MYiR 米尔电子
Make Your Idea Real

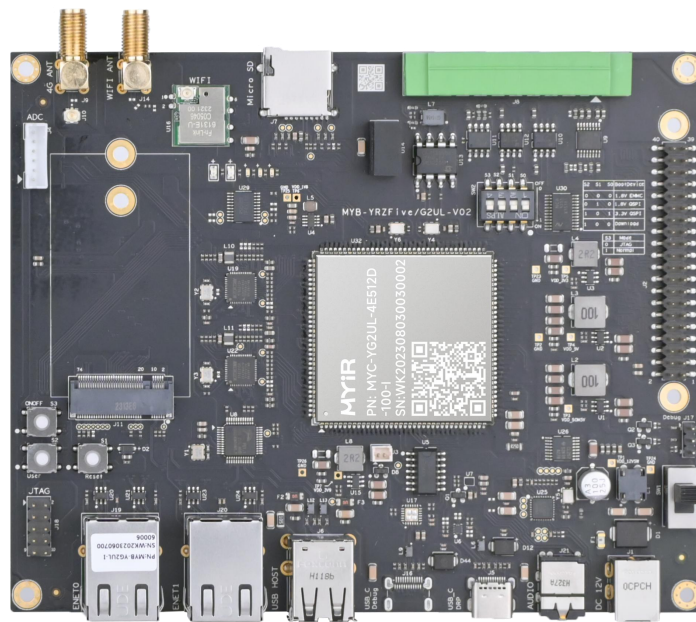# MYD-YG2UL Development Board Overview

✓ MYC-YG2UL CPU Module as Controller Board
✓ RENESAS RZ/G2UL Processor based on 1.0GHz Single-core ARM Cortex-A55 and 200MHz Cortex-M33 Cores
✓ 512MB DDR3L, 4GB eMMC Flash, 4KB EEPROM
✓ 1 x RS232, 1 x RS485, 2 x USB 2.0 Host, 1 x USB 2.0 OTG, 1 x CAN, 1 x Micro SD card Slot
✓ 2 x Gigabit Ethernet, WiFi, 4G/5G LTE Interface
✓ Camera Interface (MIPI-CSI), RGB, Audio Input/Output
✓ Supports Running Linux 5.10 OS, OpenWrt 22.03
✓ Optional 7-inch LCD Modules, Camera Module and RPI Module (RS232/RS485/CAN)

