MYiR 米尔电子
Make Your Idea Real

MYD-C335X-GW Development Board

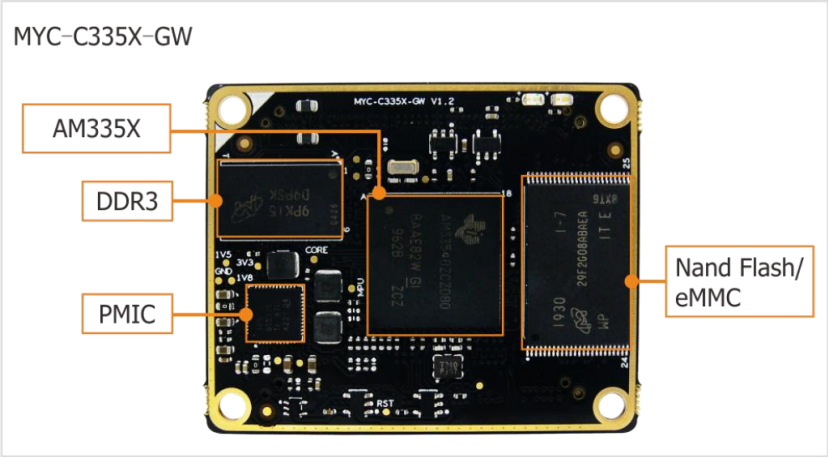
Overview

- ✓ *MYC-C335X-GW CPU Module as Controller Board*
- ✓ *Up to 1GHz TI AM335x ARM Cortex-A8 Processors*
- ✓ *256MB/512MB DDR3L, 256MB Nand Flash/4GB eMMC*
- ✓ *RS232, RS485, USB Host, Micro SD Card Slot, LVDS and LCD Interfaces*
- ✓ *2 x Gigabit Ethernet (or 1 x Gigabit Ethernet and 1 x SFP), WiFi/Bluetooth Module*
- ✓ *Mini-PCIe Slot for Optional USB based 4G LTE Module*
- ✓ *Ready to Run Linux 4.14.67*
- ✓ *Supports -40 to +85 Celsius Extended Temperature Operation for Industrial Applications*

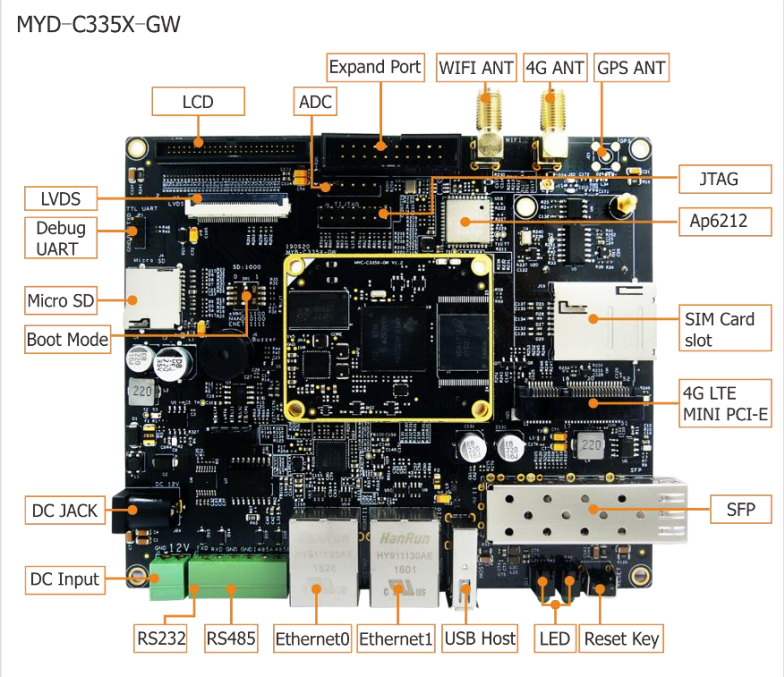
The **MYD-C335X-GW Development Board** consists of a high-performance CPU Module **MYC-C335X-GW** and a base board designed especially for gateway applications. It's a complete development platform for both evaluation and application development purposes based on TI **AM335x** ARM Cortex-A8 processors.

