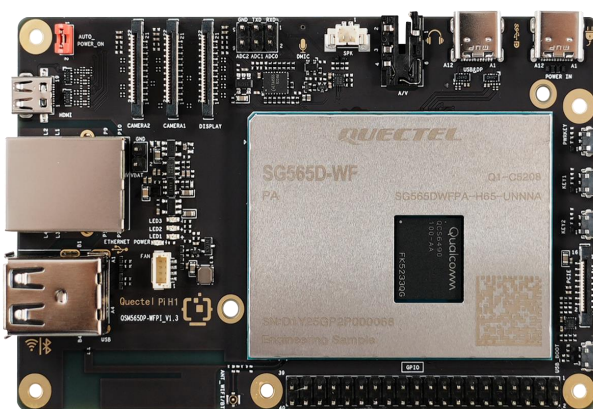


Quectel Pi H1

Single-Board Computer

Product Introduction

Quectel Pi H1 is a smart Single-Board Computer (SBC) based on the Qualcomm QCS6490 platform. It integrates a high-performance 64-bit octa-core processor delivering up to 12 TOPS of computing power, along with the Qualcomm Adreno™ 643L GPU. Supporting Yocto Linux or Debian operating system, the product comes equipped with 8 GB of LPDDR4X memory and features a USB Type-C power interface, expandable with external eMMC or SSD storage. It offers dual-band Wi-Fi (2.4 & 5 GHz) compliant with IEEE 802.11a/ b/ g/ n/ ac and Bluetooth 5.0, while enabling dual-display output via DP and LCM or DP and Micro HDMI. Combining powerful performance with rich multimedia capabilities, the Quectel Pi H1 is designed to meet the demands of both industrial and consumer applications for high-speed connectivity, advanced multimedia, and robust computing power.



Wi-Fi 5
2.4 & 5 GHz



Feature-rich
Interfaces



USB Type-C
Power Input



Compact, Full-Featured Design with
Extended Temperature Range

Main Advantages

- **Robust computing power:** Up to 12 TOPS, well-suited for most algorithm prototyping & inference application development.
- **Feature-rich interfaces:** USB, Micro HDMI, ADC, audio, Ethernet, camera, PCIe , antenna, etc.
- **Dual displays:** DP and LCM or DP and Micro HDMI.
- **Wireless connectivity:** Wi-Fi 5, 802.11a/ b/ g/ n/ ac, delivering enhanced wireless connectivity.
- **Multiple operating systems:** Yocto Linux/ Debian.
- **Extended temperature range:** For harsh outdoor & industrial use; withstand ambient temperatures from -20 °C to +70 °C.
- **Diverse application scenarios:** Edge computing, robotics, industrial automation, multimedia terminals, digital signage, smart security, rugged PDAs, etc.

Hardware Specifications

Parameter	Details
Application Processor	- High-performance 64-bit octa-core processor, delivering up to 12 TOPS of computing power 1 x A78 @ 2.7 GHz + 3 x A78 @ 2.4 GHz + 4 x A55 @ 1.9 GHz 32 KB L1I cache, 32 KB L1D cache and 512 KB L2 cache
GPU	Adreno™ 643L @ 812 MHz
Memory	8 GB LPDDR4X + 128 GB UFS
OS	Yocto Linux (Kernel 5.15)*/ Debian 13*
Weight (g)	Approx. 67.6
USB Interfaces	1 x USB 3.1 Type-C, compatible with USB 2.0, with up to 5 Gbps data rate 2 x standard USB 2.0 Type-A, supporting host mode only, and with up to 480 Mbps data rate 1 x USB Type-C for main power supply
Display Interfaces	1 x USB Type-C (DP Over USB Type-C), DisplayPort 1.4, with up to 4K (3840 x 2160) @ 60 fps 1 x Micro HDMI^①, HDMI 2.0 (frame rate to be determined*); decoding: 4K (H.264/ H.265/ VP9) @ 60 fps 1 x FPC connector^①, 4-lane MIPI DSI D-PHY 1.2, with 1280 x 800 @ 60 fps
Audio Interfaces	1 x 3.5 mm CTIA/AHJ (U.S.) & OMTP (China) combo audio jack 1 x micro HDMI for audio output 1 x on-board DMIC 1 x speaker
Camera Interfaces	2 x FPC connectors, 4-lane MIPI CSI, with up to 2.5 Gbps/ lane data rate
Ethernet Interface	1 x standard RJ45, supporting 10/ 100/ 1000 Mbps Ethernet
PCIe Interface	1 x FPC connector, 1-lane PCIe 3.0, with up to 8 GT/s × 1 lane data rate
SD Card Interface ^②	1 x SD 3.0, 4-bit SDIO
UART Interface	1 x DBG_UART, only for debugging
ADC Interfaces	3 x ADC header pins (max. input voltage: 1.8 V)
Extension Interfaces	6 x I2Cs (multiplexed with other interfaces) 1 x I2S (multiplexed with other interface) 4 x SPIs (multiplexed with other interfaces) 4 x UARTs (multiplexed with other interfaces) 3 x PWMs (multiplexed with other interfaces) 28 x GPIOs (multiplexed with other interfaces) 1 x SDIO^② (switchable)
Keypads	1 x PWRKEY, for turn-on/ turn-off; internally pulled up 1 x KEY1, a user-configurable function button 1 x KEY2, a user-configurable function button 1 x USB_BOOT, a function button that forces the product into download mode
LED Indicators	Red, blue and green
Antenna Interfaces	1 x Wi-Fi/ Bluetooth antenna connector (default) 1 x RF coaxial connector (ECT818000500); compatible with ECT818003008 RF coaxial cable^③ (optional)
WLAN	2.4 GHz & 5 GHz - IEEE 802.11a/ b/ g/ n/ ac
Bluetooth	5.0 ^④
Temperature Range	- Operating temperature: -20 °C ~ +70 °C - Storage temperature: -40 °C ~ +85 °C
Power Supply	USB Type-C power input, which must be a PD-compatible adapter capable of 9V/3A or 5V/5A output
Shielding Cover	N/A
Firmware update	- USB0 - OTA*
RoHS	All components are fully compliant with the EU RoHS Directive 2011/65/EU

