +85 Celsius extended temperature operation for industrial embedded applications.

The TI AM335x consists of 6 pin-pin compatible devices (AM3352, AM3354, AM3356, AM3357, AM3358 and AM3359) with various options including speed grades, packages, graphics and peripherals. MYIR is using the 15x15 mm, 0.8-mm ball pitch, ZCZ package AM335x ARM CPU on the MYC-C335X-V4 Module which is an SOM (System on Module) and has the core components AM335x processor, 512MB DDR3 SDRAM, 512MB Nand Flash and Gigabit Ethernet PHY chip on board and can be served as the core of your embedded system. It has two 2.0mm pitch 60-pin male expansion connectors, one 2.0mm pitch 26-pin interface and one 2.54mm pitch 10-pin interface to allow extension of all the controller signals and ports to he base board through headers and connectors, thus exposing more features of the AM335x Cortex-A8 Processors.



MYC-C335X-V4 System-On-Module

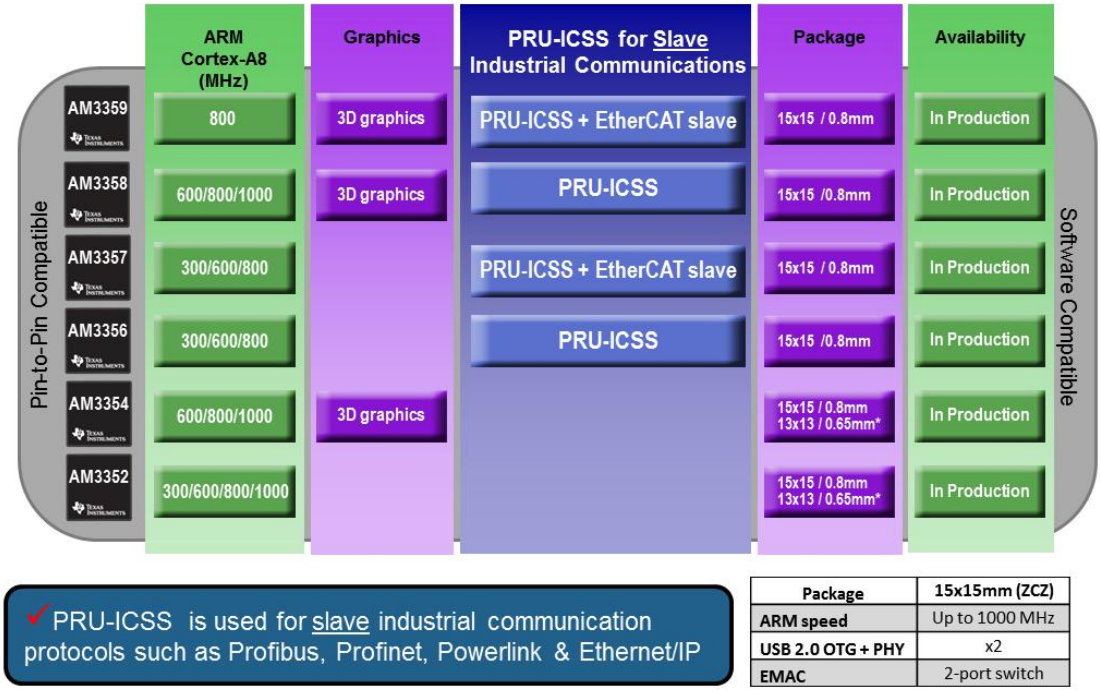
The MYD-C335X-V4 base board has extended many features and peripherals with the support of the MYC-C335X-V4 SOM and some extended controller chips including two serial ports, four USB Host ports, one USB OTG port, dual Gigabit Ethernet ports, one CAN, one RS485, one Micro SD, HDMI, LCD, Touch screen and more others.



MYD-AM335X Development Board

User can integrate a different MYC-C335X-V4 SOM on the same base board, thus making six variants of AM335x evaluation boards.

