



Industrial PC

# AIO-CM5-156



PN: CS19108RA5156A

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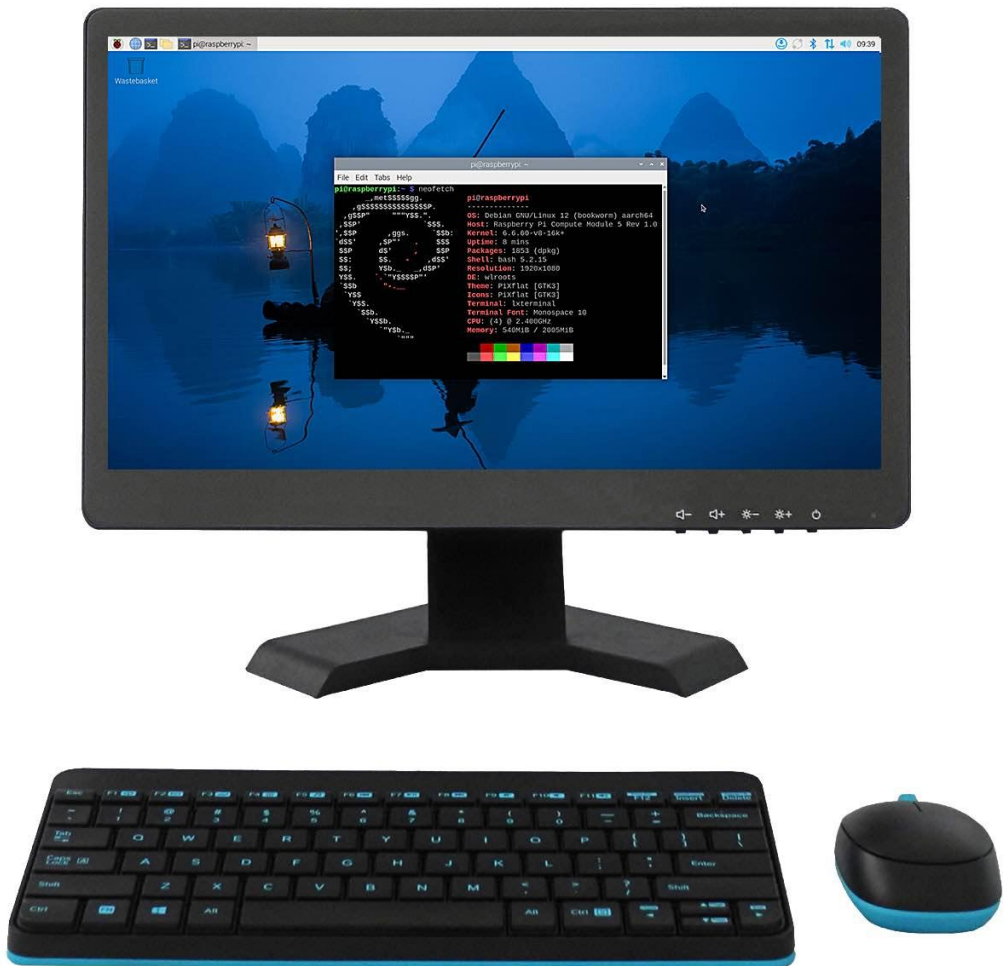
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# AIO-CM5-156

## Front View



## Rear View



## Side View 1



## Side View 2



## Product Overview

The AIO-CM5-156 all in one Raspberry Pi PC (PN: CS19108RA5156A) is an all-in-one desktop computer based on Raspberry Pi<sup>®</sup> 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<sup>2</sup>. The touch screen is a responsive capacitive screen 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 and even 4K streaming, like the Raspberry Pi 5.

It is also fully compatible with the Raspberry Pi OS.

