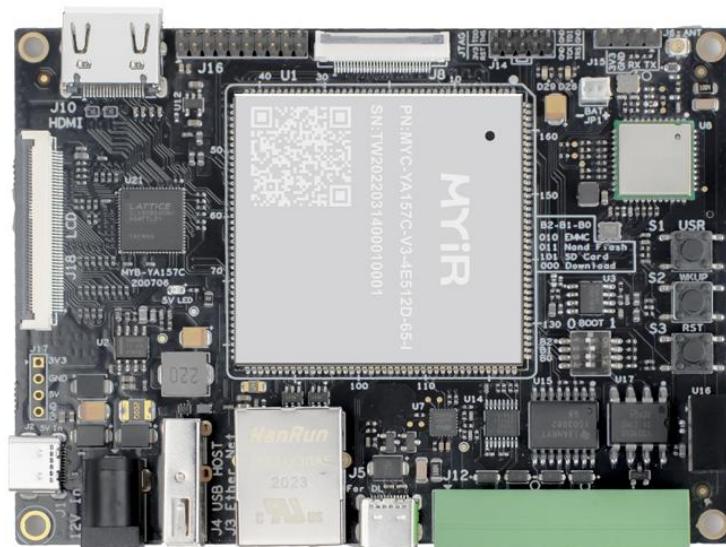




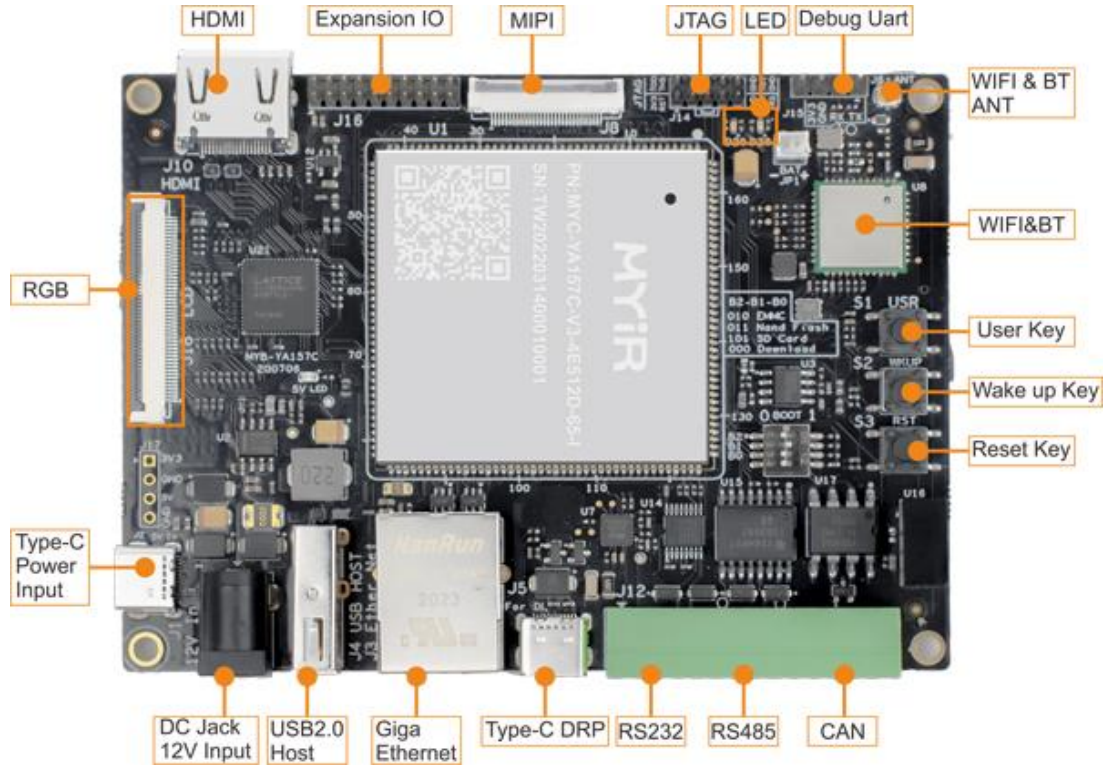
MYD-YA157C Development Board Overview



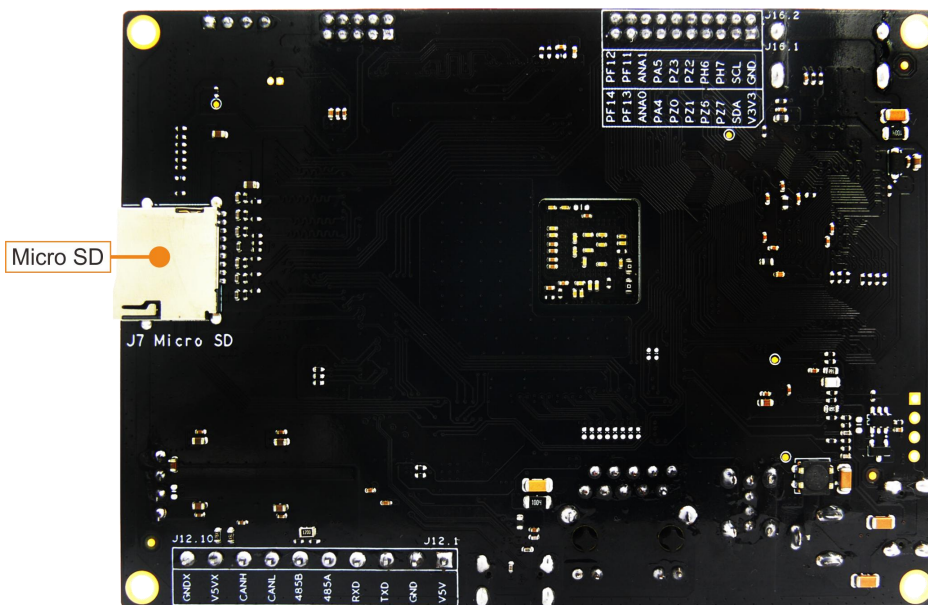
- ✓ MYC-YA157C CPU Module as Controller Board
- ✓ ST STM32MP1 MPU based on 650MHz Dual Arm Cortex-A7 and 209MHz Cortex-M4 Cores
- ✓ 512MB DDR3, 4GB eMMC Flash
- ✓ RS232, RS485, USB Type-C DRP, USB2.0 HOST, Gigabit Ethernet, CAN, WiFi/BT, Micro SD Card
- ✓ Supports RGB888 based LCD/HDMI and MIPI-DSI Display
- ✓ Supports Running Linux OS
- ✓ Optional 7-inch LCD Module and USB Camera Module



The **MYD-YA157C Development Board** consists of a compact CPU Module **MYC-YA157C** and a base board to provide a complete evaluation platform for **ST STM32MP1 Processors** which features dual-core Arm Cortex-A7 operating at up to 650 MHz and an embedded Cortex-M4 core operating at up to 209 MHz. Typical applications are industrial control, consumer electronics, smart home, medical and more other energy-efficient applications which require rich performance and low power.



MYD-YA157C Development Board (Top-view)



