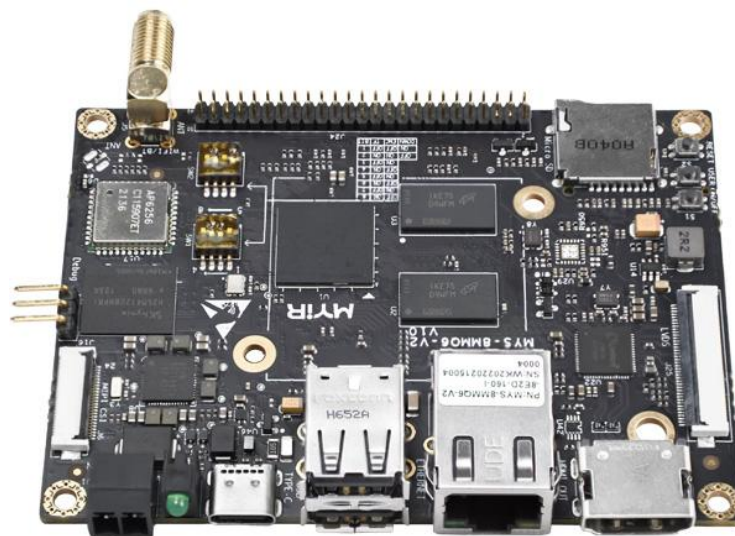**MYiR** 米尔电子
Make Your Idea Real
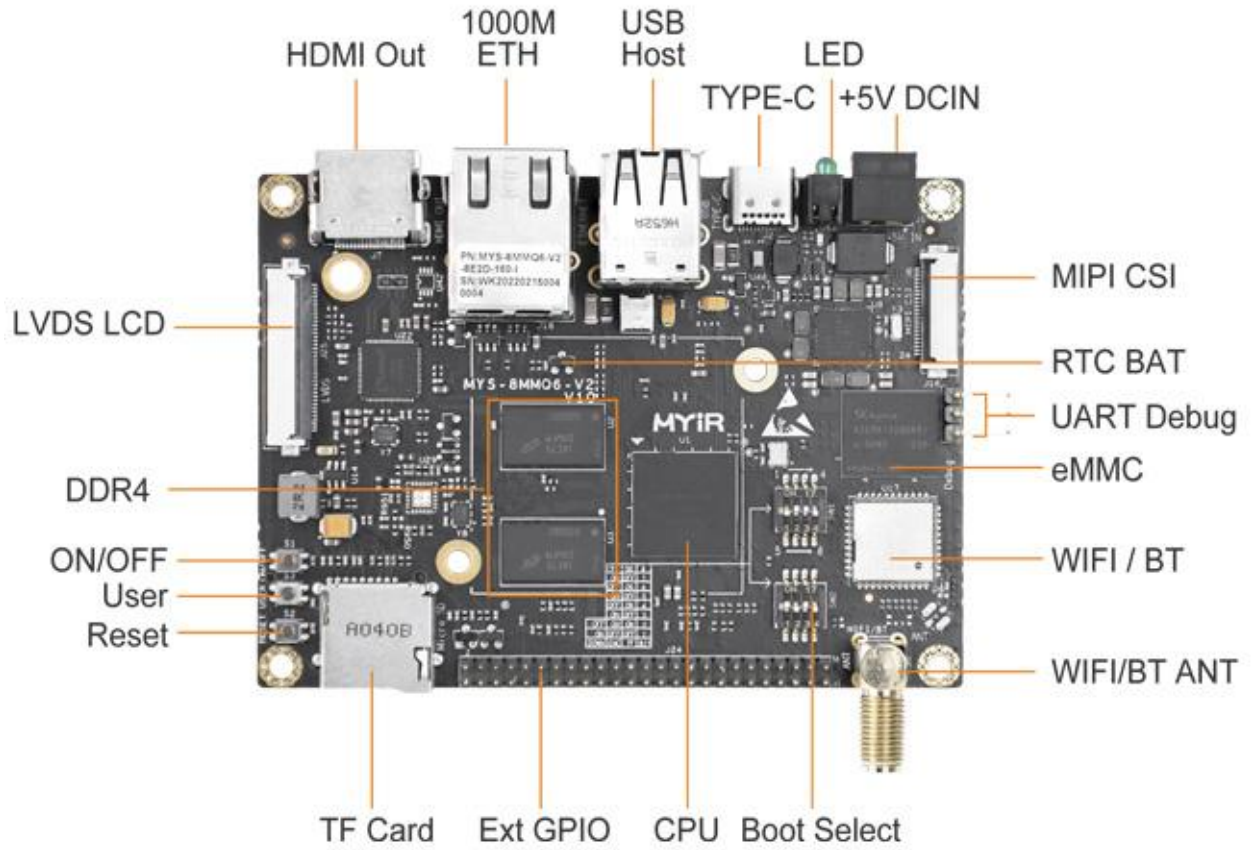
MYS-8MMX-V2
Overview