The MYD-YG2UL Development Board consists of a compact MYC-YG2UL CPU Module and a base board to provide a complete evaluation platform for RENESAS RZ/G2UL processor which features 1GHz ARM Cortex-A55 and 200MHz Cortex-M33 cores, with a dedicated LCD-TFT parallel display interface, a 16-bit parallel camera interface and dual Ethernet ports. It is particularly suitable for applications such as entry-level industrial gateway controllers and embedded devices with simple GUI functionality.
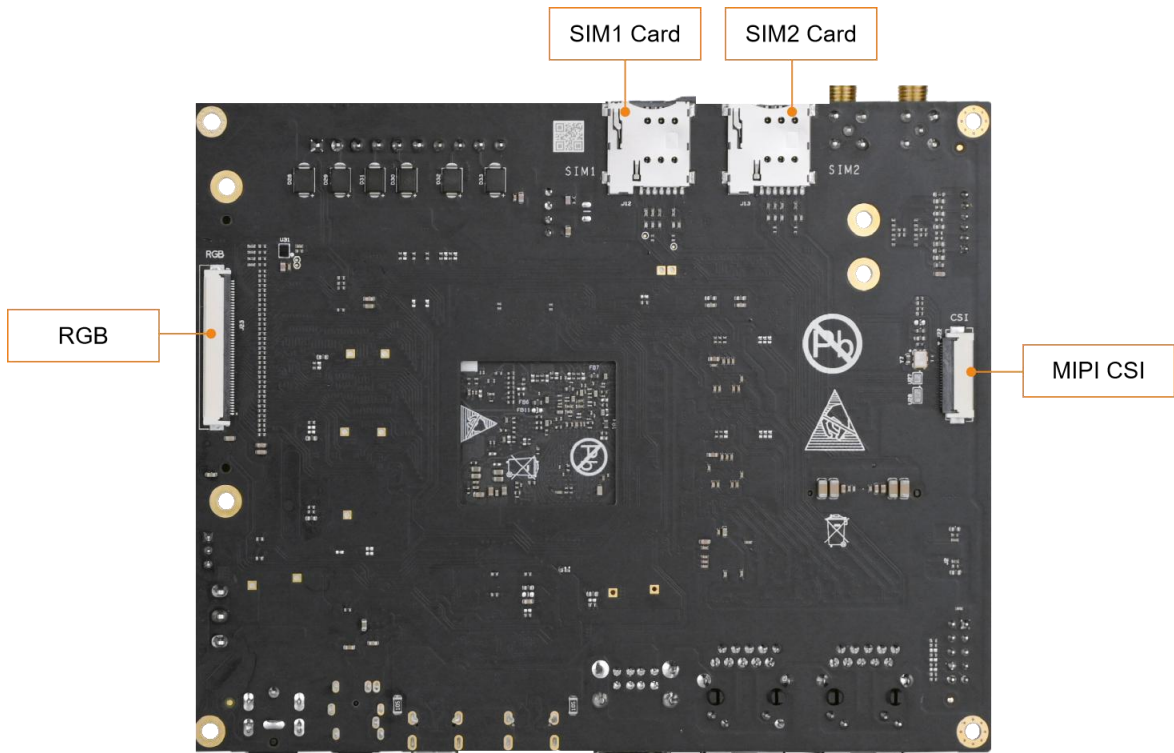
The MYC-YG2UL CPU Module is populated on the MYD-YG2UL Development Board through 1.0mm pitch 140-pin Castellated-Hole and 50-pin LGA interfaces. It is a highly-integrated SoM which combines the RENESAS RZ/G2UL processor, DDR3L, Memory Flash, 4KB EEPROM. The base board has brought out rich peripherals through connectors and headers such as RS232, RS485, two USB 2.0 HOST and one USB 2.0 OTG, two Gigabit Ethernet, one CAN, one Micro SD card slot, one M.2 Socket for USB based 4G/5G LTE Module with two SIM card holders and one USB2.0 based WiFi module. LCD interface, Camera interface, Audio input and output as well as an extension header.

