EC-IMX8MP Specification

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Revision History

Date	Revision	Change Details
2023/06/02	V1.0	First Released

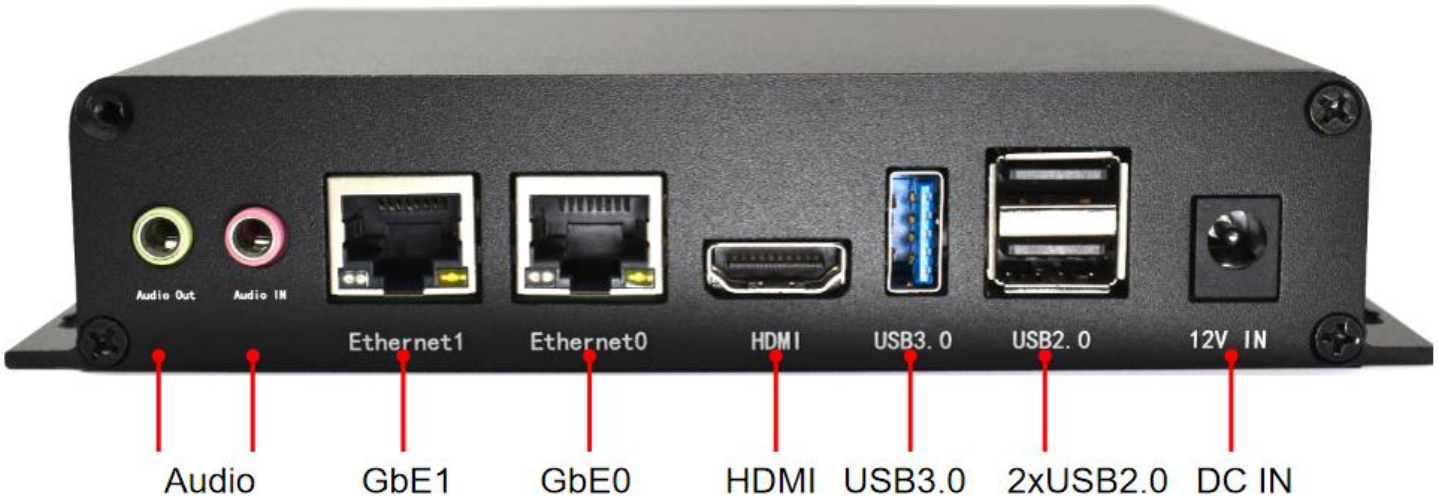
Overview:

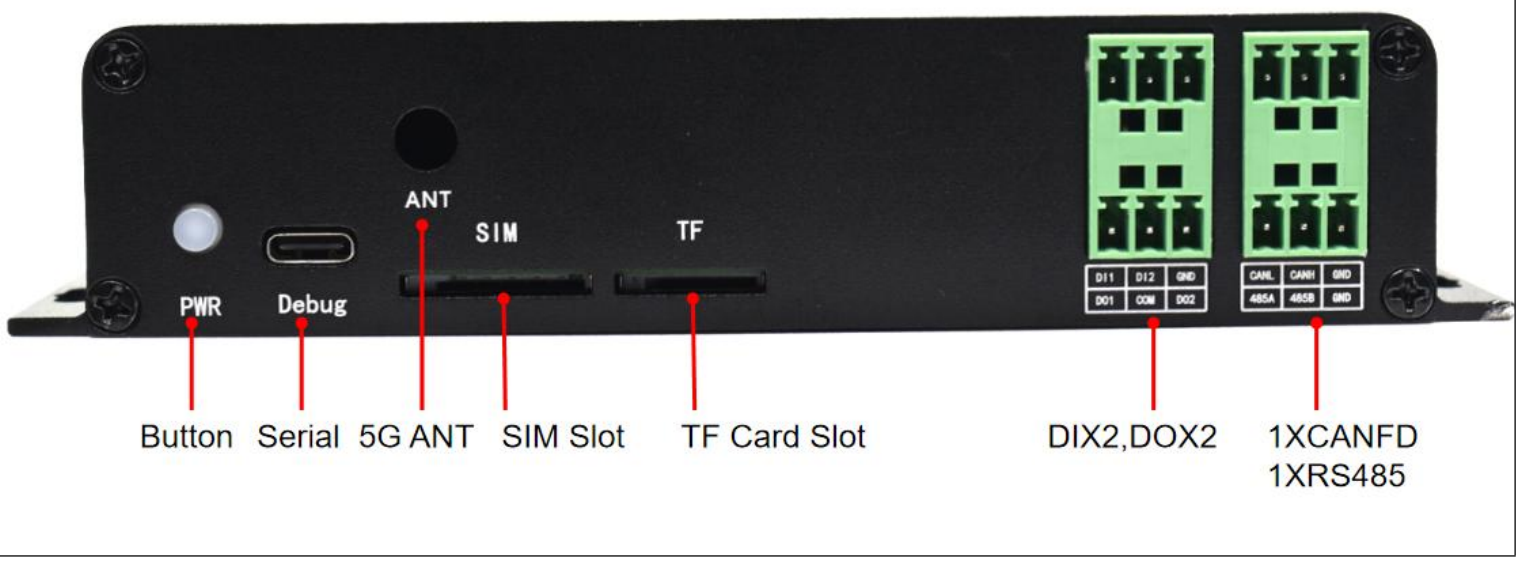
- EC-8MP Edge Computer is composed of SOM-IMX8MP, Carrier Board and the steel & aluminum enclosure.
- Engineered for industrial applications, it has wide operating temperature range from -20℃ to 70℃, and guarantees more than 50000 hours of MTBF.
- It's a compact box pc that has strong connections, comes with dual Gigabit network, 2.4GHz & 5GHz Wi-Fi/ Bluetooth 5.1 ,1xM.2 B key (USB3.0) for 4G 2242 module/5G 3052 Modul, 1xM.2 key M (PCIE3.0) for 2242 SSD expansion
- 1x USB3.0, 2x USB2.0, 1x HDMI, 1x Audio in, 1x Audio out, 2x DI,2x DO, 1x RS485, 1x CANFD, 1x Debug, 1x ON&OFF button