- *MYD-C3359-V4 Development Board* – with *MYC-C3359-V4 Module* for TI *AM3359*
- *MYD-C3358-V4 Development Board* – with *MYC-C3358-V4 Module* for TI *AM3358*
- *MYD-C3357-V4 Development Board* – with *MYC-C3357-V4 Module* for TI *AM3357*
- *MYD-C3356-V4 Development Board* – with *MYC-C3356-V4 Module* for TI *AM3356*
- *MYD-C3354-V4 Development Board* – with *MYC-C3354-V4 Module* for TI *AM3354*
- *MYD-C3352-V4 Development Board* – with *MYC-C3352-V4 Module* for TI *AM3352*



AM335x Devices Comparison

The MYD-C335X-V4 series ARM Cortex-A8 boards have many features in common only with some differences depending on the AM335x Cotex-A8 CPU features. You can get to know the differences from above image (see Figure 1-4). MYIR delivers the MYD-C3352-V4 and MYD-C3358-V4 by default according to customer's specified model. Other four models are only available for mass quantity demand.

The MYD-C335X-V4 board comes with Linux 4.1.18 software package, detailed documents, necessary cable accessories as well as optional 4.3- and 7-inch LCD (with touch screen) to provide an AM335x starter kit and enable a quickly start of evaluation of AM335x Cortex-A8 MPUs.

Hardware Specification

The TI AM335x microprocessors, based on the ARM Cortex-A8, operating at up to 1GHz, are enhanced with image, graphics processing, peripherals and industrial interface options such as EtherCAT and PROFIBUS. The device supports the following high-level operating systems (HLOSs) that are available free of charge from TI:

• Linux®

• Android™

The AM335x microprocessor contains these subsystems:

• Microprocessor unit (MPU) subsystem based on the ARM Cortex-A8 microprocessor.

• POWERVR SGX™ Graphics Accelerator subsystem for 3D graphics acceleration to support display and gaming effects.

• The Programmable Real-Time Unit and Industrial Communication Subsystem (PRU-ICSS) is separate from the ARM core, allowing independent operation and clocking for greater efficiency and flexibility.

The PRU-ICSS enables additional peripheral interfaces and real-time protocols such as EtherCAT, PROFINET, EtherNet/IP, PROFIBUS, Ethernet Powerlink, Sercos, and others.

AM335x ARM Cortex™-A8 Processors						
Core Feature	**AM3352**	**AM3354**	**AM3356**	**AM3357**	**AM3358**	**AM3359**
Package	15x15mm, 0.8mm (ZCZ)					
CPU Speed (MHz)	300, 600, 800, 1000	600, 800,1000	300, 600,800	300, 600,800	600, 800,1000	800
Core Internal Memory	64KB SRAM shared w/ Data 32KB Cache, Programmable 32KB Cache					
On-chip L2 (KB)	256					
External Memory Interface	DDR2/DDR3/DDR3L/mDDR (LPDDR), 2x16-bit, NAND ECC					
Graphics	-	3D Graphics	-		3D Graphics	
OS Support	Linux, Android, RTOS, Windows Embedded, no-OS					
Other Hardware Acceleration	Crypto Accelerator	Crypto Accelerator	2 PRU-ICSS Crypto Accelerator	2 PRU-ICSS Crypto Accelerator + EtherCAT slave support	2 PRU-ICSS Crypto Accelerator	2 PRU-ICSS Crypto Accelerator + EtherCAT slave support
10/100/1000 EMAC	2 port switch					
USB 2.0 OTG + PHY	2					
Serial Ports	6 UART, 2 SPI, 3 I2C, 2 McASP, 2 CAN, 8 Timers					
System	EDMA, WDT, RTC, 3 eQEP, 3 eCAP, JTAG, ADC (8ch)					
Parallel	3 MMC/SD/SDIO, GPIO					

