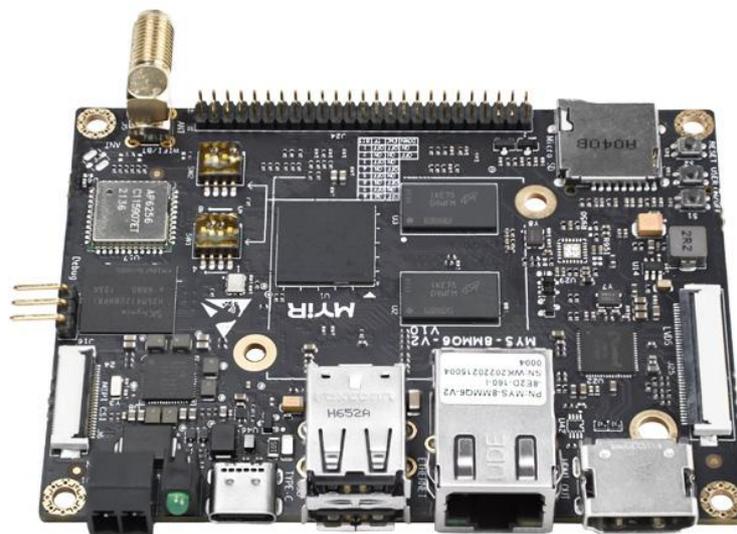




MYS-8MMX-V2

Single Board Computer

Overview



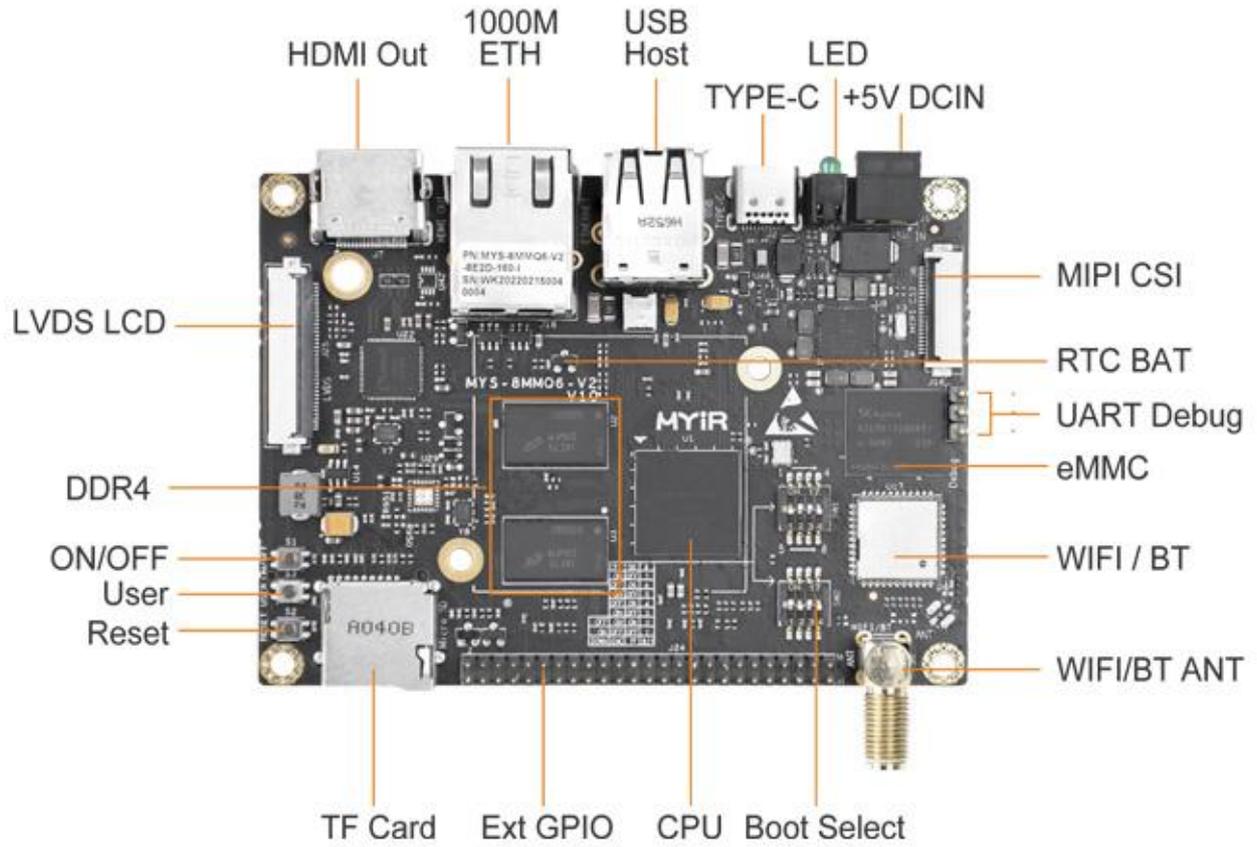
- ✓ NXP i.MX 8M Mini Quad Application Processor based on Up to 1.8 GHz Arm Cortex-A53 and 400MHz Cortex-M4 Cores
- ✓ 2GB DDR4, 8GB eMMC Flash, 32MB QSPI Flash
- ✓ 2 x USB Host, 1 x USB Type-C, NVMe PCIe M.2 2242 SSD Interface, Micro SD Card Slot...
- ✓ Supports Gigabit Ethernet, 2.4G/5G Dual-band WiFi 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



