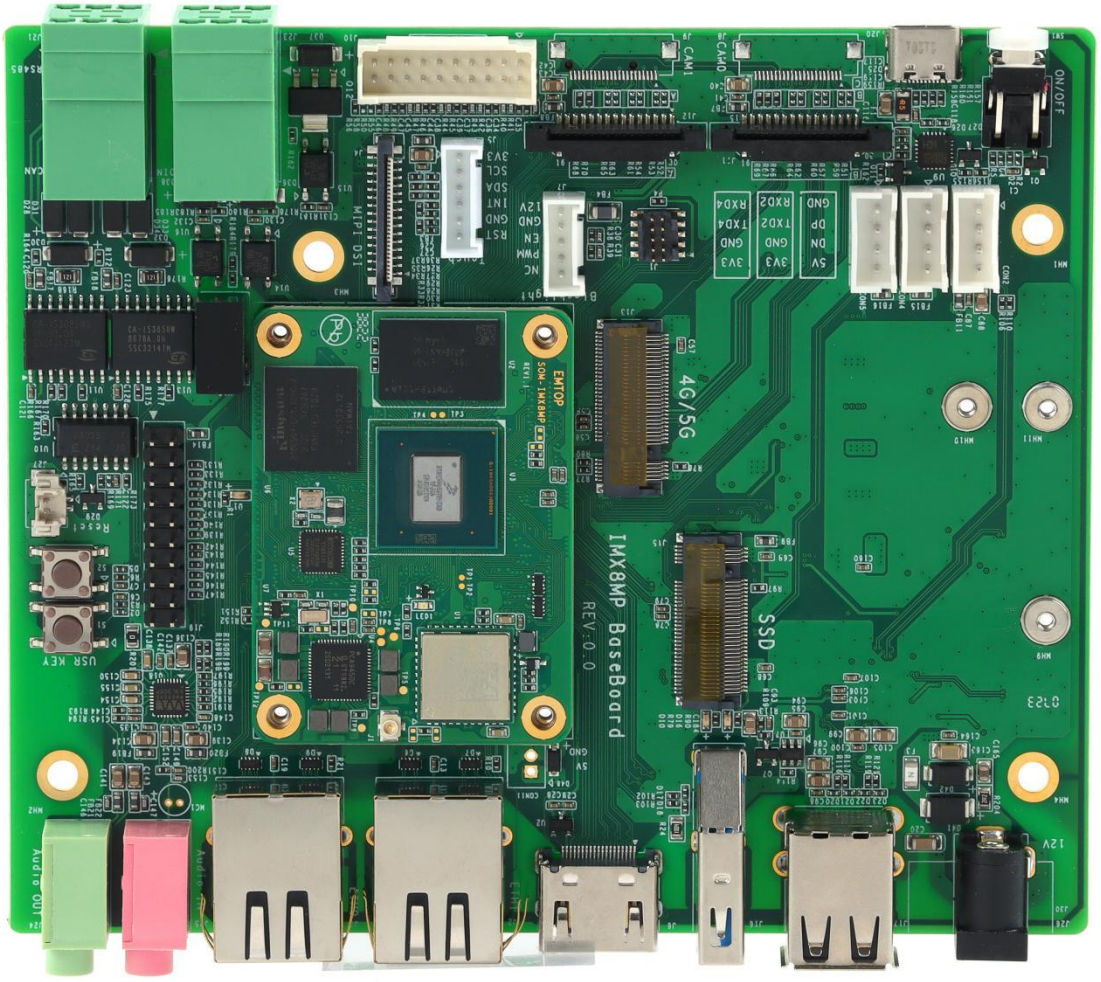
SBC-IMX8MP Specification



Revision History

