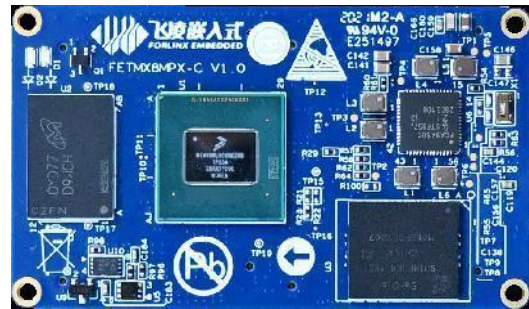


FETMX8MP-C SoM

FETMX8MP-C System on Module (SoM) is powered by NXP i.MX8M Plus a quad-core Cortex-A53 featuring SoC at speed up to 1.6GHz and integrated NPU up to 2.3 TOPS. It provides additional computing resources and peripherals such as 2x USB3.0, 1x PCIe3.0, 2x Gigabit Ethernet, 2x CAN-FD and other other high-speed interfaces. This advanced SoM targets applications on 5G networking, HD video processing, dual-band WiFi and industrial automation, etc.

Features:

- Hybrid processor, clock at up to 1.6GHz;
- Dual Gigabit Ethernet with one available for TSN;
- Advanced multi-media capability, supports 3D/ 2D;
- Built-in NPU up to 2.3 TOPS;
- The vision engine is composed of two camera inputs and a HDR-capable ISP;



4x A53+ 1x M7	1.6GHz	2.3TOPS
Architecture	Clock	NPU
CAN-FD	TSN	-40~85°C
2-	Ethernet	Operating

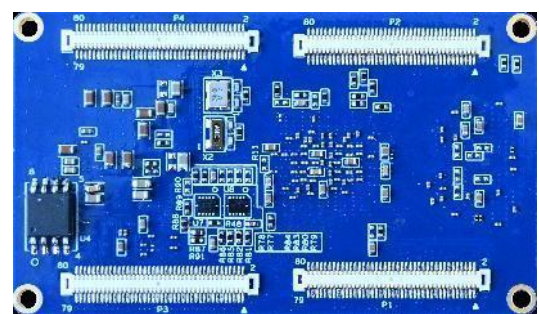
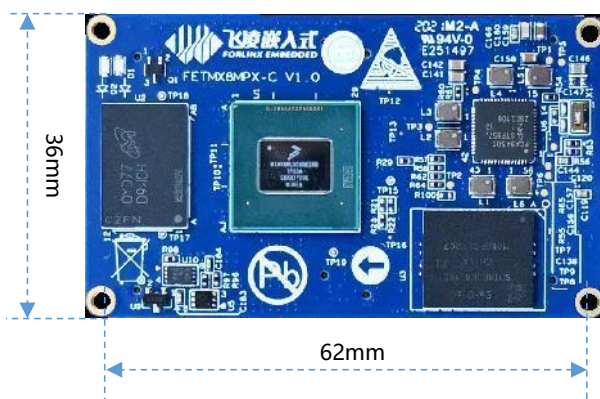
SoM features :

CPU	<p>NXP i.MX8MPQ</p> <p>CPU: quad-core Cortex-A53@ 1.6GHz+ single-core Cortex-M7@ 800MHz</p> <p>NPU: 2.3TOP</p> <p>GPU: 3D/ 2D, supports OpenGL ES 1.1, 2.0, 3.0, OpenCL 1.2, Vulkan</p> <p>VPU:</p> <p>Hard decode:</p> <ul style="list-style-type: none"> •HEVC/H.265, VP9, VP8, AVC/H.264: up to 1080p@60fps <p>Hard encode:</p> <ul style="list-style-type: none"> •H.265/HEVC, H.264/AVC: up to 1080p@60fps
RAM	1GB/ 2GB/4GB(standard : 4GB)
ROM	8GB/ 16GB eMMC(standard : 16GB)
Power input	DC 5V
Operating temp	-40~85°C
Package	Board-to-board connector(4*80-pin, 0.5mm pitch)

