



QUICK START GUIDE

i.MX 8M PLUS PEVK

i.MX 8M PLUS PEVK



ABOUT THE i.MX 8M PLUS PEVK

The i.MX 8M Plus applications processor is the latest member of the i.MX 8M family. It excels in machine learning, vision, advanced multimedia and industrial IoT applications. Elevating edge intelligence, i.MX 8M Plus processors are the solid foundation for smart homes to smart cities, Industry 4.0 and beyond. The i.MX 8M Plus PEVK offers all the functionalities of the i.MX 8M Plus EVK (8MPLUSLDP4-EVK) and additionally, the ability to measure power consumed by the supply rails of i.MX 8M Plus.

FEATURES

Compute Module:

- i.MX 8M Plus applications processor with up to five cores:
 - 4× Arm® Cortex®-A53
 - 1× Arm® Cortex®-M7
- LPDDR4 32-bit, 6 GB
- eMMC 5.1, 32GB
- QSPI NOR flash, 32 MB
- Power Management IC (NXP PCA9450C)
- Power monitor circuits

Base Board:

- MicroSD card connector
- Two Type-C connectors:
 - Port0 is the only power supply port
 - Port1 is a USB3.0 connector

- One USB3.0 Type-A connector
- Two 1 Gbit/s Ethernet
 - Port0 supports 1 Gbit/s Ethernet
 - Port1 supports 1 Gbit/s Ethernet with TSN
- AW-CM276MA (NXP 88W8997):
 - Wi-Fi®5 (802.11ac) 2 x 2 dual-band (2.4/5GHz) and Bluetooth® 5.1
- Mini-SAS MIPI-DSI connector for display
- Two Mini-SAS LVDS connectors for display
- HDMI Type-A connector for display
- Two Mini-SAS MIPI-CSI connectors for camera
- Two Female DB9 connectors for CAN
- USB-to-serial converter for debug and power data acquisition
- 3.5 mm headset for audio

GET TO KNOW THE i.MX 8M PLUS PEVK

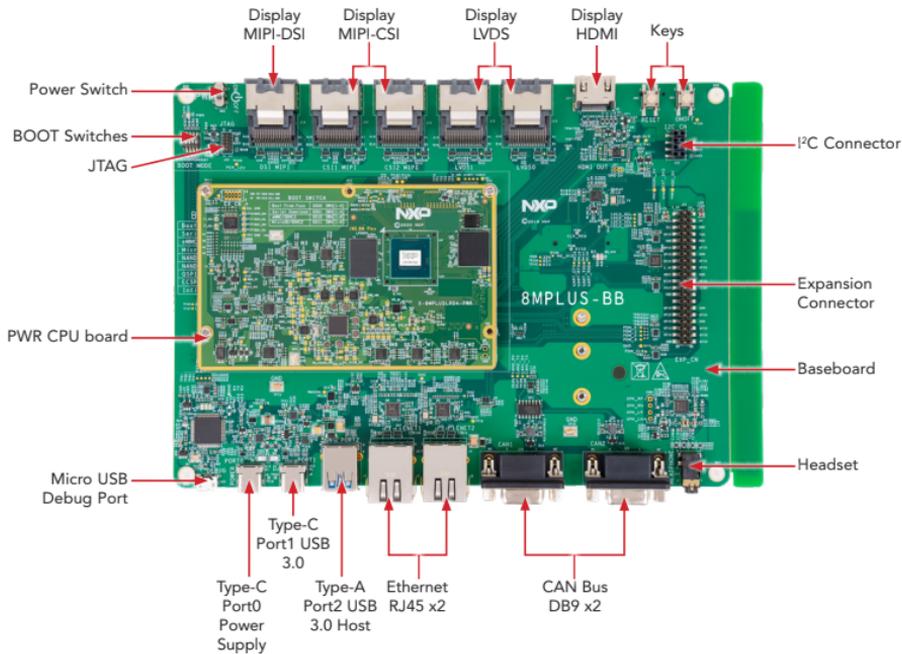


Figure 1: Top view i.MX 8M Plus PEVK board

GET TO KNOW THE i.MX 8M PLUS PEVK CONTINUED

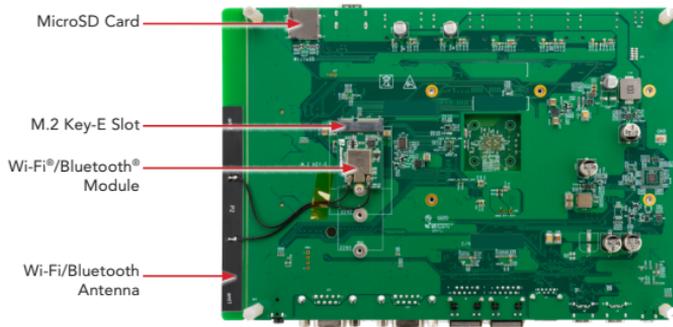


Figure 2: Back view i.MX 8M Plus PEVK board



Figure 3: i.MX 8M Plus PEVK without heatsink

GETTING STARTED

Unpack the Kit

The i.MX 8M Plus PWR EVK (8MPLUSLPD4-PEVK) is shipped with the items listed in Table 1. Ensure the items are available in the PEVK box.