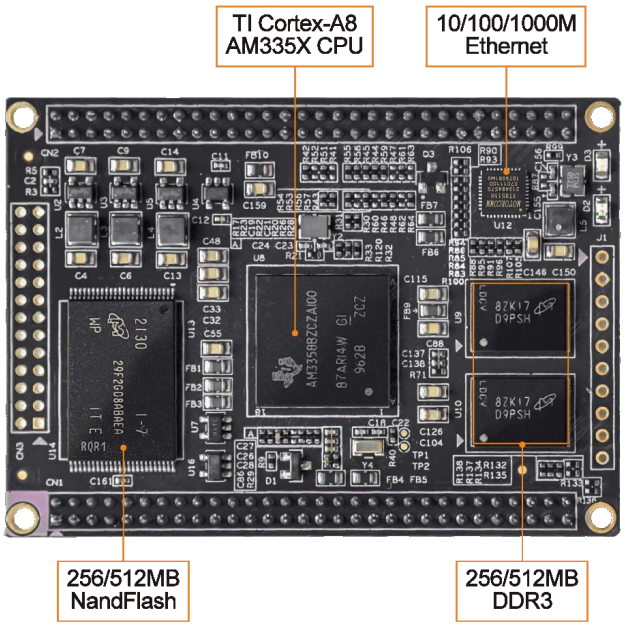
AM335x Devices Key Features

The MYD-AM335X has a CPU Module MYC-AM335X integrated with AM335x processor, DDR3 SDRAM, Nand Flash and Gigabit Ethernet PHY on it, which exposes many of these features to the user in support of developing specific solutions. The CPU Module can be mounted directly onto the base board through two 2.0mm pitch 60-pin expansion connectors. This board is characterized as follows:

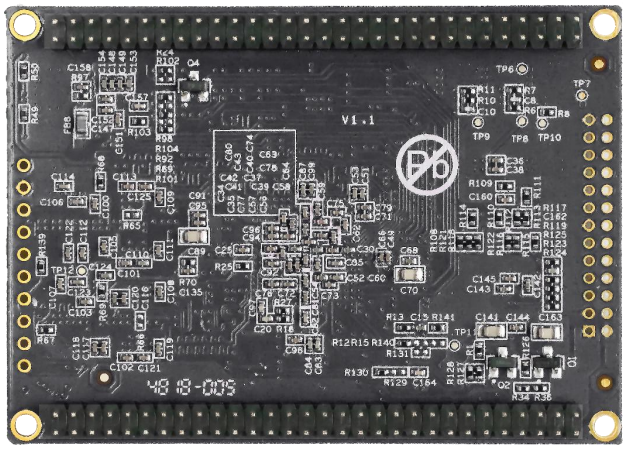
Mechanical Parameters

- Dimensions: 130mm x 100mm (base board), 70mm x 50mm (CPU Module)
- PCB Layers: 4-layer design (base board), 8-layer design (CPU Module)
- Power supply: +5V/2A (base board), +3.3V/0.8A (CPU Module)
- Working temperature: 0~70 Celsius (commercial grade) or -40~85 Celsius (industrial grade)

The MYD-C335X-V4 Controller Board (MYC-C335X-V4 System-On-Module)



MYC-C335X-V4 Top-view



MYC-C335X-V4 Bottom-view

Processor

- TI AM3352, AM3354, AM3356, AM3357, AM3358, AM3359 (15x15 mm, 0.8-mm ball pitch, ZCZ package)
  - Up to 1GHz ARM Cortex-A8 32-bit RISC MPU
  - NEON™ SIMD Coprocessor
  - 32KB/32KB of L1 Instruction/Data Cache with Single-Error Detection (parity)
  - 256KB of L2 Cache with Error Correcting Code (ECC)
  - SGX530 Graphics Engine
  - Programmable Real-Time Unit Subsystem

