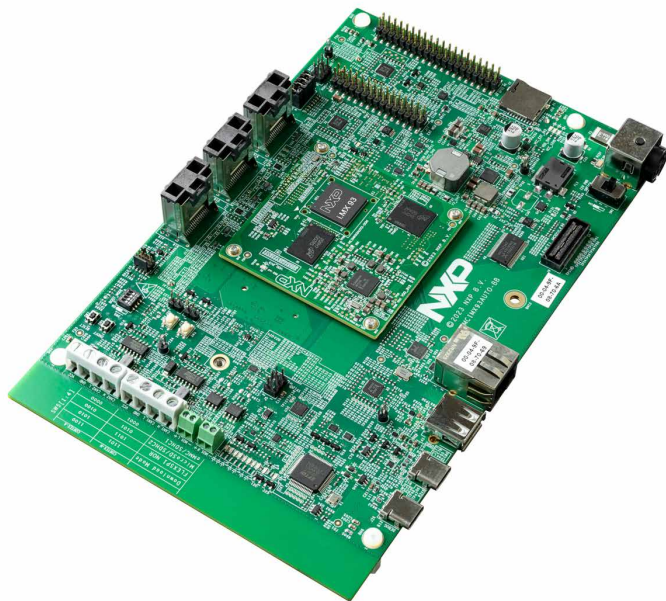




i.MX 93 Auto EVK



About the i.MX 93 Auto EVK

The i.MX 93 applications processor is the latest member of the i.MX 9 family. It excels in machine learning, vision, advanced multimedia and automotive applications. Elevating edge intelligence, i.MX 93 processors are the solid foundation for smart homes to smart cities, Industry 4.0 and beyond.

Specifications

SOM module:

- i.MX 93 applications processor with:
 - 2x Arm® Cortex®-A55
 - 1x Arm® Cortex®-M33
 - 0.5 TOPS NPU
- LPDDR4/4X 16-bit 2 GB
- eMMC 5.1, 16 GB
- Power Management IC (PMIC)

Base board:

- MicroSD 3.0 card slot
- One USB 2.0 C connector
- One USB 2.0 A connector
- One USB 2.0 C for Debug
- M.2 Key-E for Wi-Fi/BT/802.15.4
- One MIPI-CSI connector
- Two CAN ports
- Four channels for ADC
- 6-axis IMU w/ I3C support
- I2C Expansion connector
- Two 1 Gbps Ethernet
 - Port0 supports ETER
 - Port1 supports TSN
- Multiple display interface:
 - MIPI-DSI connector
 - 1x4 lane LVDS w/ Backlight
- On-board audio power amplifier for stereo speakers
- 2X20 Pin Expansion I/O

