



NXP i.MX 8M Plus Computer Module

focuses on machine learning and vision, advanced multimedia, and industrial automation with high reliability.

Modern System on Module form factor

Up to four Cortex-A53 1.8 GHz processors

Cortex-M7 processor with speeds up to 800 MHz

Neural Processing Unit (NPU)

Image Signal Processor (ISP)

NXP i.MX 8M Plus applications processor

Dual band 2.4/5 GHz 2x2 WiFi 5 (802.11ac) + Bluetooth 5.3

DESCRIPTIONS

The system is an open-frame embedded TFT LCD touch module based on the NXP i.MX 8M Plus processor. It integrates a high-resolution TFT LCD panel, projected capacitive touch panel, and a powerful single board computer, with an optional Hailo-8L AI accelerator to support edge AI inference and vision-based applications. It provides a wide range of industrial I/O interfaces including USB 3.0 (Host), USB 2.0 (Host), USB 2.0 (OTG), RS-232C, CAN, GPIO, Gigabit Ethernet, Wi-Fi (2.4GHz / 5GHz), and BLE 5.x, enabling flexible system integration and peripheral expansion. The single board computer is optimized for industrial, medical, and smart device applications. Running Debian 12 (Bookworm) with the Qt 5.15 GUI framework, the platform offers reliable performance, hardware-accelerated graphics, and scalable software architecture for advanced embedded systems.

	NXL070HR1	NXM101HR3	NXL116HR4	NXL121HR2	NXE133HR5	NXE156HR5	NXE215HR5	CUSTOM
Size	7.0"	10.1"	11.6"	12.1"	13.3"	15.6"	21.5"	
CPU	NXP i.MX 8M Plus/1.8GHz							
Core	Cortex-A53 Quad-Core @ 1.8GHz							
	Cortex-M7 processor with speeds up to 800 MHz							
AI	NPU (Up to 2.3 TOPS) / Dual ISP							
Resolution	1024 x 600	1280 x 800	1366 x 768	1024 x 768	1920 x 1080	1920 x 1080	1920 x 1080	
Brightness	300~500cd/m ² , optional							
Type of touch	Resistive or capacitive							
LCD viewing	θL: 85°, θR: 85°, θT: 85°, θB: 85°, dependent on LCD							
Contrast ratio	800:1, optional							
eMMC memory	32GB							
RAM memory	8GB LPDDR4							
Camera	Dual MIPI-CSI camera							
Video interface	LVDS	MIPI	LVDS	LVDS	eDP	eDP	eDP	
	Vivante GC7000UL GPU, HDMI							
	2D Vivante GC520L / 3D Vivante GC7000UL							
Audio interface	I2S							
Interfaces	USB 3.0 (HOST), USB 2.0 (HOST), USB 2.0 (OTG), RS-232C, GPIO, Ethernet, WiFi (2.4GHz, 5.0GHz), BLE 5.x, CAN							
Micro SD	1							
Speaker	2W / Mono with output level selection							
RTC	Rechargeable back up battery							
GUI	Qt 5.15							
OS	Debian 12							

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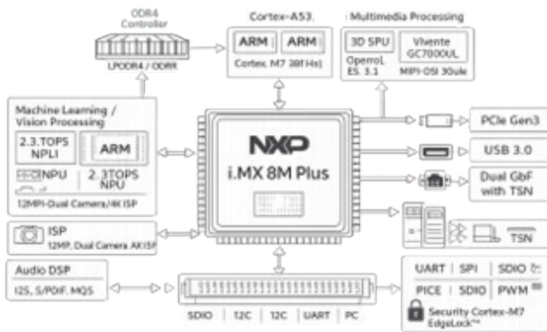
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SINGLE BOARD COMPUTER

The NXP i.MX 8M Plus is an advanced application processor designed for industrial, medical, and edge AI environments that require both high computing performance and deterministic real-time control. It integrates a quad-core Arm **Cortex-A53 CPU** operating at up to 1.8 GHz, together with a **Cortex-M7** core dedicated to real-time control and low-latency processing, all within a single SoC architecture.

This heterogeneous multi-core architecture enables the processor to simultaneously manage high-level application workloads and time-critical control tasks without resource contention. As a result, it is well suited for complex and mixed-workload environments such as medical devices, industrial HMI systems, smart kiosks, AI-enabled diagnostic equipment, and factory automation systems, where both graphical performance and precise control are required.

In addition, the i.MX 8M Plus integrates a comprehensive set of industri-



al-grade interfaces, including high-speed memory support (LPDDR4/DDR4), PCIe Gen3, USB 3.0, MIPI-CSI/DSI, and dual Gigabit Ethernet with TSN (Time-Sensitive Networking) support. These integrated high-bandwidth connectivity options enable seamless integration with cameras, displays, storage devices, and industrial communication networks. This high level of on-chip integration significantly reduces overall sys-

tem complexity, lowers BOM cost, and improves long-term reliability and scalability for embedded platforms.



A key differentiating feature of the i.MX 8M Plus is its integrated **Neural Processing Unit (NPU)**, delivering up to 2.3 TOPS of AI inference performance. The NPU is optimized specifically for deep learning inference acceleration, enabling

efficient execution of neural network models for applications such as image classification, object detection, facial recognition, human pose estimation, and emotion analysis—without imposing additional computational load on the main CPU or GPU.

By enabling local AI inference at the edge, the i.MX 8M Plus reduces reliance on cloud-based processing, minimizes network latency, and enhances data security and privacy. This architecture is particularly advantageous in medical image analysis, intelligent surveillance systems, industrial machine vision, and smart retail solutions where real-time response and data confidentiality are critical.

In environments where deterministic processing and predictable system behavior are essential—especially in medical and industrial equipment—the integrated NPU and real-time Cortex-M7 core provide stable and consistent AI acceleration. This ensures reliable system operation, controlled latency, and repeatable performance, supporting mission-critical embedded applications with high operational stability.

CPU Detail	
CPU Name	NXP i.MX 8M Plus
CPU Type	4x Arm Cortex-A53
Microcontroller	1x Arm Cortex-M7F
CPU Clock	1.8 GHz (A53) 800 MHz (M7F)
Floating Point Unit	VFPv4
NEON	Yes
L1 Instruction Cache	32KB (A53) 32KB (M7F)
L1 Data Cache	32KB (A53) 32KB (M7F)
L2 Cache	512KB

Connectivity	
USB 3.0	1x Host / 1x OTG (Gen 1)
USB 2.0	1x Host / 1x OTG
Ethernet	2x Gigabit (1x PHY with TSN + 1x RGMII)
Wi-Fi	2.4/5 GHz Dual Band 2x2 Wi-Fi 5 (802.11ac)
Bluetooth	Bluetooth 5.3
PCIe	1 (x1 Gen 3)
I2C / SPI	5x / 3x
QSPI / UART	1x / 4x
PWM / GPIO	4x / 95x
Analog Input	4x
CAN / JTAG	2x (CAN FD) / 1x
SDIO/SDMMC	1x

Multimedia	
NPU	Yes (2.3 TOPS)
ISP	Yes
Digital Controller	Triple
Graphics Controller	2D: Vivante GC520L 3D: Vivante GC7000UL
Video Detector	Yes
Digital Serial Interface	1x Quad Lane MIPI DSI (up to 1920x 1080)
LVDS	1x (up to 1920x 1080)
Digital Audio	6x SAI: I2S or AC97
S/PDIF In/Out	1x / 1x
2D/3D Acceleration	Yes
HDMI	1x (2.0a, up to 4K)
Camera	2x Quad Lane MIPI CSI-2

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