As a controller board of the **MYD-C335X-GW**, the MYC-C335X-GW CPU Module integrates an up to 1GHz **AM335x processor** (15x15mm ZCZ package, 800MHz **AM3354** by default), **256MB/512MB DDR3L**, **4GB eMMC Flash/256MB Nand Flash**, **256Kbit EEPROM** and **PMIC**. It is mounted on the top of the base board via two 0.8mm pitch 80-pin Board-to-Board expansion connectors. The base board provides a good showcase of the CPU Module's connectivity features and performance, rich peripherals are routed out including **RS232, RS485**, **USB 2.0 Host**, **2 x Ethernet (or 1 x Ethernet and 1 x SFP interface)**, **Micro SD card**, **WiFi/Bluetooth module**, **LVDS, LCD** and **JTAG** as well as one Mini PCIe interface for USB based **4G LTE module**.

The **MYD-C335X-GW** is ready to run Linux. MYIR provides rich software resources to help accelerate users' designs. The board is delivered with necessary cable accessories. Optional Camera Module and LCD modules are also available for the board.



MYC-C335X-GW CPU Module



MYD-C335X-GW Development Board

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.

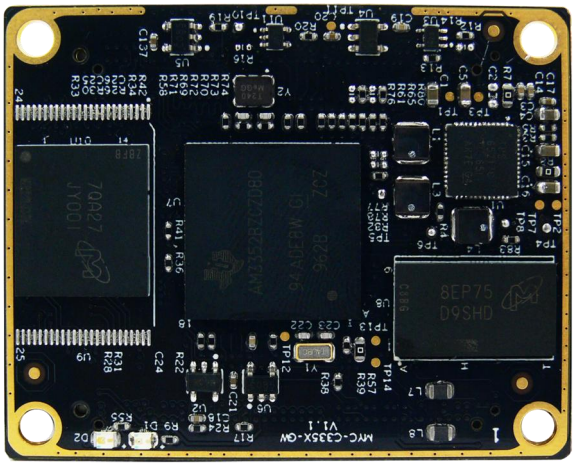
AM335x ARM Cortex™-A8 Processors						
Core Feature	**AM3352**	**AM3354**	**AM3356**	**AM3357**	**AM3358**	**AM3359**
Package	15x15mm, 0.8mm (ZCZ)					
CPU Speed (MHz)	300, 600, 800, 1000	600, 800,1000	300, 600,800	300, 600,800	600, 800,1000	800
Core Internal Memory	64KB SRAM shared w/ Data 32KB Cache, 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

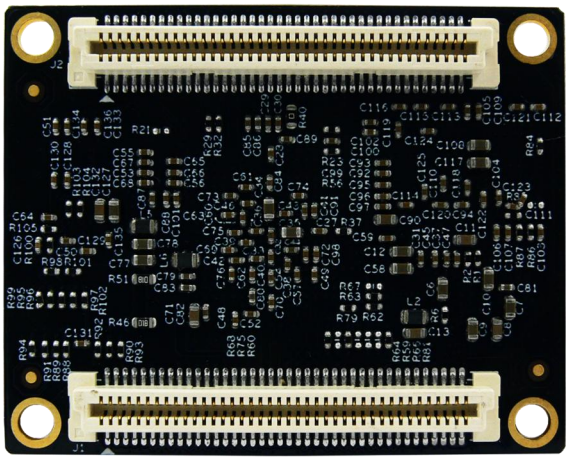
Mechanical Parameters

- Dimensions: 112.57mm x 132mm (base board), 50mm x 40mm (CPU Module)
- PCB Layers: 4-layer design (base board), 8-layer design (CPU Module)
- Supply voltage: 4.75-5.25V (CPU Module)
- Working temperature: -40~85 Celsius (industrial grade)

The MYD-C335X-GW Controller Board (MYC-C335X-GW CPU Module)



MYC-C335X-GW CPU Module Top-view



MYC-C335X-GW CPU Module Bottom-view

Processor

- TI AM3352, AM3354, AM3356, AM3357, AM3358, AM3359 (pin-to-pin compatible, 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