Get to know the i.MX 93 AUTO EVK

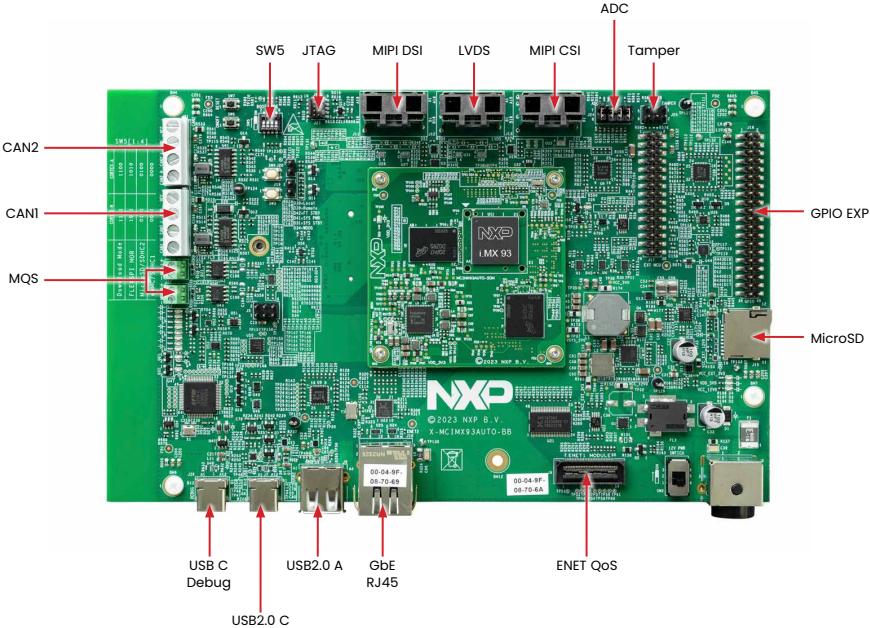


Figure 1: Top view of the i.MX 93 AUTO EVK

Get to know the i.MX 93 AUTO EVK continued

M.2 slot (E-tKEY)

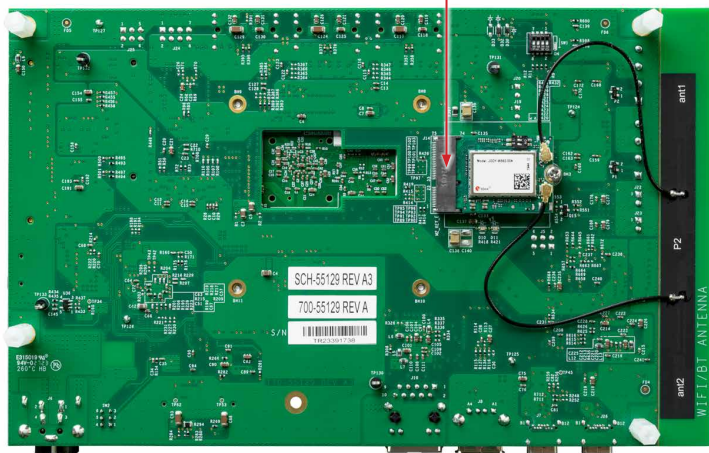


Figure 2: Back view of the i.MX 93 (14 x 14 mm) AUTO EVK

Getting started

Unpack the kit

The MCIMX93-AUTO EVK is shipped with the items listed in Table 1.

Table 1 — Kit contents

Item	Description
MCIMX93-AUTO EVK	i.MX 93 (14x14mm) AUTO EVK board
Power Supply	12V 160W power adapter
USB Type-C Cable	USB 2.0 C Male to USB 2.0 A Male
M.2 Module	PN: JODY-W562-00C; Wi-Fi 6 / BT 5.2
Software	Linux BSP image programmed in eMMC
Documentation	Quick Start Guide

Prepare Accessories

The following items in Table 2 are recommended to run the MCIMX93-AUTO EVK.

Table 2 — Customer supplied accessories

Item	Description
IMX-MIPI-HDMI	MIPI-DSI to HDMI adapter board
IMX-LVDS-HDMI	LVDS to HDMI adapter board
RPI-CAM-MIPI	IAS camera to RPi camera adapter (AR0144 sensor)
RPI-CAM-MINISAS	Adapter board for connecting the RPi-CAM-MIPI to a MIPI-CSI MINISAS connector
Audio HAT	Audio expansion board with most of audio features
IMX-DSI-SDSB	MIPI Serializer & De-Serializer board (Maxim)

Getting started continued

Download software and tools

Installation software and documentation are available at www.nxp.com/imx93autoevk. 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• Quick Start Guide• Hardware Design Guide• i.MX 93 AUTO EVK Board User Manual• Power Consumption Measurement
Software Development	<ul style="list-style-type: none">• Linux BSPs
Demo Images	<ul style="list-style-type: none">• Copy of the latest Linux images that are available to program on to the eMMC.• MCIMX93-AUTO EVK 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 MCIMX93AUTO-EVK (i.MX 93 MPU).

1 Confirm boot switches

The boot switches should be set to boot from “eMMC”, SW5[1-4] are used for boot, See table below:

BOOT Device	SW5[1-4]
eMMC/USDHC1	0000

Note: 1 = ON 0 = OFF

2 Connect USB debug cable

Connect the UART cable into the port J26. Connect the other end of the cable to a PC acting as a host terminal. UART connections will appear on the PC, this will be used as A55 and M33 core system debugging.