The MYD-YG2UL Development Board supports running Linux OS and is provided with streamlined core-image and full-featured image by Yocto as well as highly modular and highly automated OpenWrt image. MYIR also offers the kernel and driver source codes, Linux gateway demo and compilation tools to enable users to start their development rapidly and easily.
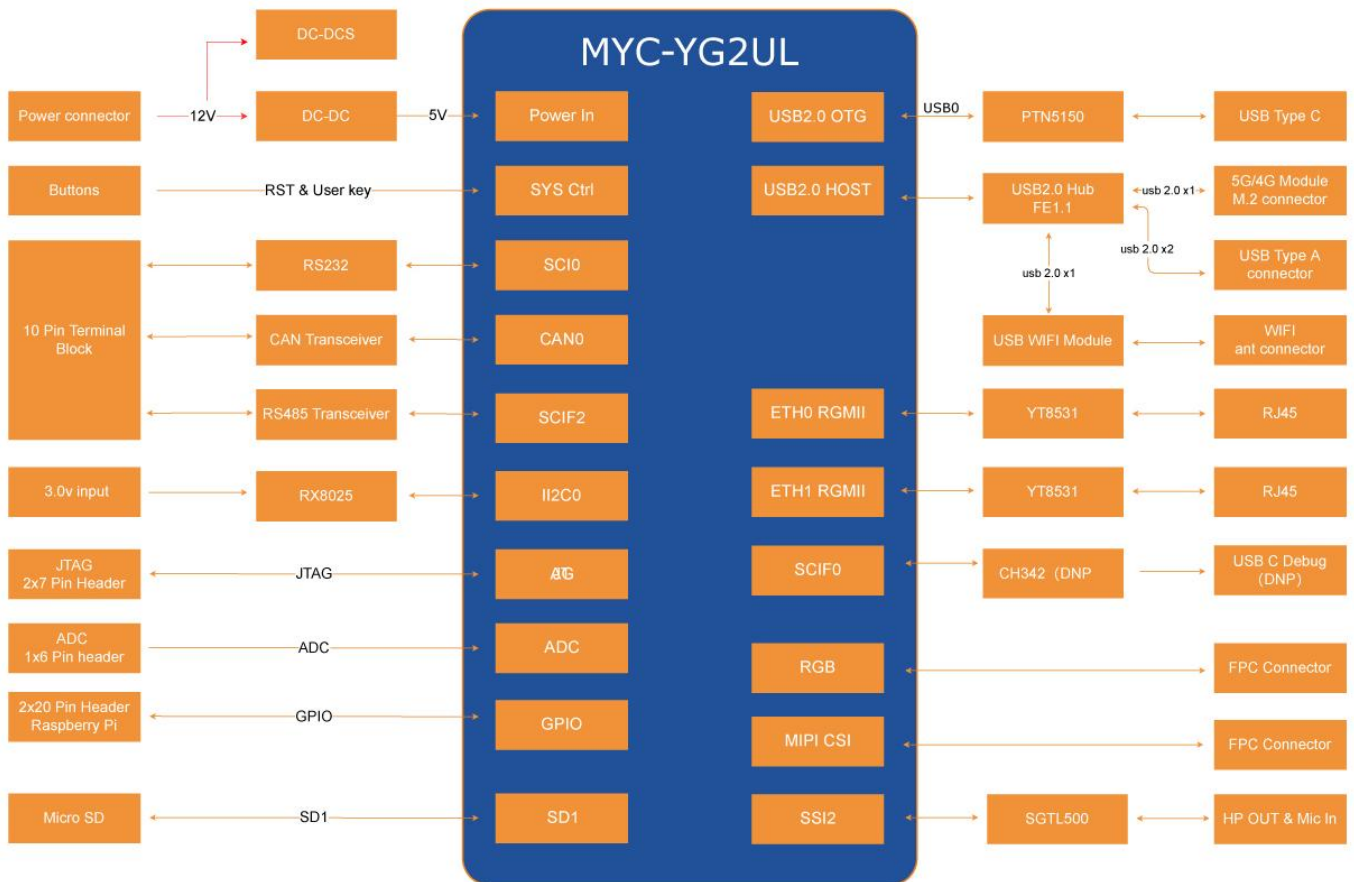
