Chipsee

Industrial PC

PPC-A55-101S

PN: CS12800-RK3568B2-101P

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Contents

PPC-A55-101S

Front View

Rear View


Chipsee
Type:CS12800-RK3568B2-101P
Rev:B-C111
OS: Android
SN: 20251110 10003111
https://chipsee.com
Origin:Made in China
CAUTION
Hot surface
DC12~36V
AUDIO
SIM
USB2.0
LED
USB3.0
PROG
LAN
HDMI
RS232/RS485/GPIO
POWER
Wifi
4G

Side View 1


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Side View 2

Product Overview

The Cortex®-A55 series PPC-A55-101S (PN: CS12800-RK3568B2-101P) is a high-quality IP65-compliant industrial panel PC. This single board computer features a 10.1" ten-point capacitive touch screen with a resolution of 1280 x 800 pixels and a brightness of 260 cd/m^2.

Key Applications

- Human Machine Interface HMI
- Mobile Applications
- Video Processing
- Machine Learning
- Video Gaming
- Process Control
- Process Monitoring
- ATM...

It is available both as an embedded solution and as a device hosed in an aluminum casing with bezels, thus facilitating different installation options:

- Installation on an industrial cabinet
- Integration with the existing equipment

The PPC-A55-101S Industrial Panel PC is based around the powerful RK3568B2 System on Chip (SoC), powered by the Rockchip RK3568B2 low-power processor which integrates a quad-core Cortex®-A55 processor.

The RK3568B2 supports multi-format video decoders and has a high-performance RAM (LPDDR4X) capable of sustaining demanding memory bandwidths. It also provides a complete set of peripheral interfaces.

10.1 inch Comparison

Chipsee provides two 10.1 inch Rockchip RK3568/RK3568B2 products: PPC-A55-101 and PPC-A55-101S, here is the comparison:

Product	PPC-A55-101	PPC-A55-101S
CPU	RK3568	RK3568B2
RAM	4G	2G
eMMC	32GB	16GB
USB	2 USB-A, 1 USB-C	4 x USB-A
RTC	Farad Cap/Lithium Coin	Lithium Coin
GPIO	8 Optical Isolated GPIO	6 CPU GPIO
CAN	2	N/A
UART	Up to 6	Up to 4
TF Card	Yes	N/A
Buzzer	Yes	N/A
Speaker	Yes	N/A
Dimension	275.5 x 193.5 x 46.0mm	253.20 X 171.83 X 36mm, small and compact

Table 196 Comparison Between the 10.1 inch RK3568/RK3568B2 Products

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 the PPC-A55-101S from the official Chipsee Store or from your nearest distributor.

Operating System

This product comes with a pre-installed OS of your choice. Please see the list below for the supported OSes, which can also be obtained from the Software Documentation section, along with the detailed installation instructions.

- Debian 11
- Android 11
- Buildroot Linux Qt 5.15

> **Warning**
>
> The Software Documentation section provides a detailed instruction on how to install different OSes on your own. However, bear in mind that Chipsee can't take the responsibility of inadequate installation procedure. If you "brick" your device, please contact Chipsee Technical Support at **support@chipsee.com** for further assistance

Optional Features

The PPC-A55-101S Industrial Panel PC does not include 4G/LTE module by default. The module is 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 PPC-A55-101S Industrial Panel PC offers a broad 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.

PPC-A55-101S	
CPU	Rockchip RK3568B2, Quad-core Cortex-A55 (2.0GHz)
RAM	2GB LPDDR4X
eMMC	16GB
SSD	Optional, supports M.2 2280 NVME SSD (PCI-E 3.0 x 2). If you use SSD, 4G/LTE will be disabled.
Storage	N/A
Display	10.1” LCD, 1280 x 800, Brightness: 260 cd/m^2
HDMI	1 x HDMI OUT
Touch	10-point capacitive touch screen
USB	2 x USB 2.0 HOST, 2 x USB 3.0 HOST(The upper USB 3.0 port close to front panel also serves as a download interface)
LAN	1 x RJ45, GbE
POE	N/A
Audio	3.5mm Audio In/Out Connector, No Internal Speaker
Buzzer	N/A
RTC	High accuracy RTC with lithium coin battery, can work 3 years after power off.
RS232	Default to 2 x RS232. Up to 4 x RS232.1
RS485	Default to 2 x RS485. Optionally, these 2 x RS485 can be configured to RS232.1
CAN	N/A
GPIO	6 channels non-isolated CPU GPIO, can be configured to IN or OUT by user
WiFi/BT	Integrated WiFi/BT Module
4G/LTE	Supported, Optional. If you use 4G/LTE, SSD will be disabled.
Power Input	From 12V to 36V
Current	300mA Typical, 500mA Max at 15V
Power Consumption	4.5W Typical, 7.5W Max
Working Temperature	From 0°C to +50°C

