Chipsee

Industrial PC

AIO-CM5-156

PN: CS19108RA5156A

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Contents

AIO-CM5-156

Front View

Rear View


Chipsee
Type:CS19108RA5156A
Rev:C121（CM5108032）
OS:Raspberry Pi OS
SN: 20240320 80007607
https://chipsee.com
Origin:Made in China

Side View 1

Side View 2

Product Overview

The AIO-CM5-156 all in one Pi PC (PN: CS19108RA5156A) is an all-in-one desktop computer based on Raspberry Pi® CM5.

Its case is plastic, very light to carry around, or mount it to a fixed place as a smart home control center. The case is available in black color.

This single board computer features a 15.6” IPS display with a maximum brightness of 350 cd/m^2. The touch screen is responsive capacitive screen Raspberry Pi Display and supports multi touch.

The product is easy to use, perfect for developers and makers accustomed to the Raspberry Pi and is looking for a computer they can use daily, it handles 1080P video streaming easily.

It is also fully compatible with the Raspberry Pi OS.

Key Applications

- Human Machine Interface HMI
- Process Control
- Process Monitoring
- HMI
- IIoT node
- Environmental Monitoring
- PLC
- Automotive applications
- Smart Home

Ordering Options

Chipsee products can be customized during the ordering process. The product will be shipped with the pre-installed factory defaults if no extra requirements are specified. The table in the Hardware Features section provides information about the default options bundled with the product.

> **Note**
>
> You can order AIO-CM5-156 from the official Chipsee Store or from your nearest distributor.

Pi® CM5 Module

The Pi® Compute Module 5 appears in different versions (different RAM size: 2GB, 4GB, or 8GB SDRAM based on CM5 and different eMMC size: 0GB, 16GB, 32GB, or 64GB based on CM5).

The AIO-CM5-156 all in one Pi PC does not include the CM5 Raspberry Pi® module by default.

If you would like to purchase it with a CM5, you can select it at the Chipsee store during the ordering process.

Operating System

This product comes with a pre-installed Raspberry Pi OS. Chipsee software engineers have created all the drivers, so every hardware feature is readily available for any standard development tool.

If your project requires a different OS, please **Contact us**, and we'll make a customized version that suits your needs.

Optional Features

The product has a m.2 2280 slot, running at PCIe 2.0 x1 speed (PCIe 3.0 is possible but experimental for CM5), you can use it with your NVMe SSD or other modules that can fit in a m.2 2280 M-key slot and supports the protocol. By default the NVMe SSD is not mounted.

The installation DIY is easy, unscrew all the screws in the back of the product, and then plug a thin (plastic is a good choice) chip into the bottom edge of the back case, swipe left and right to unlock the fastener of the panel, then carefully open it up. Be careful not to accidentally break the wires connecting the screen and the PCB when you open up the back case.

> **Warning**
>
> Installation, repair, and maintenance tasks should be performed by trained personnel only.
> Chipsee does not bear any responsibility for damage caused by inadequate handling of the product.

Hardware Features

The AIO-CM5-156 all in one Pi PC offers a board range of performance and connectivity options for scalable integration, providing expandability according to future needs. Some of the key features are listed in the table below.

AIO-CM5-156	
CPU	Raspberry Pi® CM5/CM5Lite; BCM2712 Quad(4) Core Cortex-A76 at 2.4GHz
Storage	1 x TF card slot for boot. Internal M.2 NVMe connector for SSD card (optional)
RAM	2GB, 4GB, or 8GB SDRAM based on CM5
eMMC	0GB, 16GB, 32GB, or 64GB based on CM5
Display	15.6” IPS LCD, 1920 x 1080 px, brightness 350 cd/m^2
Touch	10-point capacitive touch with 1.1mm Armored Glass
USB	2 x USB 3.0 Host, 1 x Type-C USB (Slave)
PCIe	M.2 2280 M-key. PCIe Gen 2.0 x1; PCIe Gen 3.0 x1 (compatible but experimental)
LAN	1 x Giga LAN
Audio	2W internal stereo speaker, 3.5mm audio Out connector
Buzzer	Internal Buzzer
RTC	High accuracy RTC with farad capacitor, can work 1 week after power off (default). High accuracy RTC with lithium coin battery, can work 3 years after power off (optional).
GPIO/Wiegand	40-pin GPIO connector
WiFi/BT	WiFi/BT module comes with the CM5
HAT Connector	Standard Raspberry Pi 40-way HAT connector
Micro SD card socket	For use only with CM5 Lite modules
HDMI	HDMI 2.0 connector, can be driven up to 4K 60FPS
Power Input	12V
Current at 12V	1A Max, 800mA typical
Power Consumption	12W Max, 9.6W typical
Relay	N/A
RS232	N/A
RS485	N/A
4G/LTE	N/A