The MYD-YG2UL Development Board is delivered with Quick Start Guide, one USB to TTL serial cable, one 12V/2A power adapter and one DC Power jack adapter. MYIR also offers MY-CAM003M MIPI Camera Module, MY-LCD70TP-C 7 inch LCD Module and MY-WIREDCOM RPI Module (RS232/RS485/CAN) as add-on options for the board.
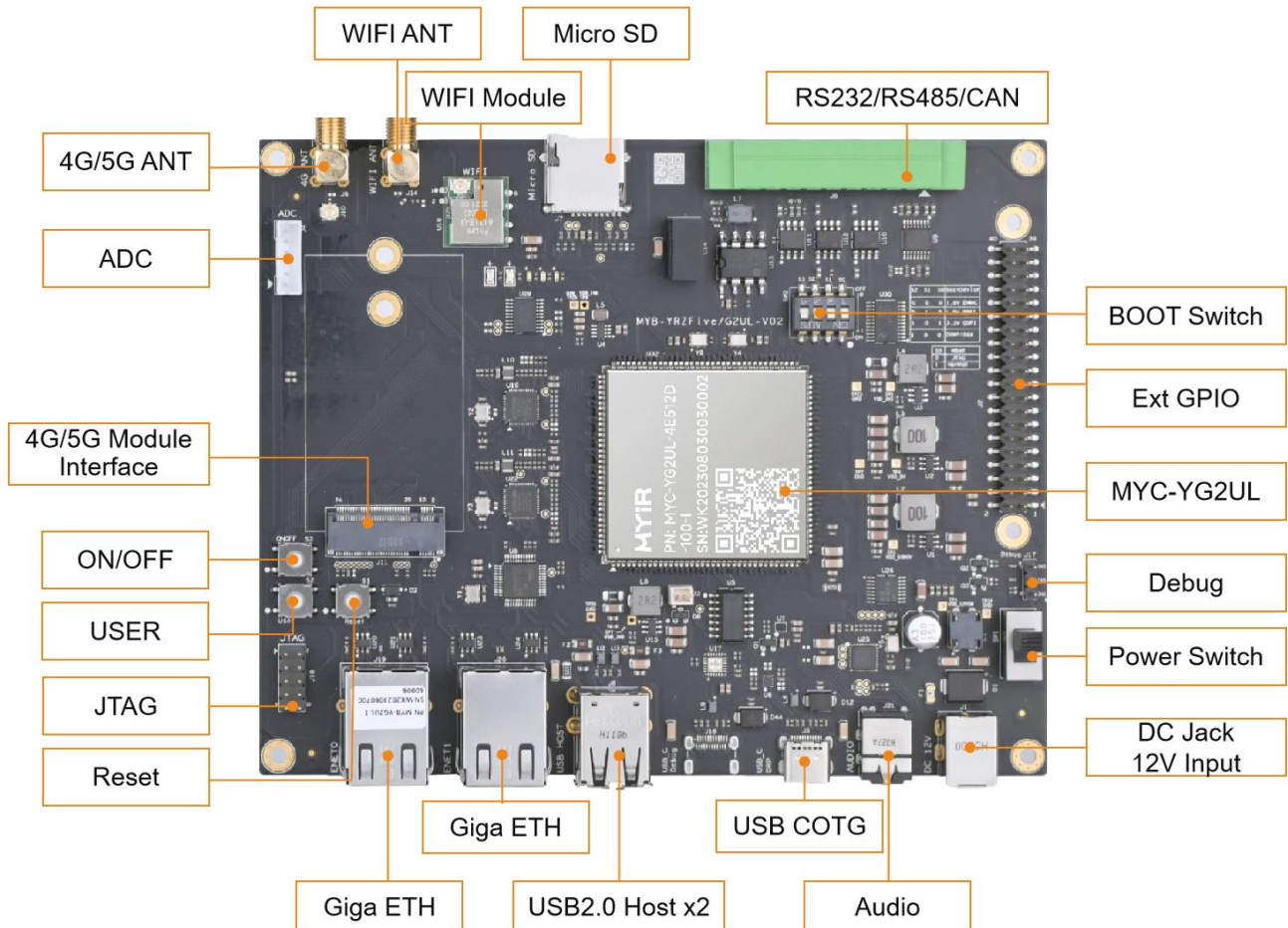
MYD-YG2UL Development Board (Top-view)

