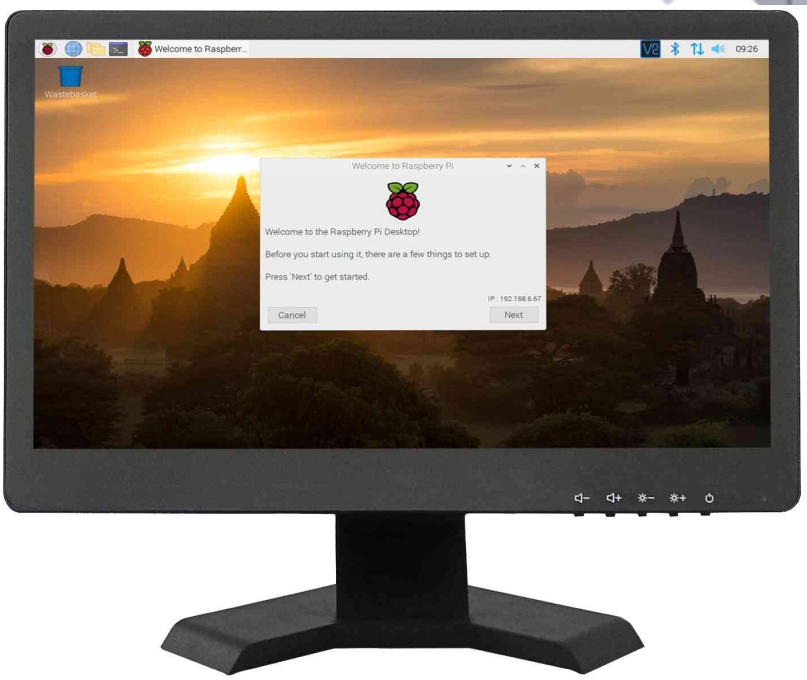
Chipsee

Industrial PC

AIO-CM4-156



PN: CS19108RA4156A

Revision 1.1

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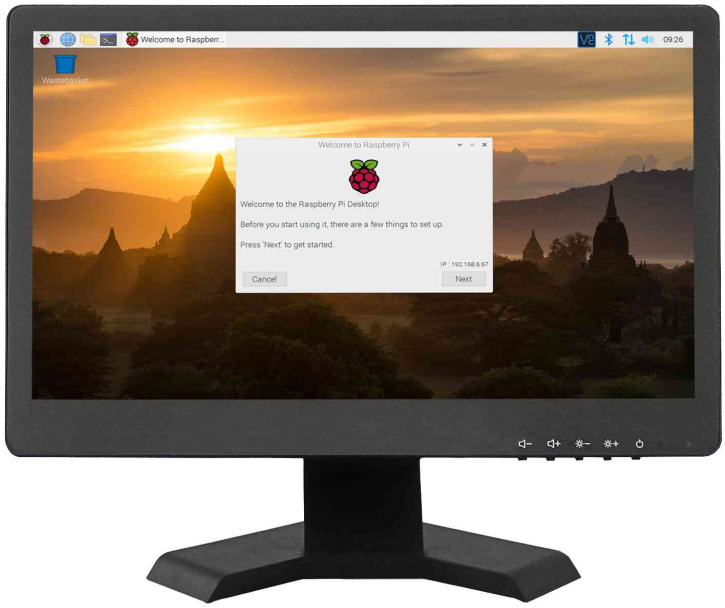
Contents