- 256/512MB DDR3L (supports up to 1GB)
- 256MB Nand Flash (supports optional 512MB/1GB)
- 4GB eMMC (alternative design with Nand Flash)
- 256Kbit EEPROM

Peripherals and Signals Routed to Pins

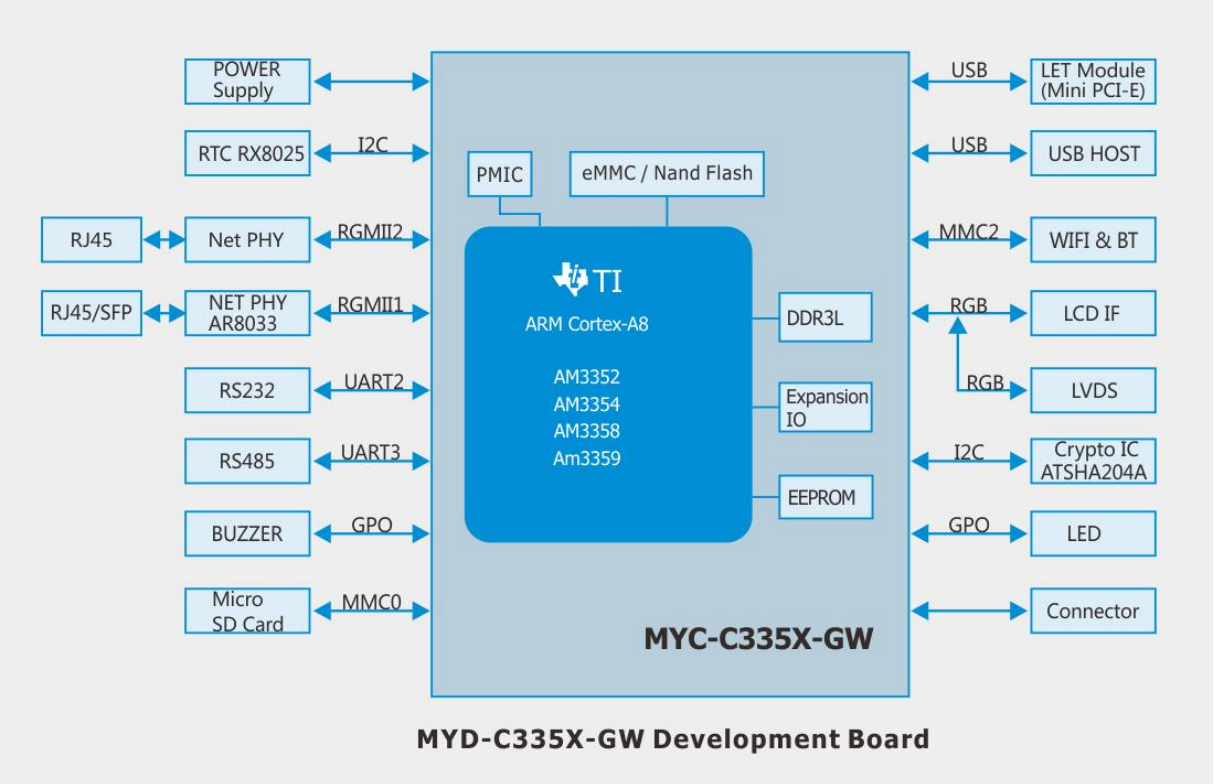
- Power Management IC (TPS65217C)
  Two 0.8mm pitch 80-pin Board-to-Board Expansion Connectors
  - 2 x RGMII
  - 2 x USB2.0 Host or 2 x USB2.0 Device
  - 6 x UART
  - 3 x I2C
  - 2 x CAN
  - 2 x SPI
  - 7 x ADC

- 1 x SAI
- 1 x RGB (supports RGB888 at up to 2048 x 2048 pixels resolution)
- 2 x SDIO
- 1 x JTAG
- 97 x GPIOs