Date	Revision	Change Details
2023/5/31	V1.0	First Released

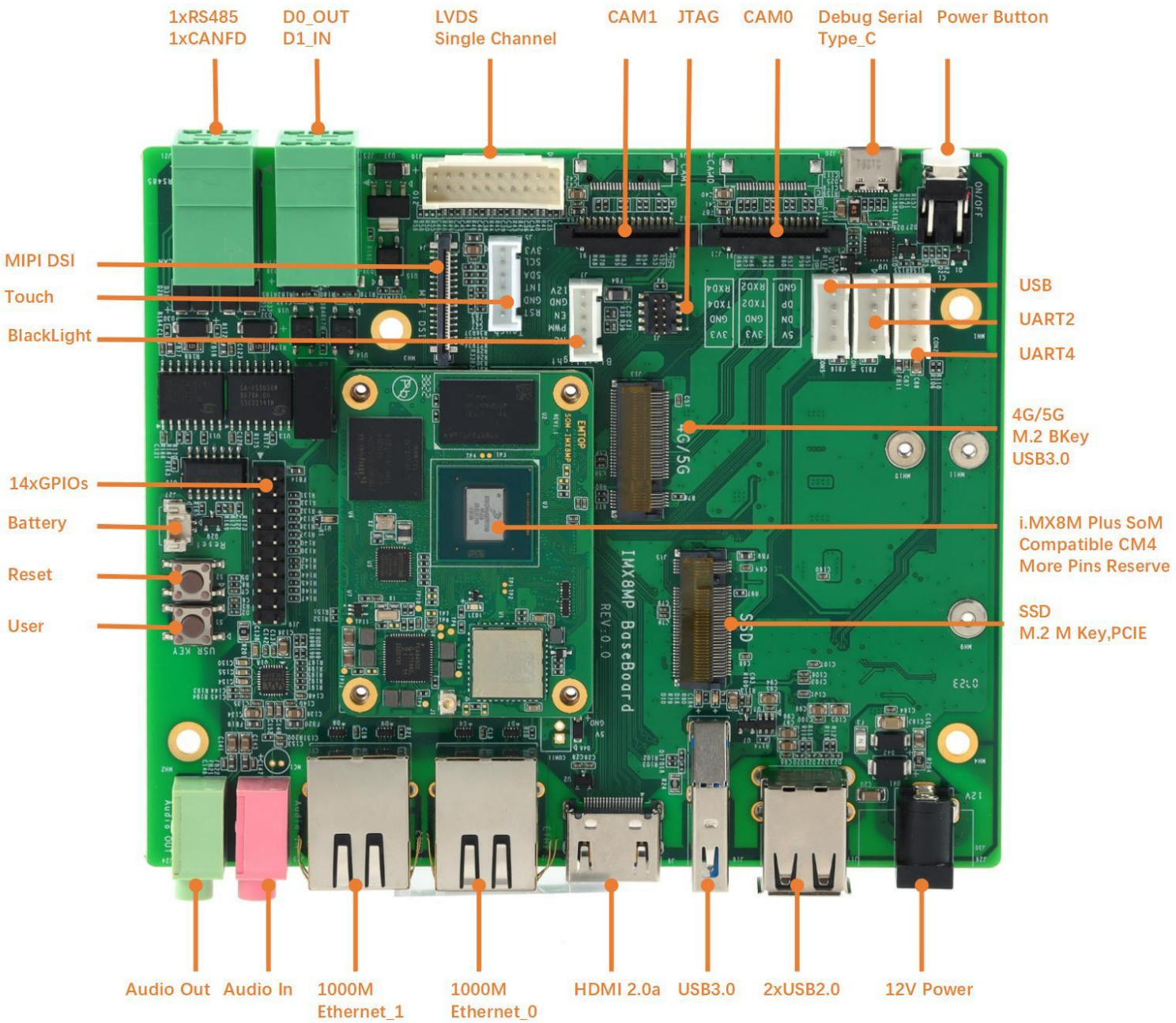
Overview:

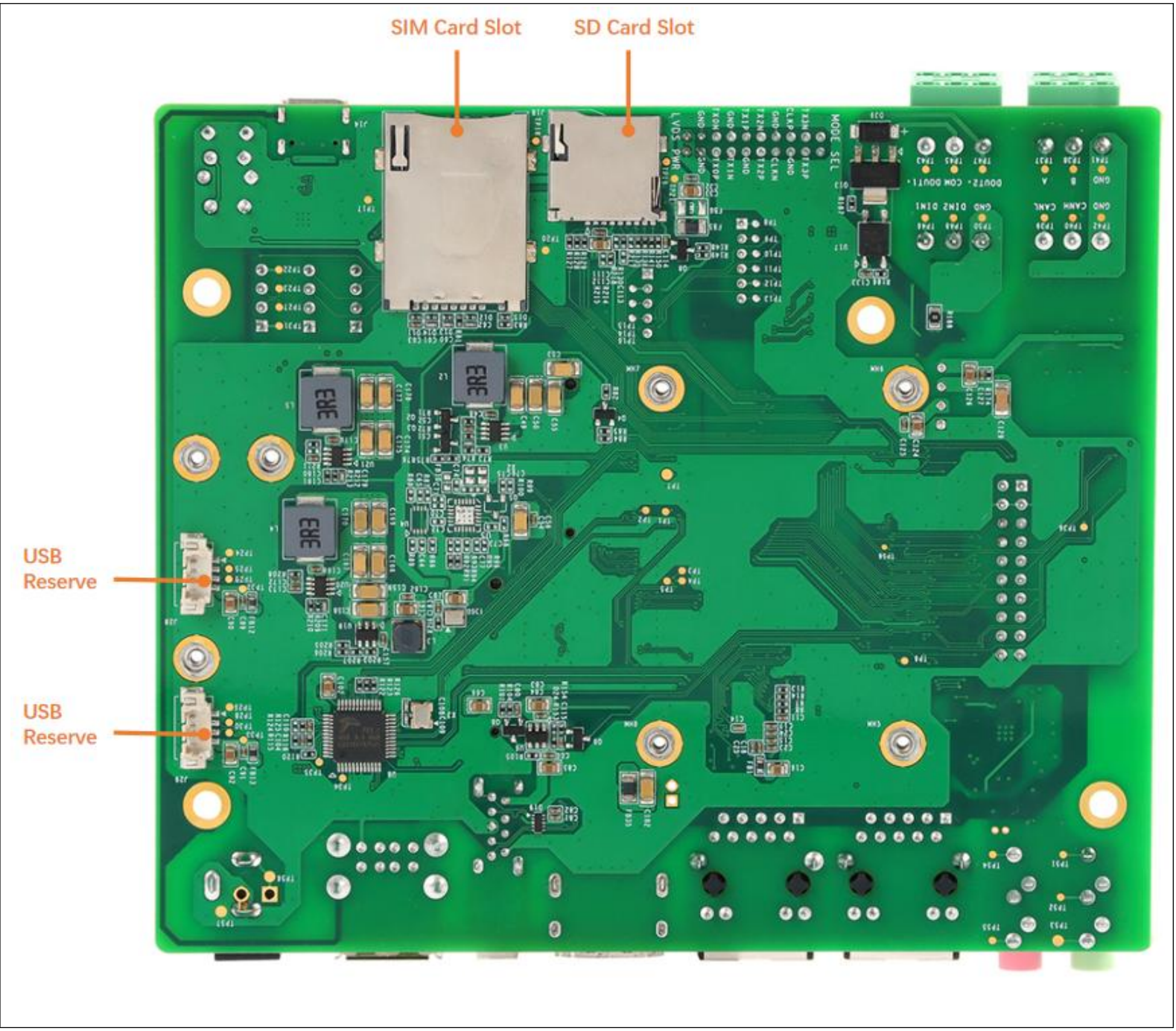
- The SBC-IMX8MP is Optimized for SOM-IMX8MP evaluation and software development, Including 1x SoM-IMX8MP And 1x Carrier Board, Implements industry standard interfaces and peripherals, designed as reference for customer's carrier-boards bring products to market faster, built to meet the needs of industry 4.0, IoTs, smart cities and multimedia.
- Based on quad core i.MX 8M Plus up to 1.8GHz with 2.3 TOPS NPU, support 2GB/3GB/4GB/8GB LPDDR4, 4-64GB EMMC.
- With complete software development including Yocto-LINUX-5.15.32 Wayland with Qt 6.3.1 and rich I/O ports is ready and capable for direct applications.
- Support 5G/SSD/LVDS/MIPI-Display with Touch/MIPI-CAMERA