- ✓ NXP i.MX 8M Mini Quad Application Processor based on Up to 1.8 GHz Arm Cortex-A53 and 400MHz Cortex-M4 Cores
- ✓ 2GB DDR4, 8GB eMMC Flash, 32MB QSPI Flash
- ✓ 2 x USB Host, 1 x USB Type-C, NVMe PCIe M.2 2242 SSD Interface, Micro SD Card Slot...
- ✓ Supports Gigabit Ethernet, 2.4G/5G Dual-band WiFi and Bluetooth 5.0 Communications
- ✓ Camera Interface (MIPI-CSI), LVDS Interface, HDMI Output Interface
- ✓ Supports Working Temperature Ranging from -40°C to 85°C
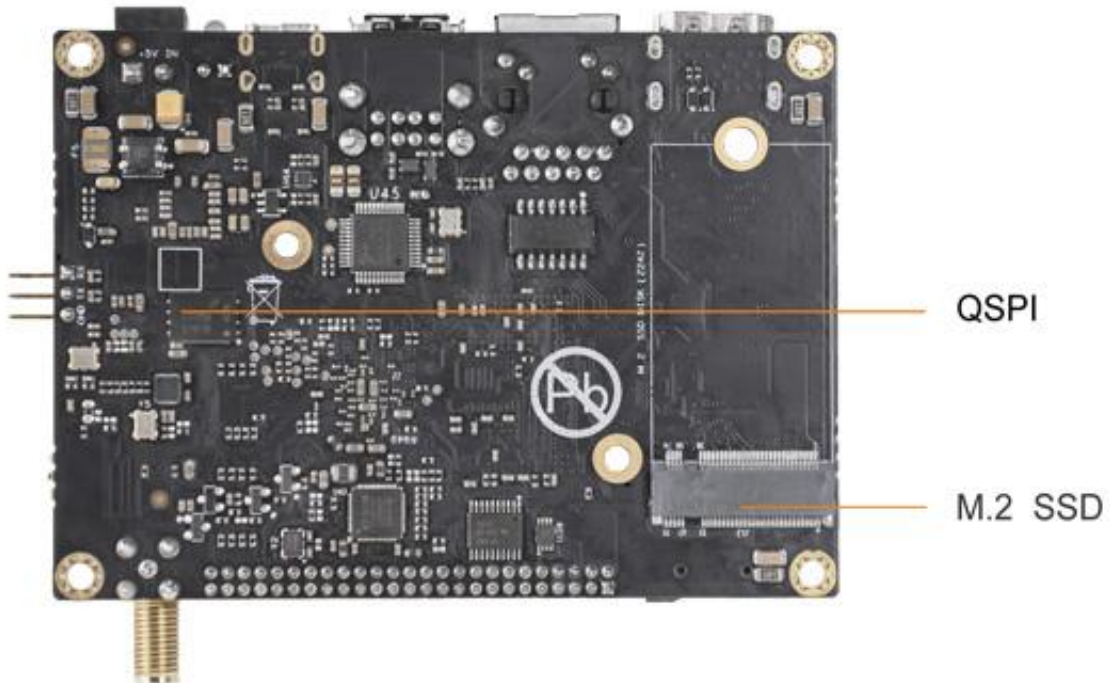- ✓ Supports Running Yocto Linux and Ubuntu Linux OS

