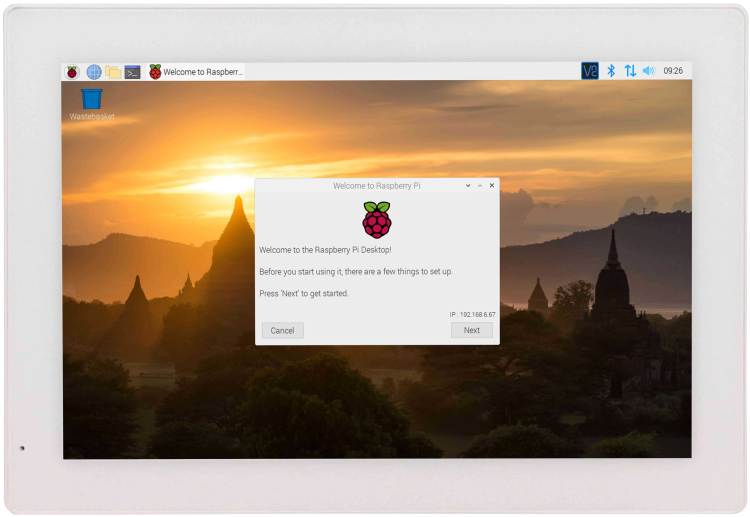
Chipsee

Industrial PC

AIO-CM4-101



PN: CS12800RA4101A

Revision 1.1

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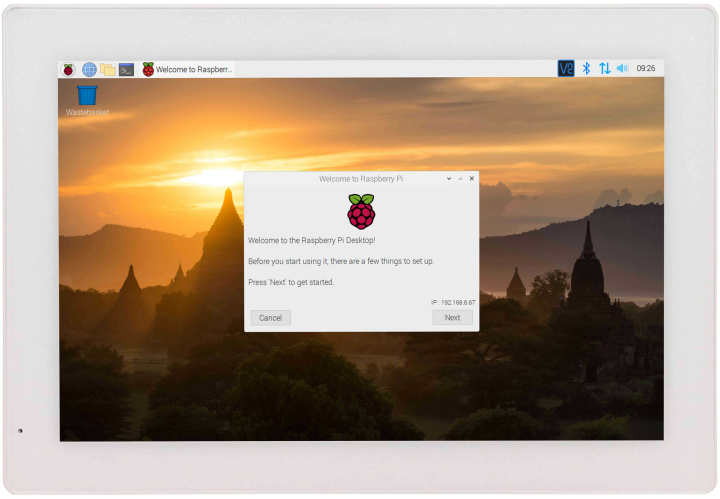
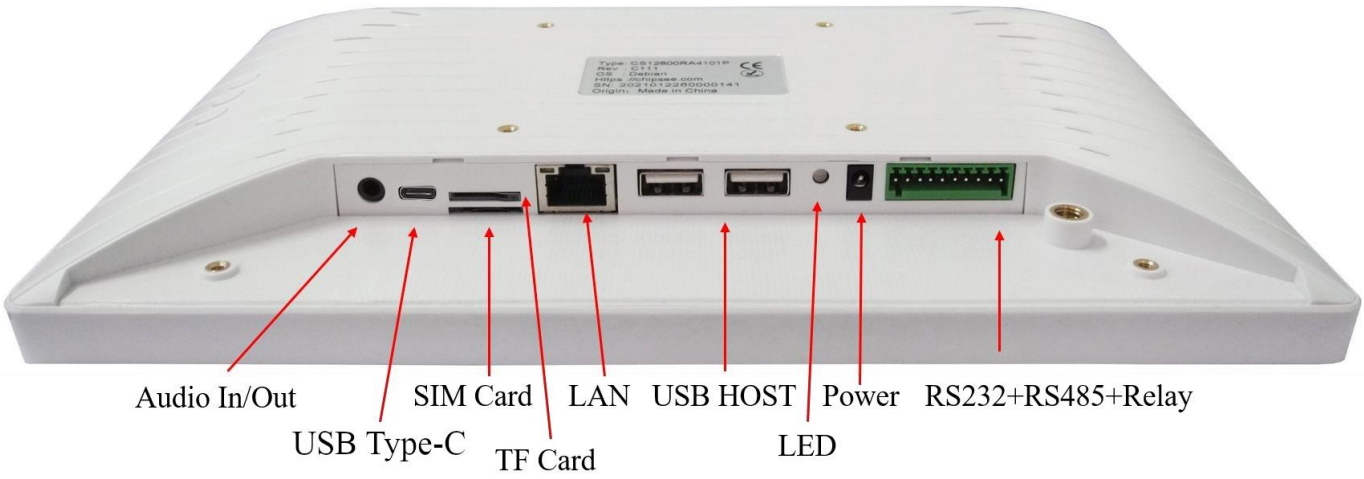
AIO-CM4-101