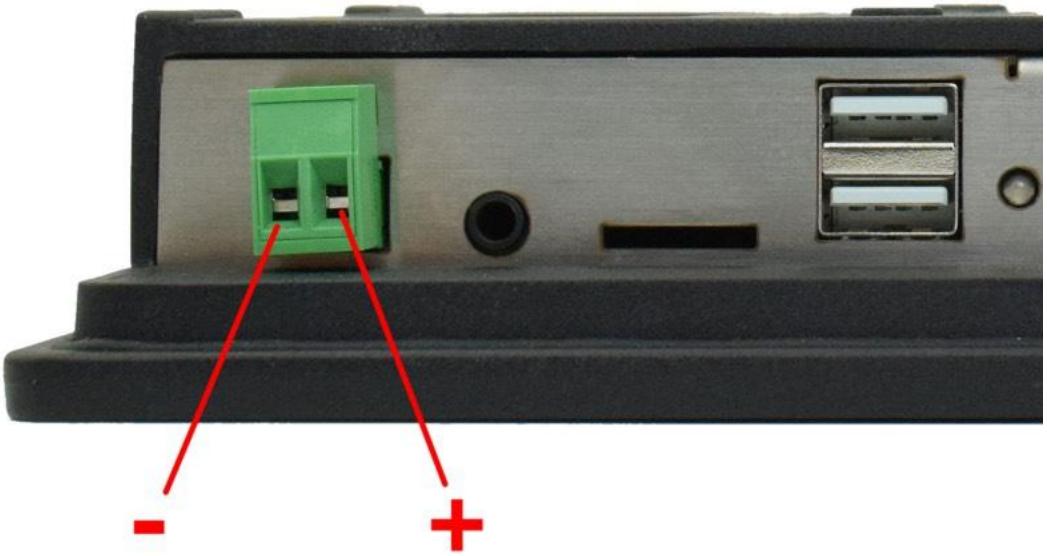
PPC-A55-101S	
OS	Android 11, Debian11, Buildroot Linux Qt 5.15
Dimensions	PPC-A55-101S (PN: CS12800-RK3568B2-101P): 253.20 X 171.83 X 36mm
Weight	PPC-A55-101S (PN: CS12800-RK3568B2-101P): 1300g
Mounting	PPC-A55-101S (PN: CS12800-RK3568B2-101P): Panel, VESA, Wall, Desktop

Table 197 Key Features

1(1,2) This product has 4 x UART by default. The default configuration is 2 x RS232 and 2 x RS485. The 2 x RS485 can be configured to RS232. Serial debug is not available on this product. UART can be swapped between RS232 and RS485 modes easily, if you need a different RS232/RS485 configuration, please get in touch with the Chipsee Technical Support at **support@chipsee.com**

Power Input

The PPC-A55-101S Industrial Panel PC can be powered by a wide range of input voltages: From 12V to 36V DC. The power input connector is a **2-pin, 3.81mm terminal**.



