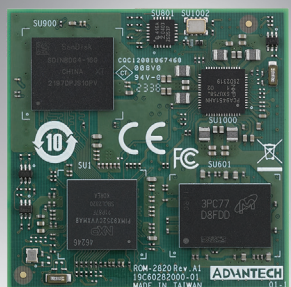


# ROM-2820

## NXP i.MX 93 Cortex®-A55 OSM 1.1 Computer-on-Module

Preliminary



### Introduction

Advantech ROM-2820 OSM 1.1 Computer-on-Module is powered by NXP i.MX 93 SoC which includes Cortex-A55 Dual-core in combination with one Cortex-M33 real time processor, Ethos®-U65 Neural Processing Unit (NPU) and 2D graphics engine. It provides USB2.0, Gigabit Ethernet, MIPI-CSI, I2C, SPI, GPIO, CAN-FD and MIPI DSI display for embedded applications.

ROM-2820 is paired with Advantech OSM carrier board for faster end product peripheral integration and time-to-market. The reference schematics and layout checklists documentations for carrier board development will be provided along with the open-sourced Linux BSP, test utilities, hardware design utilities and reference drivers.

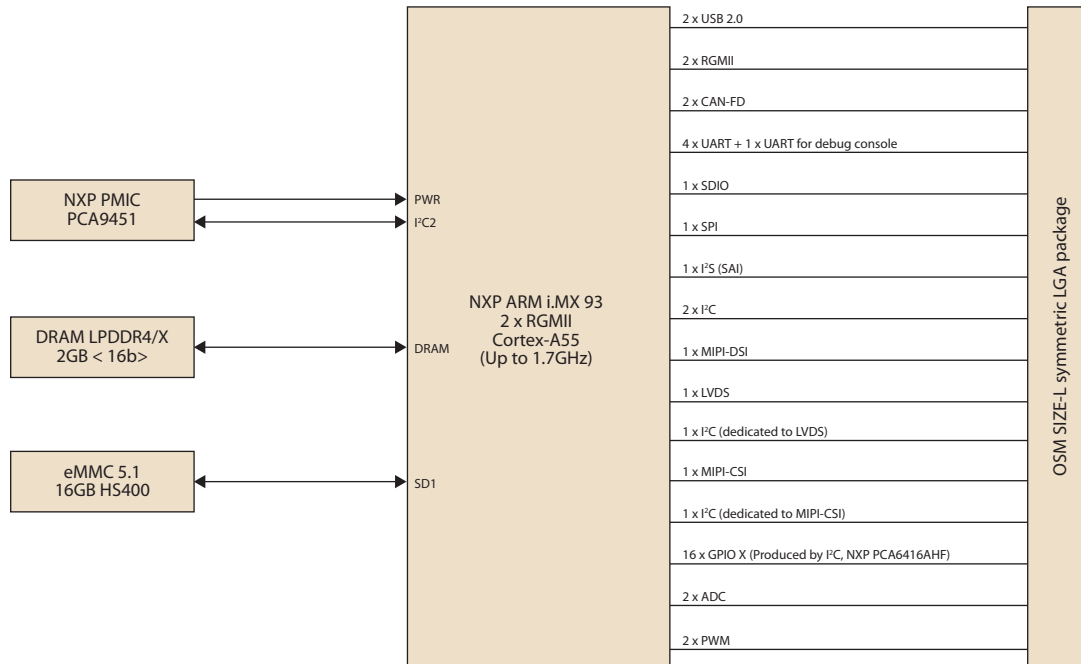
### Specifications

Form Factor		OSM 1.1
Processor System	CPU	NXP i.MX 93 Cortex-A55 Dual-core (up to 1.7GHz)
	MCU	1 x Arm Cortex-M33 core
Memory	Technology	1 x 2GB LPDDR4X up to 3733MT/s
	Capacity	1 x On-board 2GB
	Flash	1 x 16 GB eMMC NAND Flash for O.S
Graphics	LVDS/MIPI DSI	1 x 4 lane MIPI-DSI, 1 x single channel LVDS
	HDMI	-
	Parallel RGB	-
	VGA	-
	Graphics Engine	NXP integrated 2D Graphic Acceleration
Ethernet	Chipset	2 x NXP i.MX 93 integrated RGMII
	Speed	2 x 10/100/1000 Mbps
RTC	RTC	External RTC
Security		NXP i.MX 93 integrated Trust Zone