Front View

Rear View



Side View 1

Side View 2

Product Overview

The AIO-CM4-101 industrial Pi PC (PN: CS12800RA4101A) is an all-in-one desktop computer based on Raspberry Pi® CM4. It features a 10.1” 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-CM4-101 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-CM4-101 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-CM4-101 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-CM4-101 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-CM4-101	
CPU	Raspberry Pi® CM4, CM4 Lite; Quad Cortex-A72 at 1.5GHz
Storage	1 x TF card slot designed for storage expansion
RAM	2GB DDR1
eMMC	16GB
Display	10.1” IPS LCD, 1280 x 800 resolution px, brightness 350 cd/m^2
Touch	10-point capacitive touch with 1.0mm Armored Glass
USB	2 x USB 2.0 Host, 1 x USB TYPE-C
LAN	1 x Channel Giga LAN
Audio	Mic input on the front panel, 2W internal stereo speaker, 3.5mm audio In/Out connector
Buzzer	Internal Buzzer
RTC	Yes, High accuracy internal RTC (keep track of time one week after power off)
RS232	2 x RS232
RS485	1 x RS485, 2 Channels at most. The RS485 circuit automatically controls the Input and Output direction (no need for software control)
Relay	1 x relay with “Normally Connected” and “Normally Open” output
GPIO/Wiegand	Two 5V Logic GPIO Outputs, can be used as Wiegand signal
WiFi/BT	WiFi/BT module comes with the CM4
HAT Connector	N/A
Micro SD card socket	N/A
ZIGBEE	Internal Zigbee supported, not mounted by default
HDMI	N/A
4G/LTE	Internal 4G/LTE module supported, not mounted by default
Power Input	From 9V to 36V
Current at 12V	500mA Max

AIO-CM4-101	
Power Consumption	8W Typical
Working Temperature	From 0°C to +50°C
OS	Debian, Ubuntu
Dimensions	260.54 x 178.54 x 26.9mm
Weight	620g
Plastic Case Color	Black, White
Certification	CE, ROHS

Table 254 Key Features

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

Power Input

The AIO-CM4-101 industrial Pi PC can be powered by a wide range of input voltages: From 9V to 36V DC. The total power consumption is typically about 6W. For the power input connector, it's diffrent between CS12800RA4101A_C111 and CS12800RA4101A_C121. The power input connector is a 4.0/1.7mm DC connector for CS12800RA4101A_C111, it's 3.4/1.7mm for CS12800RA4101A_C121. For a proper DC power adapter, refer to the figure below. We also provide a customzied power cable of 3.4/1.7mm to 5.5/2.1mm for customer.

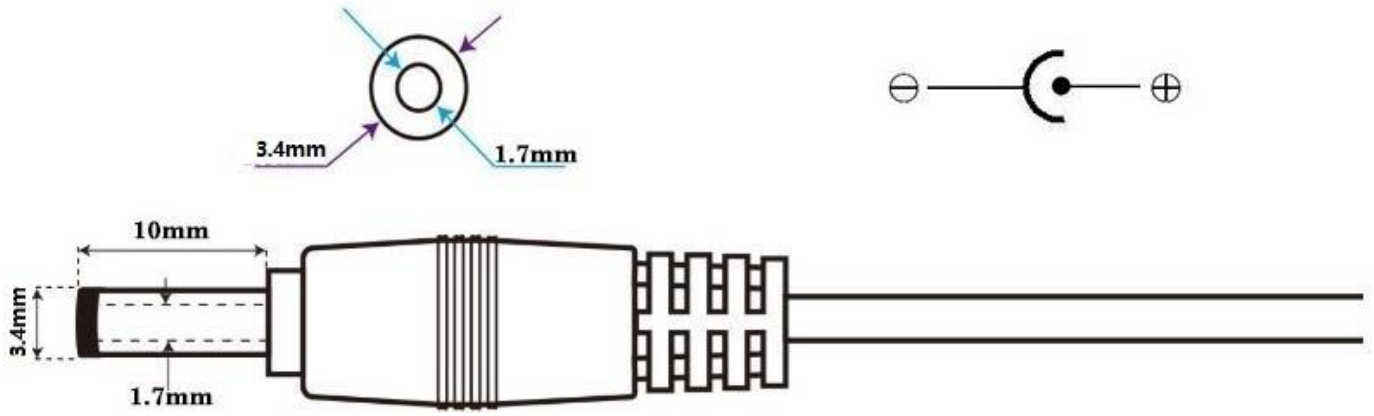

Figure 1005: *Power Adapter Connector*

Buttons and Status LED

Status LED

This product has an LED status indicator on the backside, as the figure below shows. The LED turns GREEN when the device is turned on and flashes YELLOW when the CPU is working.