The **MYS-8MMX-V2 Single Board Computer** has a compact design with only 95mm by 65mm form factor. It is powered by NXP's first embedded multicore applications processor **i.MX 8M Mini** which features up to 1.8GHz quad-core **ARM Cortex-A53** plus 400MHz **Cortex-M4** processor, combining advanced 14LPC FinFET process technology to provide more speed and improved power efficiency. The tiny board takes full features of the processor and is equipped with 2GB DDR4, 8GB eMMC and 32MB QSPI Flash. It has explored rich peripheral interfaces through headers and connectors including two USB 2.0 Host, one USB OTG, one Gigabit Ethernet, TF card, M.2 interface, LVDS LCD interface, MIPI CSI interface, HDMI output, IO expansion interface and more others. The AP6256 WiFi/BT module on the board also allows wireless communications with other devices.

The MYS-8MMX-V2 board is capable of running **Linux** operating system based on the **Yocto 3.0** or **Ubuntu 18.04**. MYIR provides software resources including kernel and driver source code, together with detailed user manual, schematic documentations to help customer start their development rapidly.

The MYS-8MMX-V2 SBC can be used as a System-on-Module (SOM) for your next embedded design. It can be also used directly for your system integration with your created applications. It can support wide working temperature ranging from -40 to 85 Celsius. With advanced video and graphics capabilities on a single board, the MYS-8MMX-V2 provides a low-power and high-performance solution for embedded applications in areas of consumer electronics, industrial automation, smart healthcare, security monitoring, etc.

MYS-8MMX-V2 Top-View

HDMI Out
1000M ETH
USB Host
LED
TYPE-C
+5V DCIN
MIPI CSI
LVDS LCD
RTC BAT
UART Debug
eMMC
DDR4
ON/OFF
User
Reset
WIFI / BT
WIFI/BT ANT
TF Card
Ext GPIO
CPU
Boot Select

MYS-8MMX-V2 Board Bottom-View

QSPI

M.2 SSD

MYIR also provides a high-quality aluminum enclosure to house the MYS-8MMX-V2 Single Board Computer, which is called **MYS-8MMX-V2 Box**. Inside of the enclosure, the MYS-8MMX-V2 board is installed with a heat-sink. The Box effectively protects against external interference and gives the product a more elegant appearance. This enables the product to be used in various industries and fields.
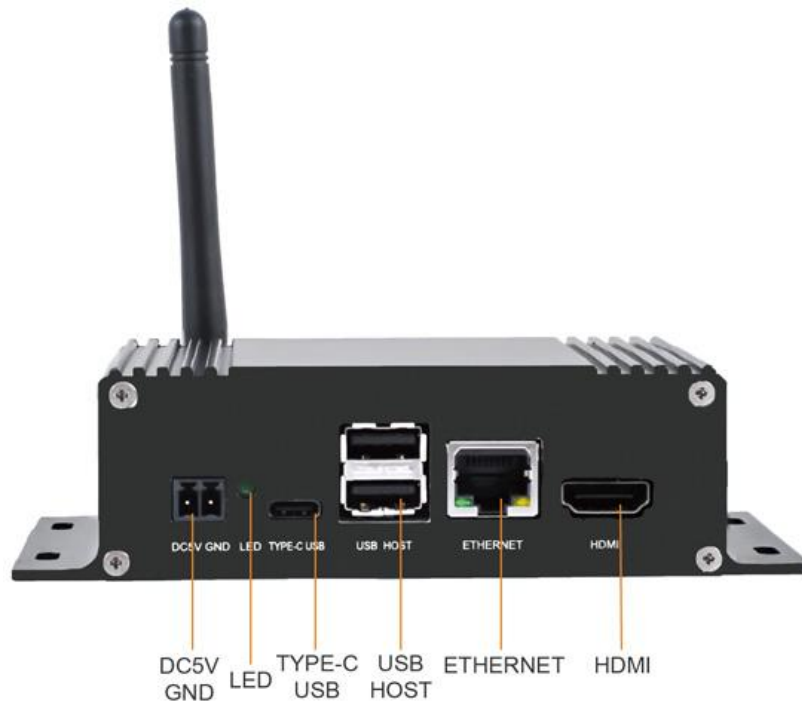
MYS-8MMX-V2 Box

