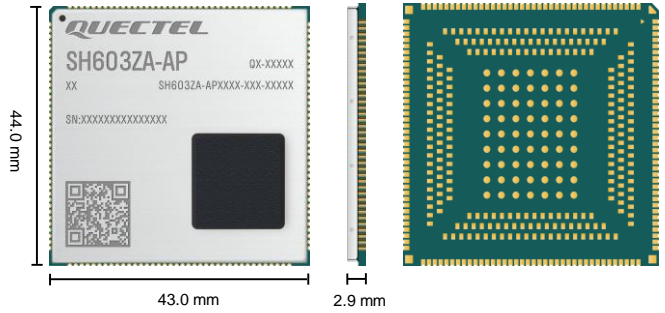


# Quectel SH603ZA-AP

## Smart Module



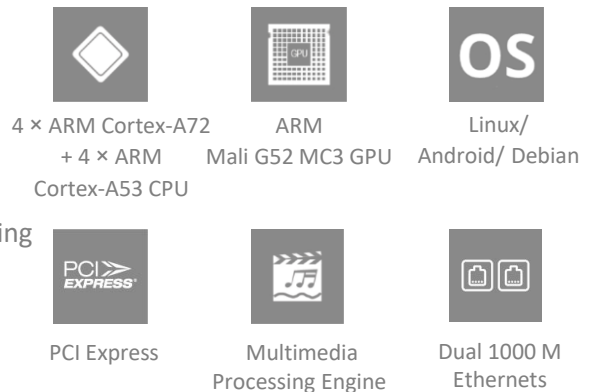
SH603ZA-AP is Quectel's new generation of smart module, which integrates Rockchip IoT chip RK3576/ RK3576J, including high-performance 4 × ARM Cortex-A72 + 4 × ARM Cortex-A53 CPU, ARM Mali G52 MC3 GPU, 16 M ISP HDR and 6 TOPS NPU computing power. Supporting external Wi-Fi and Bluetooth, the module is ideal for industrial applications requiring automation , as well as consumer applications requiring high computing power and multimedia functions.

SH603ZA-AP module integrates abundant peripheral interfaces: 1 × HDMI/ DP/ EDP/ MIPI, dual 1000 Mbps ethernet interfaces, multiple industrial serial interfaces, 2 × USBs, 2 × PCies, 2 × CANs, 2 × SATAs, 12 × UARTs etc. Supporting 8K @ 30 fps or 4K @ 120 fps decoding (H.265/ VP9/ AV1, etc.) and 4K @ 60 fps encoding (H.264/ H.265), as well as triple-screen displays, the module can satisfy the requirements of domestically applying edge devices in AI industrial control by means of its 6 TOPS NPU and complete in-depth learning algorithms. The module, with built-in Linux/ Android/ Debian operating system, can also be used with external Quectel Cat 4/ 1, 4G, Voice, Wi-Fi 6 and GNSS modules, which greatly expands its applicability to the scenarios in M2M industry, such as smart commercial displays, robots, live videos, smart retails, industrial control, E-books, industry tablets, etc.



## Key Features

- ✓ 4 × ARM Cortex-A72 + 4 × ARM Cortex-A53 CPU
- ✓ ARM Mali G52 MC3 GPU
- ✓ 16 M ISP HDR
- ✓ 6 TOPS NPU computing power
- ✓ 8K @ 30 fps or 4K @ 120 fps or 4K @ 60 fps video decoding
- ✓ 4K @ 60 fps video encoding
- ✓ PCIe 2.1/ USB 3.0/ SD 3.0
- ✓ HDMI 2.1/ MIPI DSI-2 1.1/ eDP 1.3
- ✓ MIPI CSI 1.2
- ✓ Dual 1000 M ethernet interfaces