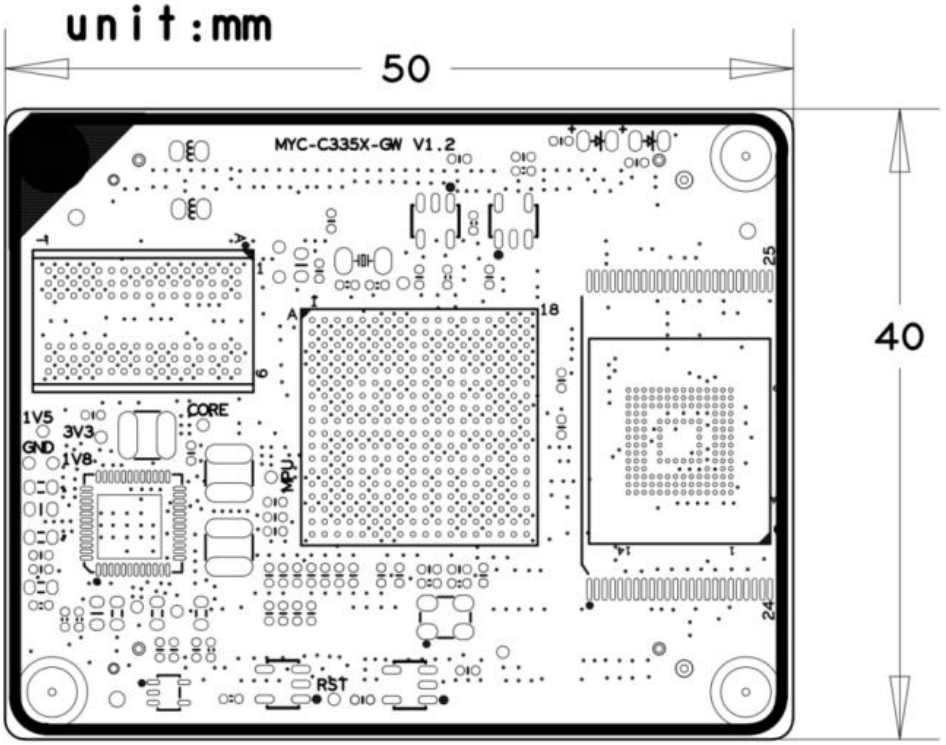
Note: the peripheral signals brought out to the expansion interface are listed in maximum number. Some signals maybe reused. Please refer to the processor datasheet and pin-out description file.