AIO-CM5-156	
ZIGBEE	N/A
Working Temperature	From 0°C to +50°C
OS	Raspberry Pi OS, Android
Dimensions	374 x 238 x 33mm
Weight	1600g
Plastic Case Color	Black
Certification	CE, ROHS

Table 393 Key Features

Power Input

The AIO-CM5-156 all in one Pi PC can be powered by an input voltage of 12V DC.

The total power consumption is typically about 10W, depending on the load and brightness.

The power input connector is a 2.1mm I.D x 5.5mm O.D x 9.5mm DC connector. For a proper DC power adapter, refer to the figure below.

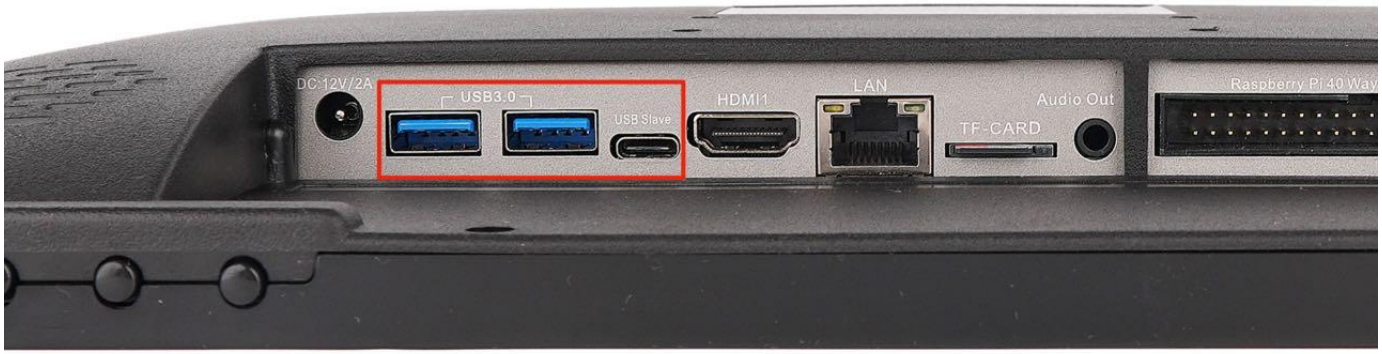
Power Adapter

Connectivity

There are many connectivity options available on the AIO-CM5-156 industrial Pi PC. It has 2 x USB 3.0 Host, 1 x Type-C USB (Slave), 1 x Giga LAN (RJ45) Ethernet connector supporting up to 1 Gbps, and a Raspberry Pi 40 pin connector.

USB HOST and Type C

There are 2 x 3.0 **USB HOST connectors** and 1 x **Type-C Connector** onboard, as shown on the figures below.



