



# QUICK START GUIDE

i.MX 8M APPLICATIONS PROCESSOR FAMILY

## i.MX 8M NANO EVK



## GET TO KNOW THE i.MX 8M NANO EVK

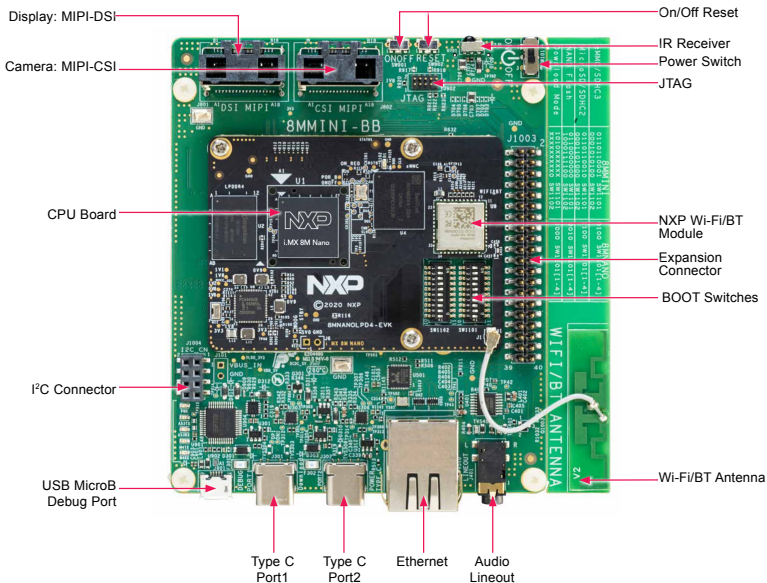


Figure 1: Top view i.MX 8M Nano EVK board

## GET TO KNOW THE i.MX 8M NANO EVK CONTINUED

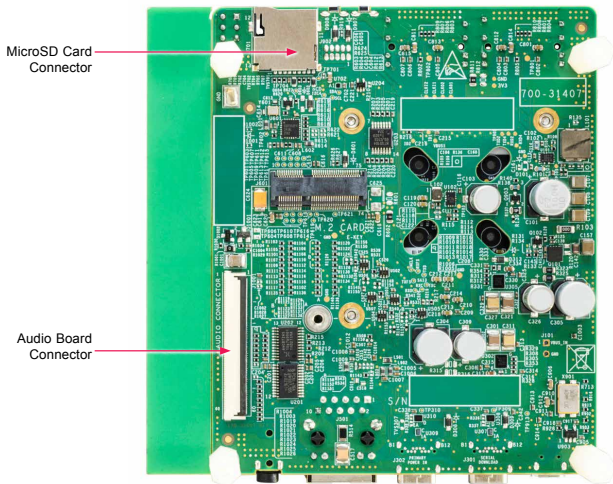


Figure 2: Back view i.MX 8M Nano EVK board

## GET TO KNOW THE i.MX 8M NANO EVK CONTINUED



**Figure 3:** MIPI-DSI to HDMI Adaptor Card (included in the EVK) Note: (Color of the adaptor card may differ)

## ABOUT THE i.MX 8M NANO EVK

The i.MX 8M Nano applications processor is a member of the i.MX 8M family of products focused on delivering advanced media and machine learning experience combining state-of-the-art capabilities with high-performance processing optimized for low-power consumption.

## FEATURES

### Compute Module:

- i.MX 8M Nano applications processor with up to five cores:
  - 4× Arm® Cortex®-A53
  - 1× Arm® Cortex®-M7
- LPDDR4 16-bit, 2 GB
- eMMC 5.1, 32 GB
- QSPI NOR flash, 32 MB
- NXP Power Management IC (PMIC)
- NXP Wi-Fi 802.11a/b/g/n/ac and BT5.0

### Base Board:

- MicroSD card connector
- Two Type-C connectors:
  - Port1 is USB2.0 Type-C connector
  - Port2 is the only power supply port
- 1 Gbps Ethernet
- Mini-SAS MIPI-DSI connector for display
- Mini-SAS MIPI-CSI connector for camera
- USB to serial converter for debug
- Infrared receiver
- LEDs for power indication and general-purpose use
- 3.5 mm audio jack for amplified speakers

## GETTING STARTED

### Unpack the Kit

The i.MX 8M Nano EVK (8MNANOLPD4-EVK) is shipped with the items listed in Table 1. Ensure the items are available in the EVK box.

**Table 1 Kit Contents**

ITEM	DESCRIPTION
EVK Board	i.MX 8M Nano EVK
IMX-MIPI-HDMI Accessory Card	MIPI-DSI to HDMI adapter board
Power Supply	USB Type C 45W Power Delivery Supply, 5V/3A; 9V/3A; 15V/3A; 20V/2.25A supported
Mini-SAS cable	8" mini-SAS cable
USB Type-C Cable	Cable – Assembly, USB 3.0, Type-C Male to Type-A 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	Android 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 Nano EVK.

