EVALUATION KIT BASED ON i.MX 8M PLUS APPLICATIONS PROCESSORS

The i.MX 8M Plus EVK is a feature-rich development platform that enables evaluation and development of high-performance, scalable and cost-optimized solutions for the empowered edge.

The i.MX 8M Plus EVK hardware and software board support packages provide a comprehensive platform for evaluation of the i.MX 8M Plus Quad and i.MX 8M Plus Dual applications processors utilizing 4 or 2 Arm® Cortex®-A53 cores and 1 Cortex-M7 core. It offers high performance with low power, flexible options for memory and high-speed interfaces, as well as industry-leading machine learning, vision, audio, and video capabilities.

The EVK offers a large assortment of features to support graphics, video, image processing, machine learning, audio and voice functions. It is complemented by optimized drivers and software to enable a variety of applications for the embedded consumer and industrial markets.

The EVK topology consists of a base board and a compute module. The compute module plugs into the base board, which enables the MIPI-DSI and MIPI-CSI connectors, USB 3.0 connector, and PCIe high-speed interfaces ideal for connected, high performance embedded applications. In addition, the base board has SD/MMC slot, 10/100/1000 Ethernet port, and includes a 3.5mm speaker jack.

The compute module is a size-optimized design that contains the i.MX 8M Plus applications processor, PMIC, LPDDR4, DRAM, and QSPI NOR Flash.

MACHINE LEARNING AND VISION

One of the critical target applications for i.MX 8M Plus involves machine learning and vision. To achieve this, the i.MX 8M Plus incorporates an on-chip Neural Processing Unit (NPU), dual camera Image Signal Processors (ISPs) and other supporting sub-systems.

NEURAL PROCESSING UNIT (NPU)

The powerful i.MX 8M Plus applications processor is based on multi-core Arm Cortex-A53 processors operating at a maximum frequency of 1.8 GHz. The integrated on-chip NPU delivers up to 2.3 TOPS. As the first i.MX processor with a machine learning accelerator, the i.MX 8M Plus processor provides substantially high performance for ML inference at the edge.

IMAGE SIGNAL PROCESSOR (ISP)

The i.MX 8M Plus offers a high performance intelligent vision system using dual on-chip ISPs and various camera interfaces with resolution up to 12 MP and input rate of 375 MP/s. This vision system acts as the eyes of the i.MX 8M Plus processor. The integrated ISPs brings real-time image processing to high-definition video and perform algorithms that extract the maximum image details in high-contrast scenes. A de-warp engine performs fisheye lens correction and reverses the effects of wide-angle lens distortion. It also corrects distortions from low-cost lenses and ensures high image quality.

AUDIO, VIDEO, AND GRAPHICS

The EVK includes hardware-accelerated video and graphics capabilities. The i.MX 8M Plus offers video encoding and decoding of most relevant video formats. Encode supports H264 and H265. Decode supports H264, H265, VP9 and VP8, respectively, while rendering up to 4Kp30 video resolution. Applications such as video streaming HMI, surveillance and robotics can take advantage of the high level of multimedia integration. Proven system solutions for audio and voice enablement are provided through NXP's ecosystem partners.

HMI AND CONNECTIVITY

Today, Human Machine Interface (HMI) applications must respond accurately, and in 4 ms, to touch screen and gesture inputs. Connectivity is a must, demanding increasingly faster and more reliable wired and wireless capabilities along with security to protect privacy and sensitive data. The i.MX 8M Plus EVK provides capabilities to develop these key functionalities.

TARGET APPLICATIONS

- General-purpose Human Machine Interface (HMI) solutions

- Smart Homes – Artificial Intelligence local server, alarm hub and security systems, smart robot, access control, home patient monitors, sound bars, AV receivers, and other home automation applications

- Smart City – safety and security, surveillance, crowd and traffic control, transportation management and driver monitoring

- Smart World – smart retail, POS interface, targeted advertisement, building control, teleconferencing systems and healthcare diagnostics

- Industrial and Machine Vision – robot controller, industrial gateway, commercial printers and scanners, industrial tablets, smart industrial cameras and multiple factory automation applications

i.MX 8M PLUS EVK CONTENTS

- i.MX 8M Plus EVK base board and compute module

- Quick Start Guide

- USB 3.0 Type C to Type A

- USB 2.0 Type A to Type Micro

- Adapter – USB 3.0, Type-C Male to Type-A Female

- USB Type C 45 W power delivery supply

SOFTWARE AND TOOLS

The i.MX 8M Plus EVK comes with a pre-installed Linux-based image stored in the eMMC memory. Hardware design files, software tools and board support packages (BSPs) for Linux, Android and FreeRTOS are available from NXP to use as a reference for starting designs. Other reference designs and tools are also available from NXP's ecosystem partners. Additional information can be found at
www.nxp.com/iMX8MPlusEVK.

There are a number of accessory boards that pair with the i.MX 8M Plus EVK including support for cameras and displays. Visit www.nxp.com/i.MX8-ACCESSORY-BOARDS to see the complete list.

ORDERING INFORMATION

Part Number: 8MPLUSLPD4-EVK
Memory: 6 GB LPDDR4, 32 GB eMMC 5.1, 32 MB QSPI NOR

i.MX 8M PLUS EVK COMPUTE MODULE

Part Number	8MPLUSLPD4-EVK
Memory	• 6 GB LPDDR4 • 32 GB eMMC 5.1 • 32 MB QSPI NOR
Processor	• i.MX 8M Plus Quad applications processor • 4x Arm Cortex-A53 up to 1.8 GHz • 1x Arm Cortex-M7 @ 800 MHz • Cadence® Tensilica® HiFi 4 DSP • Neural Processing Unit (NPU)

i.MX 8M PLUS EVK BASE BOARD

Display/Camera Connectors	• MIPI-CSI Camera mini-SAS connector • MIPI-DSI Display mini-SAS connector • LVDS Display mini-SAS connector • HDMI Display connector
Audio	• HP Jack 3.5 mm audio connector • Board expansion connector for audio interfaces
Connectivity	• 10/100/1000 Ethernet • USB 3.0 Type C connector • USB 3.0 Type A connector • PCIe M.2 interface • CAN female DB9 connector
Debug	• JTAG connector • UART via USB
Tools and OS support	• Linux® • Android™ • FreeRTOS
Power Management	NXP PMIC
Wireless	• Onboard PCB antenna

i.MX 8M PLUS EVK DISPLAY BOARD

Description	Part Number	Photo
MIPI-DSI OLED Display	MX8_DSI_OLED1	

i.MX 8M PLUS EVK ACCESSORY BOARDS

Description	Part Number	Photo
MIPI-DSI to HDMI Adapter	MX-MIPI-HDMI	
MIPI-CSI Camera	MINISASTOCSI	