Highlight Features

- NXP i.MX8M Plus with 4 core 1.8 GHz or 1.6GHz Cortex-A53 processors
  - One 800MHz Cortex-M7 for real time requirements
  - Integrated 2.3 Tops AI/ML Neural Processing Unit accelerating ML inferencing
  - Advanced multimedia capabilities include 1080p60 video encode and decode (including H.265, H.264), 3D/2D graphic acceleration, and multiple audio and voice functionalities
- 2x Gigabit network(1XTSN), 2.4GHz & 5GHz WIFI and Bluetooth 5.2
- 2x MIPI CSI, 1x MIPI-DSI, 1x HDMI1.4, 1x LVDS Single LANE
- 1x PCIE3.0, 2x USB 3.0 Host, 5x USB2.0(2xUSB2.0 Interface, 3xUSB2.0 Optional)
- 1x RS485/ 1x CANFD/ 14x GPIOs/ 2xDI/ 2xDO/ 2x TTL/1x Debug(USB To TTL)
- 1x RTC(External Battery)/ 1x I2C(For Touch)/ 1xPWM(For Backlight)
- 1x USER KEY/ 1x Reset Key/1x ON&OFF Key
- Support 5G M.2 3052 Module
- Support Rich Add On Module
  - 4G/5G/7 INCH MIPI Display/ OV5640 MIPI Camera/ USB Camera/ LVDS Display