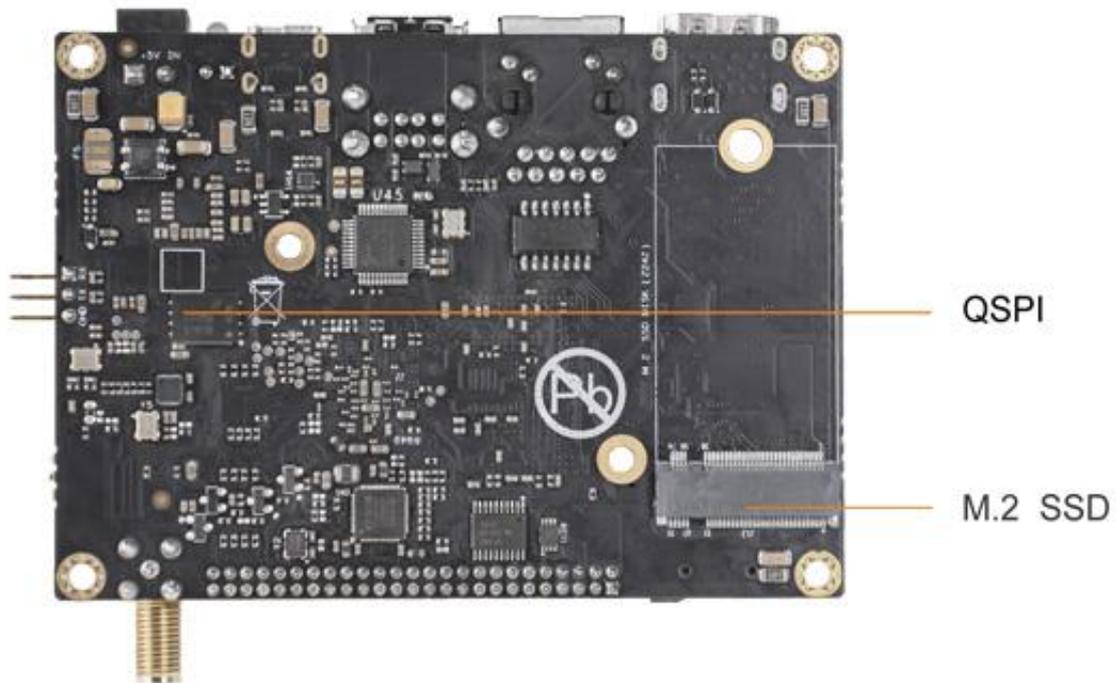
The [MYS-8MMX-V2 Single Board Computer](#) has a compact design with only 95mm by 65mm form factor. It is powered by NXP's first embedded multicore applications processor [i.MX 8M Mini](#) which features up to 1.8GHz quad-core [ARM Cortex-A53](#) plus 400MHz [Cortex-M4](#) processor, combining advanced 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.