MYS-8MMX-V2 Box

Hardware Specification

The MYS-8MMX-V2 board is using NXP's 14 x 14 mm, 0.5 mm pitch, FCBGA486 package i.MX 8M Mini Quad Application Processor (MIMX8MM6DVTLZAA/MIMX8MM6CVTKZAA) which is among the i.MX 8M Mini family and features as in below table.

Feature	MIMX8MM6CVTKZAA	MIMX8MM6DVTLZAA
Marketing Description	i.MX 8M Mini Quad	i.MX 8M Mini Quad
Core: Number of cores (SPEC)	4	4
Core Type	Arm Cortex-A53	Arm Cortex-A53
Operating Frequency [Max] (MHz)	1600	1800
Co Processor Type	Arm Cortex-M4F	Arm Cortex-M4F
Co Processor Frequency (MAX) (MHz)	400	400
External Memory Supported	DDR3L SDRAM, DDR4 SDRAM, ECC, LPDDR4 DRAM, NAND FLASH, NOR FLASH, QSPI	
L2 Cache (Max) (KB)	512	
Ethernet Type	1 Gbps + IEEE 1588 + AVB	
Serial Communication	3 x SPI, 4 x I²C, 4 x UART	
PCIe 2.0	1	
USB Controllers	2	
Video Decode Acceleration	HD1080p60, H.265, H.264, VP8, VP9	
Video Encode Acceleration	HD1080p60, H.264, VP8	
Display	1 x MIPI-DSI	
Camera	1 x MIPI-CSI	
GPU 2D / GPU 3D	1x shader, Vivante GC320, Vivante GCNanoUltra	
Audio Specific Modules	8-ch PDM input, SAI/I2S	
Junction Temperature (Min) (℃)	-40	0
Junction Temperature (Max) (℃)	105	95