### Key Applications

- Human Machine Interface HMI
- Edge AI
- 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<sup>®</sup> CM5 Module

The Pi<sup>®</sup> 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 Raspberry Pi PC does not include the CM5 Raspberry Pi<sup>®</sup> 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 Raspberry 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                 |   |
|-----------------------------|---|
| <b>CPU</b>                  | Raspberry Pi® CM5/CM5Lite; BCM2712 Quad(4) Core Cortex-A76 at 2.4GHz  |
| <b>Storage</b>              | Internal M.2 NVMe connector for SSD card (optional)   |
| <b>RAM</b>                  | 2GB, 4GB, or 8GB SDRAM based on CM5   |
| <b>eMMC</b>                 | 0GB, 16GB, 32GB, or 64GB based on CM5   |
| <b>Display</b>              | 15.6" IPS LCD, 1920 x 1080 px, brightness 350 cd/m <sup>2</sup>   |
| <b>Touch</b>                | 10-point capacitive touch with 1.1mm Armored Glass  |
| <b>USB</b>                  | 2 x USB 3.0 Host, 1 x Type-C USB (Slave)  |
| <b>PCIe</b>                 | M.2 2280 M-key, PCIe Gen 2.0 x1 (PCIe Gen 3.0 x1 is compatible but experimental) <b>(optional)</b>  |
| <b>LAN</b>                  | 1 x Giga LAN  |
| <b>Audio</b>                | 2W internal stereo speaker, 3.5mm audio Out connector   |
| <b>Buzzer</b>               | Internal Buzzer   |
| <b>RTC</b>                  | High accuracy RTC with farad capacitor, can work 1 week after power off (default).<br>High accuracy RTC with lithium coin battery, can work 3 years after power off (optional). |
| <b>GPIO/Wiegand</b>         | 40-pin GPIO connector   |
| <b>WiFi/BT</b>              | WiFi/BT module comes with the CM5   |
| <b>HAT Connector</b>        | Standard Raspberry Pi 40-way HAT connector  |
| <b>Micro SD card socket</b> | 1 x TF(micro SD) card slot, <b>only</b> for CM5 Lite module to boot from TF   |
| <b>HDMI</b>                 | HDMI 2.0 connector, can be driven up to 4K 60FPS  |
| <b>Power Input</b>          | 12V DC  |
| <b>Current</b>              | 1A Max, 800mA typical   |
| <b>Power Consumption</b>    | 12W Max, 9.6W typical   |
| <b>Relay</b>                | N/A   |
| <b>RS232</b>                | N/A   |

| AIO-CM5-156         |                          |
|---------------------|--------------------------|
| RS485               | N/A                      |
| CAN                 | N/A                      |
| 3G/4G/LTE/GPS       | N/A                      |
| Working Temperature | From 0°C to +50°C        |
| OS                  | Raspberry Pi OS, Android |
| Dimensions          | 374 x 238 x 33mm         |
| Weight              | 1600g                    |
| Mounting            | VESA, Stand              |
| Plastic Case Color  | Black                    |
| Certification       | CE, ROHS                 |

Table 404 Key Features

## Power Input

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

The total power consumption is about 12W Max, 9.6W typical, 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 Input*