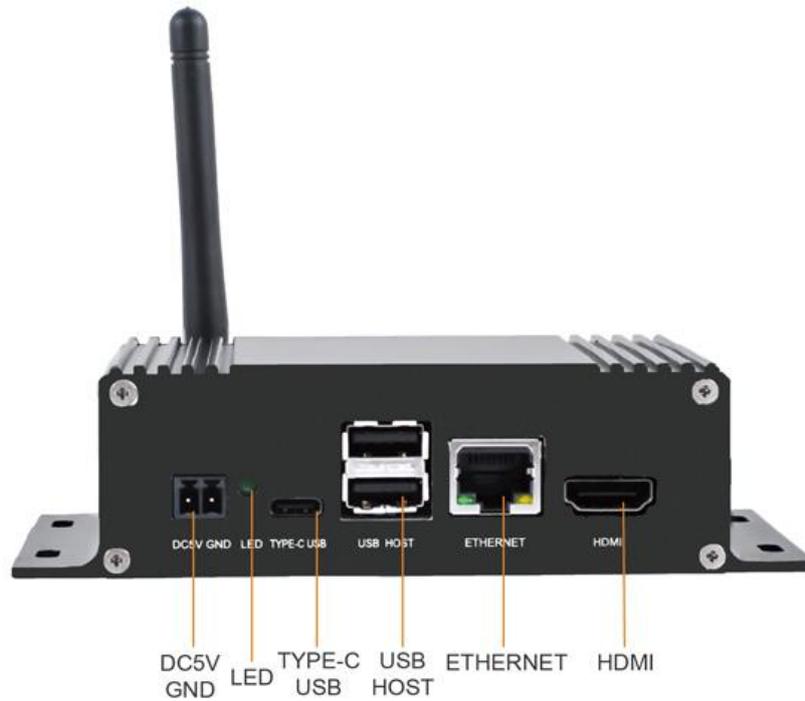
MYS-8MMX-V2 Top-View



MYS-8MMX-V2 Board Bottom-View



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

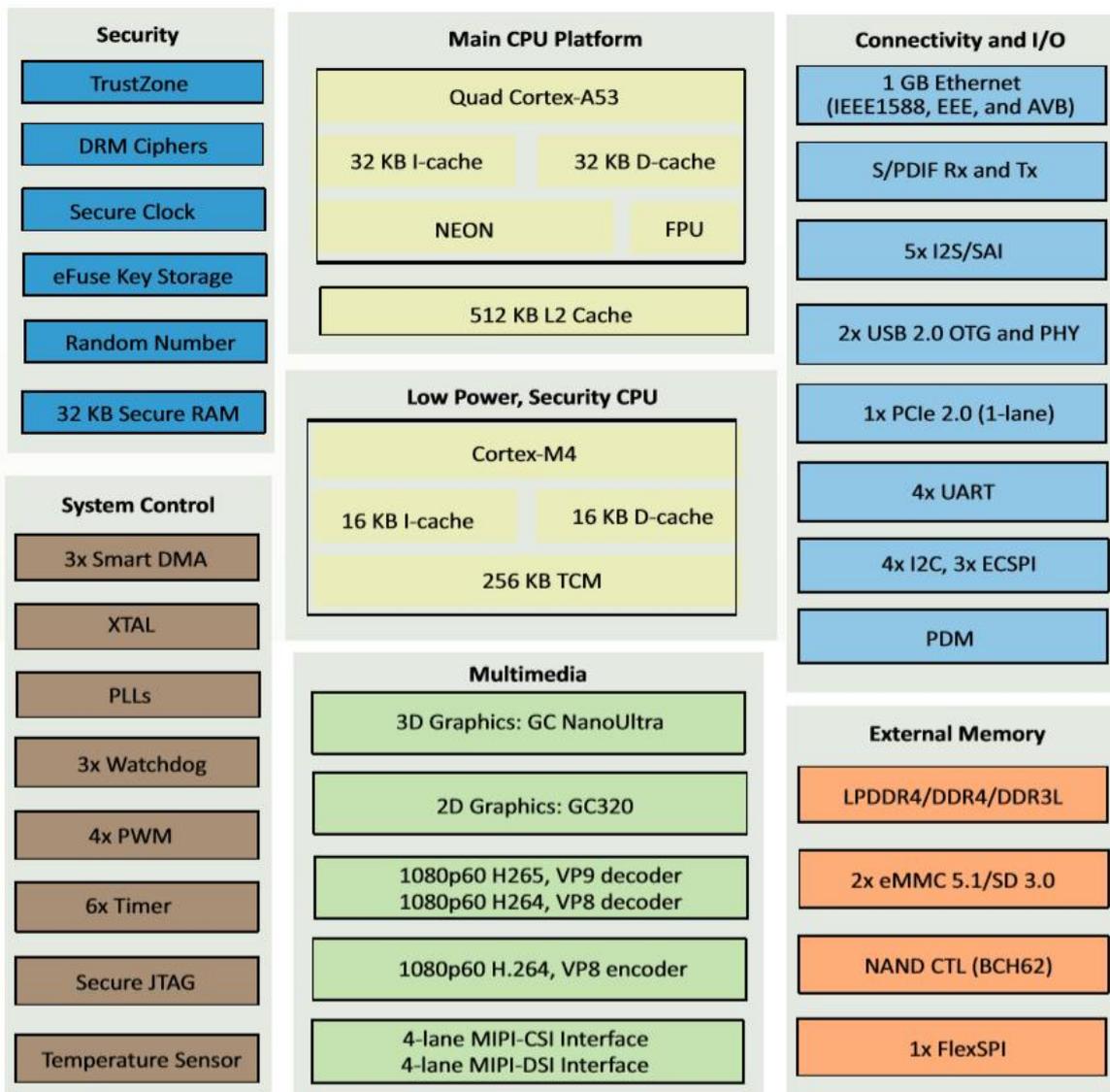
The MYS-8MMX-V2 board is using NXP's 14 x 14 mm, 0.5 mm pitch, FCBGA486 package i.MX 8M Mini Quad Application Processor (MIMX8MM6DVTLZAA/MIMX8MM6CVTKZAA) which is among the [i.MX 8M Mini family](#) and features as in below table.