Features of i.MX 8M Mini Quad Application Processor

The **i.MX 8M Mini family** of applications processors (i.MX 8M Mini Quad/QuadLite, i.MX 8M Mini Dual/DualLite, i.MX8M Mini Solo/SoloLite) represent NXP's latest video and audio experience combining state-of-the-art media-specific features with high-performance processing while optimized for lowest power consumption. The i.MX 8M Mini family of processors features advanced implementation of a quad Arm® Cortex®-A53 core, which operates at speeds of up to 1.8GHz. A general-purpose Cortex®-M4 400 MHz core processor is for low-power processing. The DRAM controller supports 32-bit/16-bit LPDDR4, DDR4, and DDR3L memory. A wide range of audio interfaces are available, including I2S, AC97, TDM, and S/PDIF. There are a number of other interfaces for connecting peripherals, such as USB, PCIe, and Ethernet. It is NXP's first embedded multicore applications processor built using advanced 14LPC FinFET process technology, providing more speed and improved power efficiency. With commercial and industrial level qualification and backed by NXP's product longevity program, the i.MX 8M Mini family may be used in any general purpose industrial and IoT application.
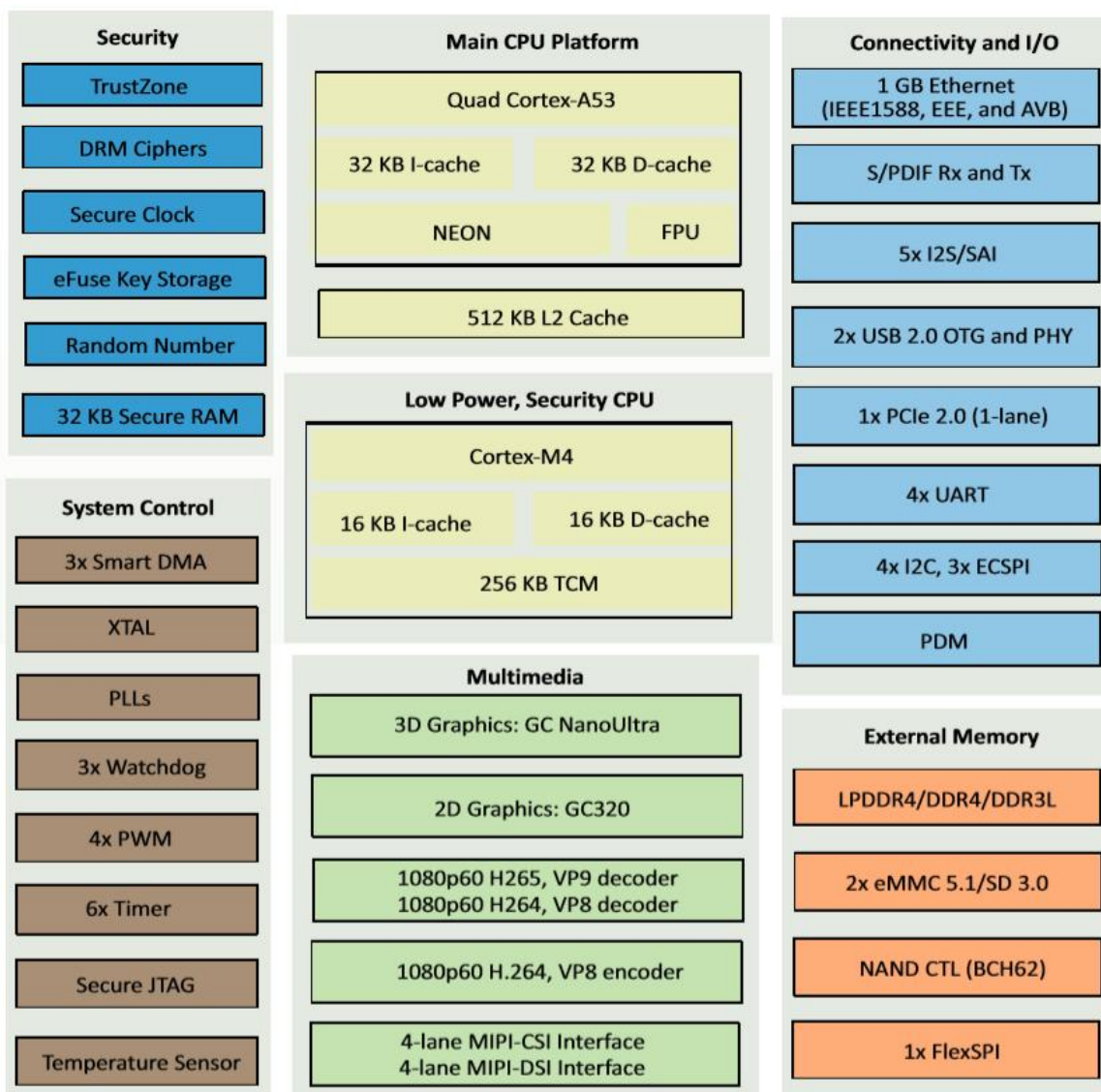
i.MX 8M Mini System Block Diagram

Mechanical Parameters

- Dimensions: 95mm x 69mm (MYS-8MMX-V2 Board),

  135mm (L, including ears) x 74.5mm (W) x 35.8mm (H) (MYS-8MMX-V2 Box)
- PCB Layers: 8-layer design
- Power supply: +5V/2A
- Working temperature: 0~70 Celsius (commercial grade) or -40~85 Celsius (industrial grade)

Processor

- NXP i.MX 8M Mini Processor

  - 1.8 GHz Quad-core ARM Cortex-A53 CPU (MIMX8MM6DVTLZAA, commercial grade) /

  1.6 GHz Quad-core ARM Cortex-A53 CPU (MIMX8MM6CVTKZAA, industrial grade)

  - 400MHz Real-time ARM Cortex-M4 co-processor

  - Integrated 2D/3D GPU and 1080p VPU

Memory

- 2GB DDR4 (supports up to 4GB)
- 8GB eMMC Flash (supports up to 128GB)
- 32MB QSPI Flash