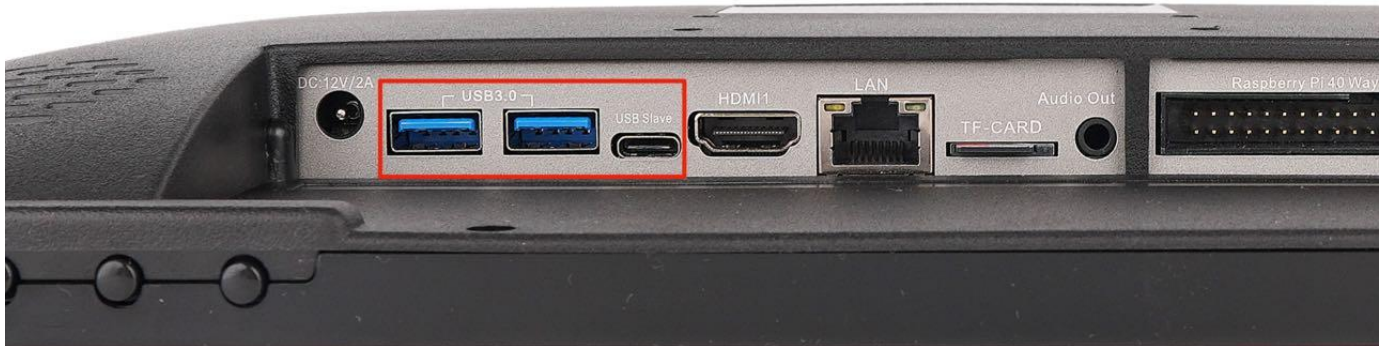
*Power Adapter*

## 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.

### USB HOST and Type C

There are 2 x 3.0 **USB Type-A HOST connectors** and 1 x **Type-C connector** onboard, as shown in the image 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.

## M.2 Connector

The product has an **optional** M.2 2280 M-key, PCIe Gen 2.0 x1 (PCIe Gen 3.0 x1 is compatible but experimental) connector. You can attach an M.2 NVME drive, or an AI module to expand the product's capability. If you need the M.2 slot please contact us before placing an order.

## 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. The Giga LAN signal comes from the CM5 module directly.



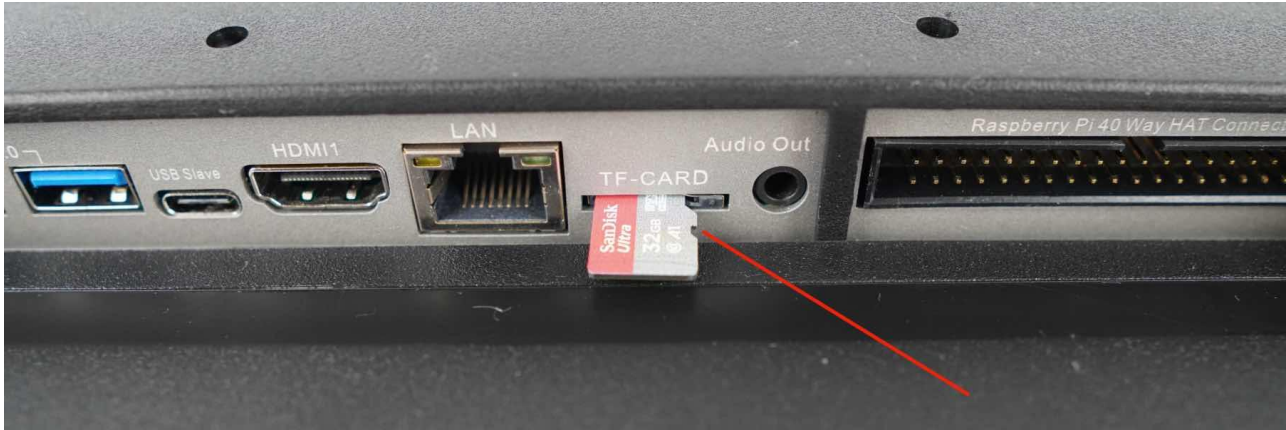
*RJ45 LAN Connectors*

### 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 Raspberry 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