Table 1 Kit Contents

| ITEM | DESCRIPTION |
|-------------------------|---|
| EVK Board | i.MX 8M Plus PEVK |
| Power Supply | USB Type C 45W Power Delivery Supply, 5V/3A; 9V/3A; 15V/3A; 20V/2.25A supported |
| USB Type-C Cable | Cable – Assembly, USB 3.0, Type-A Male to Type-C Male |
| USB micro-B Cable | Cable – Assembly, USB 2.0, Type-A Male to Micro-B Male |
| USB Type-C to A Adapter | Adapter – USB 3.0, Type-C Male to Type-A Female |
| Software | Linux® BSP image programmed in eMMC |
| Documentation | Quick Start Guide |

Prepare Accessories

The following items in Table 2 are recommended to run the i.MX 8M Plus PEVK.

Table 2 Customer Supplied Accessories

| ITEM | DESCRIPTION |
|------------------------------|---|
| IMX-MIPI-HDMI Accessory Card | MIPI-DSI to HDMI adapter board |
| IMX-LVDS-HDMI Accessory Card | LVDS to HDMI adapter board |
| MX8-DSIOLED1/MX8-DSI-OLED1A | MIPI - DSI 1080p OLED display |
| HDMI Display | HDMI display that supports a minimum resolution of 1080P60. |
| HDMI Cable | HDMI cable to connect the HDMI board to HDMI |
| Mouse | USB mouse |
| USB HUB | 2 or 4 port USB Hub |

GETTING STARTED CONTINUED

Download Software and Tools

Installation software and documentation are available at www.nxp.com/imx8mpluspevk. The following are available on the website:

Table 3 Software and Tools

| ITEM | DESCRIPTION |
|----------------------|--|
| Documentation | <ul style="list-style-type: none">• Schematics, layout and Gerber files• i.MX 8M Plus PEVK Board Hardware User's Guide• Quick Start Guide• Hardware Design Guide• Power Consumption Measurement |
| Software Development | Linux BSPs, Android BSPs |
| Demo Images | Copy of the latest Linux and Android BSP images that are available to program on to the eMMC or SD Card. i.MX 8M Plus software can be found at www.nxp.com/IMXLINUX and www.nxp.com/IMXANDROID |
| Software Tool | Use BCU (Board Control Utilities) to monitor real-time power consumption or export the data to Excel for analysis. The BCU tool and release note can be found at https://github.com/NXPmicro/bcu/releases <ul style="list-style-type: none">• Note: A GUI tool PMT is also available for power monitoring. Refer to i.MX 8M Plus PEVK Board Hardware User's Guide for further details. |

SETTING UP THE SYSTEM

The following will describe how to run the pre-loaded Linux image on the i.MX 8M Plus PEVK.

1 Confirm Boot Switches

The boot switches should be set to boot from the eMMC. SW4[1-4] are used for boot. See table below.

| BOOT Device | SW4 [1-4] |
|-------------|-----------|
| eMMC/uSDHC3 | 0010 |

1 = ON 0 = OFF

2 Connect USB Debug Cable

Connect the micro-B end of a USB cable into debug port J23. Connect the other end of the cable to a PC acting as a host terminal. Four UART serial port connections will appear on the PC, the third serial port is assigned to A53 core and the fourth to M7 core system debugging. The console print will output

on “Enhanced COM port,” which can be found in “Device Manager” of the PC.

If the serial port is not recognized, then download and install updated drivers as listed in the section Debug Serial Console below.

Open the terminal window (i.e., Hyper Terminal or Tera Term), choose the third COM port number and apply the following configuration.

- Baud rate: 115200
- Data bits: 8
- Parity: None
- Stop bits: 1

SETTING UP THE SYSTEM CONTINUED

3 Running BCU

Open terminal or command prompt/ PowerShell on the PC, change directory to the location of BCU files, and then use below command to monitor voltage/ current/power for each rail:

For Linux:

```
$ sudo ./bcu monitor -hz=1  
-board=imx8mpvkwra1
```

For Windows:

```
.\bcu.exe monitor -hz=1  
-board=imx8mpvkwra1
```

A TUI for power monitor can be seen on the screen.

4 Connect HDMI Display

Connect an HDMI cable to the HDMI connector Jack J17. Connect the other end of the cable to a HDMI display panel.

5 Connect Mouse

Connect the mouse to the USB host connector J7.

6 Connect Power Supply

Connect the USB Type-C plug of the Power Supply to J5 (USB Type-C Port0), then power up the board using switch SW3.

Use only J5 for power delivery to the board.

7 Board Boot Up

As the board boots up, you will see 4 penguins appear in the upper left-hand corner of the monitor, and then you will see the Linux terminal icon on the top left and timer on right top corner. Congratulations, you are up and running.

