

# System On Module iW-RainboW-G40D i.MX 8M Plus SMARC Development Board



The i.MX 8M Plus SMARC Development Platform incorporates i.MX 8M Plus SoC based SMARC SOM and SMARC Carrier board for complete validation of i.MX 8M Plus SoC functionality. The Development board can be used for guick prototyping of various applications targeted by the i.MX 8M Plus Applications Processor. With the 120mmx120mm Nano ITX size, SMARC Carrier board is highly packed with all the necessary on-board connectors to validate the features of i.MX 8M Plus SMARC SOM.

**APPLICATION:** Applications focusing on Machine Learning and Artificial Intelligence, NPU & Vision System, advanced multimedia and industrial automation, Vision and advanced sensing, Factory Automation, Machine Vision and more.

SoC

## iW-RainboW-G40D HIGHLIGHTS

i.MX 8M Plus Q/QL/D SoC with 64-bit ARMv8-A Architecture

Dual or Quad-core ARM Cortex-A53 up to 1.8GHz & M7 at 800MHz

NPU with up to 2.3 TOP/s Neural Network performance

Excels in ML vision, edge intelligence & advanced multimedia applications

IEEE 802.11a/b/g/n/ac Wi-Fi & Bluetooth 5.0

Dual 1000/100/10 Mbps Ethernet (TSN support on one Port)

GNSS receiver Module -GPS/GLONASS/Galileo/BeiDou (optional)

4K HDMI & 5.5" HD AMOLED MIPI DSI Display

Quick customization services in a very shorter period.

10+ years of Product Longevity Program

### **SPECIFICATIONS**

#### i.MX 8M Plus Quad : 4 x Cortex-A53, 1 x Cortex-M7, GPU, VPU, NPU ,ISP & HiFi4 Audio DSP i.MX 8M Plus Quad Lite : 4 x Cortex-A53. 1 x Cortex-M7 & GPU i.MX 8M Plus Dual : 2 x Cortex-A53, 1 x Cortex-M7, GPU, VPU, NPU ,ISP & HiFi4 Audio DSP LPDDR4 -2GB (Expandable up to 4GB) eMMC Flash - 16GB(Expandable upto 128GB) On SOM Micro SD slot (Optional) Standard SD/MMC Gigabit Ethernet PHY Transceiver x 2 (One with TSN support) USB 2.0 High-Speed 4-Port Hub IEEE 802.11a/b/g/n/ac Wi-Fi & BLE 5.0 GNSS receiver Module -- GPS/GLONASS/ Galileo/BeiDou(Optional) 4 Lane MIPI CSI Camera Connector (Optional) **OS Support** Linux 5.4.70, Android 11.0.0, Ubuntu 20.04 **SMARC Carrier Board** Gigabit Ethernet Jack- 2 Port PCle x1 slot / MiniPCle slot - 1 Port USB 3.0 Host TypeA Connector - 2 Ports (Top Port muxed with type-C)

USB 2.0 Host TypeA Connector - 2 Ports
USB 3.0 OTG Type-C Connector - 1 Port
Standard SD slot - 1 Port
SPI Flash - 1
HDMI2.0 - 1 Port
CAN FD - 2 Ports
5.5" HD AMOLED MIPI DSI display with Capacitive Touch Screen
20pin LVDS Connector
MIPI CSI Camera Connector
Audio In & Out Jack through I2S Codec x1
Full Function UART - 1 Port
RTC with backup battery
Debug Micro USB Port
Carrier Expansion Connector
SPI x 2
UART x 1
I2S x 1, I2C x 2
A&V Expansion Connector interfaces
4 Iane LVDS, 4 Iane MIPI CSI
SAI/12S x 1 Port
I2C x 1 Port, GPIOs
Power Input
12V, 2A DC
Operating Temperature
0°C to +60°C
Form Factor





# i.MX 8M Plus SMARC Development Kit Block Diagram

		i.MX 8M Plus		To One Decemb	
		SMARC Edge Connector		Peripherals &	12V Power
Bottom	10/100/1000Mbps Ethernet	ENETO to		SOM	JUDA
RJ45 Stack	10/100/1000Mbpc Ethernet	GBEO		. 3V	RTC Coin Cell
Тор	To/ Too/ Tooombps Eulernet	GRE1			Holder
	USB3 0 Host x 1				
Bottom		(HS SS)	MIPI	MIPI DSI/LVDS x1 (4 lane) MIPI DSI0	MIPI DSIO
USB3.0 Stack		(	DSI0/LVDS0 <sup>1</sup>		Connector
	USB3.0 USB3.0 Host x 1			LVDS0	LVDS Display
USB Type -C	Switch	(HS SS)		,	Connector
Connector	SEL BIP SW				
Bottom USB2.0 Host x1		USB2_HUBP3	HDMI TX -	HDMI TX x 1	HDMI
USB2.0 Stack		(113)			CONNECTOR
Тор 🕂		IISB2 HIIBD1		MIRI CSI0 x 1 (Japa 1:0)	MIPL CSIO
Mini PCle	Hub	(HS)	MIPI CSIO		Connector
Connector					
	PCIe A PCIe x1			SDIO x 1	Standard SD
-	Switch PCIe_SW_SEL				Connector
	SPL x 1			Audio In	Audio In Jack
Connector		ECSPIZ	SAI2	Codec Audio Out	And the Oright Leads
	I2S x 1	AUD_SAI3 <sup>2</sup>		And the second	
	UART x 1		LIART2	UART (with CTS & RTS) x 1	UAPT Hoodor
					OATT TICAUCI
PCIo x/I Slot				LVDS1 x 1	
FOIE A4 SIDE			<u> </u>		
				MIPI CSI X1 (4lane)	00-1- 401
Debug micro	USB USB to UART	UART4			80pin A&V
USB FUIL	IANA		AUD_SAI3 <sup>2</sup>	12S x 1	Connector
	SPLx 1	<b>F0014</b> 2			
	SPI Flash	ESPIT	I2C5, GPIOs	I2Cx 1, GPIOs	
	BOOT SEL X 3				
		BOOT_SEL	ECSPI1 <sup>3</sup>	SPI x 2	
	DIP SWITCH	CONTROL	ECSPI24		•
				UART x 1	
CANO Header	CAN CANO	FLEXCAN1	UART3	• •	80pin Carrier
	Hanscervel			125 x 1	Expansion
CANIE Handam	CAN CAN1				Connector -2
CANT Header	Transceiver	FLEAGANI		I2Cx 2	
			1 1203.1202		

Note: \* Optional

1. Either MIPI\_DSI or LVDS can be supported on SOM, in default configuration MIPI\_DSI is supported.

2. Shared between M.2 Connector and A&V Expansion Connector

3. Shared between SPI Flash and Expansion Connector-2

4. Shared between M.2 Connector and Expansion Connector-2

#### **OS SUPPORT**

Linux 5.4.70 (or higher) Android 11.0.0 (or higher) Ubuntu 20.04 (or higher)

#### DELIVERABLES

i.MX 8M Plus SMARC Dev Kit Board Support Package User Manual

### **OPTIONAL KITS/Modules**

Camera Module Heat Sink / Heat Spreader

#### **CUSTOM DEVELOPMENT**

BSP Development/OS Porting Custom SOM/Carrier Development Custom Application/GUI Development Design Review and Support

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\*Optional items not included in the standard deliverables.

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#### i.MX 8M Plus SMARC DevKit

The device can be ordered online from the iWave Website https://www.iwavesystems.com/product/i-mx-8m-plus-smarc-som/ Or from our Local Partners in your region http://www.iwavesystems.com/about-us/business-partner.html

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