The MYD-C335X-GW Development Board Base Board

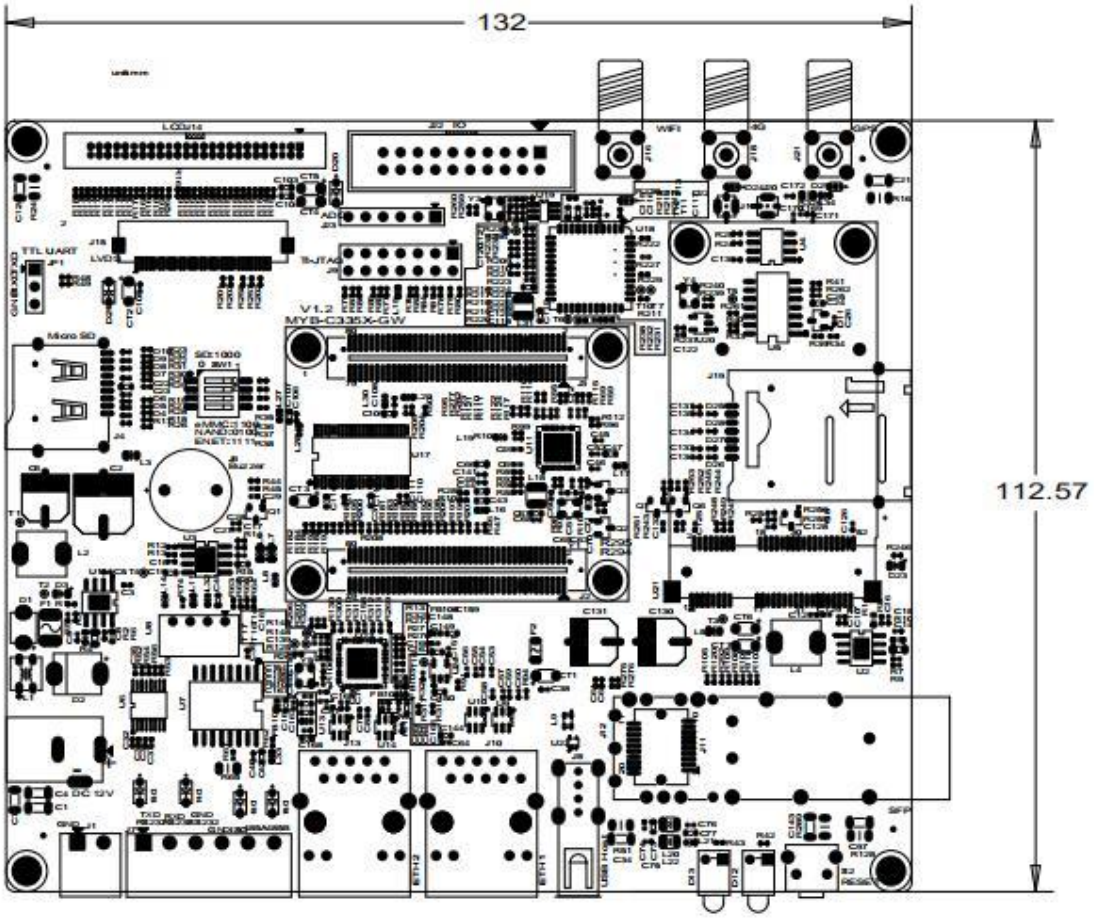
- Serial ports
  - Debug serial port (TTL)
  - 1 x RS485 serial port (with isolation)
  - 1 x 3-wire RS232 serial port (with isolation)
- 1 x USB2.0 Host ports
- 1 x Mini-PCIe interface (for USB based 4G LTE Module)
- 2 x Gigabit Ethernet interfaces or 1 x Gigabit Ethernet interface and 1 x SFP interface
- WiFi/Bluetooth Module (complies with IEEE 802.11 b/g/n and supports Bluetooth V4.1+HS)
- 1 x RGB LCD interface (J14)
- 1 x LVDS LCD interface (J15, 40-pin FPC connector)
- Battery backed RTC (on the back of the board)
- 1 x JTAG interface (2.54mm pitch 2*7-pin header)
- 1 x ADC interface
- 1 x TF card slot
- 1 x SIM card slot
- 2 x external antenna connector (one for WiFi module and one for 4G LTE module)
- 1 x 2.54mm 2*10-pin male expansion header (J22)