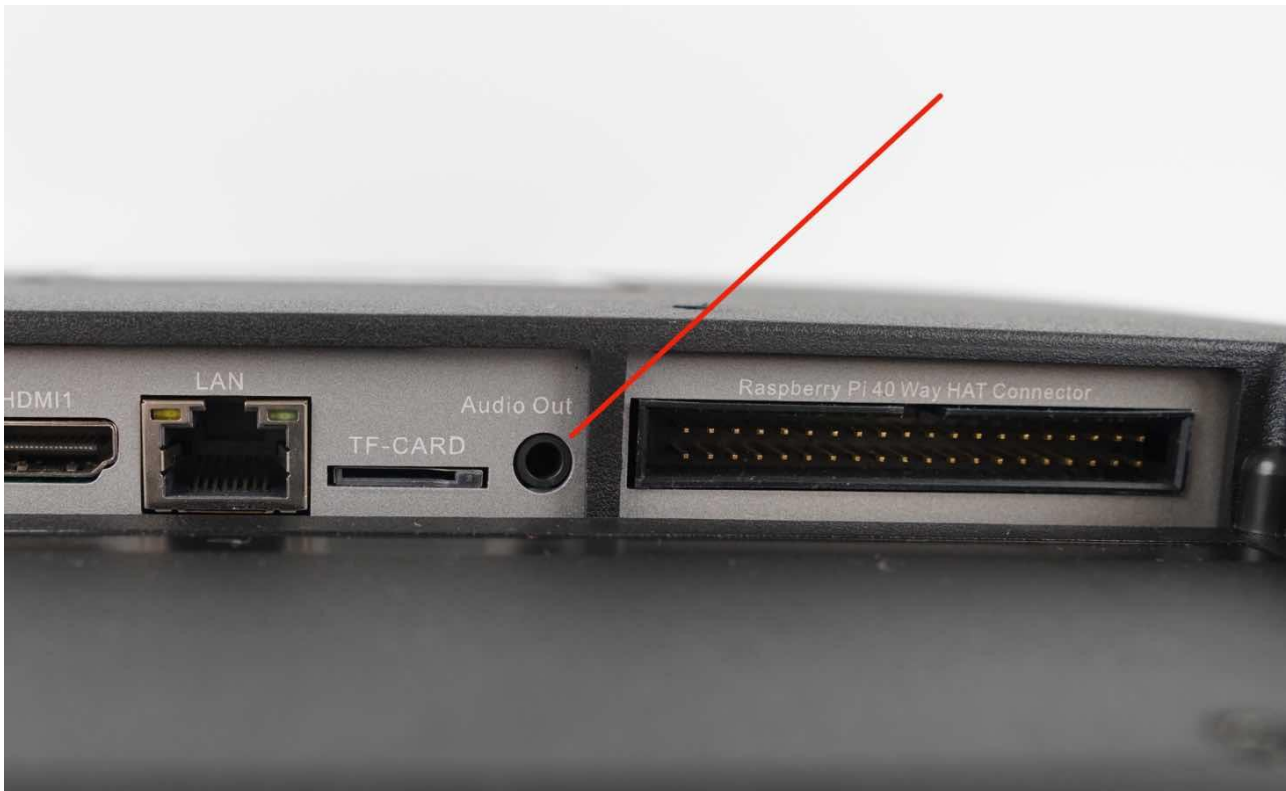
The TF card is **only** for booting operating system for the CM5 Lite. The TF card **cannot** be used for expanding storage for CM5.

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*

## Internal Speaker

The product also has an internal 2W speaker, meaning you can play music without an earphone, the sound can be played from the product directly.

## Buzzer

The product has an internal buzzer, suitable for playing beep sounds for alarms.