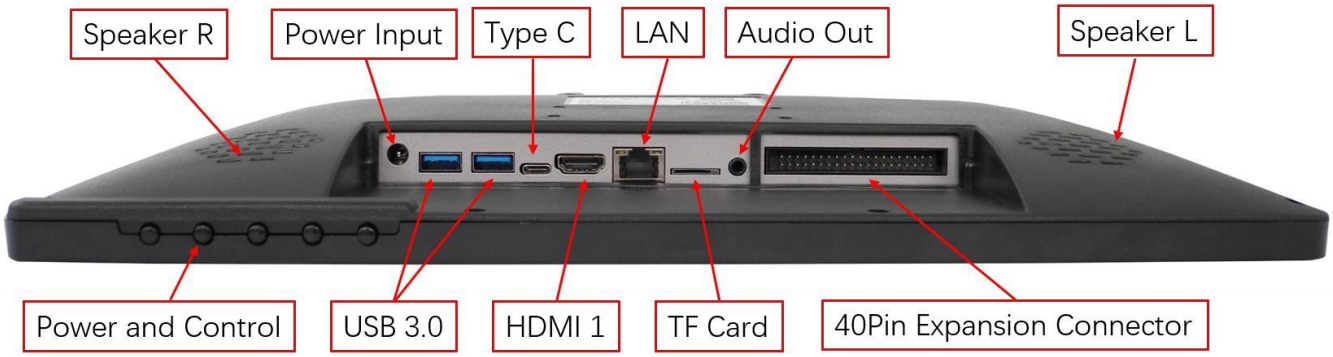
1. AIO-CM4-156 3
   1.1. Product Overview 4
   1.2. Ordering Options 5
      1.2.1. Pi® CM4 Module 5
      1.2.2. Operating System 5
      1.2.3. Optional Features 5
   1.3. Hardware Features 5
   1.4. Power Input 7
   1.5. Buttons and Status LED 7
      1.5.1. Status LED 7
      1.5.2. Buttons 7
   1.6. Connectivity 9
      1.6.1. USB HOST and Type C 9
      1.6.2. LAN Connectors 9
      1.6.3. TF Card Slot 10
      1.6.4. Audio Out Connector 10
      1.6.5. HDMI 10
      1.6.6. 40-Pin Expansion Connector 10
      1.6.7. Raspberry Pi Hat adapter 11
      1.6.8. Camera 12
   1.7. Mounting Procedure 12
   1.8. Mechanical Specifications 14
   1.9. Disclaimer 16
   1.10. Technical Support 16

AIO-CM4-156

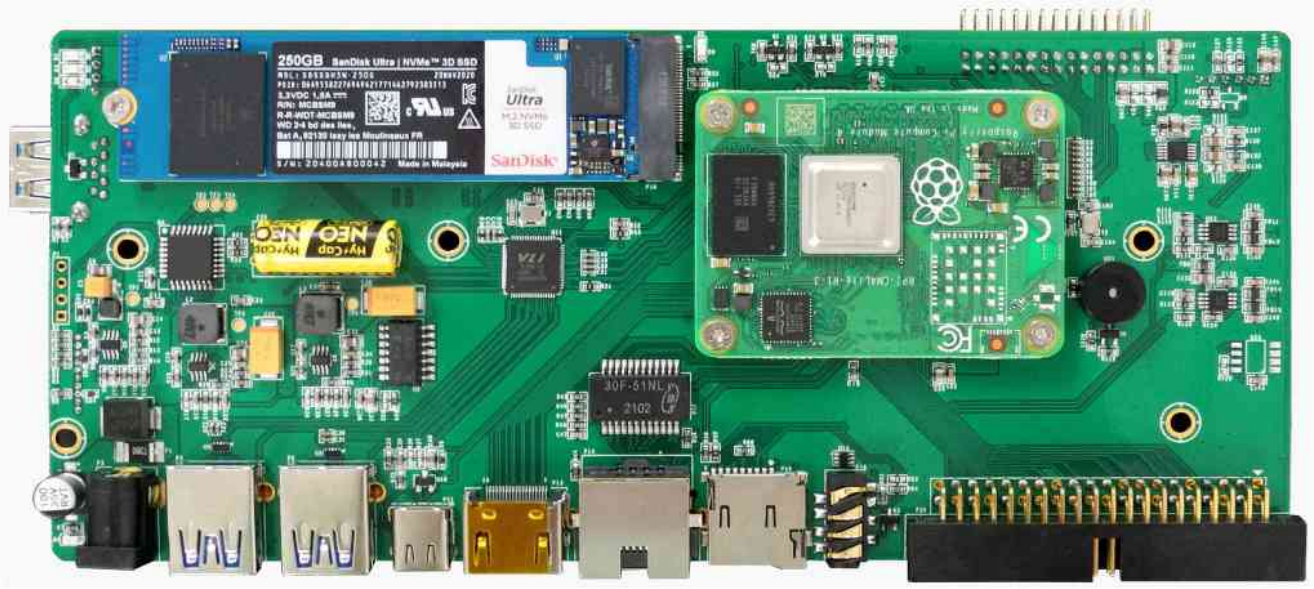


Front View

Rear View



Front View (Embedded Variant)