Memory

- 512MB DDR3 SDRAM
- 512MB Nand Flash

Peripherals and Signals Routed to Pins

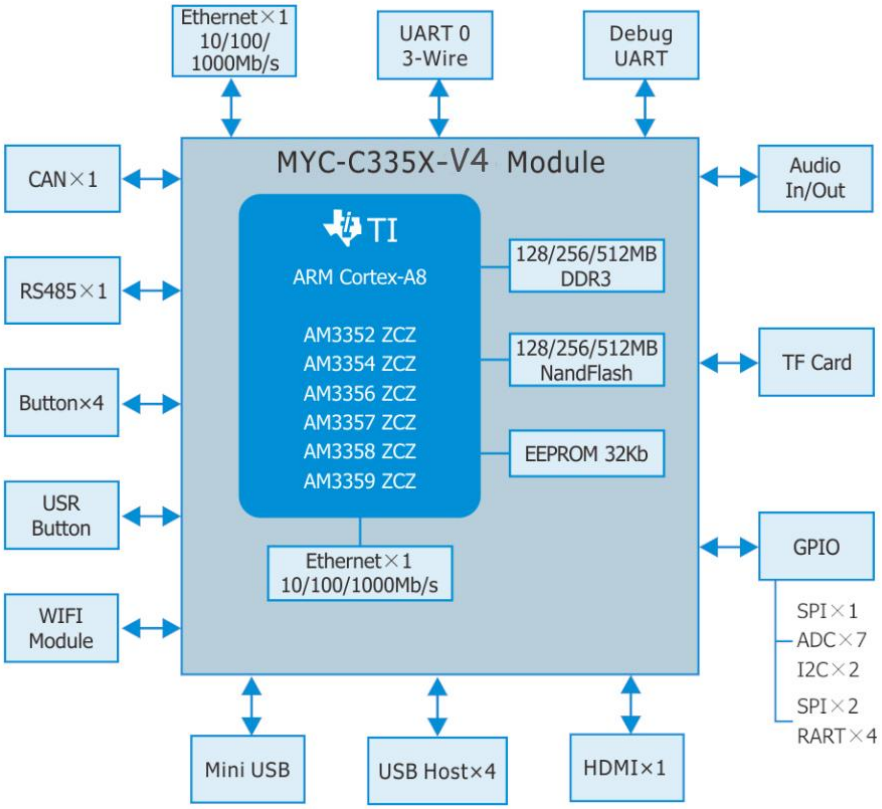
- On-board Gigabit Ethernet PHY
- One power indicator (Red LED)
- One user LED (Green)

- Two 2.0mm pitch 60-pin expansion connectors can carry out interfaces below
  - 2 x USB2.0 OTG ports
  - 6 x Serial ports
  - 2 x I2C
  - 1 x SPI
  - 7 x ADC
  - 2 x PWM
  - 3 x SDIO
- One 2.0mm pitch 26-pin expansion interface
- One 2.54mm pitch 10-pin expansion interface

The MYD-C335X-V4 Base Board

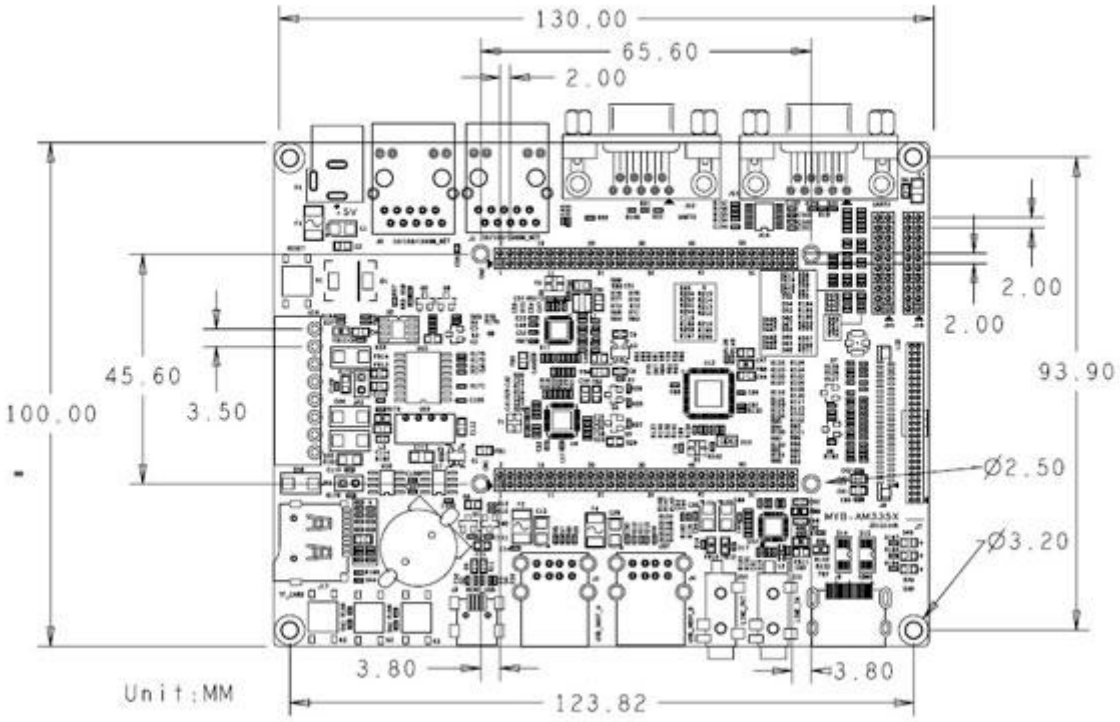
- Serial ports
  - 1 x 3-wire RS232 Debug serial port (DB9)
  - 1 x 3-wire RS232 serial port (UART1)
  - 1 x RS485 (with isolation)
- USB
  - 4 x USB2.0 Host ports
  - 1 x USB2.0 OTG ports
- 2 x 10/100/1000Mbps Ethernet interfaces
- 1 x CAN interface (with isolation)
- 1 x TF card slot
- 1 x HDMI interface
- 1 x LCD interface (16-bit true color, supports optional 4.3-inch and 7-inch TFT LCD)
- 1 x 4-wire resistive touch screen interface
- 1 x Audio input port (3.5mm jack)
- 1 x Stereo Audio output port (3.5mm jack)
- 4 x Buttons (1 x Reset button, 3 x User buttons)
- 1 x Power indicator (Red LED)
- 2 x 2.0mm 20-pin expansion connectors
  - 7 x ADC
  - 1 x SPI
  - 2 x I2C
  - 4 x UART