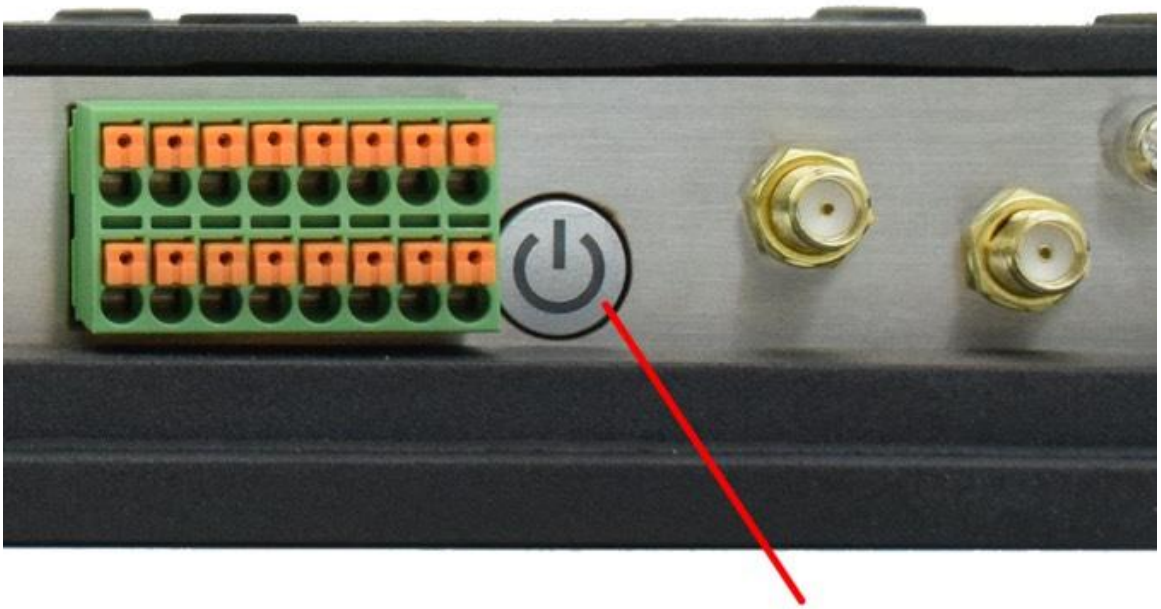
Power Input

Note that the "**+**" sign represents the positive power input. The "**-**" terminal is shorted to the ground.

Power Input Definition		
Pin Number	**Definition**	**Description**
Pin 1	Positive Input	DC Power **Positive Terminal**
Pin 2	Negative Input	DC Power **Negative Terminal**

Table 198 Power Connector

The POWER button can be used to switch the power ON or OFF.



Power On/Off Button

Touch Screen

The PPC-A55-101S Industrial Panel PC uses a 10-point capacitive touch screen.

The figure below shows the capacitive touch screen connected to the motherboard via the **USB connector**.

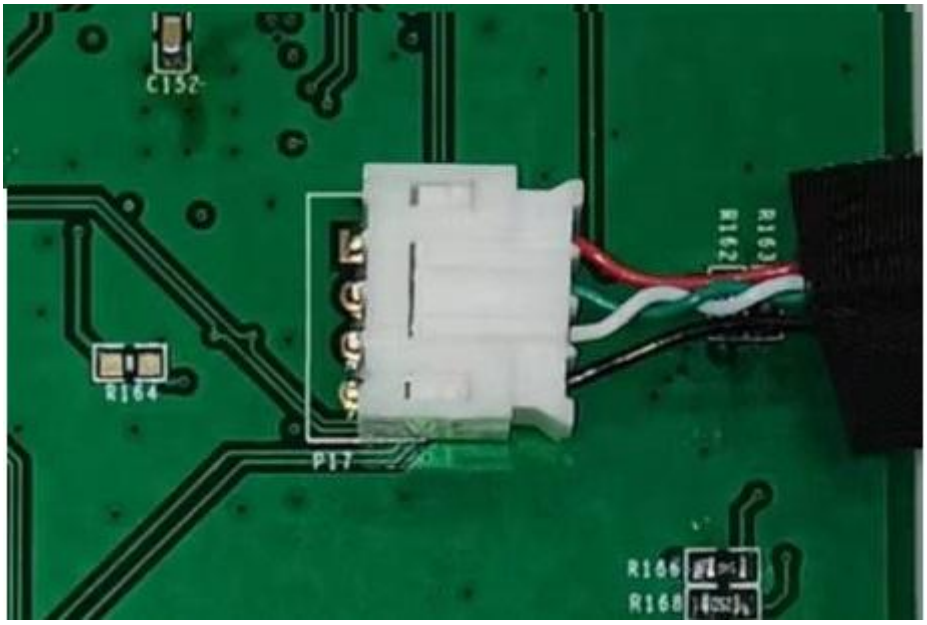


Figure 618: *Capacitive Touch Connector*

Attention

A capacitive touch screen is susceptible to power noise and Electromagnetic Radiation (EMR). It may cause LCD ripples or even capacitive touch malfunction. If using a capacitive multi-touch test application, you might notice the touch points float erratically across the display.