Notes:

*: Under development.

①: The Micro HDMI and MIPI display interfaces are mutually exclusive and cannot be used simultaneously.

②: The SD card functionality is switch-selectable between an on-board card slot and a 2 x 20-pin SDIO header, which are mutually exclusive and cannot be used simultaneously.

③: This antenna solution is optional. For details, please contact Quectel Technical Support.

④: The product is fully compliant with all mandatory Bluetooth 5.0 features but does not implement optional features such as the 2 Mbps BLE PHY or Advertising Extensions.

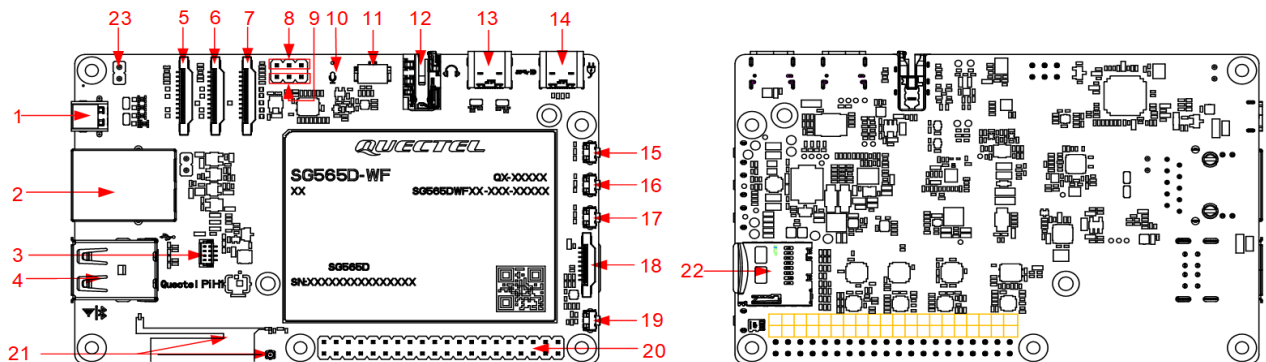
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Interface Specifications



Interface Type	No.	Interface Name	Description
USB	13	USB Type-C	USB 3.1 Type-C interface, compatible with USB 2.0
	4	USB Type-A	Two standard USB 2.0 Type-A interfaces
Display	13	USB Type-C	USB Type-C interface (DP Over USB Type-C), DisplayPort 1.4, with up to 4K (3840 × 2160) @ 60 fps
	7	DSI display	One 4-lane MIPI DSI D-PHY 1.2, supporting 1280 × 800 @ 60 fps, and with up to 2.5 Gbps/lane data rate
	1	Micro HDMI	Micro HDMI for video output, supporting 4K @ 60 fps
Audio	12	Earphone	3.5 mm audio output interface
	11	Speaker	Speaker output: 2-pin, 1.25 mm pitch general-purpose speaker connector
	10	DMIC	Digital microphone
Camera	5, 6	Camera	Two 4-lane MIPI CSIs, with up to 2.5 Gbps/ lane data rate
Ethernet	2	Ethernet	10/ 100/ 1000 Mbps Ethernet
PCIe	18	PCIe	PCIe 3.0 interface for high-speed peripherals, with up to 8 Gbps data rate
Memory	22	SD Card	Push-to-eject SD card socket, compliant with the SD 3.0 specification
UART	8	UART	Debug UART, only for debugging
Extension	20	2 × 20-pin header	Multi-function GPIOs configurable as I2C, SPI, PWM, and other interfaces
Antenna	21	Wi-Fi/ Bluetooth antenna connector (default)	Wi-Fi/ Bluetooth antenna connector or RF coaxial connector ECT818000500 ^①
		RF coaxial connector (optional)	
Others	19	USB_BOOT	Force the product into download mode
	17	KEY2	A user-configurable function button
	16	KEY1	A user-configurable function button
	15	PWRKEY	Power Button: If the auto power-on function is disabled, press and hold this button to turn on the product.
	14	USB Type-C power input	DC power is provided via this USB Type-C interface; supports Power Delivery (PD)
	23	Auto turn-on/ turn-off	Auto power-on function switch
	9	ADC	3 × ADC test interface header pins with a maximum input voltage of 1.8 V
	3	Fan connector	5V-powered fan device