Hardware Specification




SIM Card Slot
SD Card Slot
USB
Reserve
USB
Reserve

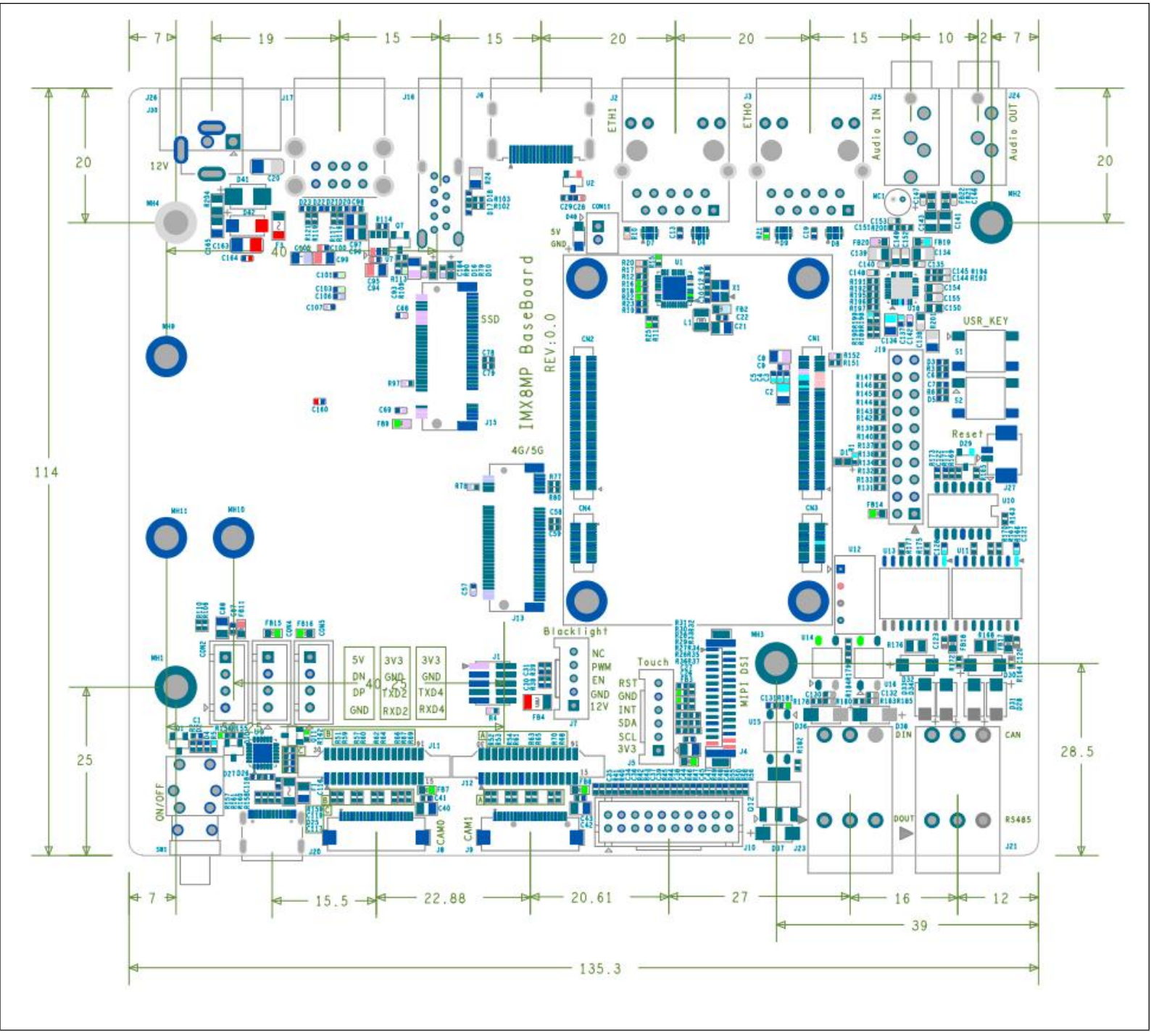
Specification listed for the SBC-IMX8MP Starter Kit:

SoM Unit	CPU(IMX8M Plus):	● 2x or 4x Cortex A53 up to 1.8GHz ● 1x Cortec M7 up to 800MHz ● 375 Mpixel/s HDR ISP ● GC7000UL with OpenCL and Vulkan support ● Video Decode and Encode ● Optional 2.3 TOP/s NPU
	Memory:	● Up to 8GB LPDDR4 RAM (2GB default)
	Storage:	● 4~64GB eMMC(16GB default)
	Connectivity:	● WiFi/BT Combo ● 2x 30Pin Double Row 0.4mm Pitch BTB ● 2x 100Pin Double Row 0.4mm Pitch BTB
	Power supply:	5V/2A typical
	Mechanical:	55*40mm
Carrier Board Unit	Connectivity:	● WiFi/BT Combo(on SOM) ● 2x GbE LAN port ● 1x RS485 ● 1x CANFD ● 2x TTL(Include Debug) ● 1x Debug ● 1x PCIe(M2 Key M) ● 1x I2C(For Touch), 1x PWM(For Backlight), 1x RTC(For Battery)
	I/O Interfaces:	● 14x GPIOs ● 2x DIN ● 2x DO
	USB:	● 2x USB2.0 host ● 1x USB3.0 host ● 1x M2 Key B(USB3.0)
	Display:	● 1x HDMI2.0a(1920 x 1080p60) ● 1x MIPI DSI ● 1x LVDS(single channel)
	Media:	● 2x MIPI CSI ● Audio IN/Out
	Power supply:	● 12V/2A typical
	Mechanical:	● 135.3x113mm

