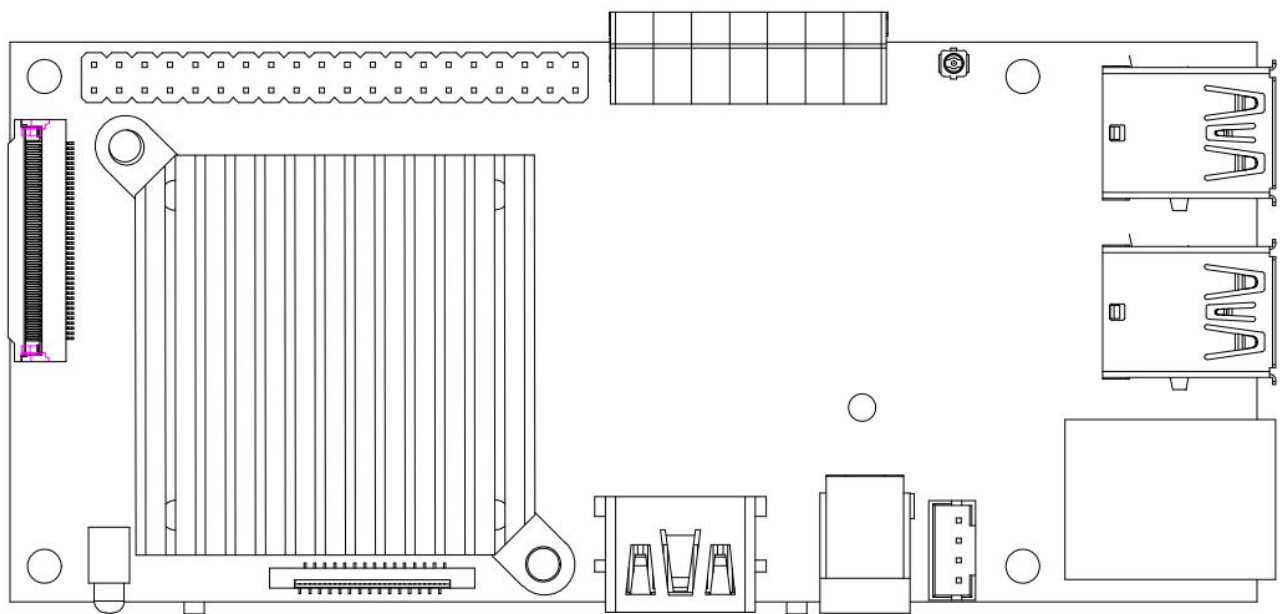


Industrial on-board specification description

Model : XPI-3576



Technical support:

Geniatech

Revision history

Version	Date	Circuit board ID	Page number	Descriptive content
V1.0	2025/6/28	RKU250530 V1.0	6	Initial version
V1.1	2025/7/22	RKU250530 V1.0	6	Added VPU, GPU and OS content
V1.2	2025/9/10	RKU250530 V1.0	6	Add product appearance size diagram, modify core board model

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I、Product Introduction

The XPI-3576 system is based on the RK3576J+Hailo H8 computing power module, supports the Linux Debian12/Android 14 emulator system, is compatible with Raspberry PI accessories, supports applications developed for the Raspberry PI system, enables seamless migration to the Raspberry PI, and is superior and cost-effective compared to the Raspberry PI. Compatible with Raspberry PI's standard 40P GPIO expansion interface, supports 4K HDMI display output, supports MIPI-DSI display output interface and MIPI-CSI video input interface, has POE mode, supports communication interfaces such as CAN, 485, 232, and supports multiple network access such as WiFi and wired. Its typical application areas include programming education, software development, digital multimedia terminals, industrial control, smart display devices, etc.

