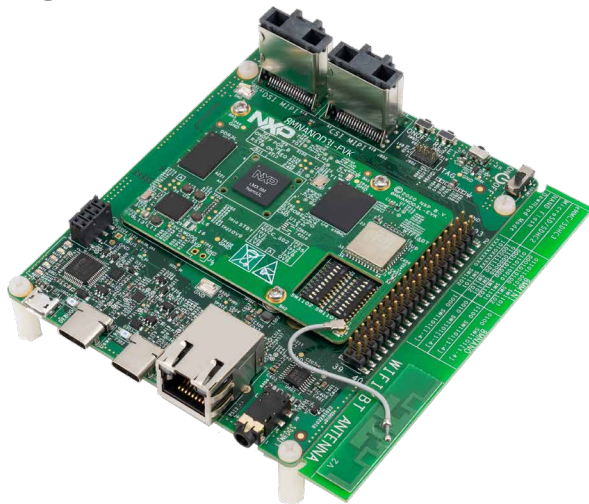# i.MX 8M NANO ULTRALITE DDR3L EVK

ABOUT THE i.MX 8M NANO ULTRALITE DDR3L EVK

The i.MX 8M Nano UltraLite (UL) applications processor is a member of the i.MX 8M family of products focused on delivering state-of-the-art capabilities with high-performance processing while optimized for low power consumption.

FEATURES

Compute Module:

- i.MX 8M Nano UltraLite applications processor with up to five cores:
  - 4 × Arm® Cortex®-A53
  - 1 × Arm® Cortex®-M7
- DDR3L 16-bit, 1 GB
- eMMC 5.1, 32 GB
- QSPI NOR flash, 32 MB
- NXP power management IC (PMIC)
- NXP 88W8987 Wi-Fi/Bluetooth® module:
  - Wi-Fi® 5 (802.11ac) 1x1 DB (2.5/5 GHz)
  - Bluetooth 5.0

Baseboard:

- MicroSD card connector
- Two Type-C connectors:
  - Port1 is USB2.0 Type-C connector
  - Port2 is the only power supply port
- 1 Gbit/s Ethernet
- 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
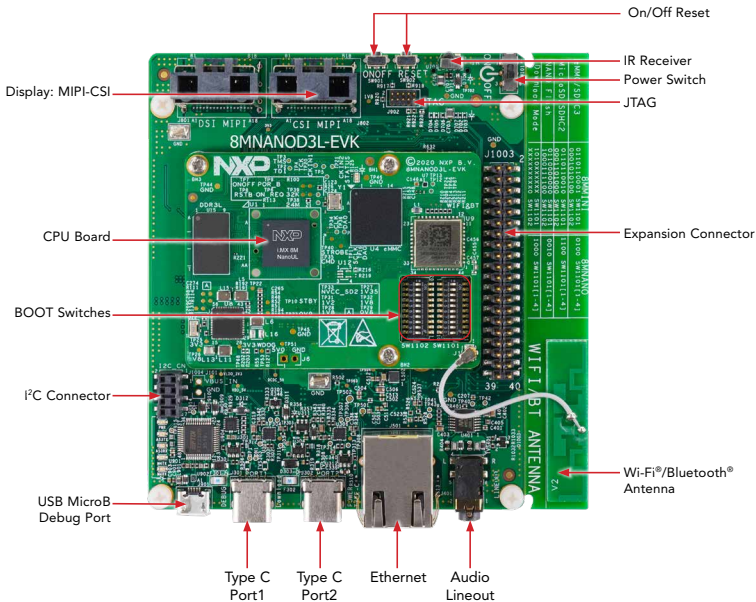
GET TO KNOW THE i.MX 8M NANO ULTRALITE DDR3L EVK