Software Specification

Names		Note	Formats
BOOTLOADER	U-BOOT	MMC/SD	Source Code
		FAT	Source Code
		NET	Source Code
KERNEL	LINUX-5.15.32	Support JFFS2/EXT4/FAT/NFS various of file system	Source Code
DEVICE DRIVER	PMIC	PCA9450CHN driver	Source Code
	SERIAL	Serials driver	Source Code
	RTC	Hardware RTC driver	Source Code
	NET	10/100M/1Gbps Ethernet driver	Source Code
	CAN	CAN bus driver	Source Code
	SPI	SPI driver	Source Code
	MIPI-DSI	MIPI-DSI driver	Source Code
	HDMI	HDMI driver	Source Code
	I2C	I2C driver	Source Code
	LVDS	LCD driver	Source Code
	TOUCH SCREEN	I2C and TSC touch panel driver	Source Code
	MMC/SD	MMC/SD controller driver	Source Code
	USB HOST	USB HOST driver	Source Code
	AUDIO	WM8904 Audio driver(supports recording & playback)	Source Code
	BUTTON	GPIO button driver	Source Code
	LED	LED driver	Source Code
	BUZZER	Buzzer driver	Source Code
	CAMERA	CSI Camera driver	Source Code
	PCIe	PCIe interface driver	Source Code
ROOTFS	YOCTO	Wayland with Qt 6.3.1	Image

Mechanical Information



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ADD On Module

Item	Picture	Description
LCD-MIPI7C		7 INCH MIPI Dislay Support Resolution 1024*600, Capacity Touch.
LCD-LVDS13		13.1 INCH LVDS Display
5G Module		M.2 M Key 5G Module
4G Module		M.2 M Key 4G Module

CAM-MIPI5640		**500MP MIPI Camera With Sensor OV5640**
CAM-MIPI219		**800MP MIPI Camera With Sensor IMX219**
CAM-OV5647		**500MP MIPI Camera With Sensor OV5647**

512GB SSD		512GB SLC Cache 3D NAND TLC NVMe M.2 2280 PCIe Gen 3x4 Internal SSD Solid State Hard Drive Memory Card Read/Write Speed up to 3500/2200MB/s for Laptop PC Desktop ARM SBC Boards
1TGB SSD		1T555555GB SLC Cache 3D NAND TLC NVMe M.2 2280 PCIe Gen 3x4 Internal SSD Solid State Hard Drive Memory Card Read/Write Speed up to 3500/2200MB/s for Laptop PC Desktop ARM SBC Boards

Order Information

Item Name	LPDDR4	EMMC	WIFI/BT	Price@1k	Temp
SBC-IMX8MP-L216CW	2GB	16GB	Yes	USD139	0°C-70°C
SBC-IMX8MP-L216CW-I	2GB	16GB	Yes	USD169	-45°C-85°C

LCD-MIPI7C	ADD On Boards	USD59
LCD-LVDS13	ADD On Boards	USD49
5G Module	ADD On Boards	USD199
4G Module	ADD On Boards	USD59
CAM-MIPI5640	ADD On Boards	USD49
CAM-MIPI219	ADD On Boards	USD9.9
CAM-OV5647	ADD On Boards	USD9.9
512GB SSD	ADD On Boards	USD22
1TGB SSD	ADD On Boards	USD45

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Packing List:

- 1xSOM-IMX8MP---System On Module
- 1xCarrier Board---Carrier board of SBC-IMX8MP Fixed with SoM
- 1x12V@2A Power Adapter
- 1xUSB Type-C Cable--For serial Debug
- 1xethernet Cable--For SSH Debug
- 1xQuick Start Guide