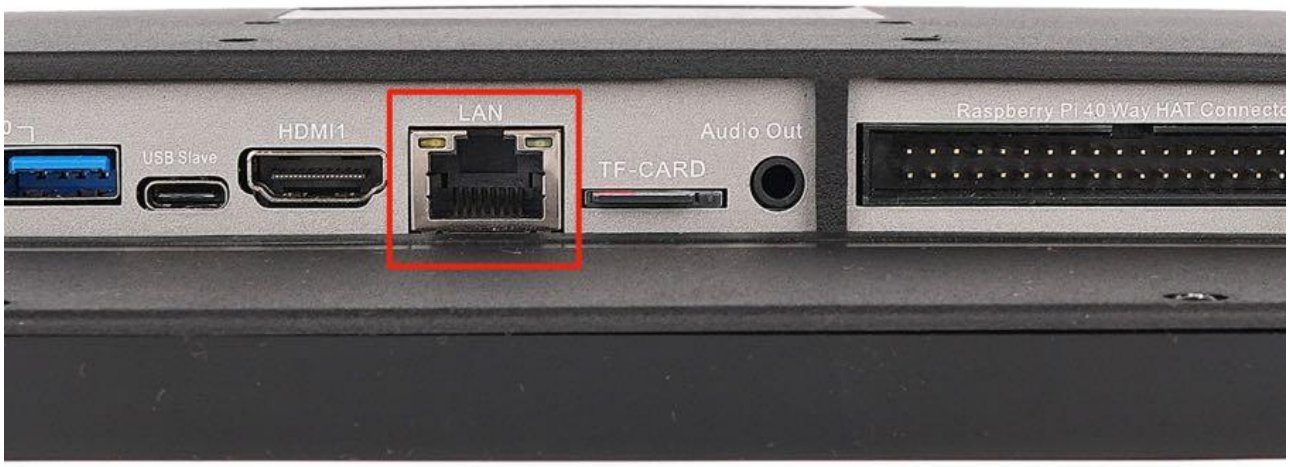
USB3.0 HOST and Type-C Connectors

Note

- External USB peripherals like a USB disk or USB mouse or keyboard can connect to the USB3.0 HOST.
- You can download software to the Raspberry Pi CM5 eMMC using the Type-C.
- When you connect the Type-C to a device, it will disable the USB HOST.

LAN Connectors

LAN (RJ45) connector provides Ethernet connectivity over standardized Ethernet cables as shown the figure below. The integrated Ethernet interface supports up to 1 Gbps data throughput. These Giga LAN signals come from the CM5 module directly.



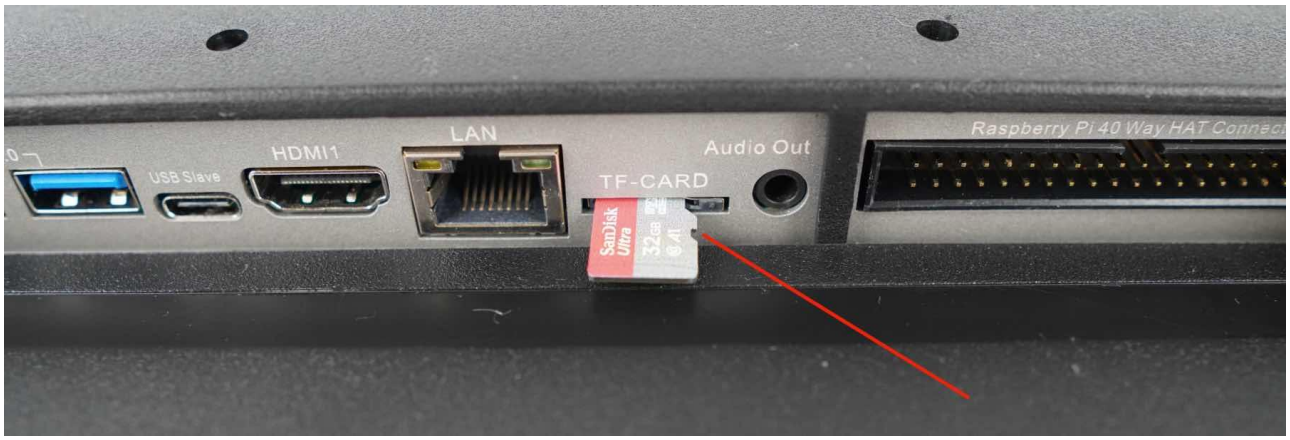
RJ45 LAN Connectors

Note

Use CAT5 or better cables to achieve full data throughput over maximum distance defined by the 1000BASE-T standard (100m).

TF Card Slot

The AIO-CM5-156 all in one Pi PC features 1 x **TF Card (micro SD) slot** that can only be used with CM5 Lite modules, as shown in the image below (note the direction of the TF card).