Figure 1006: *Status LED*

Buttons

There are three (3) buttons on the backside of the case: Volume +, Volume -, and boot mode selection, as the figure below shows.

Figure 1007: *Buttons*

The AIO-CM4-101 industrial Pi PC boots from the internal eMMC by default. If you want it to boot from the USB TYPE-C connector, please press the Boot Mode button before power ON, and release it 3 seconds after power ON. If you use CS12800RA4101A_C121, the Boot Mode button had been changed to VOL+, you should press VOL+ to enter USB download mode.

Connectivity

There are many connectivity options available on the AIO-CM4-101 industrial Pi PC. It has 2 x USB 2.0 Host, 1 x USB TYPE-C, 1 x Channel Giga LAN (RJ45) Ethernet connector supporting up to 1 Gbps, and RS232+RS485+Relay connector.

USB HOST and USB TYPE-C

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

Figure 1008: *USB HOST and USB TYPE-C Connectors*

Note

- External USB peripherals like a USB disk or USB mouse or keyboard can connect to the USB HOST.
- You can download software to the Raspberry Pi CM4 eMMC using the USB TYPE-C.
- When you connect the USB 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.

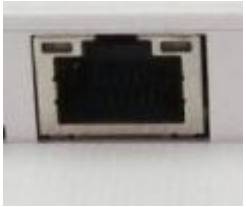

Figure 1009: *RJ45 LAN Connectors*

Note

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

TF Card and SIM Card Slots

The AIO-CM4-101 industrial Pi PC features 1 x **TF Card (micro SD) slot** and 1 x **SIM Card slot**. You can use the SIM card slot when you mount the 4G/LTE module.

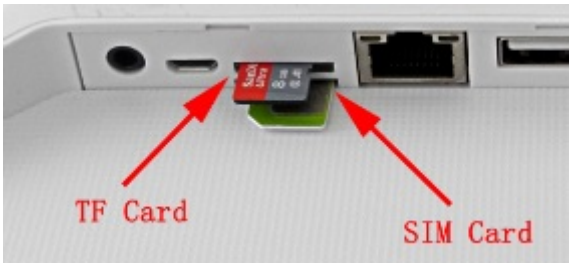

Figure 1010: *TF Card Slot (upper) and SIM Card Slot (lower)*

Warning

The product does not come shipped with the TF Card and the SIM Card by default. The TF card slot use same pins with WiFi/Bt, if you enable WiFi/Bt, the TF card function will be disabled, if you want to enable the TF card feature, you can use follow config in /boot/config.txt to enable it, but the WiFi/Bt will be disabled after reboot:

```
dtoverlay=sdio,poll_once=off
#dtparam=ant2
```

Audio In/Out Connector

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

Figure 1011: *Audio IO Connector*

ZIGBEE Module

The AIO-CM4-101 industrial Pi PC supports an onboard Zigbee module. The Zigbee controller is TI CC2531, and the Raspberry Pi forum supports it.

Attention

The product does not come with the Zigbee module by default.

RS232/RS485/Relay Connector

The serial communication interfaces (RS485, RS482, and Relay) are routed to a **10-pin 2.5mm connector**, as illustrated on the figure below.

Figure 1012: *RS232/RS485/Relay Connector*

The table below offers more detailed description of every pin and its definition:

RS232 / RS485 / Relay Pin Definition:		
Pin Number	**Definition**	**Description**
Pin 1	GND	System Ground
Pin 2	RS232_0_RXD	CPU UART0, RS232 RXD signal
Pin 3	RS232_0_TXD	CPU UART0, RS232 TXD signal
Pin 4	RS232_2_RXD	CPU UART2, RS232 RXD signal Can be set as RS485_2+(A)
Pin 5	RS232_2_TXD	CPU UART2, RS232 TXD signal Can be set as RS485_2-(B)
Pin 6	RS485_3+	CPU UART3, RS485 +(A) signal Can be set as GPIO Output
Pin 7	RS485_3-	CPU UART3, RS485 –(B) signal Can be set as GPIO Output
Pin 8	Relay NO	Relay Normally Open
Pin 9	Relay COM	Relay Common
Pin 10	Relay NC	Relay Normally Connected