There are several solutions to this problem:

1. Use a high-quality Power Adapter Unit (PSU) with low EMR. You can also provide power from a battery.
2. Make sure that the PPC-A55-101S metal case is properly connected to the Power System Ground to provide sufficient EMI shielding and eliminate the problem entirely.

Connectivity

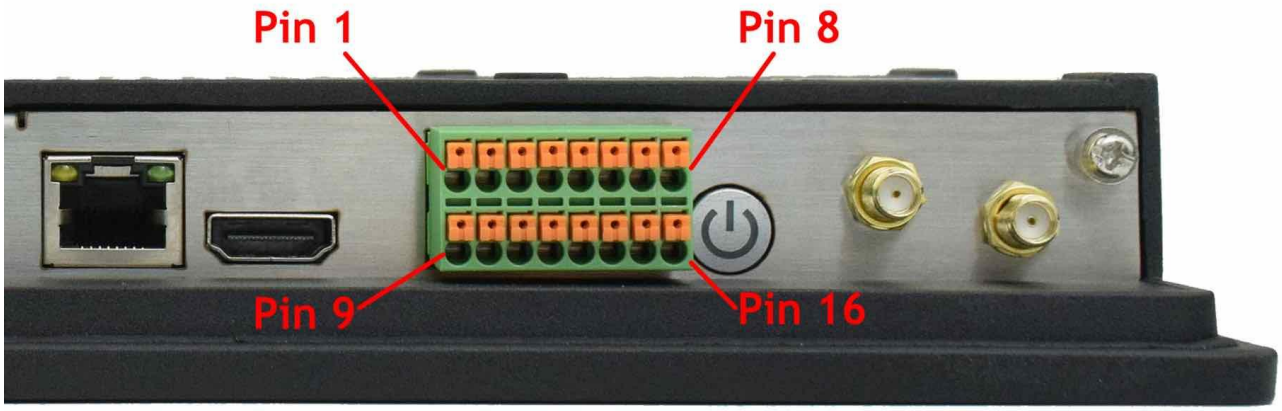
There are many connectivity options available on the PPC-A55-101S industrial PC. It has 4 x USB Host, 1 x network connector (RJ45) supporting up to 1 Gbps, 6 x GPIO and 4 x UART terminals (RS232/485).

RS232+RS485+GPIO Connector

The serial communication interfaces (RS485, RS232) and GPIO are routed to a **16-pin 3.81mm terminal**, as illustrated in the figure below.

Serial communication on both RS485 and RS232 interfaces can reach up to 115200 kbps.

GPIO directions(input / output) can be configured by user, they use CPU GPIO, users can configure them with gpiod.



PIN1	PIN2	PIN3	PIN4	PIN5	PIN6	PIN7	PIN8
GND	RS232_1RX	RS232_1TX	RS485_2A	RS485_2B	GPIO2_D4	GPIO2_D6	GPIO1_B2
PIN9	PIN10	PIN11	PIN12	PIN13	PIN14	PIN15	PIN16
5V	RS232_3RX	RS232_3TX	RS485_4A	RS485_4B	GPIO1_B0	GPIO2_D2	GPIO3_A1

The table below offers a detailed description of every pin:

RS232 / RS485 / GPIO Pin Definition:			
Pin Number	**Definition**	**Description**	**OS Node**
Pin 1	GND	GND	
Pin 2	RS232_1_RX	CPU UART1, RS232 RXD signal	/dev/ttyS1
Pin 3	RS232_1_TX	CPU UART1, RS232 TXD signal	
Pin 4	RS485_2_A	CPU UART2, RS485 +(A) signal	/dev/ttyS2

