

i.MX8M Plus Edge AI modular platform

42x42 mm universal SoM board for Edge vision AI

Product Features

- NXP i.MX 8M Plus 1.6 GHz
 - Neural Processing Unit (NPU)
 - 2.3 TOPS
 - 2 GB LPDDR4 RAM
 - 8 GB eMMC flash
 - 2x MIPI-CSI, 2x 1080p@60 max.
 - Hardened H.264/H.265 ENC/DEC
 - Connectivity:
 - Multiple GPIO, UART, I²C, SPI, USB2.0, USB3.0
 - RGMII 10/100/1000 Mbps
 - DSI-CSI display port
 - PCIe 1-lane
 - Interfacing with FlexPCB to other SCAILX boards
 - 42x42 mm w/ 3 mm spacers on bottom side
- Support LVDS block cameras*:
 - Sony
 - Tamron
 - Videology
 - Supported MIPI cameras*:
 - 2 MP Global shutter
 - 8 MP Rolling shutter
 - 5 MP Autofocus
 - Onsemi ISP based cameras
 - microSD card holder
 - Real Time Clock w/ battery

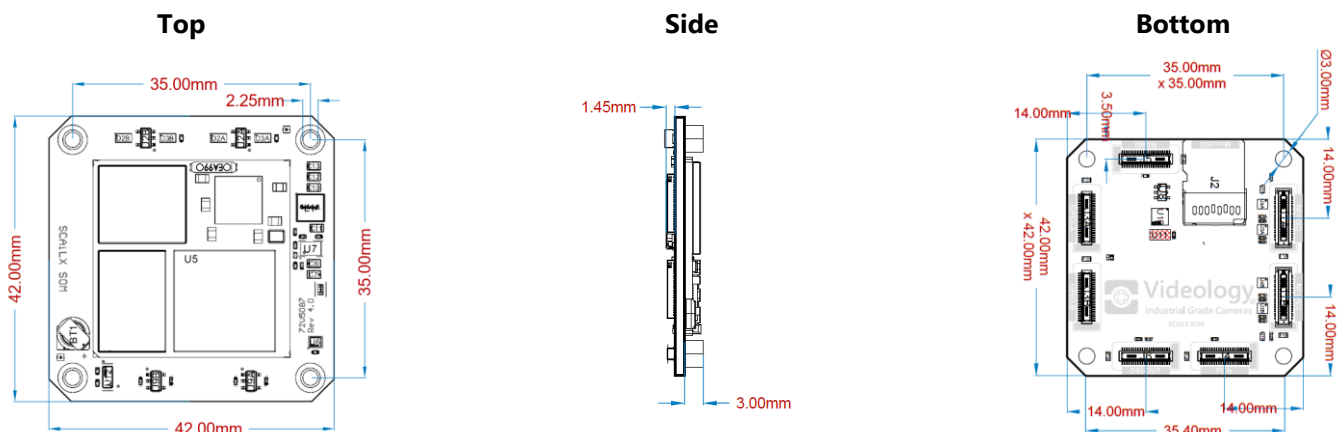
Software

- Embedded Linux
- Yocto Development Environment
- Docker application support
- Remote software updateable
- AI demo applications

*: check list of supported cameras/sensors



Dimensions and Connectors



www.videologyinc.com

HEADQUARTERS LOCATION

Videology Industrial-Grade Cameras
35 Hampden Road
Mansfield | MA 02048 United States

EUROPE LOCATION

Videology Industrial-Grade Cameras
High Tech Campus 5
5656 AE Eindhoven | The Netherlands



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RGMI (DF40C-40DP-0.4V(51))

01	RX_CTL	02	GND
03	RXC (I)	04	MDC (O)
05	GND	06	MDIO (I/O)
07	RD0 (I)	08	GND
09	RD1 (I)	10	INT
11	GND	12	CLK125
13	RD2 (I)	14	GND
15	RD3 (I)	16	RST (O)
17	+5V_ETH ¹	18	+5V_ETH ¹
19	+12V_PWR_IN	20	+12V_PWR_IN
21	+12V_PWR_IN	22	+12V_PWR_IN
23	+5V_ETH ¹	24	+5V_ETH ¹
25	Reserved	26	TX_CTL
27	GND	28	TXC (O)
29	Reserved	30	GND
31	Reserved	32	TD3 (O)
33	GND	34	TD2 (O)
35	Reserved	36	GND
37	Reserved	38	TD1 (O)
39	GND	40	TD0 (O)

GPIO-A* (DF40C-40DP-0.4V(51))

01	USB_D_P	02	GND
03	USB_D_N	04	I ² C_SCL
05	GND	06	I ² C_SDA
07	USB_RX_P	08	GND
09	USB_RX_N	10	UART_RXD (I)
11	GND	12	UART_TXD (O)
13	USB_TX_P	14	GND
15	USB_TX_N	16	DBG_EN
17	+5V_GPIO ¹	18	+5V_GPIO ¹
19	+12V_GPIO	20	+12V_GPIO
21	+12V_GPIO	22	+12V_GPIO
23	+5V_GPIO ¹	24	+5V_GPIO ¹
25	RESET	26	CAN_TX
27	GND	28	CAN_RX
29	SCLK (O)	30	GND
31	MOSI (O)	32	GPIO1
33	GND	34	GPIO2
35	MISO (I)	36	GND
37	SS0	38	DBG_RXD (I)
39	GND	40	DBG_TXD (O)