# Quectel SH603ZA-AP

Module	SH603ZA-AP	
Category	Commercial-grade	Industrial-grade
Platform	RK3576	RK3576J
CPU	4 × A72 @ 2.2 GHz + 4 × A53 @ 2.0 GHz	4 × A72 @ 1.6 GHz + 4 × A53 @ 1.4 GHz
GPU	G52MC3 (900M)	G52MC3 (700M)
Memory	2 GB LPDDR4x + 32 GB eMMC (Default)	2 GB LPDDR4x + 32 GB eMMC (Default)
	4 GB LPDDR4x/ LPDDR5x + 32 GB eMMC (Default)	4 GB LPDDR4x/ LPDDR5x + 32 GB eMMC (Default)
	4 GB LPDDR4x/ LPDDR5x + 64 GB eMMC (Optional)	4 GB LPDDR4x/ LPDDR5x + 64 GB eMMC (Optional)
	8 GB LPDDR4x/ LPDDR5x + 64 GB eMMC (Optional)	8 GB LPDDR4x/ LPDDR5x + 64 GB eMMC (Optional)
Temperature Range		
Operating Temperature	-25 °C ~ +75 °C	-40 °C ~ +85 °C
Electrical Features		
Power Consumption	TBD	TBD
Certifications		
Regulatory/ conformance	CE*/ RCM*	CE*/ RCM*
Module	General Features	
Region/ Operator	Global	
NPU	6 TOPS	
OS	Linux (Kernel 6.10)/ Android 14/ Debian	
Dimensions (mm)	44.0 × 43.0 × 2.9	
Package	LCC + LGA	
Weight (g)	TBD	
Interfaces		
Display	1 × 4-lane MIPI DSI-2 v1.1: up to (2560 × 1600) @ 60 Hz	
	1 × eDP: up to 4096 × 2160 @ 60 Hz	
	1 × HDMI: up to 4096 × 2160 @ 120 Hz	
	1 × RGB*: up to 1920 × 1080 @ 60 Hz 1 × USB/ DP: up to 4096 × 2160 @ 120 Hz	
Camera	MIPI-CSI D-PHY v2.0, 4-lane, 4.5 Gbps/ C-PHY v1.1, 3 trios, 2.5 Gbps MIPI-CSI D-PHY v1.2, 2 × 4-lane or 4 × 2-lane or 4 + 2 × 2, 2.5 Gbps DVP*, 8/ 10/ 12/ 16-bit, BT.601/ BT.656 and BT.1120 Single-channel ISP, 16M pixels	
Audio	Digital audio	
Video	<b>Encoding:</b> H.264/ H.265 standards, up to 4K @ 60 fps	
	<b>Decoding:</b> H.264 AVC/ MVC Main Profile @ L5.2, up to 4K @ 60 fps H.265 HEVC Main Profile @ L6.0, up to 8K @ 30 fps or 4K @ 120 fps VP9 Profile 0/2 @ L6.0, up to 8K @ 30 fps or 4K @ 120 fps AVS2 Profile 0/2 @ L6.0, up to 8K @ 30 fps or 4K @ 120 fps AV1 Main Profile @ L6.0, up to 8K @ 30 fps or 4K @ 120 fps	
USB	× 2, compliant with USB 3.2/ 2.0 specifications; USB OTG	
PCIe	× 2, compliant with PCIe 2.1 specification	
RGMII	Max. × 2	
UART	Max. × 12	
SATA	Max. × 2, compliant with SATA 3.0 specification	
SDIO	Max. × 2 (supporting only 1 SD card, SD 3.0, 4 bits)	
I2C	Max. × 9	
I2S	Max. × 5	
ADC	× 7, general-purpose ADC interface	
SPI	Max. × 5, master and slave modes	
PWM	Max. × 16	
CAN	Max. × 2, CAN FD	
Keypad	PWRKEY/ RESET_N/ VOL_UP/ BOOT/ VOL_DOWN	
GPIO	Max. × 130	
Electrical Features		
Supply Voltage Range	3.6–5.5 V, typ. 5 V	

## Notes:

1. \*: Under development/ in progress
2. TBD: To be determined