Embedded PCB

Product Overview

The AIO-CM4-156 industrial Pi PC (PN: CS19108RA4156A) is an all-in-one desktop computer based on Raspberry Pi® CM4. It features a 15.6” IPS display with a maximum brightness of 350 cd/m^2.

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 is fully compatible with the Raspberry Pi 4 Linux distribution.

Key Applications

- Human Machine Interface HMI
- Process Control
- Process Monitoring
- HMI
- IIoT node
- Environmental Monitoring
- PLC
- Automotive applications
- ATM...

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-CM4-156 from the official **Chipsee Store** or from your nearest distributor.

Pi® CM4 Module

The Pi® Compute Module 4 appears in different versions depending on the size of the DDR4 and eMMC.
The AIO-CM4-156 industrial Pi PC does not include the CM4 Raspberry Pi® module by default. If you would like to purchase it with a CM4, you can select it at the Chipsee store during the ordering process.

Operating System

This product comes with a pre-installed Debian OS or Ubuntu 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 AIO-CM4-156 industrial Pi PC does not include the 4G/LTE modules by default. These modules are optional and can be selected at the Chipsee store during the ordering process.

> **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-CM4-156 industrial 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-CM4-156	
CPU	Raspberry Pi® CM4, CM4 Lite; Quad Cortex-A72 at 1.5GHz
Storage	1 x TF card slot for boot. Optional, Internal M.2 NVMe connector for SSD card
RAM	2GB DDR1
eMMC	16GB
Display	15.6” IPS LCD, 1920 x 1080 resolution px, brightness 350 cd/m^2
Touch	Optional, 10-point capacitive touch with 1.1mm Armored Glass
USB	2 x USB 3.0 Host, 1 x Type-C USB (Slave)
LAN	1 x Channel Giga LAN
Audio	2W internal stereo speaker, 3.5mm audio Out connector
Buzzer	Internal Buzzer
RTC	Yes, High accuracy internal RTC (keep track of time one week after power off)
RS232	N/A
RS485	N/A
Relay	N/A
GPIO/Wiegand	40-pin GPIO connector
WiFi/BT	WiFi/BT module comes with the CM4
HAT Connector	Standard Raspberry Pi 40-way HAT connector
Micro SD card socket	For use only with CM4 Lite modules
ZIGBEE	N/A
HDMI	HDMI 2.0 connectors, slave HDMI port for CM4
4G/LTE	N/A
Power Input	12V
Current at 12V	700mA Max
Power Consumption	10W Typical
Working Temperature	From 0°C to +50°C
OS	Debian, Ubuntu
Dimensions	374 x 238 x 33mm
Weight	1600g
Plastic Case Color	Black
Certification	CE, ROHS

Table 284 Key Features

1 RAM can be 1/2/4/8GB based on CM4 Lite onboard.

Power Input

The AIO-CM4-156 industrial Pi PC can be powered by an input voltage: 12V DC. The total power consumption is typically about 8.4W. 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.