GPIO-B* (DF40C-40DP-0.4V(51))

01	USB_D_P	02	GND
03	USB_D_N	04	I ² C_SCL
05	GND	06	I ² C_SDA
07	USB_RX_P	08	GND
09	USB_RX_N	10	UART_RXD (I)
11	GND	12	UART_TXD (O)
13	USB_TX_P	14	GND
15	USB_TX_N	16	DBG_EN
17	+5V_GPIO1	18	+5V_GPIO1
19	+12V_GPIO	20	+12V_GPIO
21	+12V_GPIO	22	+12V_GPIO
23	+5V_GPIO1	24	+5V_GPIO1
25	RESET	26	CAN_TX
27	GND	28	CAN_RX
29	SCLK (O)	30	GND
31	MOSI (O)	32	GPIO1
33	GND	34	GPIO2
35	MISO (I)	36	GND
37	SS0	38	DBG_RXD (I)
39	GND	40	DBG_TXD (O)

DSI-OUT (DF40C-40DP-0.4V(51))

01	MIPI_DSI_D3_P	02	GND
03	MIPI_DSI_D3_N	04	I ² C_SCL
05	GND	06	I ² C_SDA
07	MIPI_DSI_D2_P	08	GND
09	MIPI_DSI_D2_N	10	DISP_BL
11	GND	12	DISP_EN
13	MIPI_DSI_D1_P	14	GND
15	MIPI_DSI_D1_N	16	Reserved
17	+5V_DSI ¹	18	+5V_DSI ¹
19	+12V_DSI	20	+12V_DSI
21	+12V_DSI	22	+12V_DSI
23	+5V_DSI ¹	24	+5V_DSI ¹
25	Reserved	26	Reserved
27	GND	28	Reserved
29	MIPI_DSI_D0_P	30	GND
31	MIPI_DSI_D0_N	32	Reserved
33	GND	34	Reserved
35	MIPI_DSI_CLK_P	36	GND
37	MIPI_DSI_CLK_N	38	Reserved
39	GND	40	Reserved

PCIe (DF40C-40DP-0.4V(51))

01	PCIE_REF_P	02	GND
03	PCIE_REF_N	04	I ² C_SCL
05	GND	06	I ² C_SDA
07	PCIE_RXN_P	08	GND
09	PCIE_RXN_N	10	Reserved
11	GND	12	Reserved
13	PCIE_TXN_P	14	GND
15	PCIE_TXN_N	16	Reserved
17	+5V_PCIE ¹	18	+5V_PCIE ¹
19	+12V_PCIE	20	+12V_PCIE
21	+12V_PCIE	22	+12V_PCIE
23	+5V_PCIE ¹	24	+5V_PCIE ¹
25	Reserved	26	Reserved
27	GND	28	Reserved
29	PERST	30	GND
31	WAKE	32	Reserved
33	GND	34	Reserved
35	W_DISABLE	36	GND
37	PCIE_CLKREQ	38	Reserved
39	GND	40	Reserved

*: All signals on GPIO-A and GPIO-B are specific (expect RESET and DBG_EN which are shared on both connectors).

¹: power output of SCAILX-SOM board

All 12V power connections are shared.

In a SCAILX basic setup the 12 V power is delivered by the SCAILX-ETH-POE or SCAILX-ETH-DC interface board.

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i.MX8M Plus Edge AI modular platform 42x42 mm universal SoM board for Edge vision AI

MIPI-CSI1 (DF40C-40DS-0.4V(51))

01	MIPI1_CLK_N	02	GND
03	MIPI1_CLK_P	04	CAM1_FLASH
05	GND	06	CAM1_TRIG
07	MIPI1_D0_N	08	GND
09	MIPI1_D0_P	10	CAM1_NRESET
11	GND	12	CAM1_ALERT
13	MIPI1_D1_N	14	GND
15	MIPI1_D1_P	16	CAM1_PWR_EN
17	+5V_CAM ¹	18	+5V_CAM ¹
19	+12V_CAM	20	+12V_CAM
21	+12V_CAM	22	+12V_CAM
23	+5V_CAM ¹	24	+5V_CAM ¹
25	VCC_IO_CAM1	26	CAM1_I2C_SCL
27	GND	28	CAM1_I2C_SDA
29	MIPI1_D2_N	30	GND
31	MIPI1_D2_P	32	Reserved
33	GND	34	Reserved
35	MIPI1_D3_N	36	GND
37	MIPI1_D3_P	38	Reserved
39	GND	40	Reserved

MIPI-CSI0 (DF40C-40DS-0.4V(51))