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

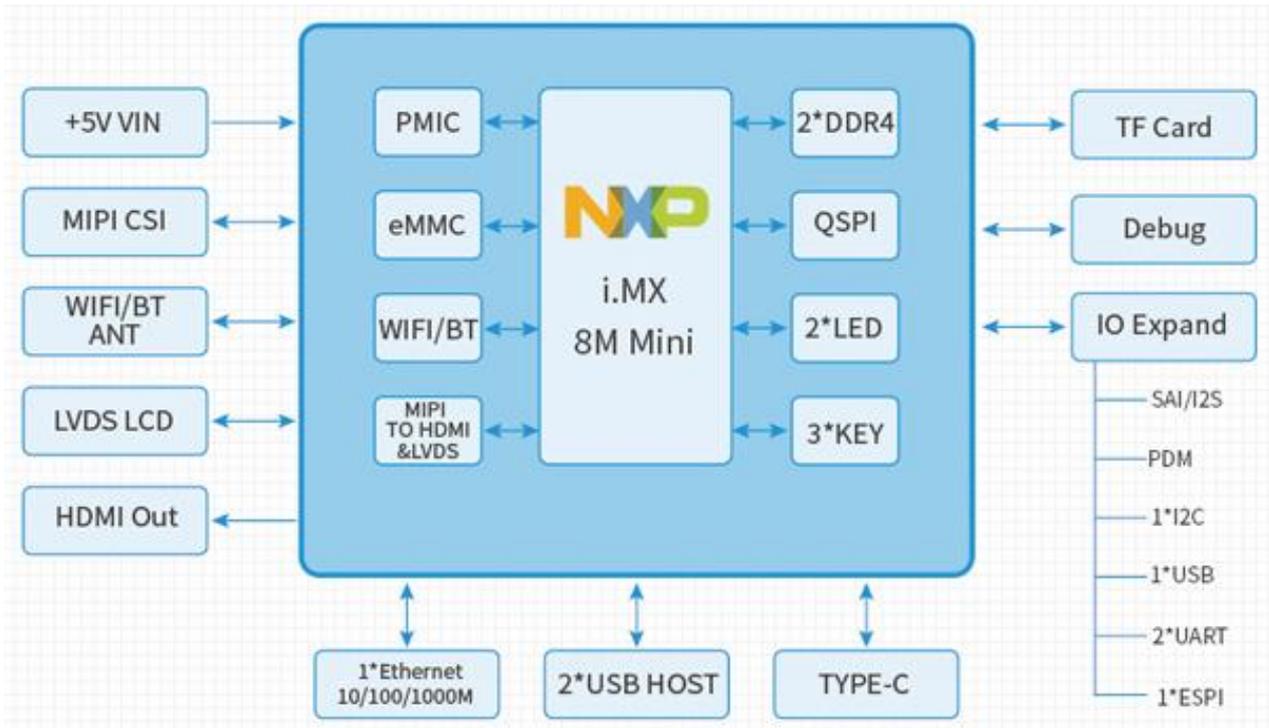


Figure 1-7 MYS-8MMX-V2 Function Block Diagram

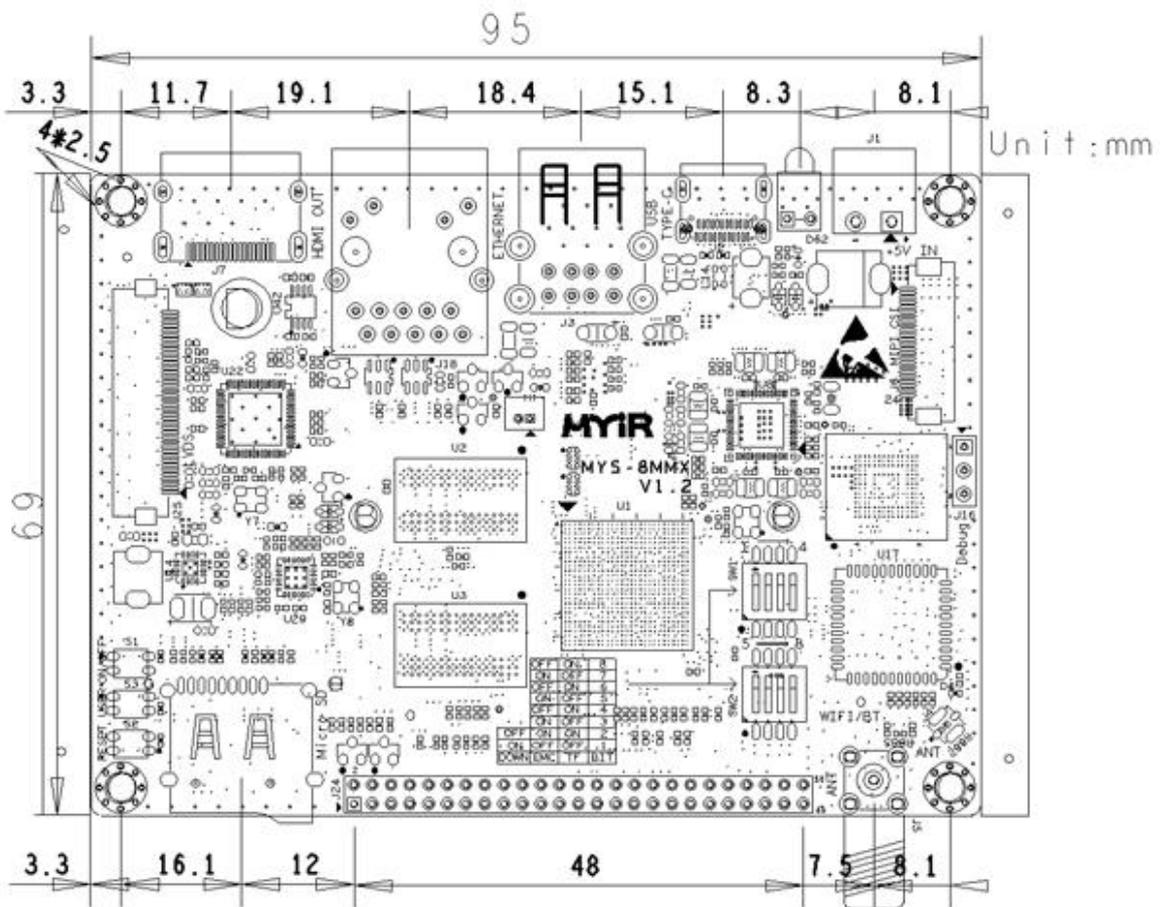


Figure 1-8 MYS-8MMX-V2 Single Board Computer Dimensions Chart



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 Socket 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 | <ul style="list-style-type: none"> ✓ 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 | <ul style="list-style-type: none"> ✓ 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 | <p>Add-on Options</p> <ul style="list-style-type: none"> ✓ 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 | |



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