Peripherals

- One Power input interface (2-pin phoenix connector)
- One 10/100/1000M Ethernet (RJ45)
- One Micro SD card slot
- Two USB 2.0 Host interfaces (Type-A)
- One USB 2.0 OTG interface (Type-C)
- One MIPI-CSI Camera interface (24-pin 0.5mm pitch FPC connector)
- One LVDS & Capacitive Touch Screen interface (40-pin 0.5mm pitch FPC connector)
- One HDMI output interface (support 1080p@60fps resolution)
- One 2.4G/5G Dual-Band WiFi and Bluetooth 5.0 Module (AP6256)
- One Antenna interface for WiFi/BT Module
- One NVMe PCIe M.2 2242 SSD Slot
- One Debug serial port (UART2, TTL, 3-pin 2.54mm pitch pin headers)
- One RTC Battery interface (2-pin 1.25mm pitch box male header connectors)
- Three Buttons (ON/OFF, User, Reset)
- Two LEDs (User LED – Blue, System indicator – Green)
- One 2 x 25-pin 2.0mm pitch Expansion Interface
  - 1 x USB
  - 2 x UART
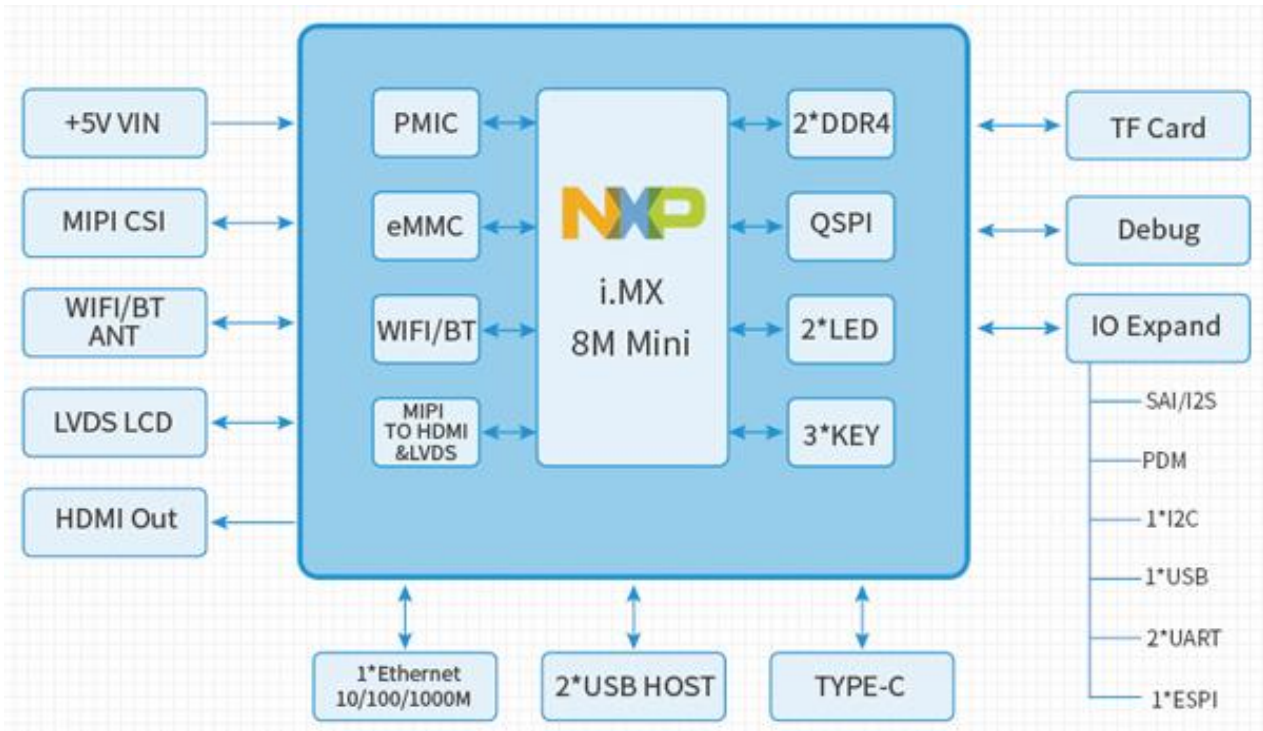 - 1 x ESPI
  - 1 x I2C
  - SAI/I2S
  - PDM