MYD-YG2UL Development Board (Bottom-view)

MYD-YG2UL Development Board Function Block Diagram

Hardware Specification

The MYC-YG2UL CPU Module populated on the MYD-YG2UL Development Board is using the 13 x 13mm, 0.5 mm ball pitch, 361 balls BGA package, 1.0 GHz RZ/G2UL (Type-1) MPU which belongs to the RENESAS RZ/G2UL product group and features single-core Arm Cortex-A55(1.0 GHz) CPU and Single-core Arm Cortex-M33 (200 MHz) CPU. The processor also has many interfaces such as camera input, display output, USB 2.0, and Gigabit-Ethernet.

In addition, there are two types of RZ/G2UL:

Type-1 supports all functions and Type-2 supports pin compatibility with RZ/G2LC.

Type-1 Part Number: R9A07G043U11GBG#BC0

Type-2 Part Number: R9A07G043U12GBG#BC0

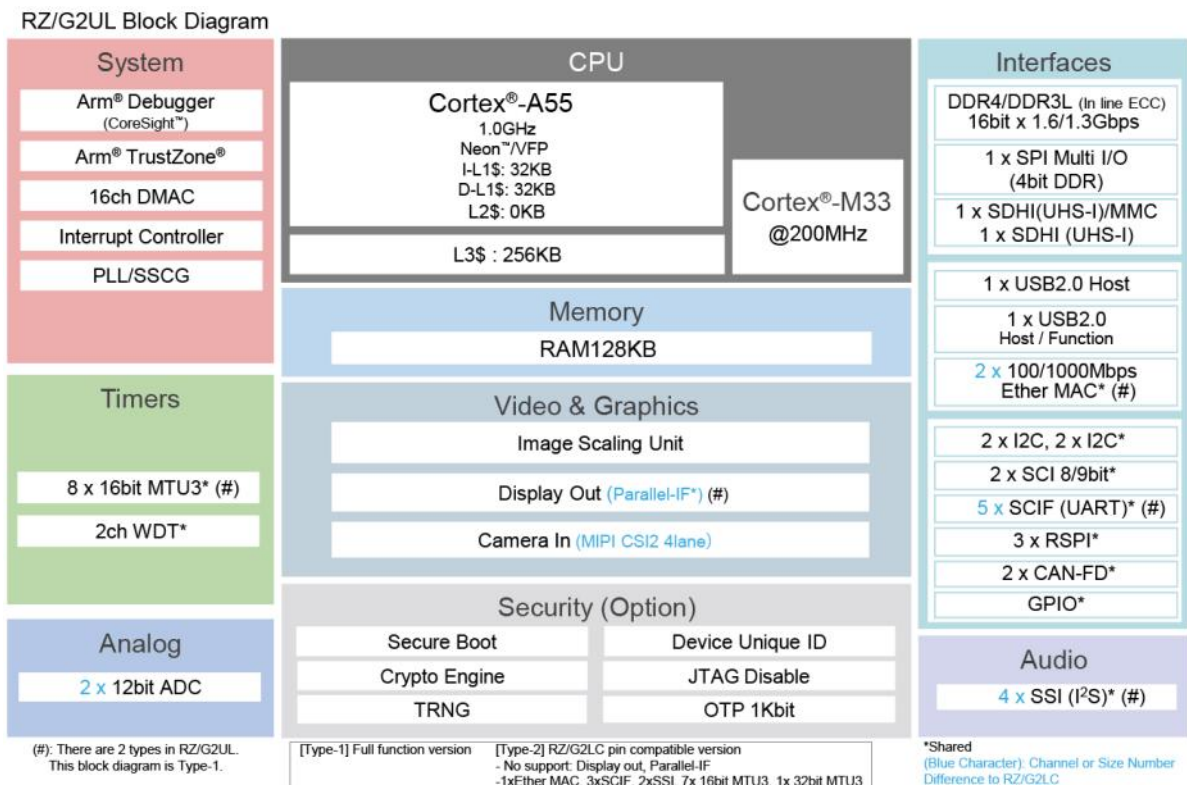| Product Group		RZ/G2L	RZ/G2LC	RZ/G2UL (Type-1)
Arm Cortex-A55	Dual	✓	✓	—
	Single	✓	✓	✓
Arm Cortex-M33		✓	✓	✓
3D Graphics		✓	✓	—
Video Codec (H.264)		✓	—	—
Display Interface		MIPI DSI or Parallel	MIPI DSI	Parallel
Camera Interface		MIPI CSI-2 or Parallel	MIPI CSI-2	MIPI CSI-2
Gigabit Ethernet		2ch	1ch	2ch
12-bit A/D Converter		8ch	—	2ch
Package (PBGA)		551pin, 21 x 21mm (0.8mm pitch) 456pin, 15 x 15mm (0.5mm pitch)	361pin, 13 x 13mm (0.5mm pitch)	361pin, 13 x 13mm (0.5mm pitch)