Contact Information

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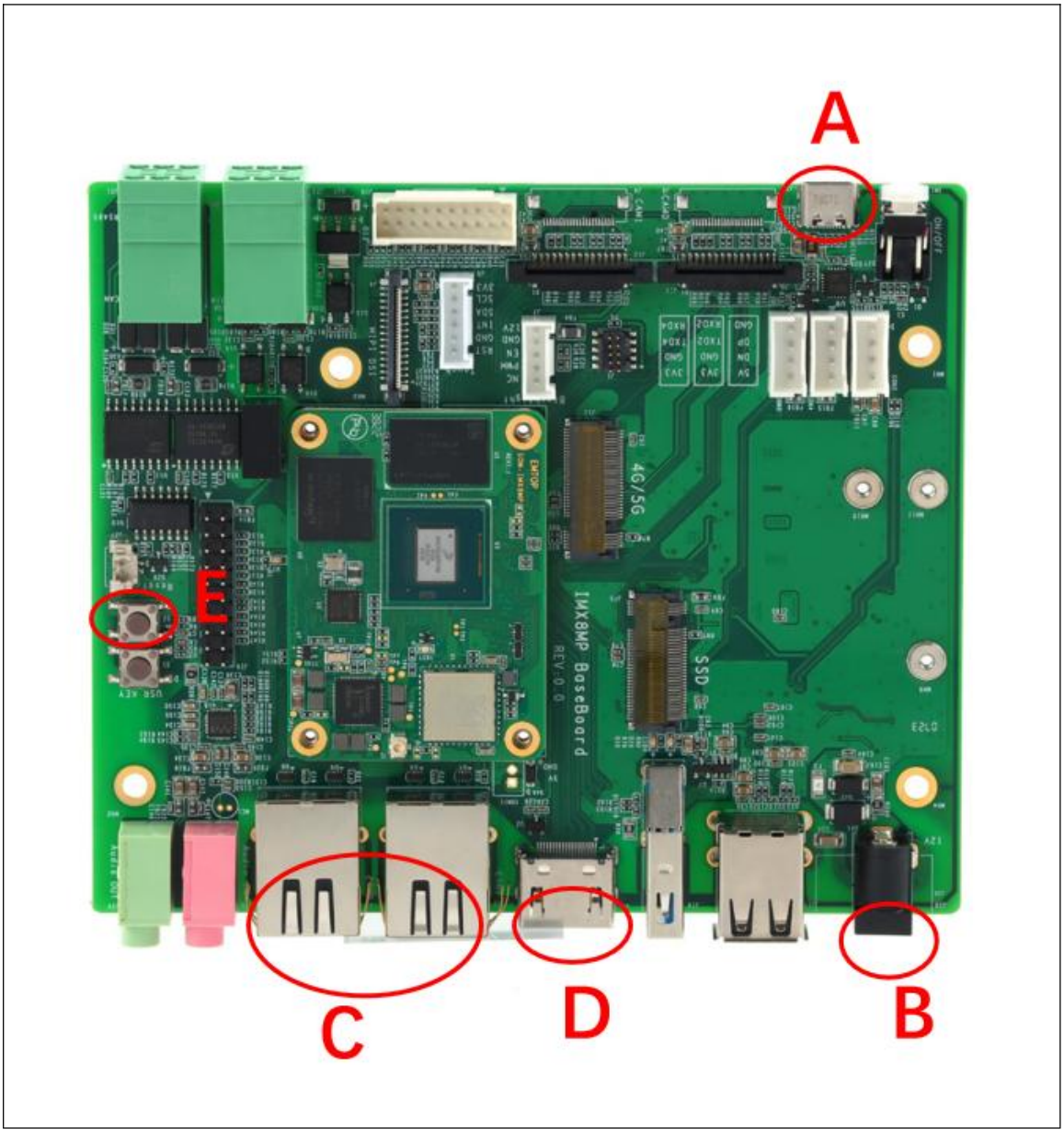
You can download drivers or serial/ssh Tools from our github link:
https://github.com/EMTOP-TECH/SOM-IMX8MP

Appendix Quick Start Guide

SBC-IMX8MP Support SSH or Serial to get debug infomation

- 1xSBC-IMX8MP
- 1x12V@2A Power Adapter
- 1xUSB Type C Cable (Connect to Serial Interface)
- PC(Windows with Putty or other serial /SSH Tool)
- (Option) 1xHDMI Display, 1xEthernet Cable