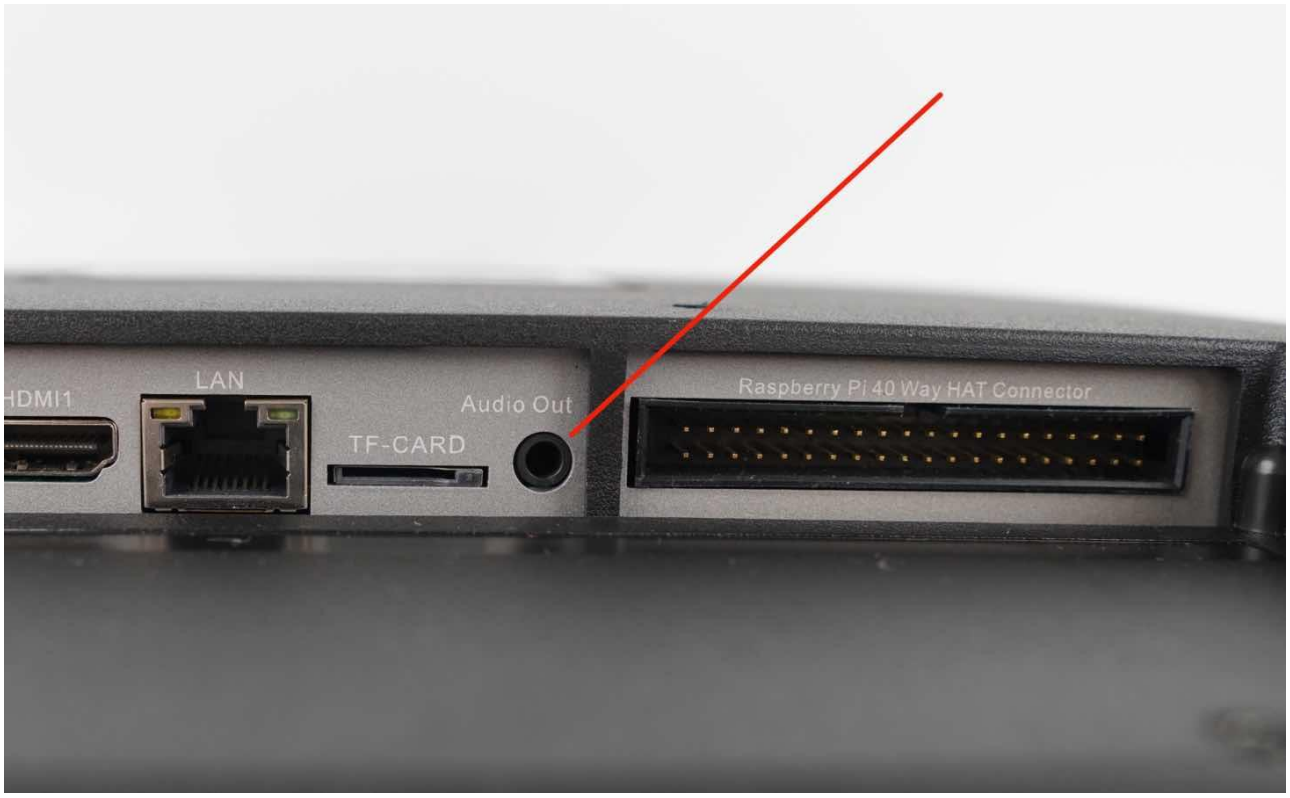


TF Card Slot

> **Warning**
>
> The TF card is **only** for booting operating system for the CM5 Lite. The TF card **cannot** be used for expanding storage for CM5.
>
> The product does not come shipped with the TF Card by default.

Audio Out Connector

The product features 3.5mm audio connector as shown in the image below.



Audio Out Connector

HDMI

The CM5 supports dual HDMI 2.0 connectors.

The product uses the master HDMI for the integrated LCD screen, there is an extra slave HDMI port to connect a second monitor to the product.

You can set this second monitor in the Display Settings of the Raspberry Pi OS.