On/Off Reset

IR Receiver

Power Switch

JTAG

Display: MIPI-CSI

CPU Board

BOOT Switches

Expansion Connector

I²C Connector

USB MicroB Debug Port

Wi-Fi®/Bluetooth® Antenna

Type C Port1

Type C Port2

Ethernet

Audio Lineout

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

3

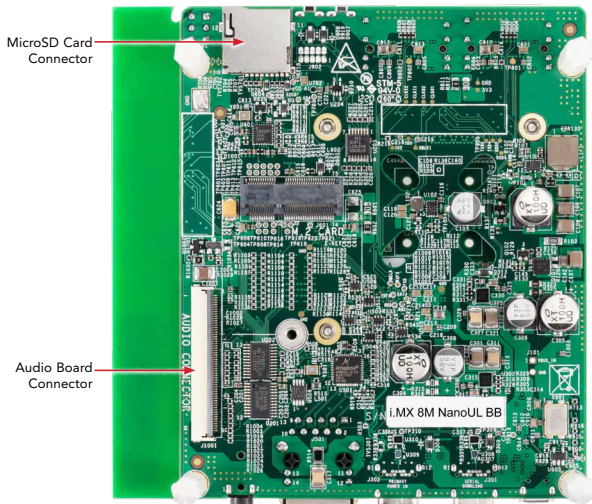MicroSD Card Connector

Audio Board Connector

Figure 2: Back view i.M X 8M Nano UL DDR3L EVK board

GETTING STARTED

Unpack the Kit

The i.MX 8M Nano UL DDR3L EVK (8MNANOD3L-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 UL DDR3L EVK
Power Supply	USB Type C 45 W power delivery supply, 5 V/3 A; 9 V/3 A; 15 V/3 A; 20 V/2.25 A; 20V/2.25A supported
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	Linux® BSP image programmed in eMMC
Documentation	Quick Start Guide

Download Software and Tools

Installation software and documentation are available at
www.nxp.com/imx8mnanoulevk. The following are available on the website:

Table 2 Software and Tools

ITEM	DESCRIPTION
Documentation	• Schematics, layout and Gerber files • i.MX 8M Nano UL DDR3L EVK Board Hardware User's Guide • Quick Start Guide • Hardware Design Guide • Power Consumption Measurement
Software Development	Linux® BSPs
Demo Images	Copy of the latest Linux BSP images that are available to program onto the eMMC or SD Card. i.MX 8M Nano UL software can be found at nxp.com/imxsw.

SETTING UP THE SYSTEM

The following will describe how to run the pre-loaded Linux image on the i.MX 8M Nano UL DDR3L 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/uSDHC3	0100XXXXXX	XXXXXXXXXX

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 the Cortex-M7 core, one for the Cortex-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 "Debug Serial Console" section 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

3 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.

4 Board Boot Up

During the boot process, there will be operating system status information scrolling on the terminal window of the PC. To work from the terminal window on the host PC, press enter at the terminal window to get the command prompt. Log in as root. Congratulations, you are up and running.

ADDITIONAL INFORMATION

Boot Switches

SW1101[1-4] are the boot configuration switches and 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 0 = OFF   X = Don't Care

Table 3 Boot Device Settings

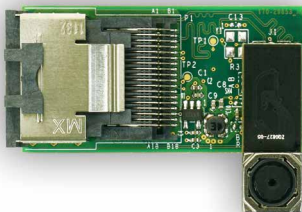| BOOT DEVICE	SW1101	SW1102
eMMC/uSDHC3	0100XXXXXX	XXXXXXXXXX
MicroSD/uSDHC2	1100XXXXXX	XXXXXXXXXX
QSPI NOR Flash	0110XXXXXX	XXXXXXXXXX
Serial Download Mode	1000XXXXXX	XXXXXXXXXX

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

Do More with Accessory Boards

MINISASTOCSI: MIPI-CSI CAMERA MODULE

Use this MIPI-CSI camera module for machine vision, video streaming and recording. More information can be found at: https://www.baslerweb.com/en/embedded-vision/embedded-vision-portfolio/embedded-vision-kits/daa3840-30mc-imx8mp-evk/lease

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.

Part Number	RF Technology	(a) Freq Ranges (EU)	(b) Max Transmitted Power
8MNANOD3L-EVK	WLAN 2.4GHz Mode 802.11b/g/n	2412 MHz–2472 MHz	17.61 dBm
	WLAN 5GHz Mode 802.11a/n/ac	5180 MHz–5700 MHz	19.78 dBm
	BLE	2402 MHz–2480 MHz	6.09 dBm
	BT BR/EDR	2402 MHz–2480 MHz	9.59 dBm

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

This apparatus, namely 8MNANOD3L-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