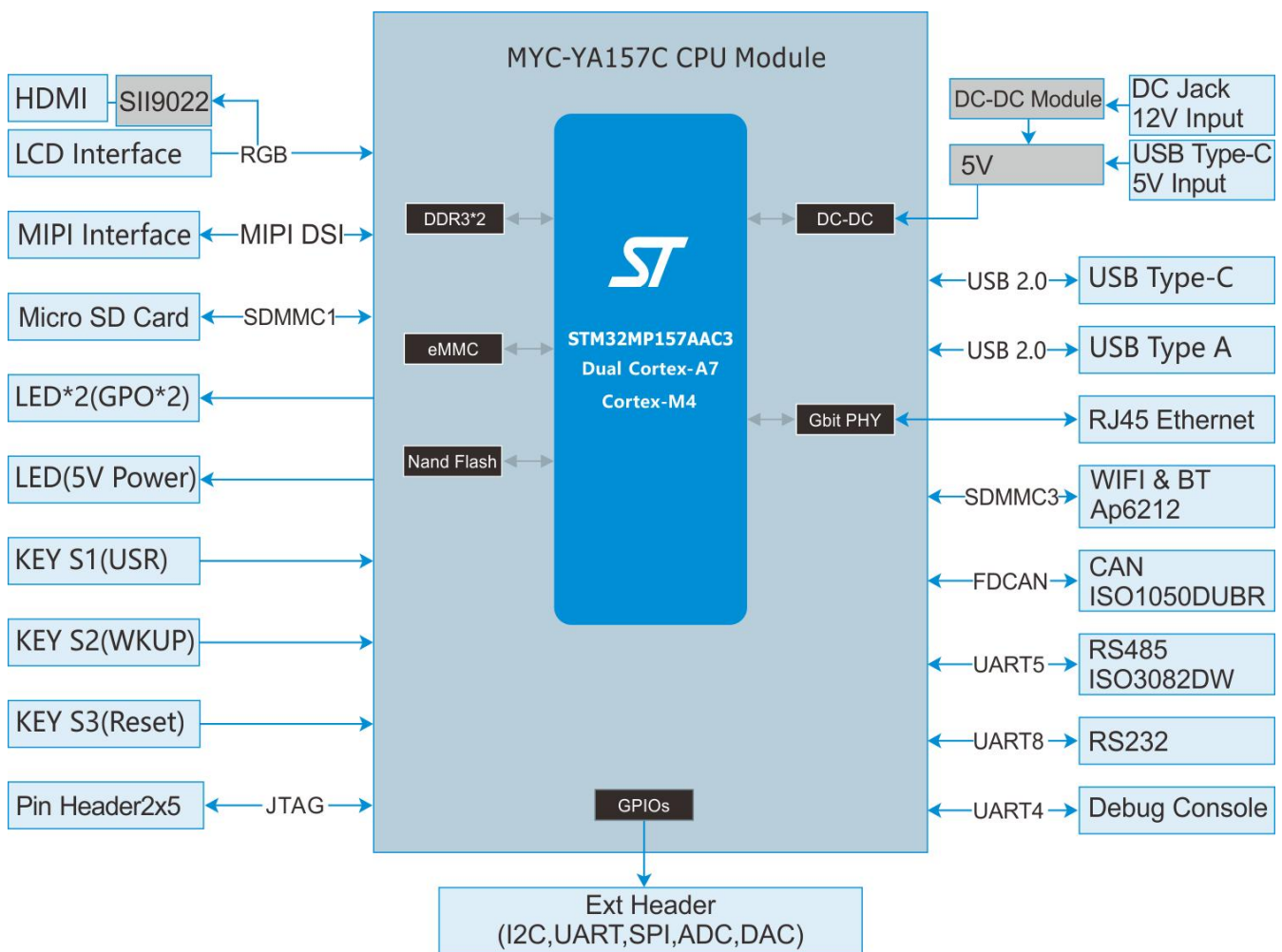
MYD-YA157C Development Board (Bottom-view)



The [MYC-YA157C CPU Module](#) is populated on the base board through 1.0mm pitch 164-pin stamp-hole (Castellated-Hole) interface. It is a highly-integrated SoM which combines the [STM32MP157](#) processor ([STM32MP157AAC3](#)), 512MB DDR3, 4GB eMMC as well as a GigE PHY chip. The base board has brought out rich peripherals through connectors and headers such as RS232, RS485, USB Type-C DRP, USB2.0 HOST, Gigabit Ethernet, WiFi/Bluetooth, CAN, Micro SD Card Slot, JTAG, RGB888 based LCD/HDMI, MIPI-DSI, etc.

The [MYD-YA157C Development Board](#) is delivered with one Quick Start Guide, one Type-C cable, one USB to TTL serial cable and one WiFi/Bluetooth antenna to provide user a complete platform for evaluating and prototyping based on STM32MP1 series microprocessors. MYIR also offers [MY-TFT070CV2 LCD Module](#) and [MY-CAM002U Camera Module](#) as add-on options for the board.