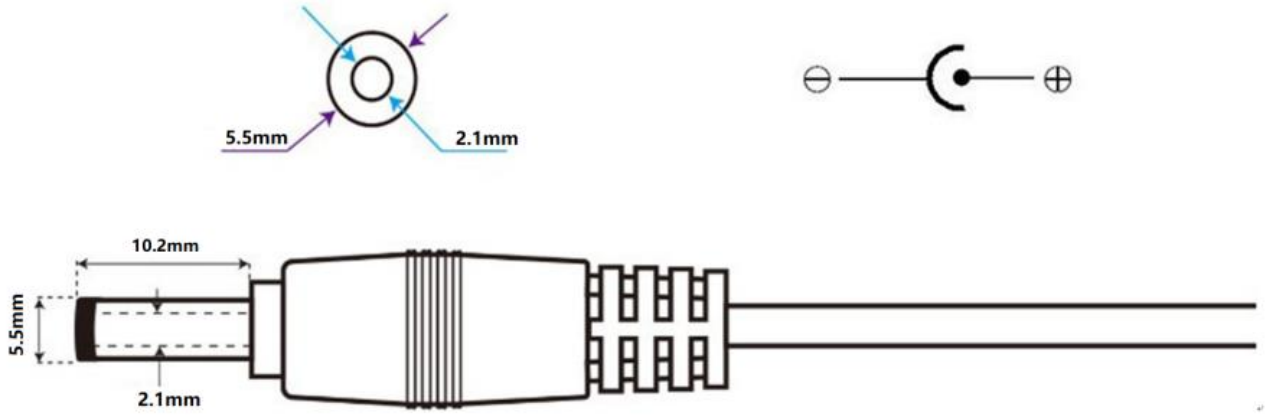


Figure 969: *Power Adapter*

Buttons and Status LED

Status LED

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

Figure 970: *Status LED*

Buttons

There are five (5) buttons on the front panel: Brightness +, Brightness -, Volume +, Volume -, and Power, as the figure below shows.

Figure 971: *Buttons*

The AIO-CM4-156 industrial Pi PC supports two (2) boot modes, the auto-boot and manual boot modes. The default boot mode is the auto-boot mode. You can change the boot mode by using Software or by pushing **Volume +** and **Volume -** buttons at the same time before power on and releasing it 3 seconds after power on to toggle, 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 285 Boot mode

- The AIO-CM4-156 industrial 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
	Toggle the boot mode	NULL

Buttons	Functions before the system boot	Functions after the system boot
Volume + and Volume -		

Table 286 Boot mode

Connectivity

There are many connectivity options available on the AIO-CM4-156 industrial Pi PC. It has 2 x USB 3.0 Host, 1 x Type-C USB (Slave), 1 x Channel Giga LAN (RJ45) Ethernet connector supporting up to 1 Gbps, and RS232+RS485+Relay 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.

Figure 972: *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 CM4 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 CM4 module directly.

Figure 973: *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-CM4-156 industrial Pi PC features 1 x **TF Card (micro SD) slot** that can only be used with CM4 Lite modules, as shown on the figure below.

Figure 974: *TF Card Slot*

> **Note**
>
> 1. The product does not come shipped with the TF Card by default.

Audio Out Connector

The product features audio Out connector as shown on the figure below.

Figure 975: *Audio Out Connector*

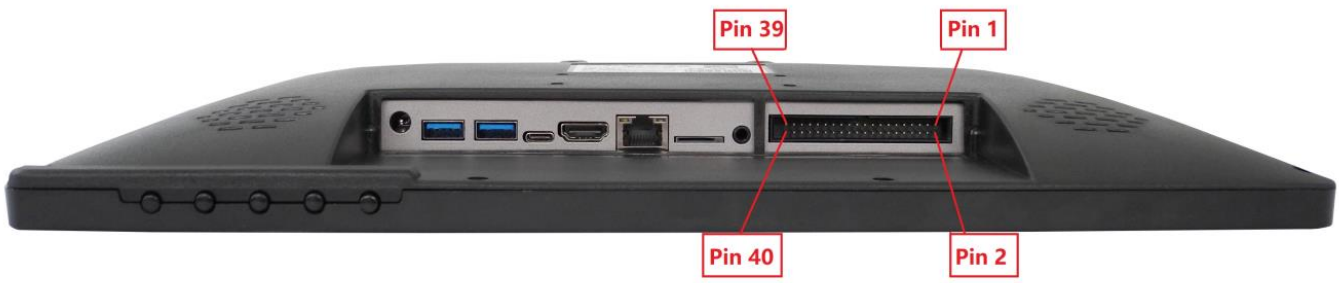
HDMI

The CM4 supports dual HDMI 2.0 connectors. The product uses the master HDMI for the LCD so, customers can use the slave HDMI port, as the figure below shows.