01	MIPI0_CLK_N	02	GND
03	MIPI0_CLK_P	04	CAM0_FLASH
05	GND	06	CAM0_TRIG
07	MIPI0_D0_N	08	GND
09	MIPI0_D0_P	10	CAM0_NRESET
11	GND	12	CAM0_ALERT
13	MIPI0_D1_N	14	GND
15	MIPI0_D1_P	16	CAM0_PWR_EN
17	+5V_CAM ¹	18	+5V_CAM ¹
19	+12V_CAM	20	+12V_CAM
21	+12V_CAM	22	+12V_CAM
23	+5V_CAM ¹	24	+5V_CAM ¹
25	VCC_IO_CAM0	26	CAM0_I2C_SCL
27	GND	28	CAM0_I2C_SDA
29	MIPI0_D2_N	30	GND
31	MIPI0_D2_P	32	Reserved
33	GND	34	Reserved
35	MIPI0_D3_N	36	GND
37	MIPI0_D3_P	38	Reserved
39	GND	40	Reserved

¹: power output of SCAILX-SOM board

Abbreviations

RGMI	Reduced Gigabit Media-Independent Interface
GPIO	General Purpose Input/Output
MIPI	Mobile Industry Processor Interface
CSI	Camera Serial Interface
DSI	Display Serial Interface
SPI	Serial Protocol Interface
UART	Universal Asynchronous Receiver/Transmitter
SoM	System-on-Module

The SCAILX-SOM-AI module is a universal interface board with a iMX8M Plus processor with AI capabilities and specific connectivity towards vision solutions.

Zoom block interfacing

The SCAILX-SOM-AI platform supports a range of LVDS zoom block cameras, including the Sony FCB-EV7520A, FCB-EV9520L, Tamron MP1010M-VC, MP3010M-EV and the Videology Zoom Block camera series, such as 24Z2.1W-10X/-20X/-30X/-40X/-55X and the 25Z2.4W-36X Global Shutter*.

*: ask for availability or check list of supported cameras

Board level interfacing (check with Videology sales or website regarding available camera modules)

MIPI board level cameras can be used with the SCAILX-SOM-AI connecting to a MIPI-CSI port using a SCAILX-FLEX cable (up to 48 cm). Color and monochrome cameras are supported. The cameras can be directly streamed and controlled via the V4L (Video4Linux) software interfacing.

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Technical specifications

System-On-Module

Processor	NXP i.MX8 M Plus 1.6 GHz Quad Cortex® -A53
Memory	2 GB LPDDR 1066 MHz
Flash	8 GB eMMC
Micro SD card	Max. 1 TB
Neural Processor	2.3 TOPS
Video processing	Hardwired H.264 / H265 encoder Hardwired H.264 / H265 decoder
Sensor MIPI port	2x 1080p@60fps max. or 1x max. 12 MP@30fps
OS	Embedded Linux
SDK	YOCTO development environment

Electrical

Supply Voltage	12 V ± 0.75 V (via RGMII connector)
Current typical/high load	166 mA / <2100 mA
Power typical/high load	Typ. 2 W / <5.5 W (CPU/NPU stress test)

Communication

Serial debug port	UART TXD/RXD on GPIO-B
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Environmental

Operating Temp.	-20 °C ~ 60 °C (-4 °F ~ 140 °F)
Storage Temp.	-30 °C ~ 85 °C (-22 °F ~ 185 °F)
Operating Humidity	30% ~ 90% RH
Storage Humidity	<85% RH

Mechanical

Dimensions WxH	42x42 mm, height see drawing on page 1 - 3 mm spacer on top side, - board-to-board connectors for add-on interface boards on bottom side via SCAILX-FLEX-xxx flexible connectors.
Weight	23 g
Connectors (bottom side)	RGMII - DF40C-40DP-0.4V(51) GPIO - DF40C-40DP-0.4V(51) MIPI - DF40C-40DS-0.4V(51) DSI - DF40C-40DP-0.4V(51) PCIe - DF40C-40DP-0.4V(51)

SCAiLX (add-on) interface boards*

SCAILX-LVDS-2-MIPI	Sony, Tamron, Videology block camera interfacing boards
SCAILX-ETH-POE	10/100/1000 Mbps Ethernet interface board with POE 21 W
SCAILX-ETH-DC	10/100/1000 Mbps Ethernet interface board with 12 V DC IN
SCAILX-GPIO	Universal breadboard for SCAILX-SOM-AI board connectors wire-out

SCAiLX camera boards*

SCAILX-2G234-xC	Board level camera 42x42 mm, Onsemi ISP, 2 MP, Colour, Global Shutter, external Sync, I ² C, V4L-control, M12 lens mount
SCAILX-2G234-xM	Board level camera 42x42 mm, Onsemi ISP, 2 MP, Monochrome, Global Shutter, external Sync, I ² C, V4L-control, M12 lens mount

Accessories (optional)

SCAILX-FLEX-60/120/240/480	FlexPCB DF40C-40 male-female 60/120/240/480 mm
	

Part numbering

SCAILX-SOM-AI	SoM board/iMX8M Plus/2 MIPI/SD
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*: check on our website for these and other modules and available datasheets

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