- Quad-core ARM Cortex-A72 processor with quad-core ARM Cortex-A53 real-time core;
- Integration of NPU engine support provides 6 TOPS (INT8) mixed operation ability;
- Supports 4GB of RAM and 32GB of eMMC flash;
- Supports MIPI-CSI video input interface and MIPI-DSI display output interface;
- Up to 4K@120Hz (3840x2160) with 10-bit data transfer;
- Support the provision of other interfaces such as CAN/485/232/UART/PCIe 3.0/GPIO;
- Support Android 14, Debian 12 system, stable and reliable performance;
- Industrial standard design, supports stable operation from -40°C to 85°C.

II、Product image

The following images are for reference only.

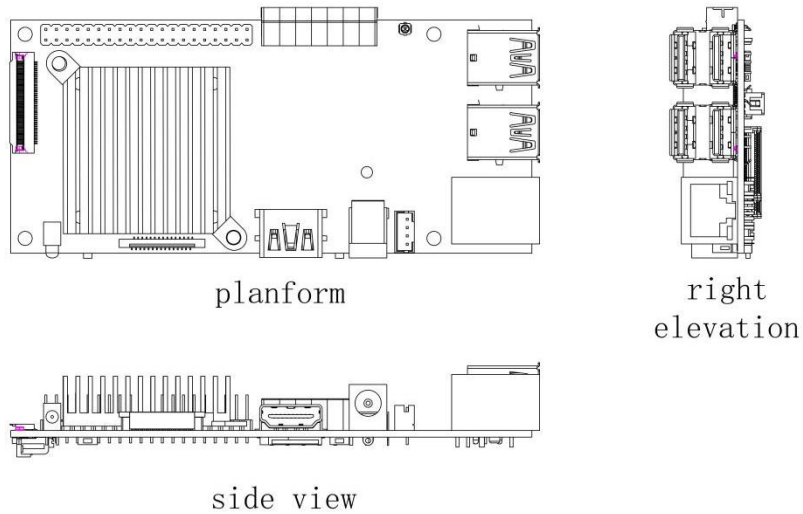


Figure1 Three-view diagram of XPI-3576 board

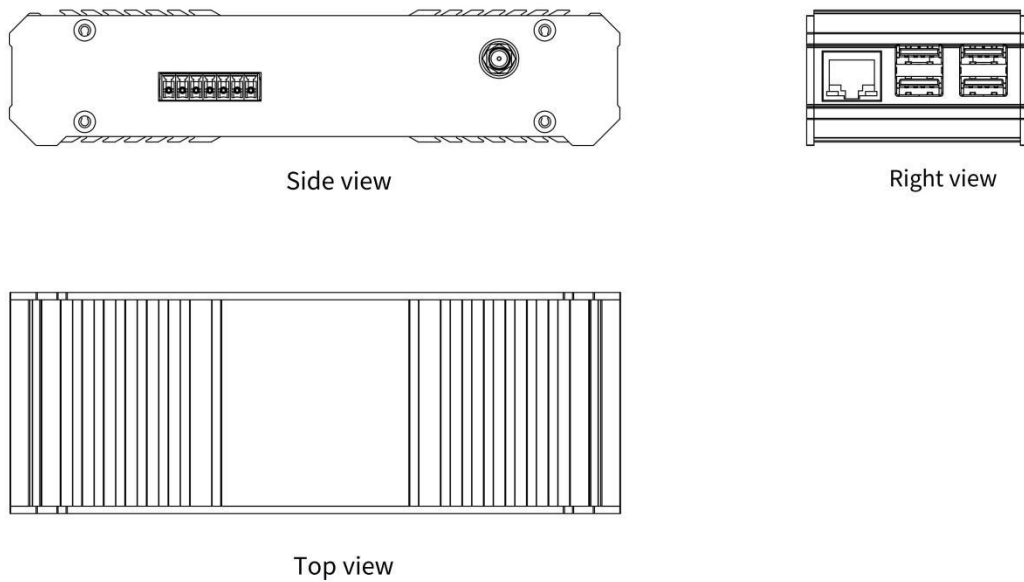


Figure2 Three-view drawing of XPI-3576

III、Hardware block diagram

3.1 Core board hardware block diagram

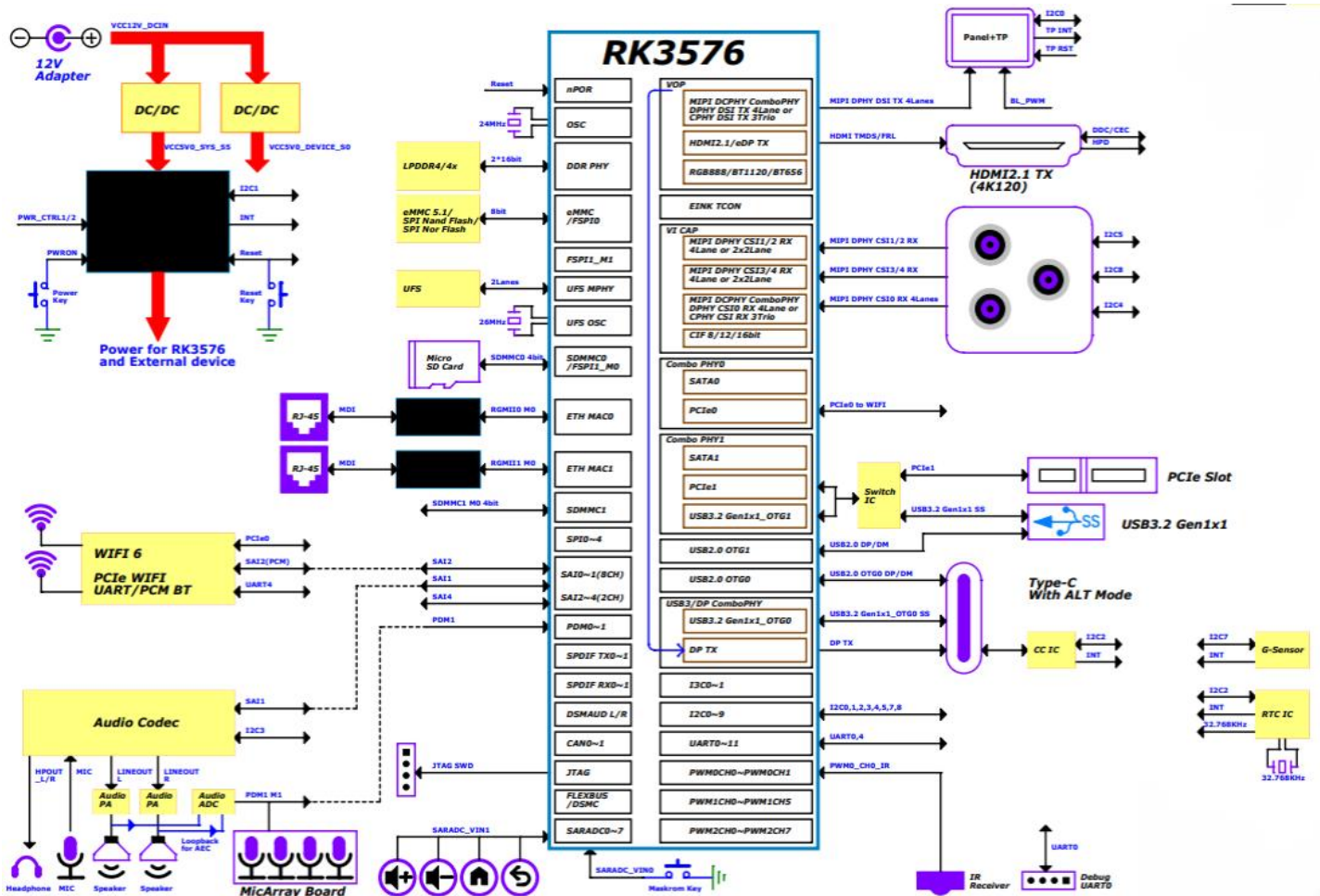


Figure3 RK3576J core board hardware block diagram