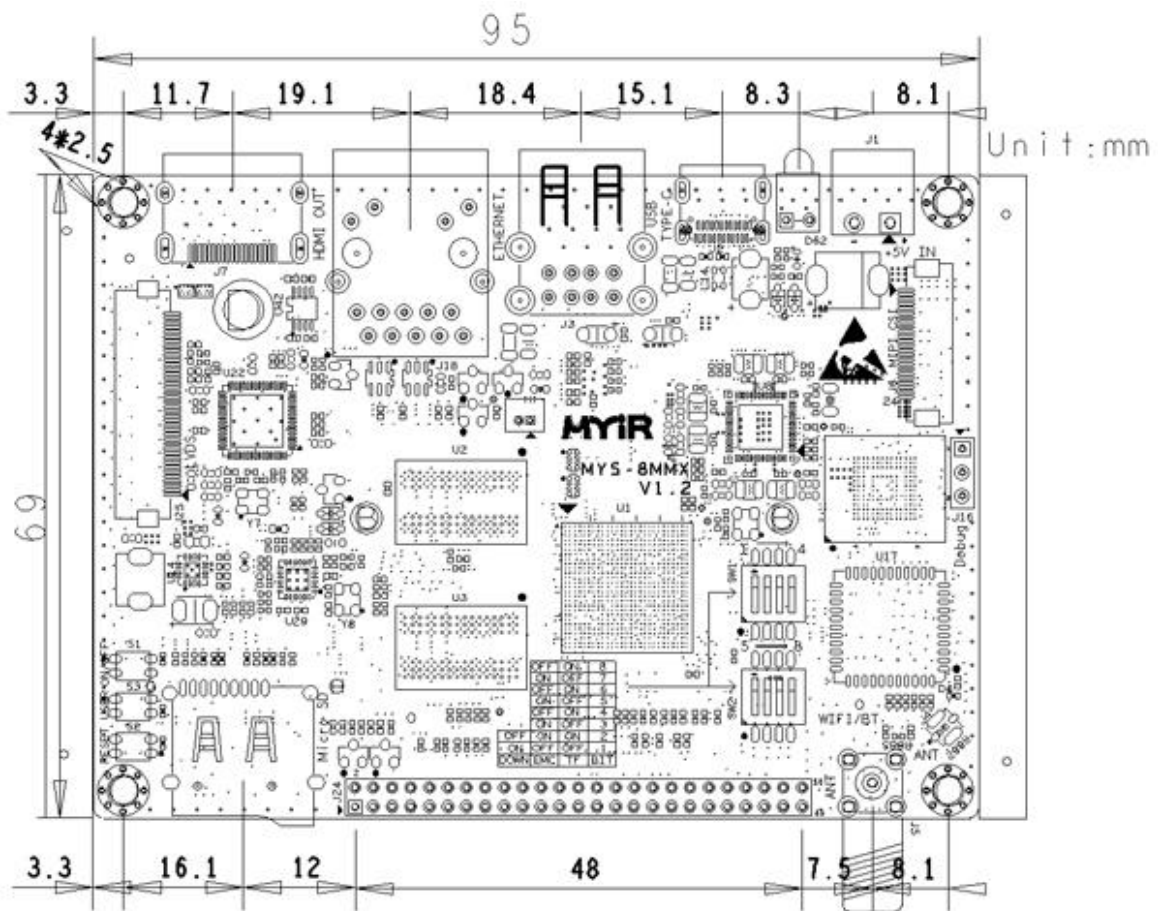Figure 1-7 MYS-8MMX-V2 Function Block Diagram