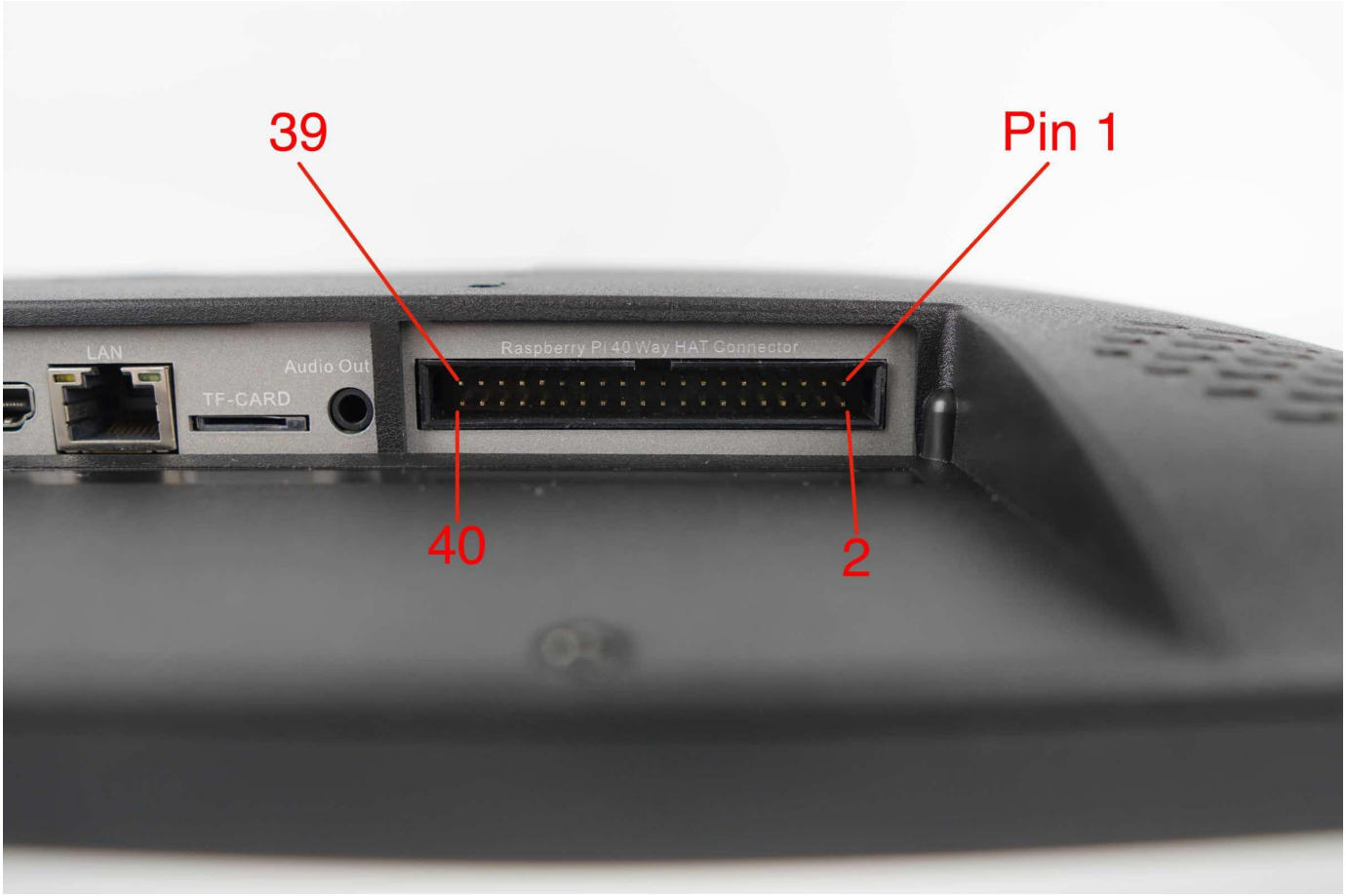
HDMI Connector (slave)

Camera

The AIO-CM5-156 all in one Pi PC has a camera on the front panel but is not mounted by default.

40-Pin Expansion Connector

The AIO-CM5-156 all in one Pi PC has a standard Raspberry Pi 40 way HAT connector, as the figure below shows. You also can check Pinout for more details.