Table 255 RS232/RS485/Relay Connector

Attention

1. The RS232_2 can be set as the RS485 signal. If you need it to work as RS485, please **Contact us** before shipping.
2. The RS485_3 can be set as Two 5V logic GPIO Output, these two TPIO can be used as Wiegand signal. If you need them to work as GPIO, please **Contact us** before shipping.
3. RS485_3 automatically controls input/output direction. It does not need software control.
4. The 120Ω match resistor for the RS485 is not mounted by default.
5. The Relay Max switching voltage is 125VAC or 60VDC. The maximum switching current is 1A. Rated load is 0.3A at 125VAC and 1A at 30VDC.

Mic Input

The product The AIO-CM4-101 industrial Pi PC has an integrated microphone on the front panel, as shown on the figure below.

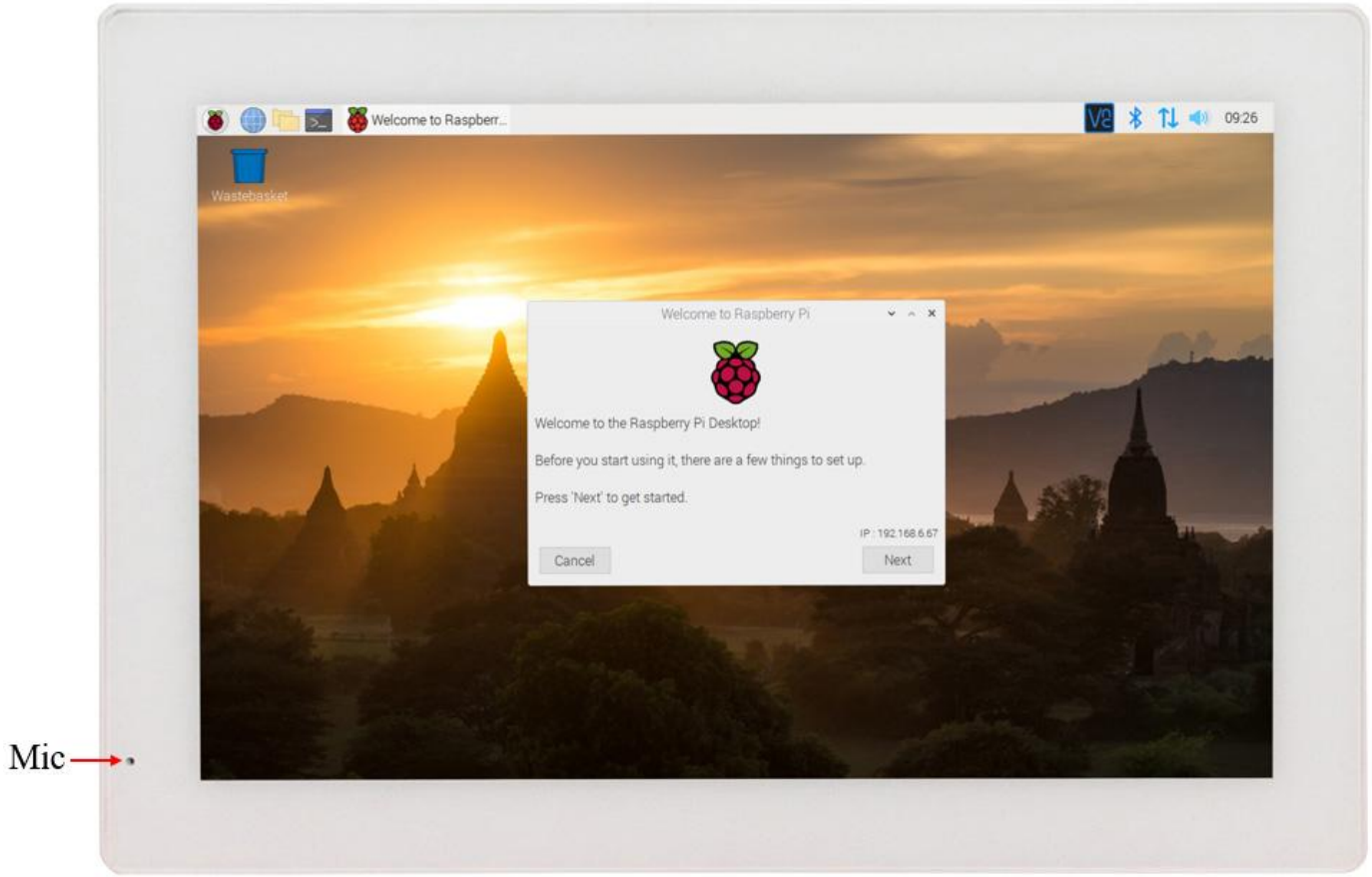

Figure 1013: *Microphone Input*

> **Attention**
>
> The product does not come with the integrated microphone mounted by default.