The [MYD-YA157C](#) is running Linux OS. Based on Linux 5.4.31 kernel, MYIR provides abundant software resources for Yocto 3.1 based MYIR MEasy-HMI system, ST Weston system and MYIR MEasy-IOT system as well as Ubuntu 18.04 system including kernel and driver source code, STM32CubeProgrammer and STM32CubeMX tools to enable users to start their development rapidly and easily.



MYD-YA157C Development Board

MYD-YA157C Development Board Function Block Diagram



Hardware Specification

The MYC-YA157C CPU Module is using STMicroelectronics [STM32MP157AAC3](#) Microprocessor with 12 x 12 mm, 0.5 mm pitch, TFBGA361 package which is among the [STM32MP1 Series](#). The STM32MP1 series is based on a heterogeneous single or dual Arm Cortex-A7 and Cortex-M4 cores architecture, strengthening its ability to support multiple and flexible applications, achieving the best performance and power figures at any time. The Cortex-A7 core provides access to open-source operating systems (Linux/Android) while the Cortex-M4 core leverages the STM32 MCU ecosystem. It is available in 3 different lines which are pin-to-pin compatible:

- [STM32MP157](#): Dual Cortex-A7 cores @ 650 MHz, Cortex-M4 core @ 209 MHz, 3D GPU, DSI display interface and CAN FD
 - [STM32MP153](#): Dual Cortex-A7 cores @ 650 MHz, Cortex-M4 core @ 209 MHz and CAN FD
 - [STM32MP151](#): Single Cortex-A7 core @ 650 MHz, Cortex-M4 core @ 209 MHz
- Each line comes with a security option (cryptography & secure boot)

| ACCELERATION | STM32 MP1 | Cortex®-A7 | f _{cpu} | Cortex®-M4 | f _{mcu} | 3D GPU | f _{gpu} | HW | FD-CAN | MIP1®-DSI |
|---|---------------|------------|------------------|------------|------------------|--------|------------------|--------|--------|-----------|
| | | core | (MHz) | core | (MHz) | | (MHz) | Crypto | | |
| CONNECTIVITY <ul style="list-style-type: none"> • 2 x USB2.0 HS Host • USB2.0 OTG FS/HS • 3 x SDMMC/SDIO • USART, UART, SPI, I²C • 2 x (TT)FD-CAN2.0* • Gigabit Ethernet IEEE 1588*** • FMC (NAND Flash) • Camera VF • Dual mode Quad-SPI • DSI 2 Gbit/s* | Product lines | | | | | | | | | |
| | STM32MP151A | 1 | 650 | 1 | 209 | - | - | - | - | - |
| | STM32MP151C | | | | | | | • | | |
| | STM32MP153A | 2 | 650 | 1 | 209 | - | - | - | 2 | - |
| | STM32MP153C | | | | | | | • | | |
| | STM32MP157A | 2 | 650 | 1 | 209 | • | 533 | - | 2 | • |
| STM32MP157C | | | | | | | • | | | |

Notes:
 * Not available in all product lines
 ** 16/32-bit for LFBGA448 and TFBGA361 packages, 16-bit only for LFBGA354 and TFBGA257 packages
 *** 10/100M Ethernet only for LFBGA354 and TFBGA257 packages