Figure 1-8 MYS-8MMX-V2 Single Board Computer Dimensions Chart

Software Features

MYIR's MYS-8MMX-V2 Single Board Computer is ready to run Linux and is provided with complete software packages. Many peripheral drivers are in source code to help accelerate customers' designs. The software package provided is characterized as following:

Item	Features	Description	Source Code Provided
Bootstrap program	U-boot	The primary bootstrap	YES
Linux kernel	Image	Based on official imx_5.4.3_2.0.0_ga version	YES
Drivers	PMIC	BD71847MWV PMIC driver	YES
	USB Host	USB Host driver	YES
	USB OTG	USB OTG driver	YES
	I2C	I2C Bus driver	YES
	Ethernet	10/100/1000M Ethernet driver	YES
	MMC	MMC/eMMC/TF card driver	YES
	HDMI	Lt8912 driver	YES
	PWM	PWM driver	YES
	RTC	RX8025 real-time clock driver	YES
	IO	GPIO driver	YES
	Camera	Ov5640 driver	YES
	WiFi & BT	AP6256 driver	YES
	Watchdog	Watchdog driver	YES
	LTE Module	Supports Quectel's EC20 using USB driver	YES
	M.2	NVME driver	YES
File System	Yocto rootfs	Yocto 3.0, including QT5.13.2	YES
		Common file system for terminal	YES
Application Programs	GPIO KEY	Key example	YES
	GPIO LED	LED example	YES
	NET	TCP/IP Sokect C/S example	YES
	RTC	RTC example	YES
	RS232	RS232 example	YES
	Camera	Camera display example	YES
Compiler Tool Chain	Cross compiler	Yocto GCC 9.2.0	BINARY

Linux 5.4.3 Software Features

Item	Features	Description	Source Code Provided
Bootstrap program	U-boot	The primary bootstrap	YES
Linux kernel	Image	Based on official imx_5.4.3_2.0.0_ga version	YES
Drivers	PMIC	BD71847MWV PMIC driver	YES
	USB Host	USB Host driver	YES
	USB OTG	USB OTG driver	YES
	I2C	I2C Bus driver	YES
	Ethernet	10/100/1000M Ethernet driver	YES
	MMC	MMC/eMMC/TF card driver	YES
	HDMI	Lt8912 driver	YES
	PWM	PWM driver	YES
	RTC	RX8025 real-time clock driver	YES
	IO	GPIO driver	YES
	Camera	Ov5640 driver	YES
	WiFi & BT	AP6256 driver	YES
	Watchdog	Watchdog driver	YES
	LTE Module	Supports Quectel's EC20 using USB driver	YES
	M.2	NVME driver	YES
File System	Yotctorootfs	Based on ubuntu18.04+docker	YES
Compiler Tool Chain	Cross compiler	Yocto GCC 9.2.0	BINARY

Ubuntu18.04 Software Features

Order Information

Product Item	Part No.	Packing List
MYS-8MMX-V2 Single Board Computer	MYS-8MMQ6-V2-8E2D-180-C	✓ One MYS-8MMX-V2 Board ✓ One Quick Start Guide ✓ One Power transfer cable ✓ One WiFi/BT antenna (XB-2DBi-SMA-WIFI2.4G&5G)
	MYS-8MMQ6-V2-8E2D-160-I	
MYS-8MMX-V2 Box	MYS-8MMQ6-V2-8E2D-180-C-B	✓ One MYS-8MMX-V2 Box ✓ One Quick Start Guide ✓ One Power transfer cable ✓ One WiFi/BT antenna (XB-2DBi-SMA-WIFI2.4G&5G)
	MYS-8MMQ6-V2-8E2D-160-I-B	
MY-CAM003M MIPI Camera Module	MY-CAM003M	**Add-on Options** ✓ MY-CAM003M Camera Module ✓ MY-CAM002U Camera Module ✓ MY-LVDS070C 7-inch LCD Module
MY-CAM002U USB Camera Module	MY-CAM002U	
MY-LVDS070C LCD Module	MY-LVDS070C	