

# Single Board Computer iW-RainboW-G27S i.MX8 Quad Max/ Quad Plus Pico-ITX SBC



The i.MX8 Quad MAX/Quad Plus Pico ITX SBC integrates Dual Cortex A72 + Quad Cortex A53 Cores, Dual GPU systems,

4K H.265 capable VPU dual failover-ready display controller based i.MX8 QuadMax SoC with on Dual 10/100/1000 Mbps Ethernet PHY,USB 3.0 hub and IEEE 802.11a/b/g/n/ac Wi-Fi & Bluetooth 5.0 module.

This board offer maximum performance with higher efficiency for complex consumer, medical and industrial embedded computing applications. With the 100mm x 72mm Pico-ITX form factor, the SBC is highly packed with all the necessary on-board connectors.

**APPLICATIONS:** Remote Energy Management, Intelligent Edge, Augmented & Virtual Reality, 4K Media Streaming, Industrial Automation, Automotive eCockpit

# iW-RainboW-G27S HIGHLIGHTS

**Dual Complex Core System:** 

Complex 1: 4 x Cortex-A53 @ 1.2 GHz Complex 2: 2 x Cortex-A72 @ 1.8 GHz

2 x Cortex-M4F @ 264 MHz for advanced system control

4K H.265 decode & 1080p h.264 enc/deccapable VPU

Enhanced Vision Capabilities (via GPU)

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

Dual 1000/100/10 Mbps Ethernet

Up to 8GB LPDDR4 memory

Ultra-compact form size 100mm x 72mm

-40 to +85°C Operation

# SPECIFICATIONS

CPU: i.MX8 QM/QP/DM Processor
i.MX8QuadMax: 2 x Cortex-A72, 4 x Cortex-A53 & 2 x Cortex- M4F
i.MX8QuadPlus: 1 x Cortex-A72, 4 x Cortex-A53 & 2 x Cortex- M4F
Power:
PF8100
Memory:
LPDDR4 - 4GB (Expandable up to 8GB) <sup>23</sup>
eMMC Flash - 16GB (Expandable) <sup>3</sup>
Micro SD Slot
Network & Communication
Gigabit Ethernet PHY Transceiver with RJ45 Magjack Connector x 2
USB3.0 High Speed Hub through dual stack Type - A Connector
USB 2.0 OTG port through - micro AB Receptacle Connector
IEEE 802.11 a/b/g/n/ac Wi-Fi & BT 5.0
RS232 X 1
CAN x 1
Operating System
Linux 4.14.98
Android Pie 9.0.0, QNX 7.0.0
Audio/Video Features:
HDMI output through HDMI (TypeA) connector 4
HDMI Input through micro HDMI (Type D) Connector
40Pin eDP Display Connector (Optional) <sup>4</sup>
I2S Audio Codec
3.5mm Audio IN/OUT
Expansion Connector 1
4 Iane MIPI DSI x 1
4 Iane LVDS x 2
CAN/SPDIF x1 Port
DMA_I2C x 1 Port
SPI x 1 Port

Expansion C 4 Iane MIPI CSI x 1 4 lane LVDS x 2 MIPI CSI I2C x 1 Port PWM x1 Port SPI x 1 Port M41 UART x 1 Port Expansion Conne 4 Jane MIPI CSI x 1 4 Iane MIPI DSI x 1 SAI x 1 Port QSPI x 1 Port DMA\_I2C x 1 Port MIPI CSI I2C x 1 Port CAN x 1 Port M40UART x 1 Port UART x 1 Port M.2 Connector Key E PCle x 2 SATA x 1 USB 2.0 x 1, USB 3.0 x 1 I2S x 1, I2C x 1 HSIC x 1 Nano SIM Connector Miscellaneo us Interface Debug UART Connector JTAG Header (Optional) Tamper Header (Optional) RTC Battery Connector **Power Supply:** 12V, 2A input through External Adaptor Operating Temperature: -40°C to +85°C Form Factor: 100mm X 72mm **Environment Spec** RoHS2 and REACH Compliance

There are 2 Configurations of i.MX8 Processor, hence in this document i.MX8 is used to represent either i MX80m or i,MX80P based on the part number. The i.MX8 can support up to 16GB RAM but considering available LPDDR4 configuration, it can support 8GB by using two 4GB chips.It 8GB (64GB) chips are av then 16GB DDP can be supported. Memory Size will liftle based on Nalve's product part number. This i.MX8 support HDMI or eDP through some pins, hence anyone can be supported at a time based on the SBC part number.