Main Features

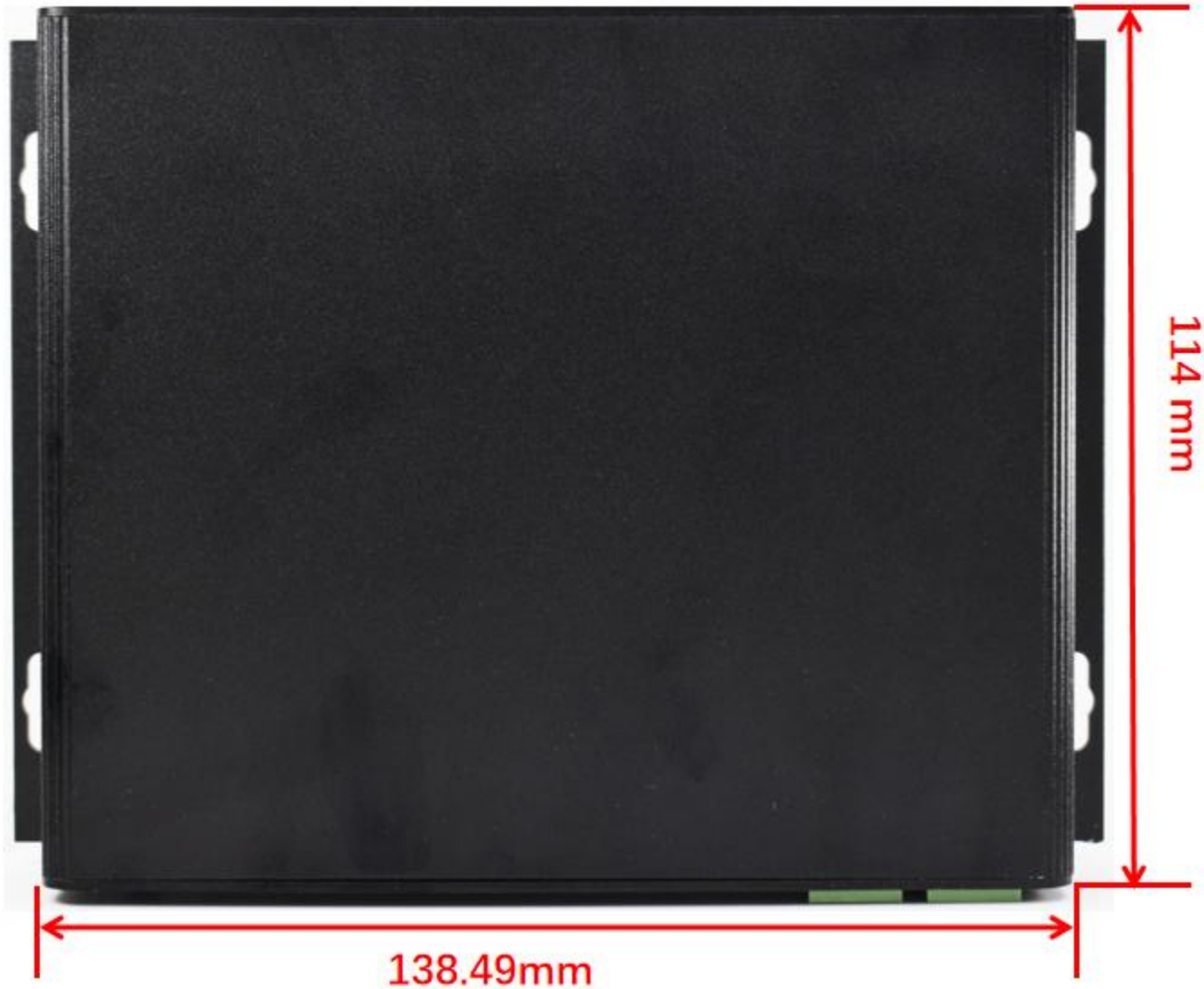
- SoM Unit:
  - CPU
    - 2x or 4x Cortex A53 up to 1.8GHz
    - 1x Cortex M7 up to 800MHz
    - 375 Mpixel/s HDR ISP
    - GC7000UL with OpenCL and Vulkan support
    - Video Decode and Encode
    - Optional 2.3 TOP/s NPU
  - Memory: Up to 8GB LPDDR4 RAM (2GB default)
  - Storage: 4~64GB eMMC (16GB default)
- Support boot from eMMC, Micro SD;
- Including dual Gigabit network, 2.4GHz & 5GHz Wi-Fi, Bluetooth 5.1;
- Support Yocto LINUX-5.15.32,Provide Uboot/kernel/filesystem/Driver source code;
- Rich External I/O
  - 1x USB3.0, 2x USB2.0,1x RS485, 1x Debug, 1x CANFD, 2x DI, 2x DO
  - 1x HDMI, 1x Audio IN, 1XAudio Out
  - 1x SIM Card Slot, 1x TF Card Slot, 1x ANT
  - 2x Gigabit network, 1x ON/OFF Button
- Rich Internal I/O
  - 1x M.2 B Key (USB3.0) for 5G module/4G Module/network card
  - 1x M.2 M Key (PCIE) For 2242 SSD;
  - 2x TTL, 14x PIN GPIOs, 1x LVDS, 3xUSB2.0, 1xIIC, 1x RTC, 2x button

I/O Interfaces and Dimension:





EC-IMX8MP
NXP i.MX 8M Plus
Quad Core Cortex-A53 1.8GHZ/1.6GHZ



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Specification

System Unit	
CPU Performance	■ 2x or 4x Cortex A53 up to 1.8GHz ■ 1x Cortex 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
Boot	Support boot from eMMC/ Micro SD /SPI Nor Flash
OS	Yocto-LINUX-5.15.32, UBoot/ Kernel/ Driver/ Filesystem/ Open Source
Memory	Onboard 2GB LPDDR4 (1GB/4GB/6GB/8GB optional)
Storage	16GB eMMC (8GB/16GB/32GB/64GB/128GB/256GB optional)
SSD	512GB/1TB Optional
Ethernet/Wireless	
Ethernet	2 x Independent MAC Gigabit RJ45 port
WIFI & BT	2.4GHz & 5GHz Wi-Fi/ Bluetooth 5.0, Support external SMA antenna
4G/5G	M.2 B Key (USB3.0, 2242 or 3052 Module)
Video & Audio	
Display	1x HDMI output, Type-A female socket, Single Channel LVDS(Internal)
Audio	Audio In/Out ,3.5mm socket
Expansion	
DC IN	1x Power Jack for 5.5mm x 2.1mm plug
USB	1x USB3.0 Host, 2 x USB2.0 Host
Serial Ports	1x Debug, 1x RS485, 1x CAN
GPIO	2x Isolated DI, 2x Isolated DO
Internal I/O	