I/O	PCIe	-
	SATA	-
	USB	2 x USB 2.0
	Audio	1 x I <sup>2</sup> S
	SPDIF	-
	SDIO	1
	Serial Port	2 x 4-wire UART; 2 x 2-wire UART; 1 x 2-wire UART for debug console
	SPI	1
	CAN-FD	2
	GPIO	16
	QSPI	N/A
	I <sup>2</sup> C	2 + 2 (dedicated to LVDS/MIPI-CSI)
	Camera Input	1 x 2-lane MIPI-CSI
	PWM	2
	Touch	-
ADC	2	
Power	Power Supply Voltage	5V
	Power Consumption	Max. Load: 2.1 watt; Idle mode: 0.03 watt
Environment	Operating Temperature	0 ~ 60 °C / -40 ~ 85 °C
	Operating Humidity	5 ~ 95% relative humidity, non-condensing
Mechanical	Dimensions (W x D)	45 x 45 mm
Operation System		Yocto Linux
Certifications		CE/FCC Class B

### Features

- NXP i.MX 93 Cortex-A55 Dual-core (up to 1.7GHz)
- 1 x Arm Cortex-M33 core
- 1 x Ethos®-U65 microNPU
- 1 x 2GB LPDDR4X up to 3733MT/s
- 1 x 4 lane MIPI-DSI
- 2 x USB 2.0, 5 x UART, 4 x I<sup>2</sup>C, 16 x GPIO, 2 x PWM, 2 x CAN-FD
- Compact size form factor - OSM Size L (45 x 45 mm)
- Support Yocto Linux

## Block Diagram



## Ordering Information

Part No.	CPU	Memory	Flash Memory	UART	LAN	USB 2.0	Display	Size	Power input	Operating Temperature
ROM-2820WD-MDA1E	i.MX 93 Dual Core	2GB	16GB	5	2	2	1 x MIPI-DSI, 1 x LVDS	45 x 45 mm	5V	-40 ~ 85 °C
ROM-2820CD-MDA1E	i.MX 93 Dual Core	2GB	16GB	5	2	2	1 x MIPI-DSI, 1 x LVDS	45 x 45 mm	5V	0 ~ 60 °C

## Development Board

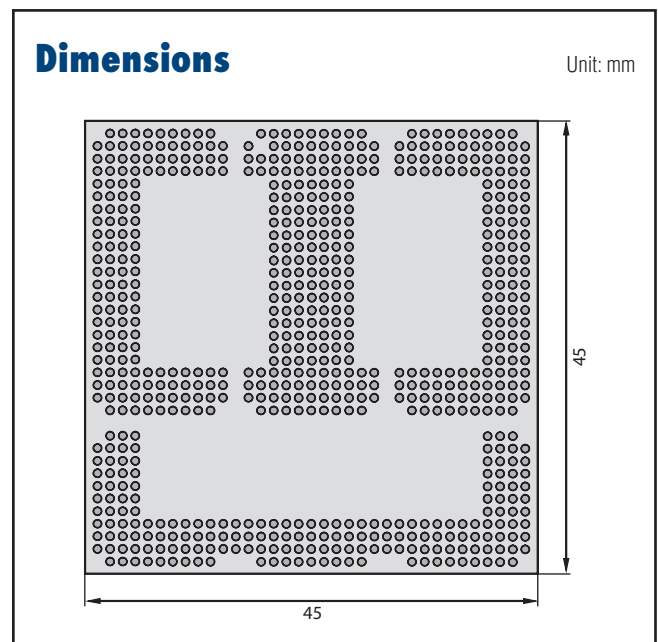
Part No.	Description
TBD	ROM-2820 evaluation kit