Function Block Diagram



Function Block Diagram of MYD-C335X-V4

Dimension Chart of MYD-C335X-V4



Dimension Chart of MYD-C335X-V4

Software Features

MYIR's AM335x Starter Kit MYD-C335X-V4 supports for Linux and is provided with software packages. Many peripheral drivers are in source code to help accelerate customers' designs with a stable and reliable hardware and software platform. The software features are summarized as below:

OS	Item	Features	Description
Linux	Bootstrap program	SPL	The primary bootstrap
		u-boot	The secondary bootstrap
	Kernel	Version	Linux 4.1.18
	Drivers	USB OTG, USB WiFi, Gigabit Ethernet, MMC/SD/TF, NandFlash, CAN, RS485, Audio, LCD Controller (supports 4.3- and 7-inch LCD), RTC, HDMI, Touch driver, Button, UART, LED	
	File system	Buildroot With QT library (V5.6.2)	Provide image file and buildroot in source code
	Examples	Audio, CAN, EEPROM, framebuffer, gpio, keypad, led, mtd, network, rtc, RS232, RS485	

Order Information

Product Item	Part No.
MYD-C335X-V4 Development Board	MYD-C3352-V4-512N512D-80-C
	MYD-C3358-V4-512N512D-100-C
MYD-C335X-V4 Development Board	MYD-C3352-V4-512N512D-80-I
	MYD-C3358-V4-512N512D-100-I
MYD-C335X-V4 Development Board	MYD-C3352-V4-256N256D-80-I
	MYD-C3358-V4-256N256D-100-I
MYC-C335X-V4 System-On-Module	MYC-C3352-V4-512N512D-80-C
	MYC-C3358-V4-512N512D-100-C
MYC-C335X-V4 System-On-Module	MYC-C3352-V4-512N512D-80-I
	MYC-C3358-V4-512N512D-100-I
MYC-C335X-V4 System-On-Module	MYC-C3352-V4-256N256D-80-I
	MYC-C3358-V4-256N256D-100-I
MY-TFT043RV2 4.3-inch LCD Module with resistive touch screen	MY-TFT043RV2
MY-TFT070RV2 7-inch LCD Module with resistive touch screen	MY-TFT070RV2
MY-TFT070CV2 7-inch LCD Module with capacitive touch screen	MY-TFT070CV2
We accept custom design based on the MYD-C335X-V4, whether reducing, adding or modifying the existing hardware according to customer's requirement.	

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