3.2 Processor architecture diagram

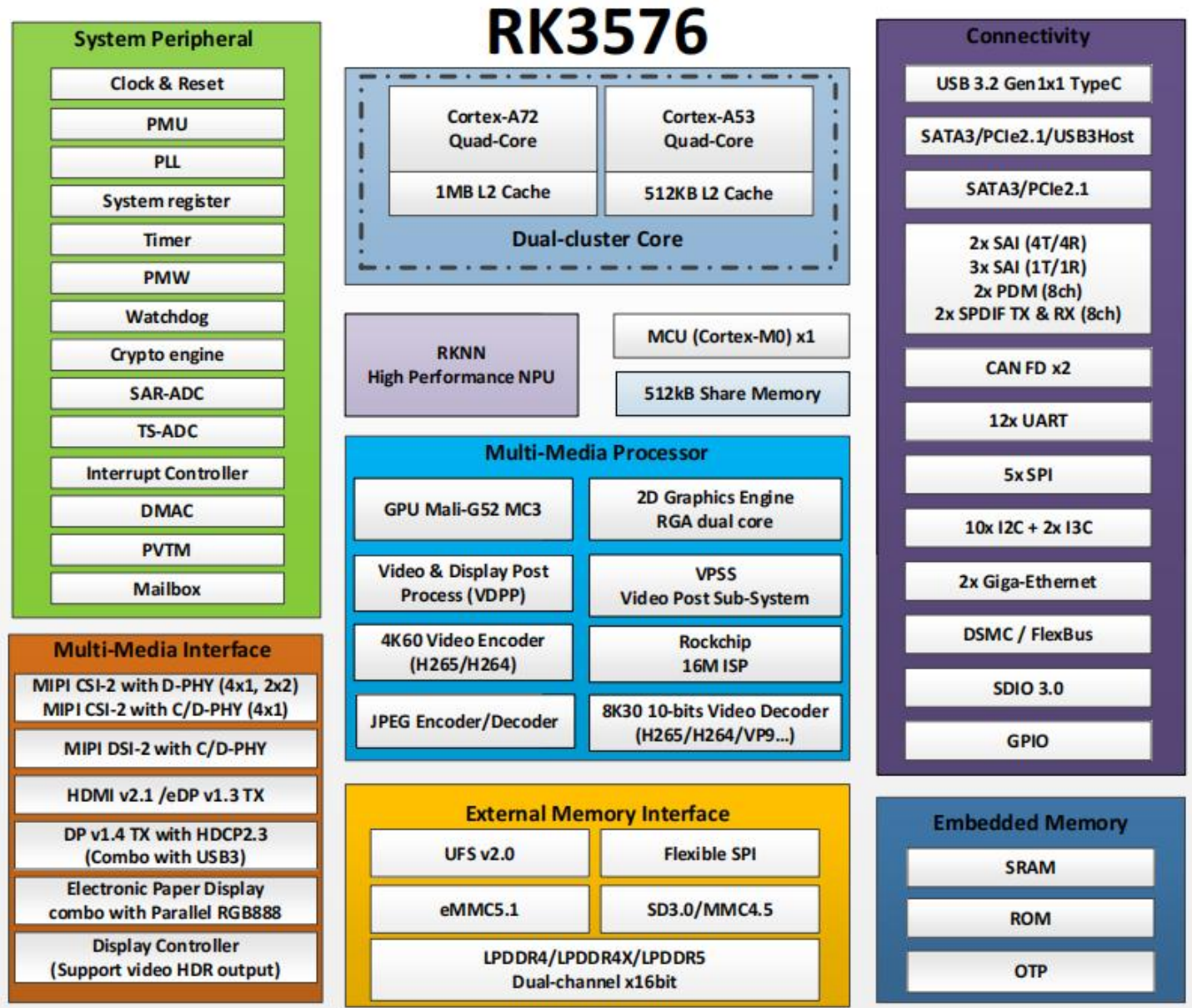


Figure4 RK3576J processor architecture diagram

IV、Hardware parameters

Table1 Hardware parameter definitions

Processor	Chip model	Rockchip RK3576J
	CPU	Quad-core ARM Cortex-A72 processor + quad-core ARM Cortex-A53 real-time core
	NPU	Neural network performance (providing 6TOPS of INT8 computing power)
	VPU	Supports video decoding H.264/AVC (up to 4K@60fps) and video encoding H.264/AVC (4K@60fps)