## Optional Accessories

Part No.	Description
1701100300	Debug port cable
1700019474	D-SUB 9P(F)/D-SUB 9P(F) RS232/RS485 100c
TBD	Heat Spreader
TBD	Semi Heat Sink
TBD	Screw for Heat Spreader and Semi Heat Sink
96PSA-A36W12R1-3	ADAPTER 100-240V 36W 12V 3A
1700001524	Power Cord 3P UL 10A 125V 180cm
170203183C	Power Cord 3P Europe (WS-010+WS-083) 183cm
1700019146	Power Cord CCC 3P 10A 250V 183cm
170203180A	Power Cord 3P UK 2.5A/3A 250V 1.83M
1700008921	Power Cord 3P PSE 183cm
SQF-ISDM1-16G-21C	SQF SD Card I-SD UHS-I MLC 16G (0~70°C)
SQF-ISDM1-16G-21E	SQF I-SD UHS-I MLC 16G (-40~85°C)

## Dimensions

Unit: mm



# Embedded Linux Support and Design-in Services

## Hardware Certified Ubuntu and Yocto with Eco Partner Services

Linux is the most popular embedded OS for transportation, outdoor services, factory automation, and mission critical applications. Its open source and kernel reliability features ease security updates, and make it particularly adaptable to new AI and Edge computing technology. Advantech has cooperated with Canonical and other software partners to provide hardware certified Ubuntu image and Yocto BSP as Linux offerings. The Advantech, Embedded Linux, and Android Alliance (ELAA) delivers local software services and consultation.



### Features

<p><b>Certified OS and BSP</b></p> <ul style="list-style-type: none"> <li>Platform compatibility tests</li> <li>Preloaded functional driver and software stacks</li> </ul>	<p><b>Licensed Services</b></p> <ul style="list-style-type: none"> <li>License authorized Canonical delivers 10-years of bug fixes and security updates</li> <li>In-house bundled service</li> </ul>	<p><b>Numerous AI and Edge Resources</b></p> <ul style="list-style-type: none"> <li>Containerized technology for service provision and deployment</li> <li>AI resources from Caffe, TensorFlow, and mxnet</li> </ul>	<p><b>Local Partner Alliance</b></p> <ul style="list-style-type: none"> <li>Embedded Linux and Android Alliance (ELAA)</li> </ul>
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# WISE-DeviceOn

## Massive IoT Device Management Utility

IoT deployment and management typically involves numerous disparate devices installed on multiple sites. These devices require effective monitoring, managing, and tracking. Advantech's easy-to-use WISE-DeviceOn interface enables users to remotely monitor device health, troubleshoot problems, and send software/firmware updates over-the-air (OTA). In sum, DeviceOn empowers quick real-time responsiveness to emerging problems.



### Features

Comprehensive Management	Remote Access	Efficient Operations
<ul style="list-style-type: none"><li>• Devices status</li><li>• Peripherals/firmware</li><li>• Open for extension</li></ul>	<ul style="list-style-type: none"><li>• Real-time monitoring</li><li>• Remote controls</li><li>• Troubleshooting</li></ul>	<ul style="list-style-type: none"><li>• Zero-touch on-boarding</li><li>• OTA updates</li><li>• Batch control</li></ul>

### Product Highlights



**SOM-6883**

High-performance 11<sup>th</sup> Gen Intel<sup>®</sup> COMe Type 6 Module



**MIO-5375**

Compact 11<sup>th</sup> Gen Intel<sup>®</sup> Outdoor Focused 3.5" SBC



**EPC-B5587**

10<sup>th</sup> Gen Intel<sup>®</sup> Xeon<sup>®</sup> based Edge server



**EPC-R3220**

Arm based IoT Edge Gateway