For More Information on RZ/G2L, RZ/G2LC and RZ/G2UL, please visit:

RZ/G2L: https://www.renesas.com/rzg2l

RZ/G2LC: https://www.renesas.com/rzg2lc

RZ/G2UL: https://www.renesas.com/rzg2ul

*Production Information for RZ/G2L, RZ/G2LC, and RZ/G2UL*

RZ/G2UL Processor Block Diagram

The MYD-YG2UL Development Board is using the MYC-YG2UL CPU Module as core controller board. It takes full features of RZ/G2UL processor and the main features are characterized as below:

Mechanical Parameters

- Dimensions: 150mm x 120mm (base board), 39mm x 37m (CPU Module)
- PCB Layers: 6-layer design (base board), 10-layer design (CPU Module)
- Power supply: +12V/2A Power supply (base board), 5V/1A (CPU Module)
- Working temperature: -40~85 Celsius (industrial grade)
  (WiFi Module: -20~70 Celsius)

The MYD-YG2UL Controller Board (MYC-YG2UL CPU Module)
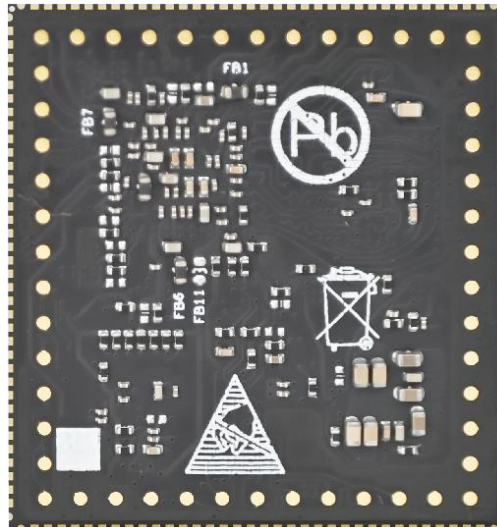
MYC-YG2UL CPU Module (Top-view and Bottom-view)

Processor

- RENESAS RZ/G2UL processor (Type-1)
  - 1.0 GHz Single-core ARM Cortex-A55
  - 200 MHz ARM Cortex-M33
  - 16-bit DDR3L/DDR4-1600 (in line ECC)
  - MIPI CSI-2 (4 lanes) Camera Interface
  - Parallel Display Interface
  - 2 x Gigabit Ethernet

Memory

- 512MB DDR3L
- 4GB eMMC
- 4KB EEPROM

Peripherals and Signals Routed to Pins

- Power Management IC
- 1.0mm pitch 140-pin Stamp Hole Expansion Interface + 50-pin LGA
 - 2 x RGMII
  - 2 x USB2.0

- 5 x SCIF
- 2 x SCI
- 2 x CAN FD
- 4 x I2C
- 3 x SPI
- 2 x ADC
- 1 x RGB
- 1x MIPI-CSI
- 4 x SSI
- Up to 82 GPIOs

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 CPU Module pinout description file.