Note:

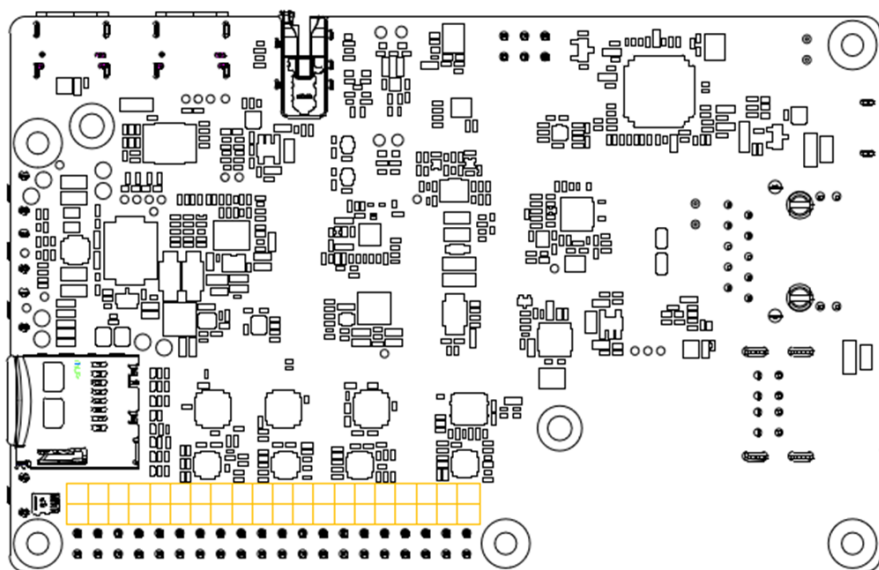
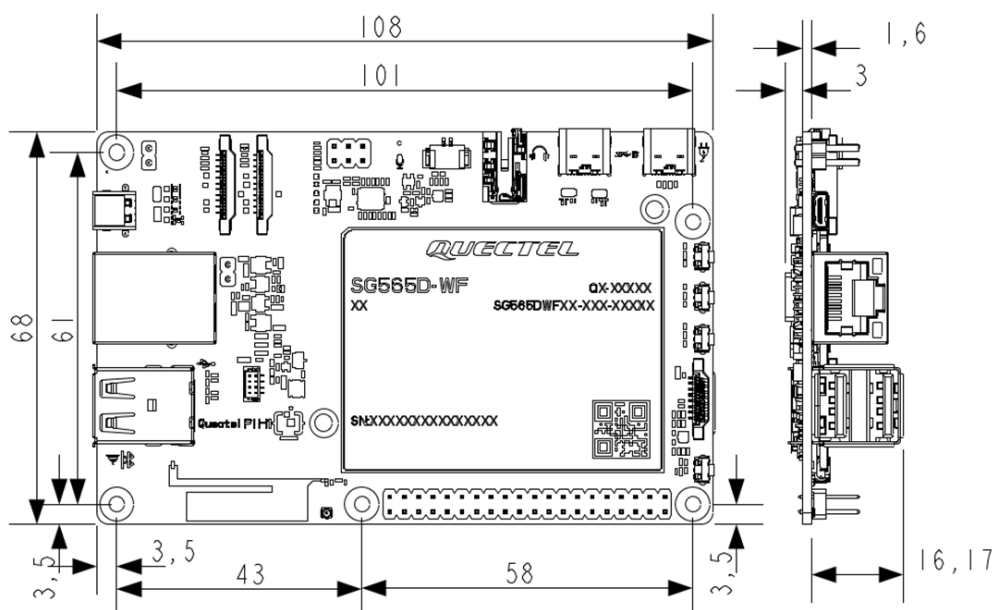
①: The product offers two antenna solutions: a Wi-Fi/Bluetooth® PCB trace antenna (default) or an RF coaxial connector (optional). When the default PCB antenna is selected, the RF connector is not populated on the board.

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Dimensions & Appearance



Bot

Note:
All dimensions are in millimeters (mm) and are subject to an overall tolerance of $\pm 0.10/-0.15$ mm.

Product Photos