40-pin expansion

3V3		1	2	5V	
SDA1	GPIO2	3	4	5V	
SCL1	GPIO3	5	6	GND	
GPCLK0	GPIO4	7	8	GPIO14	UART TX
GND		9	10	GPIO15	UART RX
	GPIO17	11	12	GPIO18	PCM CLK
	GPIO27	13	14	GND	
	GPIO22	15	16	GPIO23	
3V3		17	18	GPIO24	
SPI0 MOSI	GPIO10	19	20	GND	
SPI0 MISO	GPIO9	21	22	GPIO25	
SPI0 SCLK	GPIO11	23	24	GPIO8	SPI0 CE0
GND		25	26	GPIO7	SPI0 CE1
SDA0	GPIO0	27	28	GPIO1	SCL0
	GPIO5	29	30	GND	
	GPIO6	31	32	GPIO12	PWM0
PWM1	GPIO13	33	34	GND	
PCM FS	GPIO19	35	36	GPIO16	
	GPIO26	37	38	GPIO20	PCM DIN
GND		39	40	GPIO21	PCM DOUT

40-pin expansion functions

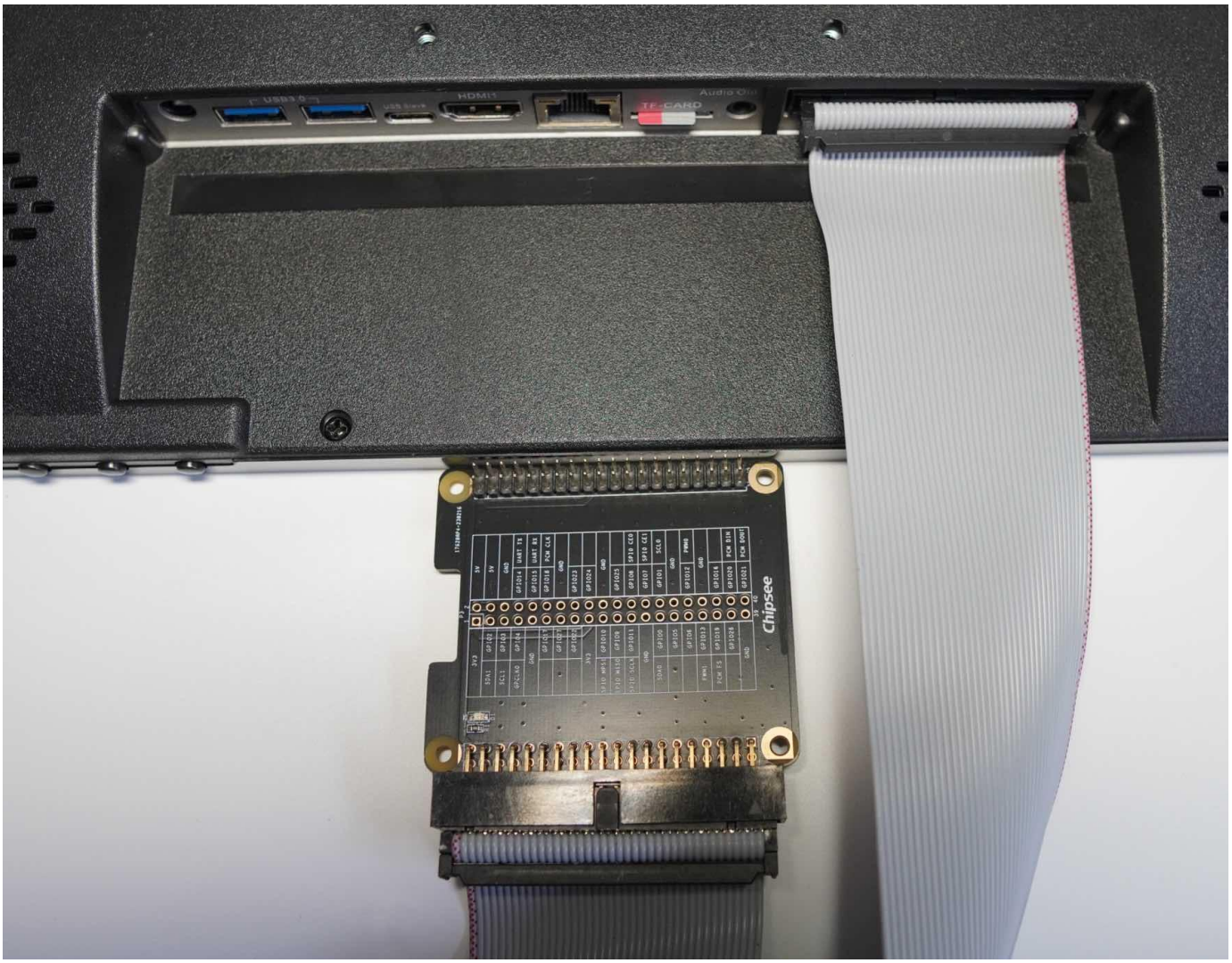
You also can check pinout.xyz for more details.