	GPU	Through 3D (ARM Mali G52 MC3) /2D (RGA V2.5) co-design, it takes into account high-performance rendering and low-power display output, and supports mainstream graphics interfaces and advanced post-processing functions
Storage performance	RAM	4GB (8G/16G optional)
	ROM	32GB (optional 64G/128G) eMMC
support system	OS	Android 14、Debian 12
Hardware interface	MIPI CSI	1 4LANE CSI FPC (0.5mm FPC seat)
	MIPI DSI	1 4LANE DSI FPC (0.5mm FPC seat)
	USB	4 2×USB 2.0, 2×USB3.0
	Network port RJ45	1 10/100/1000Mbps Ethernet, one Ethernet port
	TF card slot	1 Support TF card insertion
	Phoenix Terminal	1 1×CAN, 1×485/422, 1×232
	PCIe 3.0	1 M.2
	GPIO	1 40-pin Expand I/O, 2.54mm interface
	UART	4 DEBUG
	HDMI OUT	1 HDMI v2.1
	Watchdog	1 Has a watchdog mode
	RTC	1 With button battery
	Bluetooth	1 BT 5.0
	WiFi	1 WIFI module AP6256 2.4G/5.8G
DC power terminal	1 DC 12V	
Size	170mm×61.5mm×37.68mm, aluminium profile	
Power supply	12V	

V、Electrical characteristics

5.1 Working environment

Table2 Definition of environmental parameters

Storage temperature	-10 °C	85 °C
Industrial standard temperature	-40 °C	85 °C
Relative humidity	90%	/

5.2 Power consumption parameter (SOC)

Table3 Power parameter definition

Running status	Typical voltage	Typical current	Typical power consumption
Idle state	12V	50mA	0.6W
Full load state	12V	590mA	7.08W

Note:

Power consumption measurements are based on the evaluation board, and the test data are relevant to specific application scenarios and are for reference only.

Idle state: The system is started, the evaluation board is not connected to other external modules, and the program is not running.

Full load state: The system is up, the evaluation board is not connected to other external modules, the DDR is conducting pressure read/write tests, and the resource utilization of four ARM Cortex-A53 cores reaches approximately 100%.

VI、Mechanical size

The structural parameters related to the XPI-3576 are shown below

Table4 Structure size definitions

PCB size	125mm×56mm
PCB layer	10 layers
PCB board thickness	The 1.6 mm
Maximum component height	The 16.28 mm
Weight	32g