## 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.



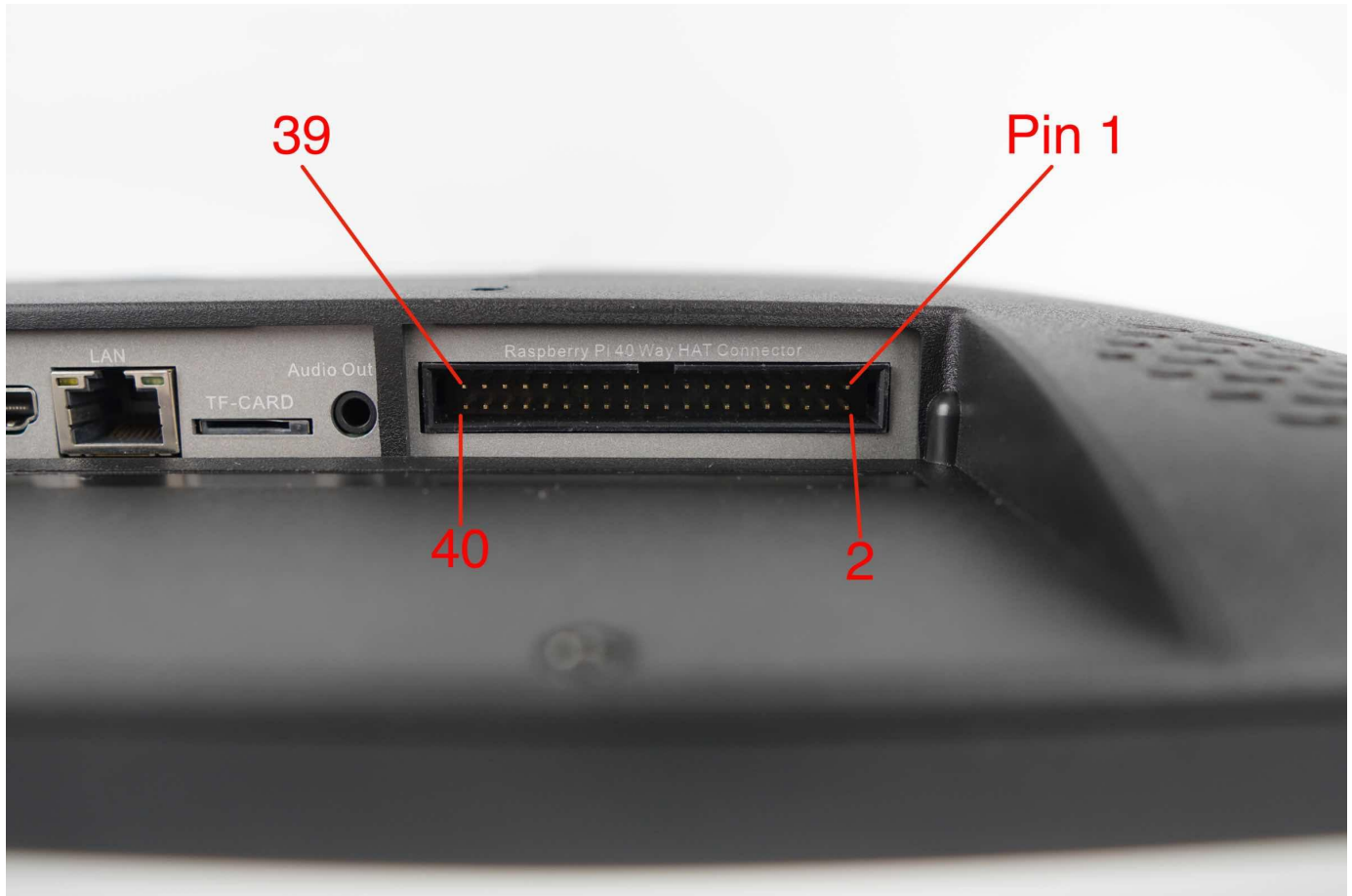
*HDMI Connector (slave)*

## Camera

The AIO-CM5-156 all in one Raspberry 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 Raspberry 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      | GPI02  | 3  | 4  | 5V     |          |
| SCL1      | GPI03  | 5  | 6  | GND    |          |
| GPCLK0    | GPI04  | 7  | 8  | GPI014 | UART TX  |
| GND       |        | 9  | 10 | GPI015 | UART RX  |
|           | GPI017 | 11 | 12 | GPI018 | PCM CLK  |
|           | GPI027 | 13 | 14 | GND    |          |
|           | GPI022 | 15 | 16 | GPI023 |          |
| 3V3       |        | 17 | 18 | GPI024 |          |
| SPI0 MOSI | GPI010 | 19 | 20 | GND    |          |
| SPI0 MISO | GPI09  | 21 | 22 | GPI025 |          |
| SPI0 SCLK | GPI011 | 23 | 24 | GPI08  | SPI0 CE0 |
| GND       |        | 25 | 26 | GPI07  | SPI0 CE1 |
| SDA0      | GPI00  | 27 | 28 | GPI01  | SCL0     |
|           | GPI05  | 29 | 30 | GND    |          |
|           | GPI06  | 31 | 32 | GPI012 | PWM0     |
| PWM1      | GPI013 | 33 | 34 | GND    |          |
| PCM FS    | GPI019 | 35 | 36 | GPI016 |          |
|           | GPI026 | 37 | 38 | GPI020 | PCM DIN  |
| GND       |        | 39 | 40 | GPI021 | PCM DOUT |