Figure 976: *HDMI Connector (slave)*

40-Pin Expansion Connector

The AIO-CM4-156 industrial Pi PC has a standard Raspberry Pi 40 way HAT connector, as the figure below shows. You also can check Pinout for more details.



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

Figure 977: *40-pin Expansion Connector*

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-CM4-156 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.

Figure 978: *Raspberry Pi Hat adapter*

Camera

The AIO-CM4-156 industrial Pi PC has a camera on the front panel but is not mounted by default.

Mounting Procedure

You can mount AIO-CM4-156 with the Vesa (75 x 75mm) and Stand mounting methods, as shown in the figures below.

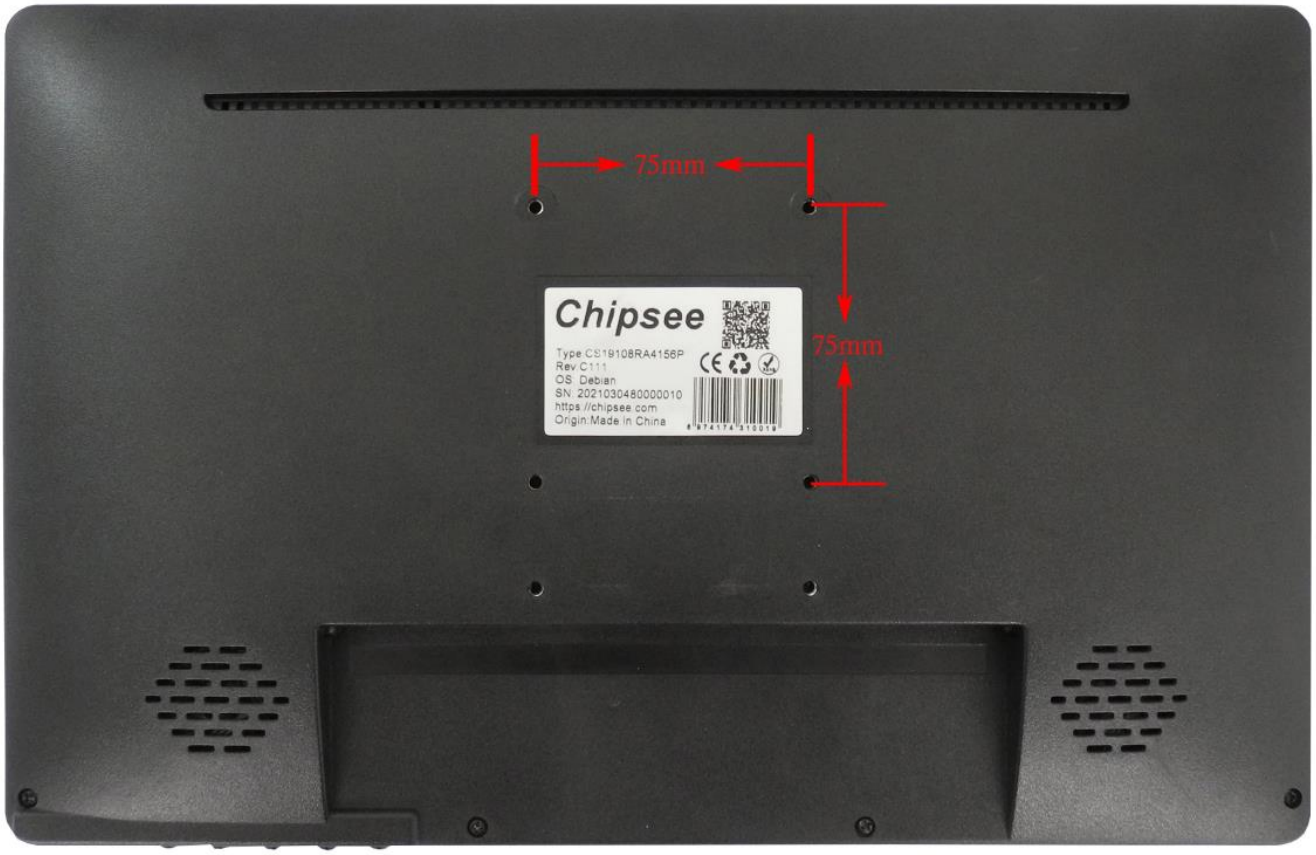


Figure 979: *VESA mounting*

Figure 980: *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-CM4-156 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.