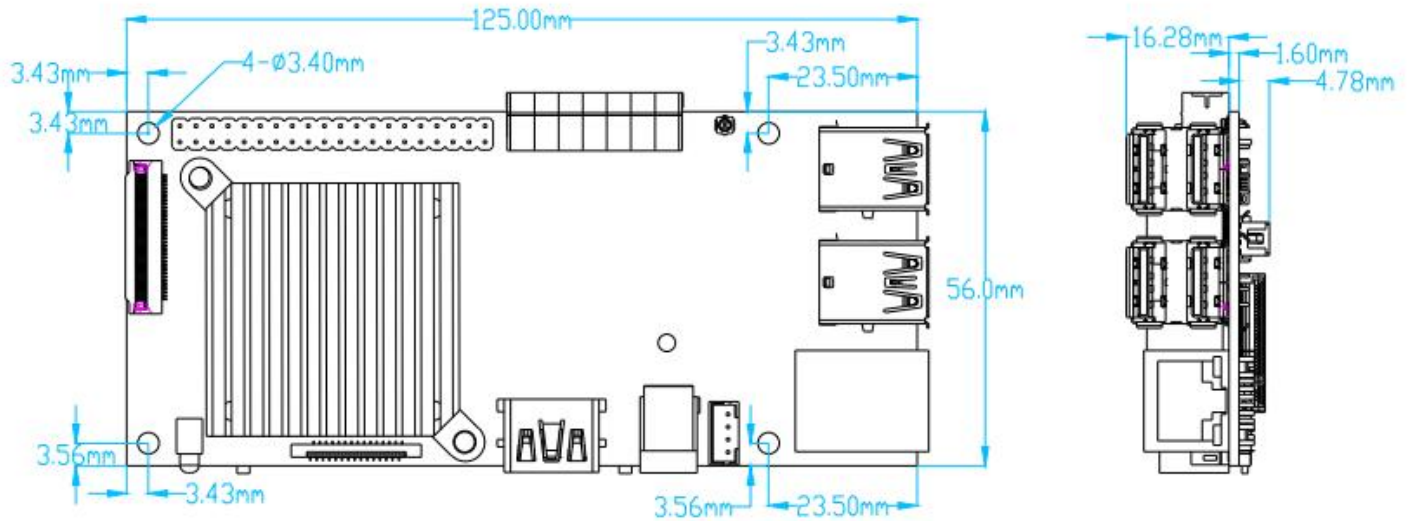


Figure5 XPI-3576 Onboard Schematic Dimensional Diagram

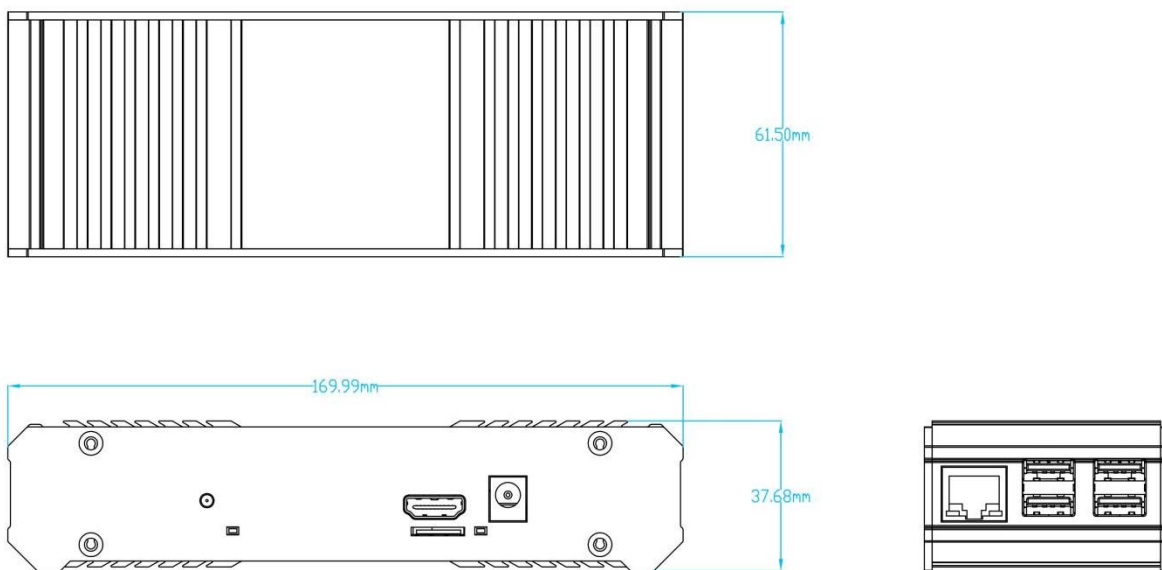


Figure6 XPI-3576 Overall Dimensions Diagram

VII、Notes for Use

1. Do not apply squeezing, bending or disassembly operations to the circuit board;
2. Please ensure that the circuit board is kept away from electrostatic environments;
3. Do not allow water or other liquids to touch the circuit board;

4. It is recommended to use a soft, dry cloth or brush to clean the circuit board;
5. Do not use overly long connection wires to avoid affecting device performance and image quality.