Raspberry Pi Hat adapter

The product also has an available I/O connector that is 100% compatible with any Raspberry Pi cape or extensions, making the AIO-CM5-156 a perfect fit with your existing tools.

The product also comes with an adapter with a standard Raspberry Pi HAT pin-out to add more flexibility to your project. It offers a convenient way to develop and test your hardware with all the connectors at hand.

You can learn more about it in the product manual.



Raspberry Pi Hat adapter

Buttons and Status LED

Status LED

This product has a status LED on the front panel. The LED turns RED after power on, turns GREEN when the system is booted. It can be controlled by software to flash YELLOW when the CPU is working.

Status LED

Buttons

There are five buttons on the front panel: Power, Brightness+, Brightness-, Volume+, Volume-, as the image below shows.

Buttons

The AIO-CM5-156 all in one Pi PC supports two boot modes, the auto-boot and manual boot modes. The default boot mode is the auto-boot mode.

You can either change the boot mode in the software, or toggle boot mode by pushing physical buttons.

Press **Volume +** and **Volume -** buttons at the same time before power on and keep pressing for 3 seconds after power on will change boot mode to manual boot. As the table below shows.

Boot mode	Behaviors	Default Configuration	How to toggle
Auto	Auto boot after power on	√	Software control or Push Volume+ and Volume- buttons at the same time before power on, and release it 3 seconds after power on.
Manual	Boot after pushing the Power button and releasing it 3 seconds after power on		

Table 394 Boot mode

Note

> The AIO-CM5-156 all in one Pi PC boots from the internal eMMC by default. If you want it to boot from the Type-C connector, press and hold the Volume + button before power ON, and release it 3 seconds after power ON.
>
> You can use Brightness + / Brightness - buttons to control the backlight of the LCD.
>
> You can also use Volume + / Volume - buttons to control the System Volume.

For a detailed explanation of button functions, check the table below.

Buttons	Functions before the system boot	Functions after the system boot
Power	Push after power on and release after 3 seconds will boot the system	Push after the system booted and release after 3 seconds will close the system.
Brightness +	NULL	Increase the brightness of LCD
Brightness -	NULL	Reduce the brightness of LCD
Volume +	Push before power on and release it after 3 seconds, the system will boot from the Type-C port	Increase the volume of the system
Volume -	NULL	Reduce the volume of the system
Volume + and Volume -	Toggle the boot mode	NULL

Table 395 Boot mode

Mounting Procedure

You can mount AIO-CM5-156 with the Vesa (75 x 75mm) and Stand mounting methods, as shown in the figures below.

VESA mounting

The product also ships with a base stand, if you don't need to stand you can contact us when placing orders.

(The keyboard and mouse are **NOT** included in the product.)

Stand mounting

Attention

Please make sure the display is not exposed to high pressure when mounting into an enclosure.

You can find detailed information about mounting in the Mount IPC Guide.

Mechanical Specifications

The outer mechanical dimensions of AIO-CM5-156 are 374 x 238 x 33mm (W x L x H). Please refer to the technical drawing in the figures below for details related to the specific product measurements.

Front Panel Dimension Technical Drawing

Side Dimension Technical Drawing

3D Model

AIO-CM5-156 3D model can be viewed in the online doc in a web browser, **if you are reading from the PDF** version, please visit the online doc AIO-CM5-156, select hardware documentation, drag the navigation bar to the 3D Model section.

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