Mounting Procedure

You can mount AIO-CM4-101 with the Vesa (75 x 75mm) and Stand mounting methods, as shown in the figures below.

Figure 1014: *VESA mounting*

Figure 1015: *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-CM4-101 are 260.54 x 178.54 x 26.9mm (W x L x H). Please refer to the technical drawing in the figures below for details related to the specific product measurements.

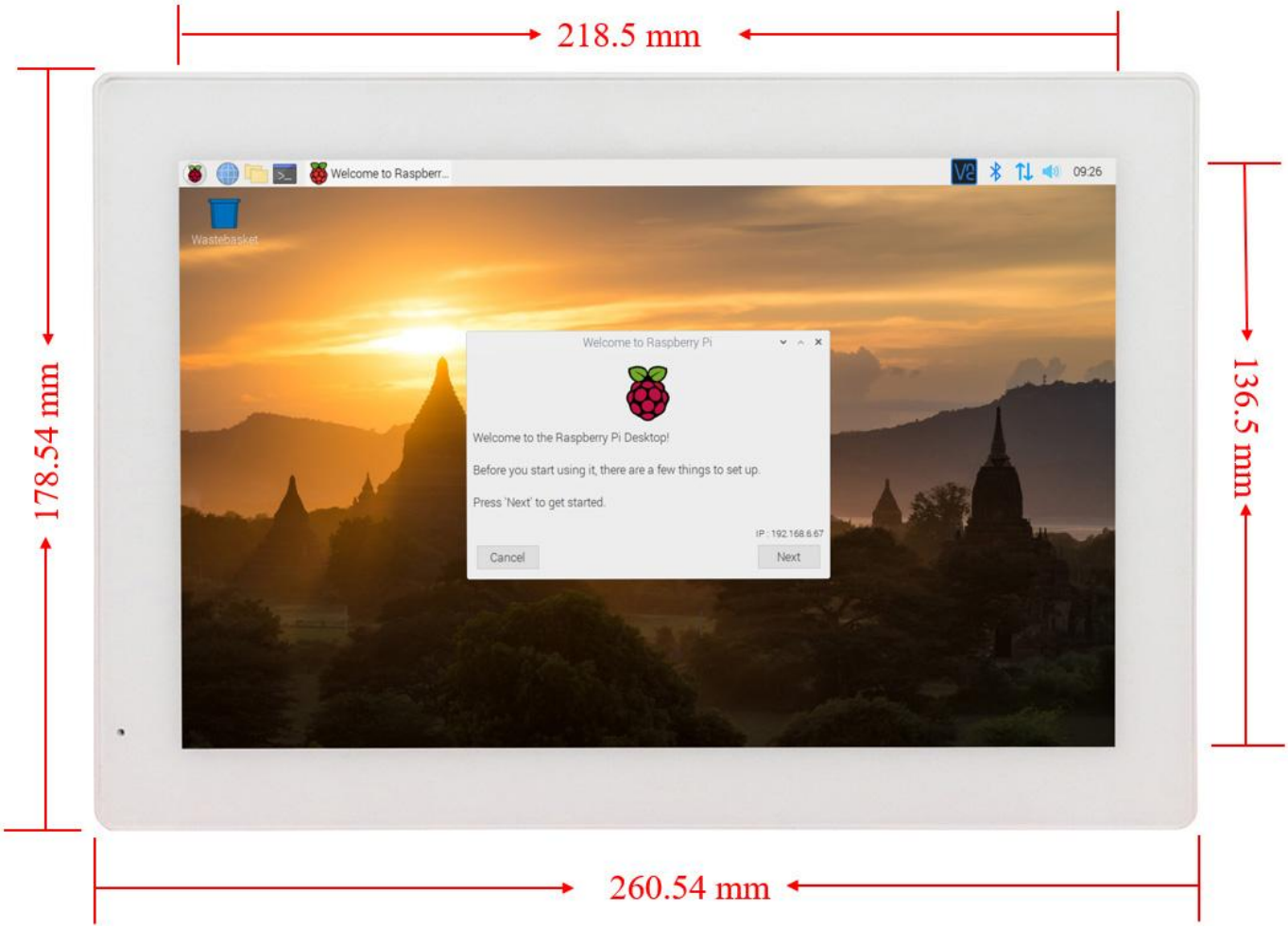

Figure 1016: *Front Panel Dimension Technical Drawing*

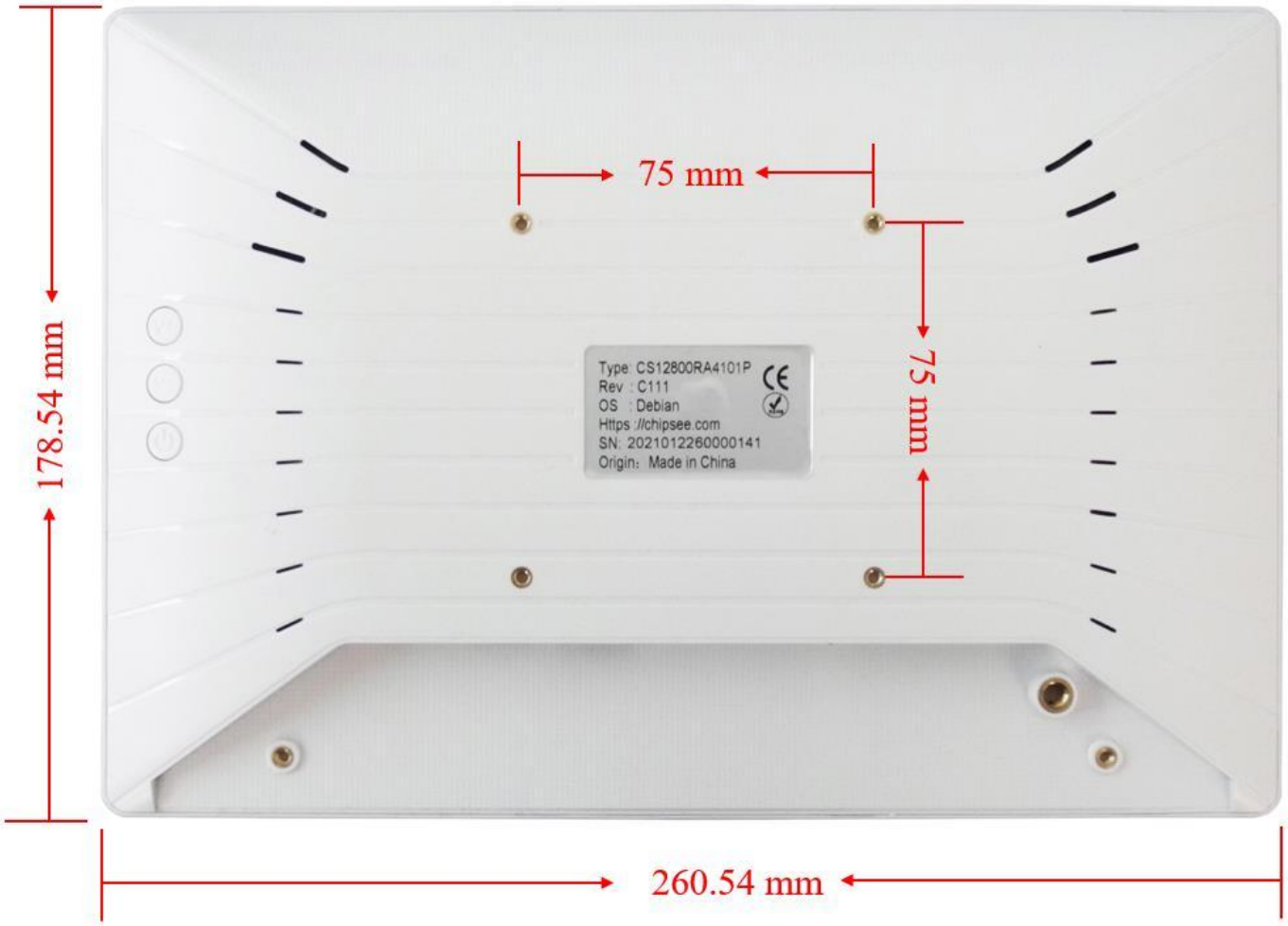

Figure 1017: *Backside Dimension Technical Drawing*

Figure 1018: *Side Dimension Technical Drawing*

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