RS232 / RS485 / GPIO Pin Definition:			
Pin 5	RS485_2_B	CPU UART2, RS485 -(B) signal	
Pin 6	GPIO2_D4	CPU GPIO2 28	gpiochip2 line28
Pin 7	GPIO2_D6	CPU GPIO2 30	gpiochip2 line30
Pin 8	GPIO1_B2	CPU GPIO1 10	gpiochip1 line10
Pin 9	5V	5V	
Pin 10	RS232_3_RX	CPU UART3, RS232 RXD signal	/dev/ttyS3
Pin 11	RS232_3_TX	CPU UART3, RS232 TXD signal	
Pin 12	RS485_4_A	CPU UART4, RS485 +(A) signal	/dev/ttyS4
Pin 13	RS485_4_B	CPU UART4, RS485 -(B) signal	
Pin 14	GPIO1_B0	CPU GPIO1 8	gpiochip1 line8
Pin 15	GPIO2_D2	CPU GPIO2 26	gpiochip2 line26
Pin 16	GPIO3_A1	CPU GPIO3 1	gpiochip3 line1

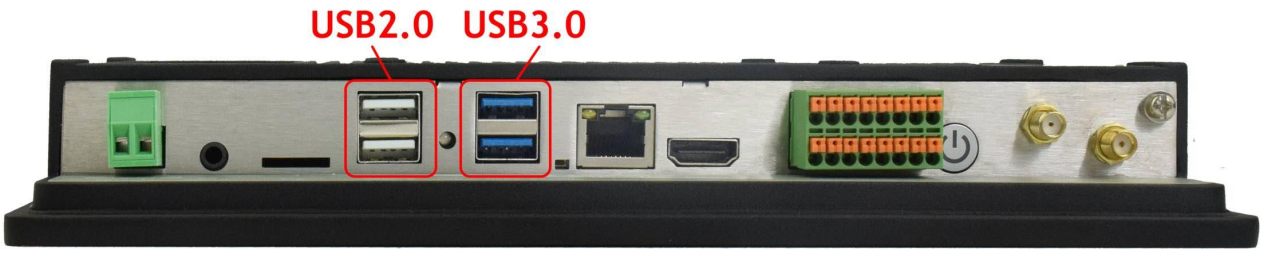
Table 199 Connectivity Section for PPC-A55-101S

Attention

- The 120Ω match resistor for **RS485** is **already mounted** by default.
- This product supports changing 2 x RS485 to 2 x RS232, providing up to 4 x RS232.
- The GPIO is directly routed from CPU, it uses the 5V logic by default. You can use an external isolated power input but the power input range should be from 5V to 24V DC.
- The GPIO output channels can drive at most 500mA current on each channel.

USB Connectors

There are 2 x USB 2.0 HOST, 2 x USB 3.0 HOST(The upper USB 3.0 port close to front panel also serves as a download interface) on board, as shown in the figures below.



USB HOST Ports

USB For Flashing Operating System

LAN Connectors

LAN (RJ45) connector provides 1 x RJ45 Ethernet connectivity over standardized Ethernet cables as shown in the figure below. The integrated Ethernet interface supports up to 1 Gbps data throughput.

RJ45 LAN Connector

Note

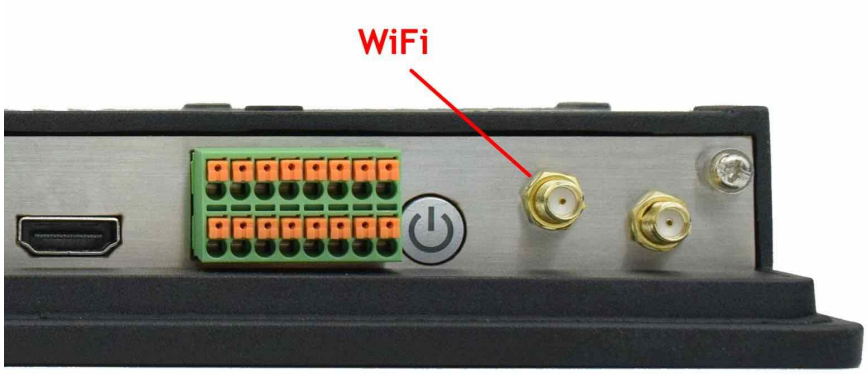
Use CAT5 or better cables to achieve full data throughput over maximum distance defined by the 1000BASE-T standard (100m).