STM32MP1 Series Processors



*available for STM32MP157C only

STM32MP157 Block Diagram

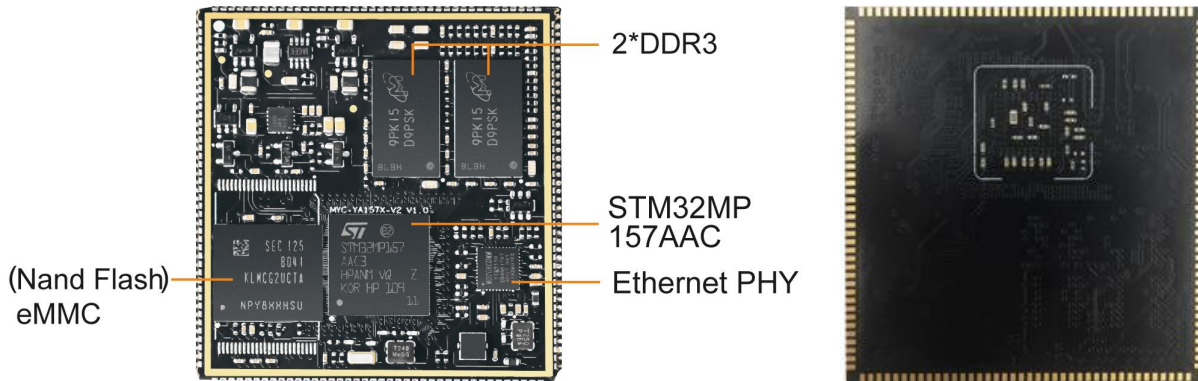


The MYD-YA157C Development Board is using MYC-YA157C CPU Module as core controller board. It takes full features of STM32MP1 processor and the main features are characterized as below:

Mechanical Parameters

- Dimensions: 110mm x 80mm (base board), 45mm x 43mm (CPU Module)
- PCB Layers: 4-layer design (base board), 8-layer design (CPU Module)
- Power supply: +12V/1.5A or USB Type-C Power supply (base board), 5V/0.5A (CPU Module)
- Working temperature: 0~70 Celsius (commercial grade) or -40~85 Celsius (industrial grade)

The MYD-YA157C Controller Board (MYC-YA157C CPU Module)



MYC-YA157C CPU Module without shielding cover (Top-view and Bottom-view)

Processor

- STMicroelectronics STM32MP157AAC3 Microprocessor
 - Up to 650MHz dual-core Arm Cortex-A7 32-bit RISC core
 - Up to 209MHz Arm Cortex-M4 32-bit RISC core with FPU/MPU
 - Integrated 3D GPU

Memory

- 512MB DDR3 (supports up to 1GB DDR3)
- 4GB eMMC Flash (supports up to 64GB eMMC)
- Nand Flash (alternative design with eMMC, supporting 256MB / 512MB /1GB Nand Flash)

Peripherals and Signals Routed to Pins

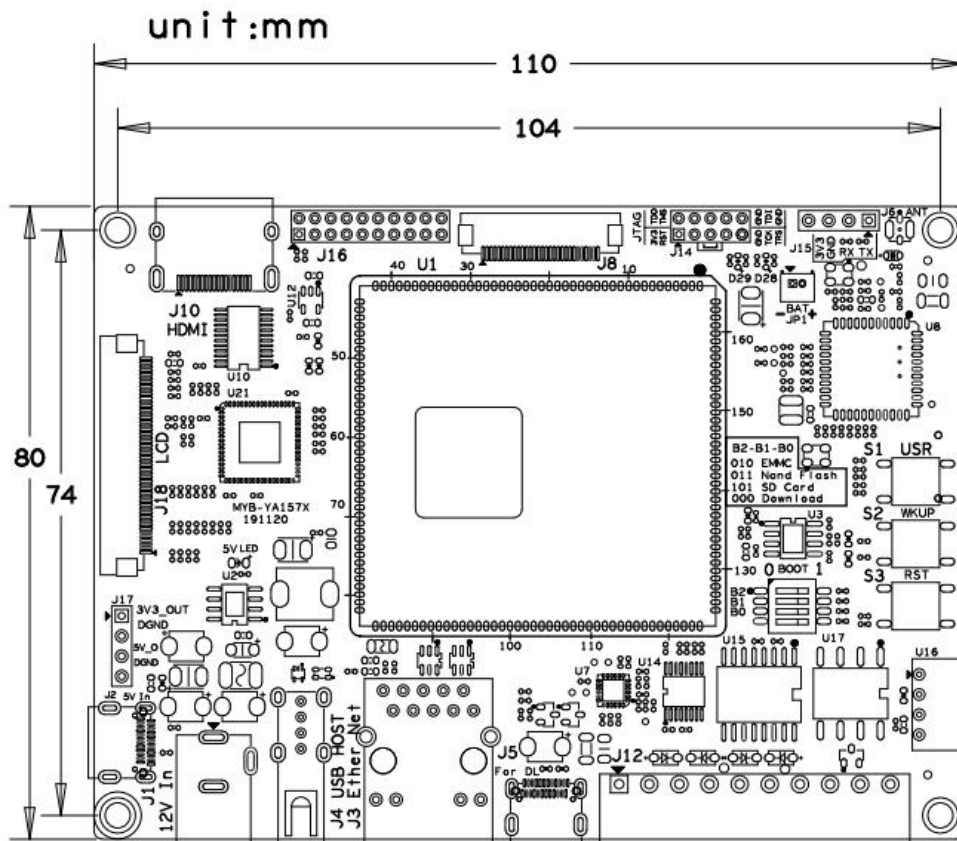
- One 10/100/1000M Ethernet PHY
- 1.0mm pitch 164-pin Stamp Hole Expansion Interface
 - 8 x Serial ports
 - 6 x I2C
 - 6 x SPI
 - 1 x SAI
 - 1 x USB 2.0 Host and 1 x USB 2.0 OTG
 - 2 x SDIO
 - 2 x CAN
 - 1 x MIPI-DSI
 - 1 x Digital Camera Interface (DCMI)
 - 1 x RGB Interface (supports RGB888, resolution up to 1366 x 768 @60fps)
 - Up to 97 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-YA157C Development Board Base Board