ADDITIONAL INFORMATION

Boot Switches

SW4[1-4] is the boot configuration switch, the default boot device is eMMC/uSDHC3, as shown in Table 4. If you want to try other boot devices, you need to change the boot switches to corresponding values as listed in Table 4.

Note: 1 = ON and 0 = OFF

Table 4 Boot Device settings

| BOOT DEVICE | SW4-1 | SW4-2 | SW4-3 | SW4-4 |
|--|-------|-------|-------|-------|
| Boot From Fuses | 0 | 0 | 0 | 0 |
| USB Serial Download Mode | 0 | 0 | 0 | 1 |
| USDHC3 (eMMC boot only, SD3 8-bit) Default | 0 | 0 | 1 | 0 |
| USDHC2 (SD boot only, SD2) | 0 | 0 | 1 | 1 |
| NAND 8-bit single device 256 page | 0 | 1 | 0 | 0 |
| NAND 8-bit single device 512 page | 0 | 1 | 0 | 1 |
| QSPI 3B Read | 0 | 1 | 1 | 0 |
| QSPI Hyperflash 3.3V | 0 | 1 | 1 | 1 |
| ecSPI Boot | 1 | 0 | 0 | 0 |

Debug Serial Console

Windows® users may need to update the serial drivers on your computer. The drivers can be found at <https://www.ftdichip.com/Drivers/VCP.htm>

ADDITIONAL INFORMATION CONTINUED

Do More with Accessory Boards

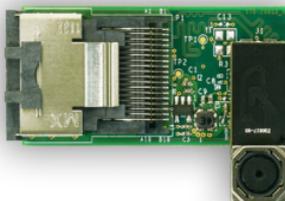
MX8-DSI-OLED1/MX8-DSI-OLED1A: MIPI-DSI 1080P OLED DISPLAY

Use this OLED display for display and touchscreen support.



MINISASTOCSI: MIPI-CSI CAMERA MODULE

Use this MIPI-CSI camera module for machine vision, video streaming and recording.



IMX-MIPI-HDMI

MIPI-DSI to HDMI adapter card (Mini SAS) to connect MIPI DSI output to HDMI (Color may vary)



IMX-LVDS-HDMI

LVDS-to-HDMI converter adapter card (Mini SAS) to connect LVDS output to HDMI (Color may vary)



ADDITIONAL INFORMATION CONTINUED

BASLER ADD-ON CAMERA KIT: 4KP30 MIPI-CSI CAMERA MODULE

Use this Basler add-on camera kit for up to 4Kp30 machine vision support on EVK. More information can be found at: www.baslerweb.com/imx8mplus.



- Dart camera module
 - designed for mass production
- M12 lens
 - exchangeable
- Mini-SAS adapter
 - for Basler dart BCON for MIPI standard connector
- Flat flex cable
 - 200 mm length

SUPPORT

Visit www.nxp.com/support for a list of phone numbers within your region.

WARRANTY

Visit www.nxp.com/warranty for complete warranty information.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
 - (2) This device must accept any interference received, including interference that may cause undesired operation.
- Attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This product has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this product does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment should be installed and operated with a minimum distance 20cm between the radiator and your body.

The following information is provided per Article 10.8 of the Radio Equipment Directive 2014/53/EU:

- (a) Frequency bands in which the equipment operates.
- (b) The maximum RF power transmitted.

| PN | RF TECHNOLOGY | (A) FREQ RANGES (EU) | (B) MAX TRANSMITTED POWER |
|-----------------|-------------------------------|----------------------|---------------------------|
| 8MPLUSLPD4-PEVK | WLAN 2.4 GHz Mode 802.11b/g/n | 2412 MHz – 2472 MHz | 18.5 dBm |
| | WLAN 5 GHz Mode 802.11a/n/ac | 5180 MHz – 5825 MHz | 15 dBm |
| | BLE | 2402 MHz – 2480 MHz | 4 dBm |
| | Bluetooth BR/EDR | 2402 MHz – 2480 MHz | 4 dBm |

EUROPEAN DECLARATION OF CONFORMITY (Simplified DoC per Article 10.9 of the Radio Equipment Directive 2014/53/EU)

This apparatus, namely 8MPLUSD4-PEVK, conforms to the Radio Equipment Directive 2014/53/EU.

The full EU Declaration of Conformity for this apparatus can be found at this location: www.nxp.com/iMX8MPLUS

www.nxp.com/iMX8MPLUSPEVK

NXP and the NXP logo are trademarks of NXP B.V. All other product or service names are the property of their respective owners. The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by NXP Semiconductors is under license. Windows is a registered trademark of the Microsoft Corporation. Arm and Cortex are trademarks or registered trademarks of Arm Limited (or its subsidiaries) in the US and/or elsewhere. The related technology may be protected by any or all of patents, copyrights, designs and trade secrets. All rights reserved. © 2021 NXP B.V.