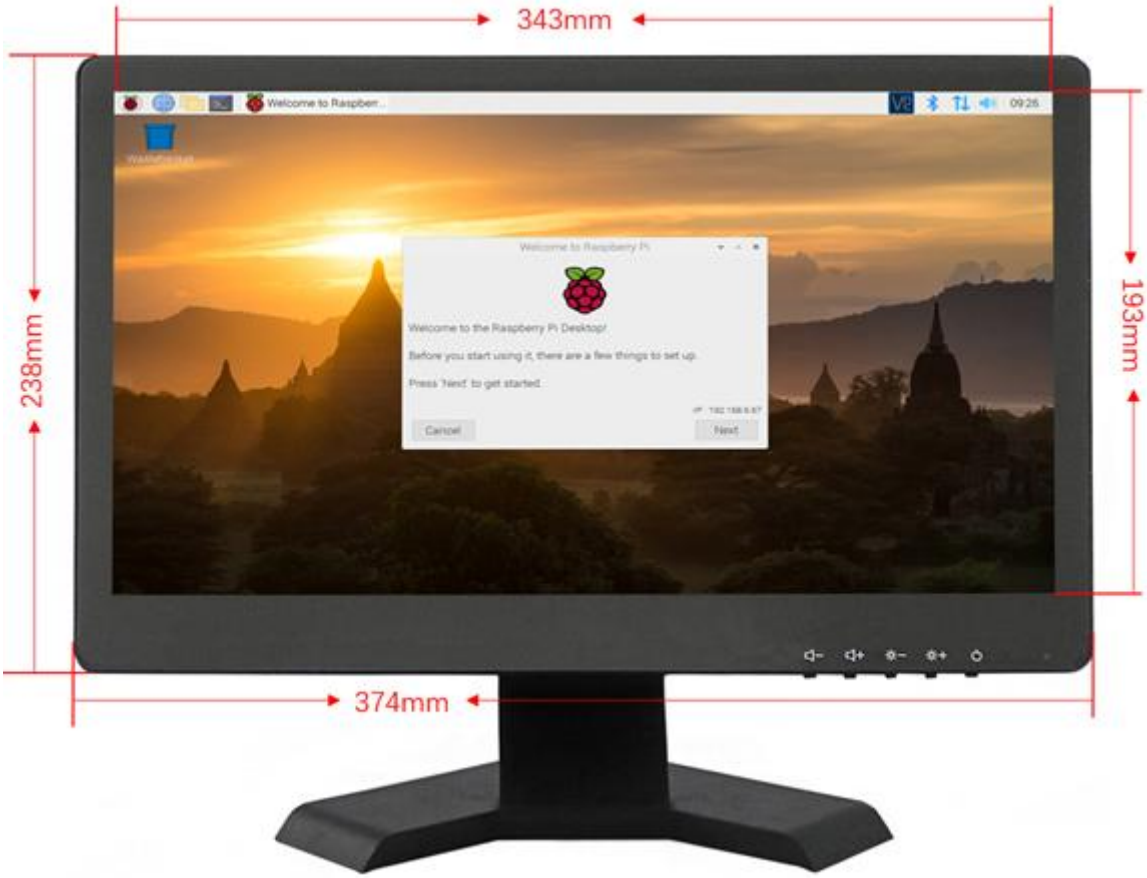


Figure 981: *Front Panel Dimension Technical Drawing*

Figure 982: *Backside Dimension Technical Drawing*

Figure 983: *Side Dimension Technical Drawing*

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