- Serial ports
 - Debug UART
 - 1 x RS485, isolated power signal
 - 1 x RS232
- USB
 - 1 x USB2.0 Host port
 - 1 x USB Type-C DRP
- 1 x CAN, isolated power signal
- 1 x JTAG Interface (2.0mm pitch 2 x 5-pin headers)
- 1 x 10/100/1000 Mbps Ethernet interface (RJ45)
- WiFi/Bluetooth Module (complies with IEEE 802.11 b/g/n standard and supports Bluetooth V4.2)
- 1 x External antenna connector (simultaneous BT/WLAN receive with single antenna)
- 1 x Micro SD card slot
- RGB888 based LCD/HDMI (supports resolution up to 1366 x 768 pixels at 60Hz)
- 1 x MIPI-DSI Display Interface (supports display resolution up to 1366 x 768 pixels at 60Hz)
- 3 x Buttons (one for Wake up, one for Reset and one for USER)
- 1 x 2.0mm 2*10-pin male expansion header



MYD-YA157C Base Board Dimensions Chart



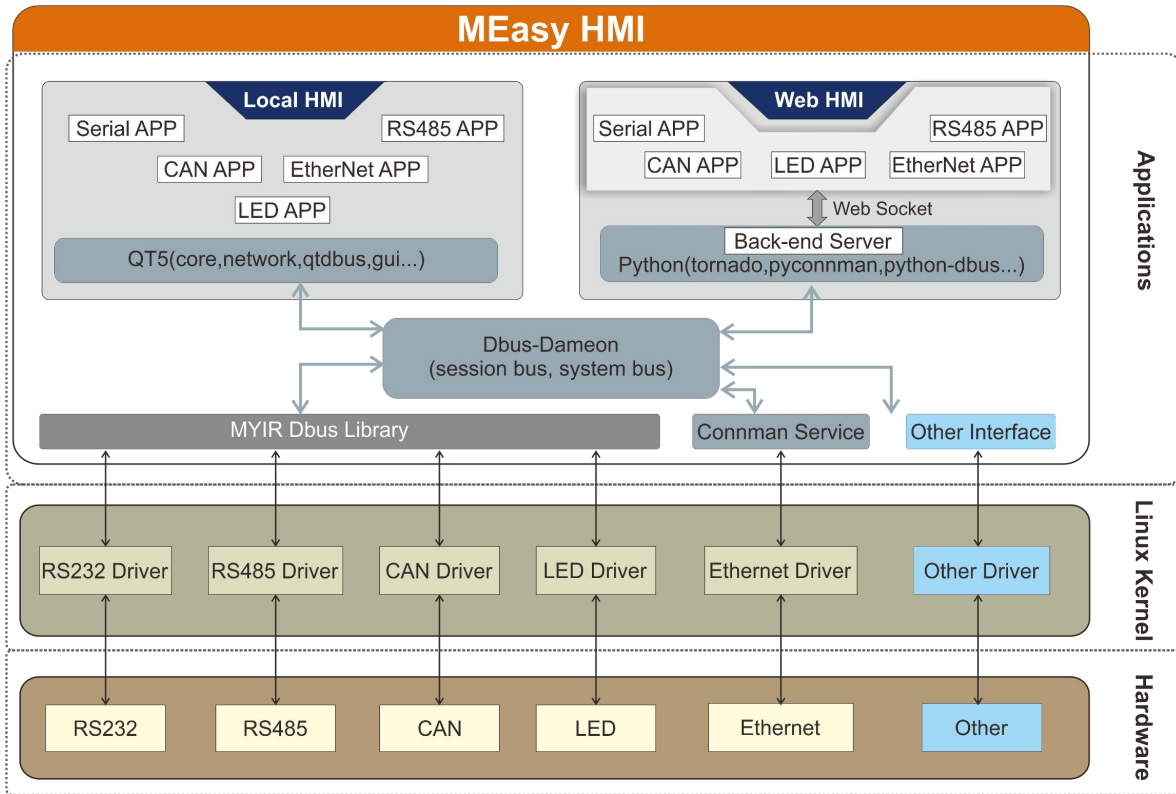
Software Features

| Item | Features | Description | Source Code |
|---------------------|------------------------------|---|-------------|
| Bootstrap program | TF-a-2.2 | Arm Trusted Firmware | YES |
| Bootloader | U-boot-2020.01 | Kernel bootstrap | YES |
| Linux kernel | Linux-5.4.31 | Customized based on ST kernel_5.4.31 version for MYD-YA157C | YES |
| Drivers | Nand Flash | Nand Flash driver | YES |
| | PMIC | STPMIC driver | YES |
| | USB Host | USB Host driver | YES |
| | USB OTG | USB OTG driver | YES |
| | I2C | I2C driver | YES |
| | SPI | SPI driver | YES |