■ SoM peripherals

Interface	QTY	Spec.
LVDS	1	<ul style="list-style-type: none"> • single 4 lanes, supports 720@60FPS ; • dual async channels(8 data, 2 clocks), supports 1920x 1200@60FPS;
HDMI	1	HDMI2.0a, up to 4K@30FPS
MIPI-DSI	1	• 1x 4-lane MIPI-DSI up to 1.5Gbps;
MIPI-CSI	2	<ul style="list-style-type: none"> • 2x 4-lane MIPI-CSI • single camera working mode up to 12MP@30FPS or 4K@45FPS; • dual-camera working mode with each one up to 1080@30FPS
Ethernet	2	2x RGMII, one enabled with TSN
UART	4	Up to 4Mbps
CAN	2	Support both CAN-FD and CAN2.0 B
USB	2	<ul style="list-style-type: none"> • 2x USB3.0/2.0 controller integrated with PHY; • Host mode: Super-speed(5Gbit/s), high-speed(480Mbit/s), full-speed(12Mbit/s), low-speed(1.5Mbit/s); • Device mode: SS/ HS/ FS
PCIe	1	1x PCIe3.0
SD	2	<ul style="list-style-type: none"> • SD2,4-bit, supports 1.8/ 3.3V switching • SD1, 8-bit, only available for 1.8V
QSPI	1	Circuited to 16MB NorFlash on SoM
I2C	5	<ul style="list-style-type: none"> • standard mode: up to 100Kbit/s; • fast speed mode: up to 400Kbit/s
SAI	6	Supports I2S, AC97, tDM and codec/DSP
SPDIF	1	
PWM	4	16-bit counter
JTAG	1	For M core debugging

■ Exterior and dimensions:



Height diagram after installation

* Note: tolerance $\pm 0.2\text{mm}$

■ OS:

OS	Linux5.4.70, Android11.0
Firmware installation	<ul style="list-style-type: none"> •TF card •USB OTG

■ Driver list:

	Interface	Function	Chipset
Linux5.4.7 Driver List	SDIO	WiFi-BT	AW-CM358SM
	USB	USB camera	C270
	USB	4G	EC20/ EC25
	USB	5G	RM500U, RM500Q
	USB	USB to fast Ethernet	FIT-USB-100M V1.0
	I2S	Audio	WM8960
	I2C	RTC	PCF8563T
	MIPI-CSI	Camera	Basler daA3840_30mc, 4K
	MIPI-CSI	Camera	OV15645, 1080p
	Ethernet	PCIe to Ethernet	FIT-RTL8111F_PCIE_V1.0
	MIPI-DSI	7''	FIT-LCD7.0C V2.1 1024x600
	LVDS	10.1''	FIT_LVDS10.1C_V2.0 2380x800
Android11.0 Driver List	Interface	Function	Chipset
	SDIO	WiFi-BT	AW-CM358SM
	USB	USB camera	C270
	USB	4G	EC20/ EC25
	USB	5G	RM500U, RM500Q
	USB	USB to fast Ethernet	FIT-USB-100M V1.0
	I2S	Audio	WM8960
	RGMII	Ethernet	PHY AR8031/YT8521
	RS232	TTL to RS232	FIT-RS232-II V1.1
	RS485	TTL to RS485	FIT-485 V1.1
	I2C	RTC	PCF8563T
	MIPI-CSI	Camera	Basler daA3840_30mc, 4K
	MIPI-CSI	Camera	OV15645, 1080p
	MIPI-DSI	7''	FIT-LCD7.0C V2.1 1024x600
LVDS	10.1''	FIT_LVDS10.1C_V2.0 2380x800	