SIM Slot	● 1x Built-in Micro SIM slot, push pop-up slot
SD Slot	● 1x Built-in Micro SD slot, push pop-up slot
M.2 B Key(USB3.0)	● Support 4G/5G module such as Quectel 4G module, built-in SIM card, etc.
M.2 M Key(PCIE)	● Support other expansion such as network card, SATA and serial port
Camera	● Dual MIPI-CSI 2Lane
Others	● 1xRTC(For Battery), 1x I2C(For Touch), 1x PWM(For Backlight)
Power Supply	
Power Input	DC 12V power input for default
Mechanical & Environmental	
Enclosure Material	Steel and aluminum alloy
Dimension	138.49(L)mm x114(W)mm x 32(H)mm
Operating Temp.	-20℃~+70℃ (industrial grade)
Relative Humidity	10%~90%

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

Order Information

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

Packing List:

- 1x EC-IMX8MP Edge Computer
- 1x 12V@2A Power Adapter
- 1x USB Type-C Cable--For serial Debug
- 1x ethernet Cable--For SSH Debug
- 1x Quick Start Guide

Contact Information

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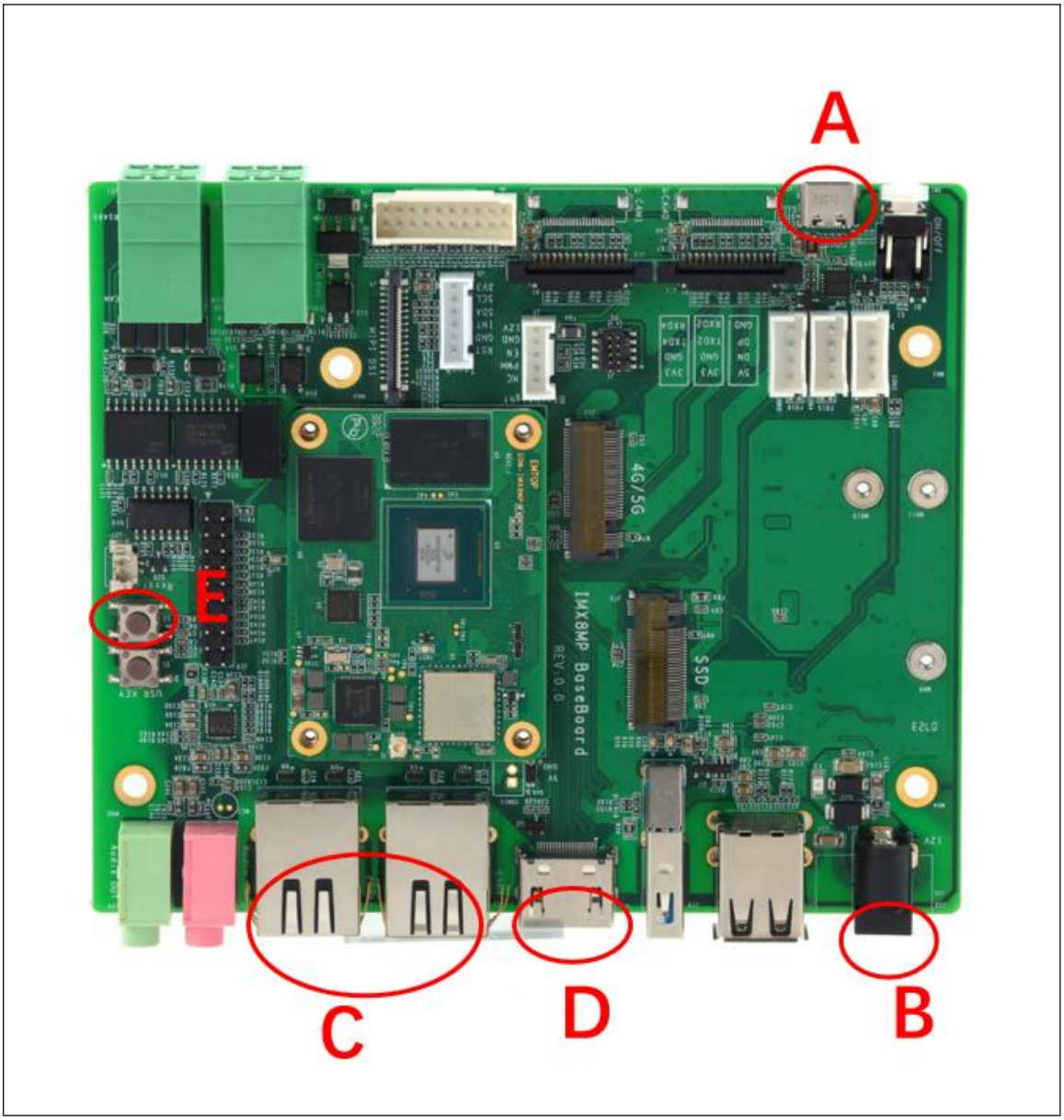
You can download drivers or serial/ssh Tools from our github link:
https://github.com/EMTOP-TECH/SOM-IMX8MP