| | Ethernet | 10M/100M/1000M Ethernet driver | YES |
| | MMC | eMMC/TF card driver | YES |
| | LCD | LCD driver, supports MYIR's 7-inch LCD with 800 x 480 pixels resolution | YES |
| | HDMI | HDMI driver | YES |
| | Touch | Capacitive touch screen driver | YES |
| | PWM | PWM driver | YES |
| | RTC | RTC driver | YES |
| | GPIO | GPIO driver | YES |
| | UART/USART | Serial port driver | YES |
| | CAN | FDCAN Bus driver | YES |
| | RS485 | RS485 driver | YES |
| | Camera | USB Camera driver (OV2659) | YES |
| WiFi & BT | AP6212 WiFi/BT driver (SDIO) | YES | |
| Watchdog | Watchdog driver | YES | |
| File system | rootfs | Yocto 3.1 for ST Weston system | YES |
| | rootfs | Yocto 3.1 for QT5.12 system | YES |
| | rootfs | MEasy-IOT 1.0 & MEasy_HMI 2.0 demo system developed by MYIR | YES |
| | Ubuntu core system | Based on ubuntu18.04 | YES |
| Tools | STM32CubeProgrammer | ST programmer software | BIN |
| | STM32CubeMX | ST configuration integration tool | BIN |
| Applications | GPIO LED | LED example | YES |
| | GPIO KEY | KEY example | YES |
| | NET | TCP/IP Socket C/S example | YES |
| | RTC | RTC example | YES |
| | RS232 | RS232 example | YES |
| | RS485 | RS485 example | YES |
| | CAN | CAN example | YES |
| | LCD | LCD Display example | YES |
| | Camera | Camera Display example | YES |
| UART | UART example | YES | |
| Compiler Tool Chain | Cross compiler | arm-openstlinux_weston-linux-gnueabi | BINARY |