Connection



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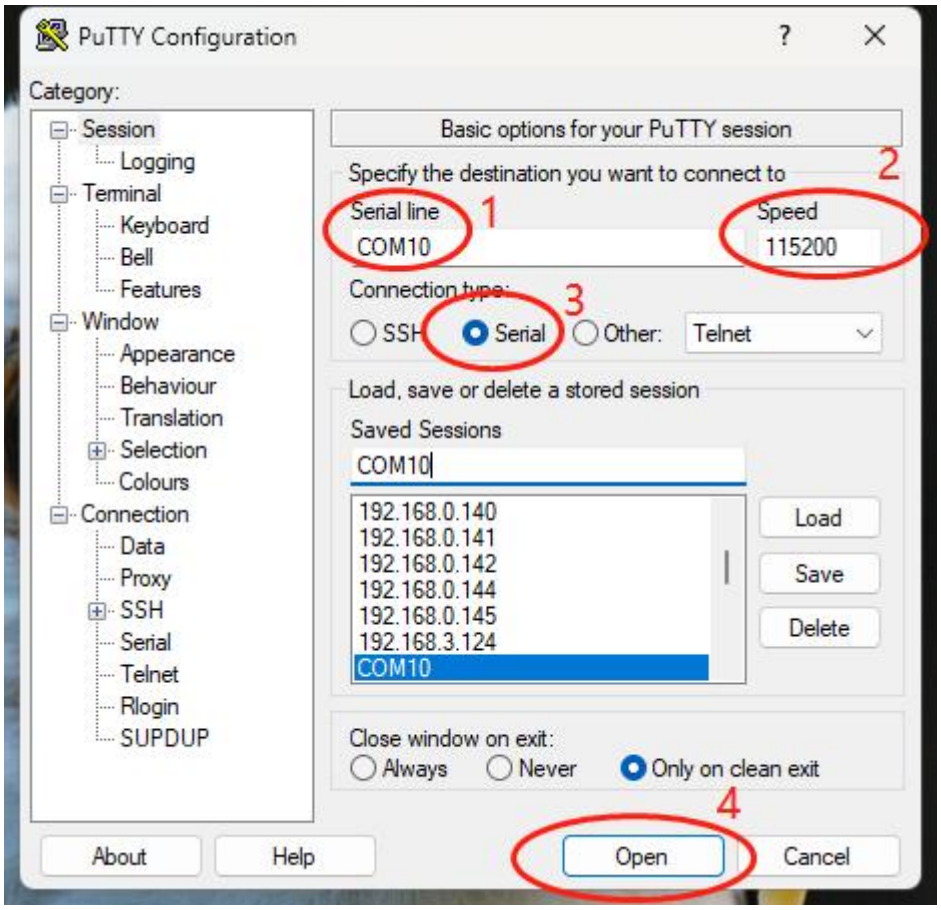
A	Debug Serial, Type-C Interface, Connector To your PC, Drivers will auto install.
B	12V@2A Power Adapter
C	Option, Connect Ethernet cable to your router if you use SSH
D	Option, Connect to your HDMI display
E	If you wish to boot from tf card, Press S2 Reset before Power up

Debug Information From Serial



Make A Bootable TF Card

- Get from **Image** directory named as **IMX8MP-BASEBOARD-Yocto-SD-REVXX.img.xz**,unxz it and get the raw image **IMX8MP-BASEBOARD-Yocto-SD-REVXX.img**.
- If you work under Windows system, please run **Tools/win32diskimager** to write the **IMX8MP-BASEBOARD-Yocto-SD-REVXX.img** into TF Card.
- If you work under Linux system,please use **dd** command to write it into TF Card.

Image Name	Display Supported
IMX8MP-BASEBOARD-Yocto-SD-REVXX.img	HDMI