■ Provided technical files

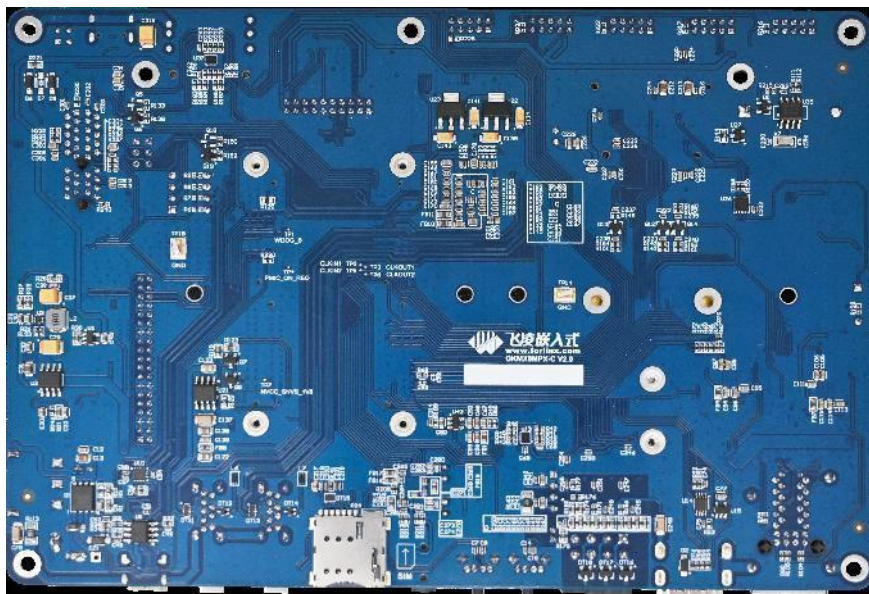
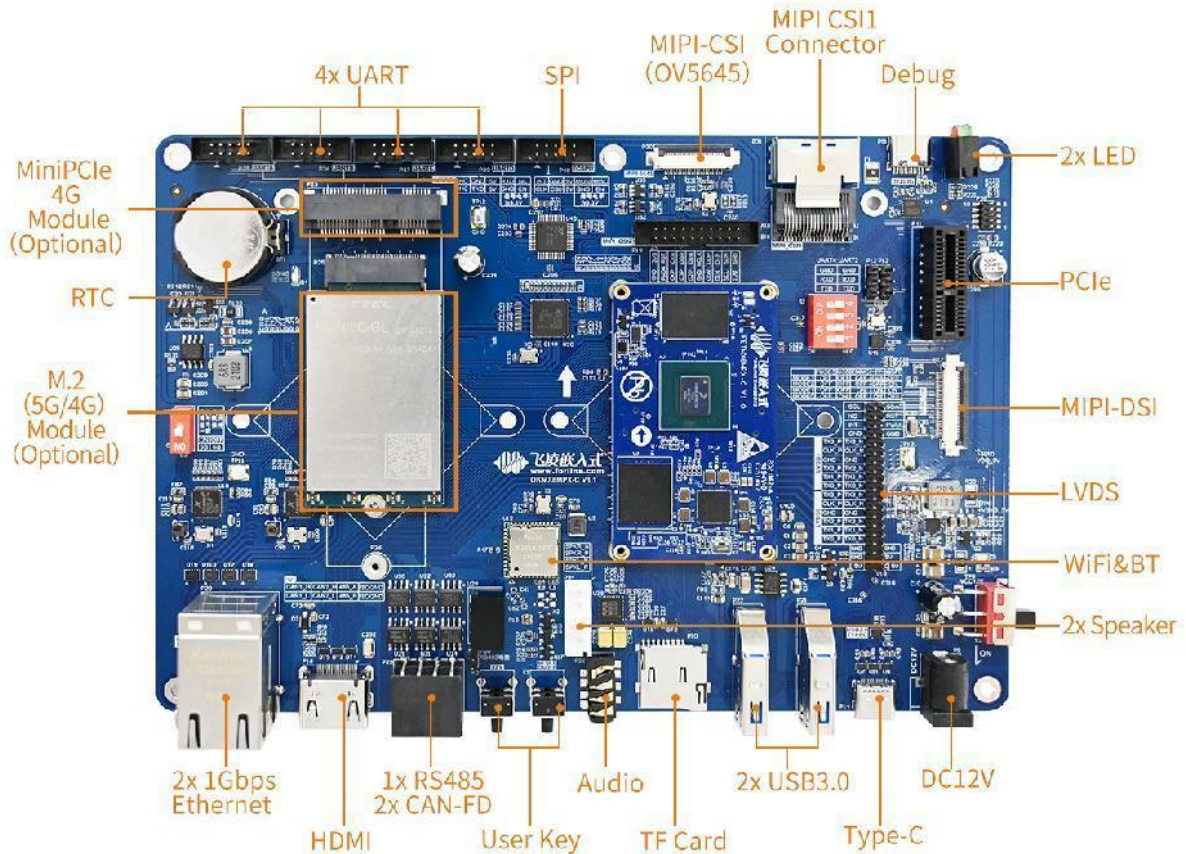
Firmware	User manual, compiling guideline, kernel source code, file system, OS image, VM ubuntu image, SD card tool, USB OTG tool, QT demos and source code
Hardware	User manual, carrier board schematic, carrier board PCB(AD), datasheet, carrier board and SoM DXF files, pinmux sheet