MYD-C335X-GW Development Board Function Block Diagram



MYC-C335X-GW Dimensions Chart



MYD-C335X-GW Dimensions Chart

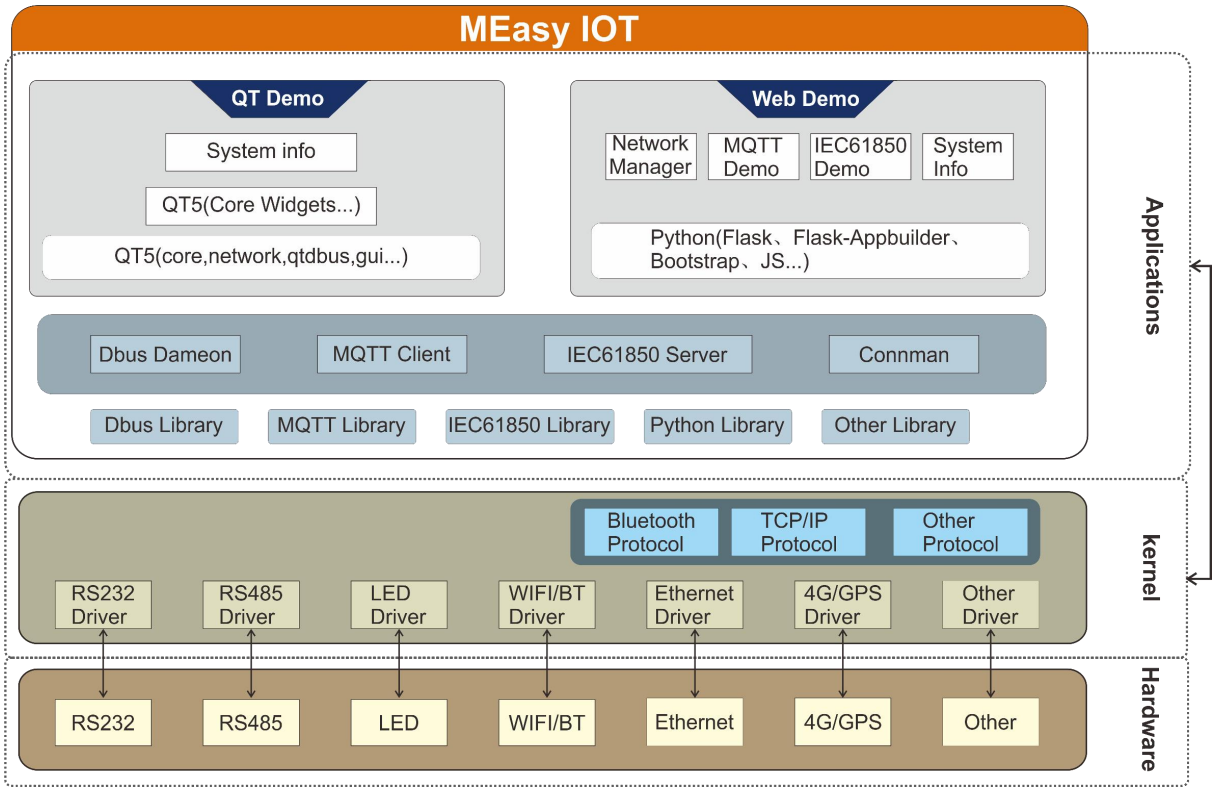
Software Features

The MYD-C335X-GW is provided with software package. The software features are summarized as below:

Item	Features	Description	Source Code
Bootstrap program	U-boot	The primary bootstrap	YES
Linux kernel	Linux 4.14.67	Customized kernel for MYD-C335X-GW	YES
Drivers	LCD	LCD driver (source code, supports 4.3- / 7-inch LCD)	YES
	Touch	Resistive and Capacitive touch screen driver	YES
	USB Host	USB Host driver	YES
	I2C	I2C Bus driver	YES
	SPI	SPI Bus driver	YES
	ADC	ADC driver	YES
	Ethernet	10/100/1000M Ethernet driver	YES
	MMC/SD	MMC/SD card driver	YES
	eMMC	eMMC driver	YES
	NAND	NAND Flash driver	YES
	RTC	Internal RTC driver	YES
	RX-8025T	External RTC driver	YES
	UART	UART driver	YES
	RS485	RS485 drive	YES
	RS232	RS232 drive	YES
	4G LTE Module	Supports Quectel's EC20 using USB driver	YES
	WiFi & BT	AP6212 driver	YES
	GPS	GPS driver	YES
	Fiber	SFP driver	YES
	GPIO-LED	GPIO-LED driver	YES
	PMU	PMU driver	YES
File System	rootfs	customized file system based on buildroot	Image
	Rootfs-qt	Customized MEasy IoT file system Based on buildroot	
	UBI	NAND Flash ubi file system	
	Ramdisk.gz	SD card Ramdisk file system	
	sdcard.img	SD card ext4 file system	
Application Programs	QT	QT environment validation demo	YES
	GPIO-LED	GPIO-LED example	YES
	NET	TCP/IP Socket C/S example	YES
	RTC	RTC example	YES
	RS232/RS485	RS232/RS485 example	YES
	LCD	LCD example	YES
	NAND Flash	NAND Flash example	YES
Compiler Tool Chain	Cross compiler	gcc version 7.4.0 \ (Buildroot 2019.02.2-gb4331a8-dirty\)	BINARY
Cross Compiler Tool Chain	Cross compiler	gcc version 7.2.1 20171127 \ (Linaro GCC 7.2-2017.11\)	BINARY

Software Features of MYD-C335X-GW

The MYD-C335X-GW runs Linux OS and is provided with software packages. Based on Linux 4.14.67 kernel, MYIR has provided abundant software resources including kernel and driver source code as well as MYIR' s MEasy IOT Demo to allow customer to get a good experience and development reference.



MEasy-IOT System Structure