The MYD-YG2UL Development Board Base Board

- 1 x Power Jack
- 1 x Power Switch
- Serial ports
  - 1 x Debug UART (TTL)
  - 1 x RS232
  - 1 x RS485
- USB
  - 1 x USB 2.0 OTG port
  - 2 x USB 2.0 Host ports
  - 1 x M.2 socket for USB based 4G/5G LTE Module
  - 1 x USB based WiFi Module
- 2 x SIM Card Slots
- 2 x Antenna Interfaces (one for WiFi and one for 4G/5G)
- 2 x 10/100/1000 Mbps Ethernet interfaces (RJ45)
- 1 x CAN interface
- 1 x 2.54mm 2 x 20-pin male expansion header
  (GPIO/I2C/UART/SPI/CAN, compatible with Raspberry PI standard 40-pin extension interface)
  Supports MYIR's MY-WIREDCOM RPI Module to extend RS485, RS232 and CAN functions
- Audio Input and Output Interface
- 1 x MIPI Camera Interface
  Supports MYIR's MY-CAM003M MIPI Camera Module
- 1 x LCD interface
  Supports MYIR's MY-LCD70TP-C LCD Module with Capacitive Touch Screen
- 3 x Buttons (one for Reset, one for Power On/Off and one for USER)
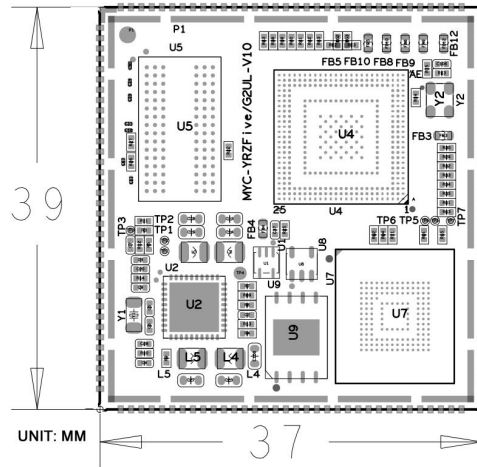
MYC-YG2UL Dimensions Chart
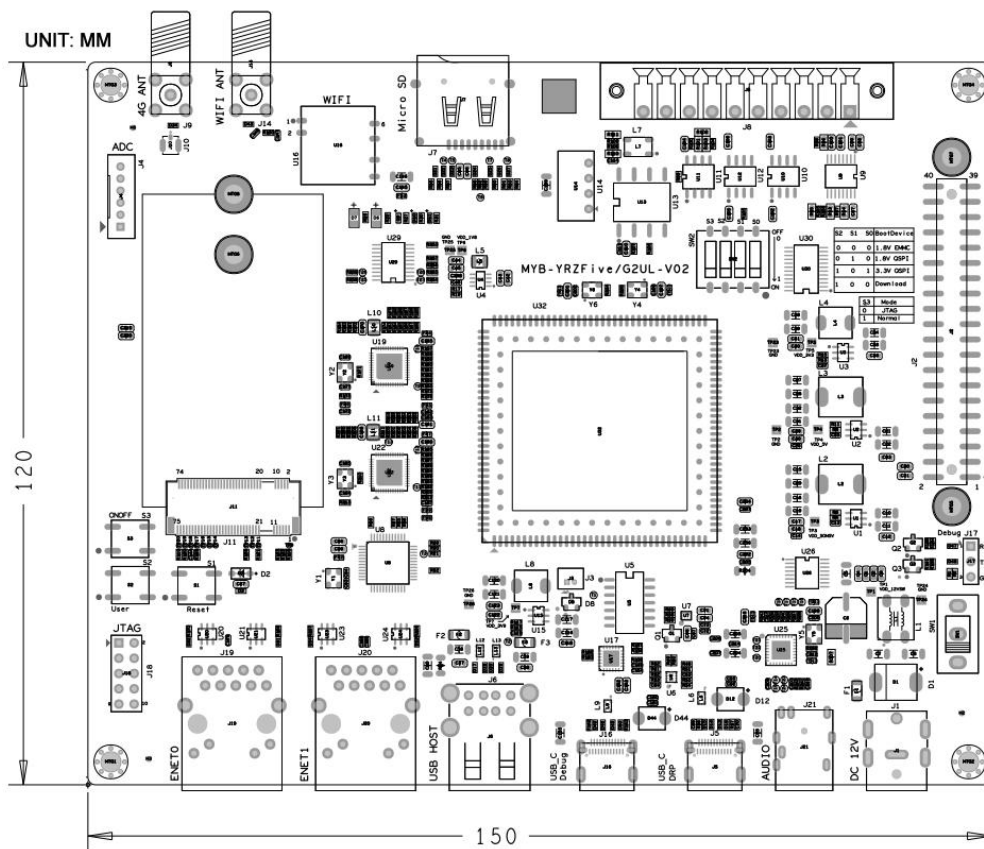
MYD-YG2UL Dimensions Chart