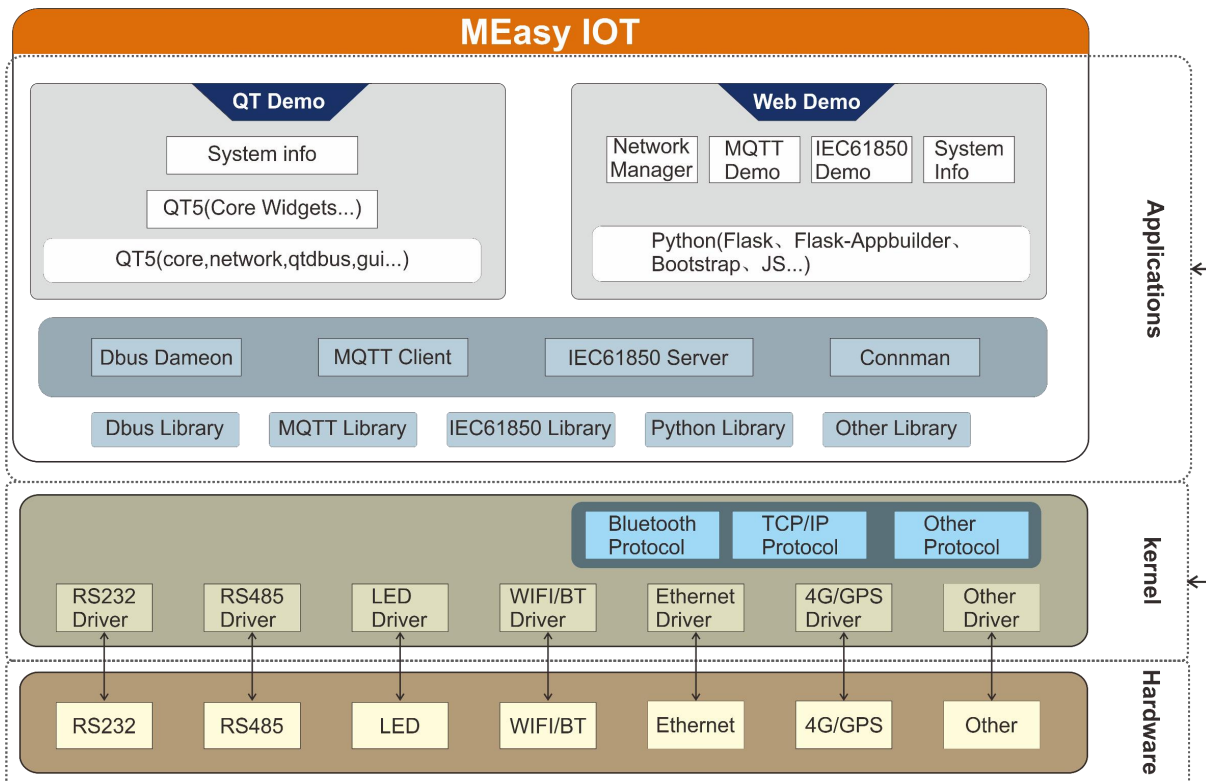
MYD-YA157C Software Features



The MYD-YA157C runs Linux OS and is provided with software packages. Based on Linux 5.4.31 kernel, MYIR has provided abundant software resources for Yocto 3.1 based MYIR MEasy-HMI system, Yocto 3.1 based ST Weston system, Ubuntu 18.04 system and MYIR MEasy-IOT system including kernel and driver source code, STM32CubeProgrammer and STM32CubeMX tools to enable users to start their development rapidly and easily.



MEasy-HMI System Structure



MEasy-IOT System Structure



Order Information

| Product Item | Part No. | Packing List |
|---------------------------------|---------------------------|---|
| MYD-YA157C Development Board | MYD-YA157C-V3-4E512D-65-C | ✓ One MYD-YA157C Development Board |
| | MYD-YA157C-V3-4E512D-65-I | ✓ One USB Type-C cable ✓ One USB to UART Serial cable ✓ One WiFi/Bluetooth Antenna ✓ One Quick Start Guide |
| MYC-YA157C CPU Module | MYC-YA157C-V3-4E512D-65-C | ✓ One MYC-YA157C CPU Module |
| | MYC-YA157C-V3-4E512D-65-I | |
| MY-LCD70TP-C LCD Module | MY-TFT070CV2 | ✓ 7-inch LCD Module with capacitive touch screen |
| MY-CAM002U Camera Module | MY-CAM002U | ✓ USB Camera Module |

Note:

1. One MYD-YA157C Development Board includes one CPU module MYC-YA157C 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