### 40-pin expansion functions

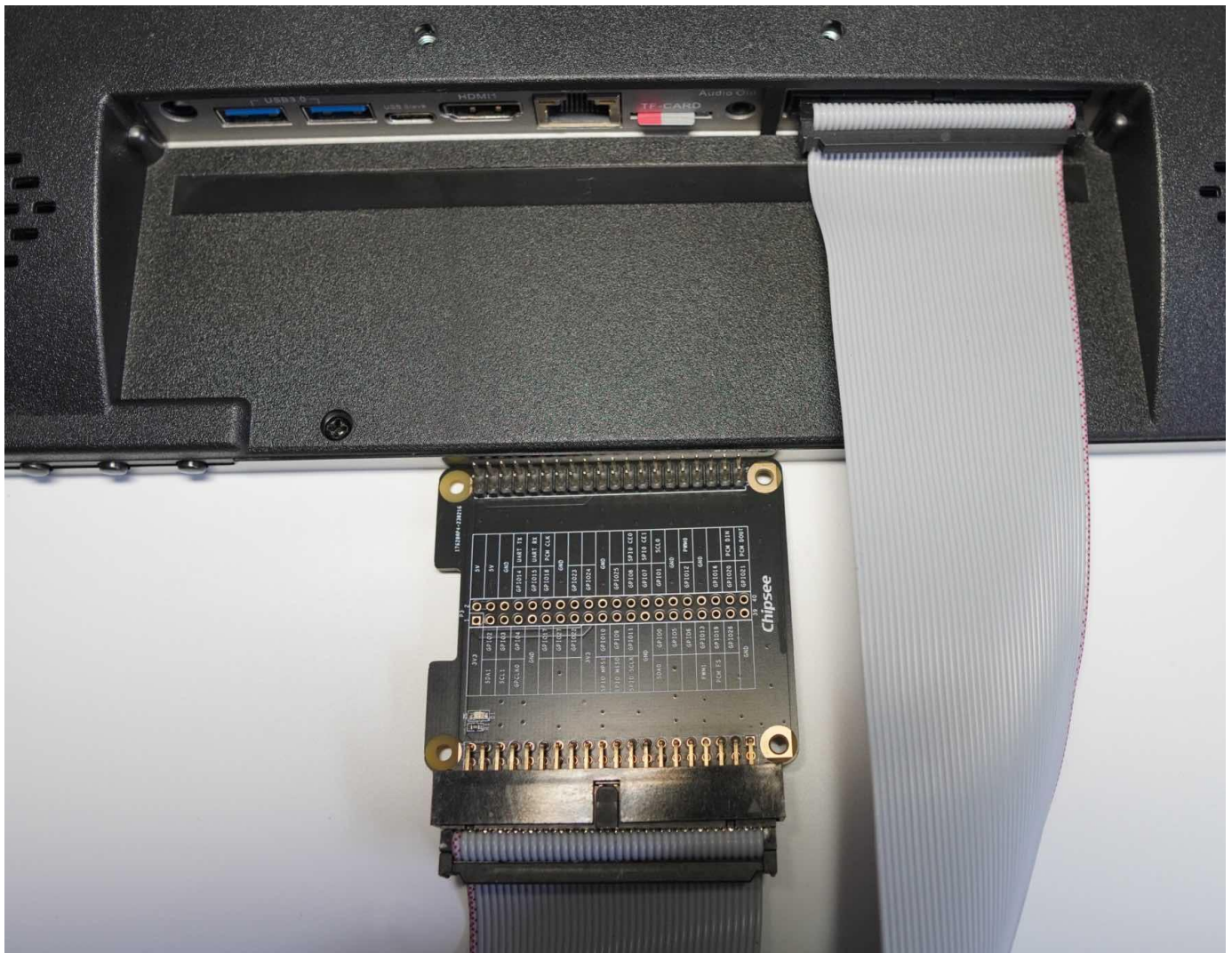
You also can check [pinout.xyz](https://pinout.xyz) for more details.