### i.MX8 Quad Max/ Quad Plus Pico-ITX SBC

	LPDDR4 - 4GB (Upgradable)	it) DDR CH0 DDR CH1		PMIC Interface	To On -board Peripherals	On -Board Regulators PMIC	12V 3V Gigabit	- 12V Power Jack RTC Coin cell Header
	eMMC – 16GB (Upgradable)	eMMCO		ENETO .		Gigabit Ethernet PHY	Ethernet	Left Conn
Micro SD Connector	SD1 x 1	SDHC1		ENET1		Gigabit Ethernet PHY	Gigabit Ethernet	RJ45 Conn Dual Ganged Right Conn
Antenna Conn.		SDHC2		USB OTG1	•	USB Device/OTG	x 1	USB 2.0 Conn
Antenna Conn. Nano SIM Conn.	Module with Antenna PCIe x 1	ESAI 0		USB OTG2	USB2.0	USB3.0 HUB	USB3.0	Top USB 3.0 Stack
M.2 Module Connector key B	SIM PCIe/USB3.0 SW USB3.0 x 1	PCle1 2		USB_SS3	USB3.0	(3ports)	Host x 2	Bottom
	PCIe/USB3.0 SW USB3.0 X 1	→		HDMI RX	+	HDMI RX x1		Micro HDMI Conn
	PCIe/SATA SW PCIe x 1	PCIe2/SATA <sup>2</sup> PCIe0		HDMI TX/eDP <sup>1</sup>	HDMI TX/ eDP	<b>-+</b> +	HDMI TX	HDMI Flag Conn
	HSIC x 1						eDP	40 Pins eDP Conn
	SALX 1	SAI0		MIPI DSI0	MIPI DSI x1 4lanes			
	USB2.0 x 1		i.MX8 QM/QP	MIPI DSI0 12C0	•	MIPI DSI 12C x1		+
	$\longleftarrow$			LVDS1 CHO		LVDS x 2 Channel		
60 pins Expansion Header -3	DSI x 4lanes	MIPI DSI1		LVDS1_CH0	•	LVDS I2C x 1		
	I2C x 1 CSI x 4lanes	LVDS1 I2C0		SPDIF/FLEXCAN1 3	SPDIF/CAN1 x 1			Header -1
	CSI I2C x 1	MIPI CSI1 MIPI CSI1_I2C0				SPI x 1		
	UART x 1	UART3		SPI3 . DMA 12C2 .	I2C x 1			•
	DMA_12C x 1	DMA_12C1		DWIA_1202		MIPI CSI x1 4lanes		+
	SAI x 1	SAI24		MIPI CSIO MIPI CSIO 12CO		MIPI CSI I2C x1		
	CAN x 1	FLEXCAN2		LVDS0 CH0	LVDS x 2 Channel		60 pins	
	GPIOs OSPI x 1	GPIOs		LVDS0_CH1 LVDS0 I2C0		LVDS I2C x 1		Expansion Header -2
	UART/I2C x 1	QSPI1A			UART/I2C x 1			
	<	M4-0 UART/I2C	120	M4-1 UART/I2C	+	SPI x 1		
Boot Mode SW	SCU Boot Mode	SCU Boot Mode		SPI2	•			
Tamper Header	Tamper			FLEXCANO	← →	CAN Transceiver	<b>←</b> →	CAN Header
Debug UART	UART x 1	UART4		SAI1		I2S Audio Codec		Audio In/Out Jack
Header	SCU UART x 1	SCU UARTO		DMA_I2C1				Julie III Sul Sul
20pin Header (Optional)	JTAG			UARTO	UART x1	RS232 Transceiver	← →	RS232 Header

<sup>1</sup> Either eDP interface or HDMI TX is supported. By Default HMDI is Supported

<sup>2</sup> PCieO is connected to Wi-Fi BT Module and M.2 Connector. By default M.2 Connector is supported.

<sup>3</sup> Either FLEXCAN1 or SPDIF is supported. BY default FLEXCAN1 is supported

<sup>4</sup> SAI2 Receive mode

<sup>5</sup> HSIC is optional feature

**OS SUPPORT** Linux 4.14.98 Android Pie 9.0.0 QNX 7.0.0

#### DELIVERABLES i.MX8QM Pico ITX SBC **Board Support Package**

User Manual

#### **OPTIONAL KITS/MODULES**

Heat Sink Industrial Enclosure

#### **CUSTOM DEVELOPMENT**

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

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\*Optional items are not included in the standard deliverables

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#### iWave Europe

Ordering the i.MX8 QM/ QP Pico-ITX SBC

http://www.iwavesystems.com/webforms

The board can be ordered online from the iWave Website

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