Order options:

Model	Core number	Clock	RAM	Flash	Working temp	Status
FETMX8MPQ-C+161GOE16M8GIB10:A1	4x A53+ 1x M7	A53@1.6GHz	1GB	8GB	-40~85°C	Mass production
FETMX8MPQ-C+162GOE16M16GID10:A1	4x A53+ 1x M7	A53@1.6GHz	2GB	16GB	-40~85°C	Mass production
FETMX8MPQ-C+164GOE16M16GIA10:A1	4x A53+ 1x M7	A53@1.6GHz	4GB	16GB	-40~85°C	Mass production

Development board/ kit



■ Carrier board features:

Interface	QTY	Spec.
MIPI-DSI	1	A FPC connector is available on carrier board for 4-lane MIPI-DSI applicable for Forlinx 7'' MIPI-DSI module with resolution of 1024x 600@30FPS
LVDS	1	8 data, 2clocks, supports 1920x1200@60fps
HDMI 2.0	1	HDMI2.0a up to 4K@30FPS; HDMI2.1 eARC
Ethernet	2	10/100/1000Mbps, RJ45, one is available for TSN
4G	1	Alternative with 5G, supports EC20/ EC25
5G	1	Alternative with 4G, supports RM500U/ RM500Q
WiFi	1	AW-CM358M IEEE 802.11 a/b/g/n/ac, dual-band, rating up to 433.3Mbps
BT		BT5, up to 3Mbps
UART	4	4x UART converted by USB available on carrier board via box header
CAN	2	Isolated CAN supports both CAN2.0B and CAN-FD
RS485	1	Isolated
Audio	1	WM8960, MIC& Phone integrated to one 3.5mm jack, supports 2x 1w8Ω speaker via XH2.54 header
I2C	3	On carrier board for audio, RTC and camera
ECSPI	1	2×5 2.0mm header
USB3.0 Type-C	1	Supports DFP, UFP and DRP
USB3.0	2	USB Type-A, only for Host
PCIe	1	PCIex1, supports PCI Express Gen3
MIPI-CSI	2	CSI1: daA3840-30mc-IMX8MP-EVK, 3840X2160; CSI2: OV5645, up to 2592X1944
TF card	1	UHS-I TF card, up to 104MB/s
PWM	2	For display backlight control
RTC	1	Recommended battery CR203
Key	4	Power key, reset and two user keys
LED	2	For user's definition, red and green
DEBUG UART	2	Cortex-A53 and M7 debug port, default baud rate 115200
JTAG	1	2×5 2.0mm header on carrier board