## 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.



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 Raspberry 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 405 Boot mode

 **Note**

The AIO-CM5-156 all in one Raspberry 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 406 Boot mode



## Mounting Procedure

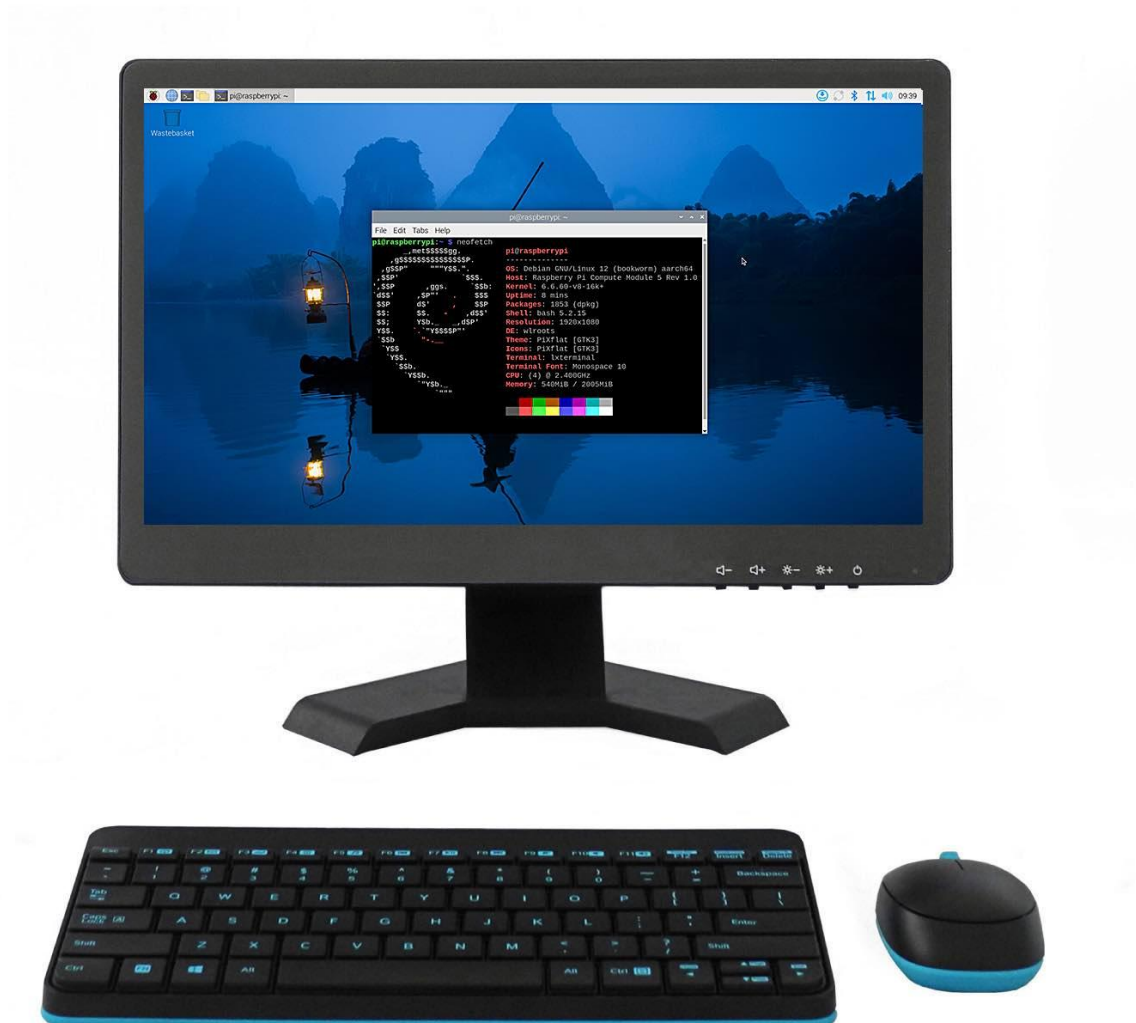
You can mount AIO-CM5-156 with the Vesa (75 x 75mm) and Stand mounting methods, as shown in the figures below.



*VESA mounting*

The product also ships with a base stand, if you don't need the 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.

## Disclaimer

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