**Table 2 Customer Supplied Accessories**

ITEM	DESCRIPTION
HDMI Display	HDMI display that supports a minimum resolution of 1080P60.
HDMI Cable	HDMI cable to connect the HDMI board to HDMI display
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/imx8mnanoevk](http://www.nxp.com/imx8mnanoevk). The following are available on the website:

**Table 3 Software and Tools**

ITEM	DESCRIPTION
Documentation	<ul style="list-style-type: none"> <li>• Schematics, layout and Gerber files</li> <li>• i.MX 8M Nano EVK Board Hardware User's Guide</li> <li>• Quick Start Guide</li> <li>• Hardware Design Guide</li> <li>• Power Consumption Measurement</li> </ul>
Software Development	Linux BSPs, Android BSPs
Demo Images	<p>Copy of the latest Linux and Android BSP images that are available to program on to the eMMC or SD Card.</p> <p>i.MX 8M Nano software can be found at <a href="http://nxp.com/imxsw">nxp.com/imxsw</a>.</p>

## SETTING UP THE SYSTEM

The following will describe how to run the pre-loaded Android image on the i.MX 8M Nano EVK.

### 1 Confirm Boot Switches

The boot switches should be set to boot from the eMMC. Only SW1101[1-4] are used for boot. See table below

BOOT DEVICE	SW1101	SW1102
eMMC <u>u</u> SDHC3	0100XXXXXX	XXXXXXXXXX

**Note:** 1 = ON 0 = OFF X = Don't Care

### 2 Connect USB Debug Cable

Connect the micro-B end of a USB cable into debug port J901. Connect the other end of the cable to a PC acting as a host terminal. Two UART connections will appear on the PC, one for M7 core, one for A53 core. 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, 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 COM port number that corresponds to the "Enhanced COM port" or the highest numbered port and apply the following configuration.

- Baud rate: 115200
- Data bits: 8
- Parity: None
- Flow control: None



**SETTING UP THE SYSTEM** CONTINUED**3 Connect HDMI Display**

The MIPI-DSI to HDMI accessory card and mini SAS cable are needed for evaluating HDMI.

Connect the mini-SAS cable to J801 on the EVK (MIPI DSI Connector) and connect the other end to J5 on the MIPI to HDMI accessory card. Connect an HDMI cable to J2 (HDMI port) on the MIPI to HDMI accessory card and connect the other end to a HDMI display panel.



Figure 4: Mini-SAS cable connected to the mini-SAS connector (J5) on the MIPI-DSI to HDMI accessory board.

**Note:** Color may differ

**4 Connect Mouse**

Connect the mouse to J301 (USB Type-C Port1) through the USB Type-C to A adapter.

**5 Connect Power Supply**

Connect the USB Type-C plug of the Power Supply to J302 (USB Type-C Port2), then power up the board using switch SW101.

Use only J302 for power delivery to the board.

**6 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 Android logo, then the Android desktop. Congratulations, you are up and running.

## ADDITIONAL INFORMATION

### Boot Switches

SW1101[1-4] are the boot configuration switches, 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.

**Table 4 Boot Device Settings**

BOOT DEVICE	SW1101	SW1102
eMMC/uSDHC3	0100XXXXXX	XXXXXXXXXX
MicroSD/uSDHC2	1100XXXXXX	XXXXXXXXXX
QSPI NOR Flash	0110XXXXXX	XXXXXXXXXX
Serial Download Mode	1000XXXXXX	XXXXXXXXXX

**Note:** 1 = ON 0 = OFF X = Don't Care

### 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: MIPI MINI-SAS OLED DISPLAY**

Use this OLED display for touchscreen support.



#### **MINISASTOCSI: MIPI-CSI CAMERA MODULE**

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



## SUPPORT

Visit [www.nxp.com/support](http://www.nxp.com/support) for a list of phone numbers within your region.

## WARRANTY

Visit [www.nxp.com/warranty](http://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
8MNANOLPD4-EVK	WLAN 2.4 GHz Mode 802.11b/g/n	2412 MHz – 2472 MHz	17.61dBm
	WLAN 5 GHz Mode 802.11a/n/ac	5180 MHz – 5700 MHz	19.78dBm
	BLE	2402 MHz – 2480 MHz	6.09dBm
	BT BR/EDR	2402 MHz – 2480 MHz	9.59dBm

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

This apparatus, namely 8MNANOLPD4-EVK, 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/i.MX8MNANO](http://www.nxp.com/i.MX8MNANO)

[www.nxp.com/iMX8MNANOEVK](http://www.nxp.com/iMX8MNANOEVK)

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