Appendix Quick Start Guide

SBC-IMX8MP Support SSH or Serial to get debug information

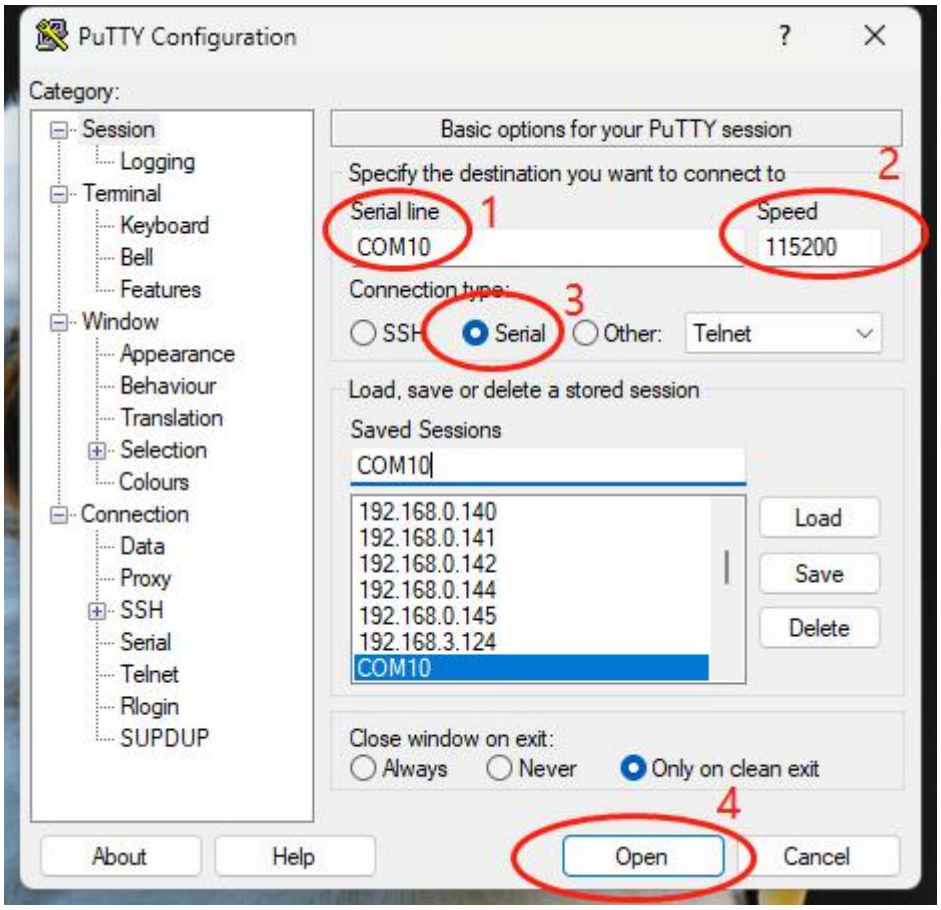
- 1x 12V@2A Power Adapter Must
- 1x USB Type C Cable (Connect to Serial Interface On Board, phone charge Cable OK) Must
- PC (Windows with Putty or other serial /SSH Tool)
- (Option) 1x HDMI Display
- (Option)1x Ethernet Cable

Connection



A	Debug Serial, Type-C Interface, Connector To your PC, Drivers will auto install.
B	12V@2A Power Adapter
C	Optional, Connect Ethernet cable to your router if you use SSH
D	Optional, 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