Software Features

The MYD-YG2UL Development Board supports for Linux OS and comes with complete software package. The kernel and many peripheral drivers are available in source code to assist clients to expedite their development. The following are a summary of the software features:

Item	Feature	Description	Source Code
Bootloader	trusted-firmware-a	Fsbl Boot	YES
	U-boot	secondary boot program based on uboot_2021.10	YES
Linux kernel	Linux kernel	Customized base on official kernel_5.10.83 version	YES
Drivers	PMIC	DA9062-53AM1 driver	YES
	USB Host	USB Host driver	YES
	USB OTG	USB OTG driver	YES
	I2C	I2C driver	YES
	SPI	SPI driver	YES
	Ethernet	YT8531SH driver	YES
	SDHI	eMMC/SD driver	YES
	RGB	RGB display driver	YES
	Audio	SGTL5000 audio driver	YES
	4G/5G	4G/5G driver	YES
	PWM	PWM driver	YES
	ADC	ADC driver	YES
	RTC	RTC driver	YES
	GPIO	GPIO driver	YES
	UART	RS485/RS232/TTL driver	YES
	CAN	CAN driver	YES
	Camera(MIPI)	OV5640 camera driver	YES
	WiFi	FG6131EUXX-00 driver	YES
File system	myir-image-core	image without GUI interface built with Yocto	YES
	myir-image-full	full-featured image built with Yocto	YES
	myir-image-OpenWrt	Image built with OpenWrt	YES

MYD-YG2UL Software Features

Order Information

Product Item	Part No.	Packing List
MYD-YG2UL Development Board	MYD-YG2UL-4E512D-100-I	✓ One MYD-YG2UL Development Board ✓ One USB to TTL cable ✓ One 12V/2A Power adapter ✓ One DC Power jack adapter ✓ One Quick Start Guide
MYC-YG2UL CPU Module	MYC-YG2UL-4E512D-100-I	✓ One MYC-YG2UL CPU Module
MY-LCD70TP-C LCD Module	MY-TFT070CV2	**Add-on Options** ✓ MY-LCD70TP-C 7-inch LCD Module ✓ MY-CAM003M Module ✓ MY-WIREDCOM Module
MY-CAM003M MIPI Camera Module	MY-CAM003M	
MY-WIREDCOM RPI Module	MY-WIREDCOM	

Note:

1. One MYD-YG2UL Development Board includes one CPU module MYC-YG2UL mounted on the base board. If you need more CPU module, you can order extra ones.

2. Discounts are available for bulk orders.

3. We provide OEM/ODM services to reduce time and save cost for customers.

MYIR Tech Limited

Headquarter Address: Room 04, 6th Floor, Building No.2, Fada Road, Yunli Smart Park, Bantian, Longgang District, Shenzhen, Guangdong, China 518129

Factory Address: Room 201, Block C, Shengjianli Industrial Park, Dafu Industrial Zone, Guanlan, Longhua District, Shenzhen, 518110, China

Website: www.myirtech.com
Email: sales@myirtech.com
Tel: +86-755-22984836