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

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

3 Connect IMX-MIPI-HDMI daughter card and display

Connect an IMX-MIPI-HDMI daughter card to J11 through a MINI-SAS cable, and then connect the IMX-MIPI-HDMI daughter card to a display through an HDMI cable.

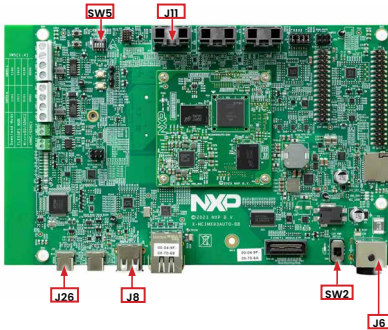
4 Connect mouse

Connect a mouse to the USB2 Type-A connector J8

Setting up the system continued

5 Connect power supply

Connect the power adapter to J6, then power up the board by SW2 switch.



6 Board boot up

As the board boots up, you will see two 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

SW5[1-4] is the boot configuration switch, the default boot device is eMMC/uSDHC1, 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

Table 4 — Boot device settings

BOOT MODE	BOOT CORE	SW5-4	SW5-3	SW5-2	SW5-1
From internal fuses	Cortex-A55	0	0	0	1
Serial Downloader	Cortex-A55	0	0	1	1
USDHC1 8-bit eMMC 5.1	Cortex-A55	0	0	0	0
USDHC2 4-bit SD3.0	Cortex-A55	0	0	1	0
FlexSPI Serial NOR	Cortex-A55	0	1	0	1
FlexSPI Serial NAND2K page	Cortex-A55	0	1	1	1
Infinite Loop	Cortex-A55	0	1	0	0
Test Mode	Cortex-A55	0	1	1	0
From internal fuses	Cortex-M33	1	0	0	1
Serial Downloader	Cortex-M33	1	0	1	1
USDHC1 8-bit eMMC 5.1	Cortex-M33	1	0	0	0
USDHC2 4-bit SD3.0	Cortex-M33	1	0	1	0
FlexSPI Serial NOR	Cortex-M33	1	1	0	1
FlexSPI Serial NAND2K page	Cortex-M33	1	1	1	1
Infinite Loop	Cortex-M33	1	1	0	0
Test Mode	Cortex-M33	1	1	1	0

Additional information continued

Do more with Accessory Boards

IMX-LVDS-HDMI

LVDS output to HDMI adapter board



IMX-MIPI-HDMI

MIPI DSI output to HDMI adapter board



RPI-CAM-MIPI

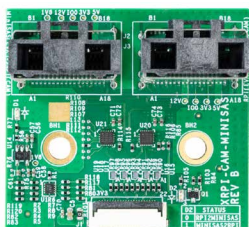
IAS camera to RPi camera adapter (AR0144 sensor)



Additional information continued

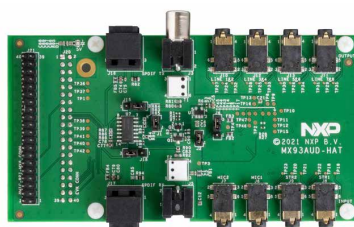
RPI-CAM-MINISAS

Adapter board for connecting the RPi-CAM-MIPI to a MIPI-CSI MINISAS connector



AUDIO BOARD: MX93AUD-HAT

Audio expansion board with most of audio features



X-M2-NOR-FLASH

M.2 QSPI NOR Flash card



X-IMX-DSI-SDSB

MIPI-DSI Serializer & De-Serializer accessory kit



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
MCIMX93ATUO-EVK	WLAN 2.4 GHz Mode 802.11b/g/n/ax	2412 MHz – 2462 MHz	21dBm
	WLAN 5 GHz Mode 802.11a/n/ac/ax	5150 MHz – 5875 MHz	21dBm
	Bluetooth BDR / EDR / LE	2402 MHz – 2480 MHz	20dBm

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

This apparatus, namely MCIMX93ATUO-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.MX93AUTOEVK

www.nxp.com/iMX93AUTOEVK

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