WiFi & BT Module

The PPC-A55-101S Industrial Panel PC is equipped with the popular **Realtek RTL8821CS WiFi/BT module** which supports BT/BLE 2.1/3.0/4.2, as well as 802.11ac/abgn 433Mbps 2.4/5.8 GHz Wireless LAN (WLAN).

Figure 619: *RTL8821CS WiFi/BT Module*

The PPC-A55-101S includes an SMA connector for an external WiFi/BT antenna, as illustrated in the figure below.



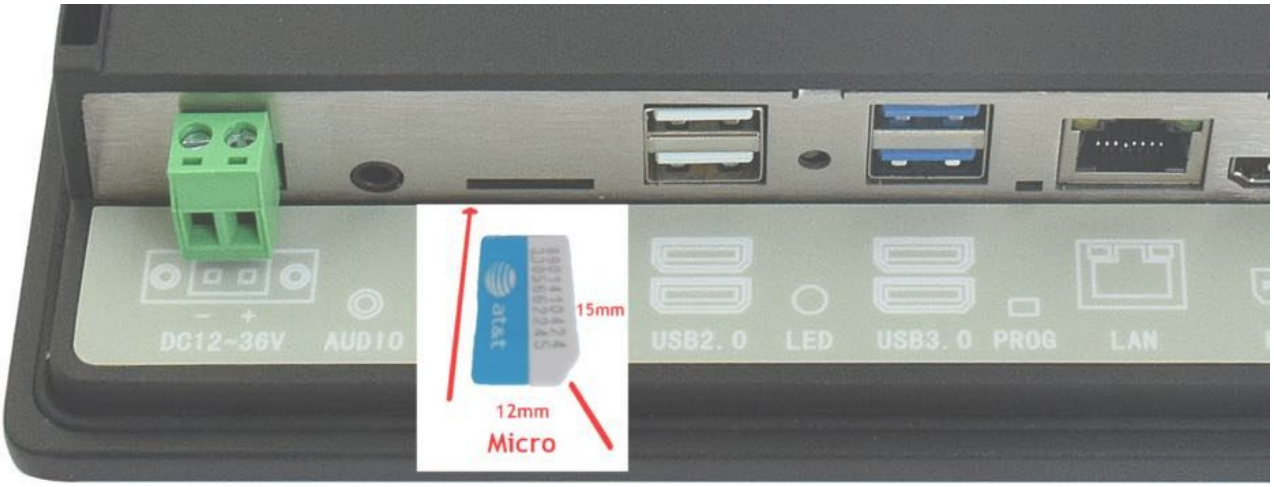
WiFi+BT Antenna SMA

4G/LTE Module

The PPC-A55-101S Industrial Panel PC is equipped with a **mini-PCIe connector** that can connect a 4G/LTE module. The customer will also need a SIM Card Holder and a 4G/LTE Antenna Connector to ensure 4G/LTE works on the PPC-A55-101S. SIM card does **NOT** support hot plug. **Power off** before inserting or removing SIM card.

Figure 620: *mini-PCIe Connector & 4G Module*

Figure 621: *SIM Card Holder & 4G Antenna*



SIM Card Direction

4G Antenna SMA

Attention

The product does not come shipped with the 4G/LTE module by default. The customer can choose the 4G/LTE module option when placing an order, we will install all the necessary components.

If you use SSD, 4G/LTE will be disabled. You can only choose SSD or 4G/LTE module.

M.2 SSD Slot

There is a M.2 slot on the PPC-A55-101S that allows an optional SSD. The M.2 slot is capable of holding a PCI-E 3.0 x 2, 2280 NVME SSD. The PPC-A55-101S does not come shipped with an SSD by default, if you want a different configuration you can consult us when placing an order.

If you don't need the SSD we usually don't solder the M.2 slot on the board. But if you want the M.2 slot available for your future expansions, please tell us when placing an order.

Attention

If you use 4G/LTE, SSD will be disabled. You can only choose SSD or 4G/LTE module.

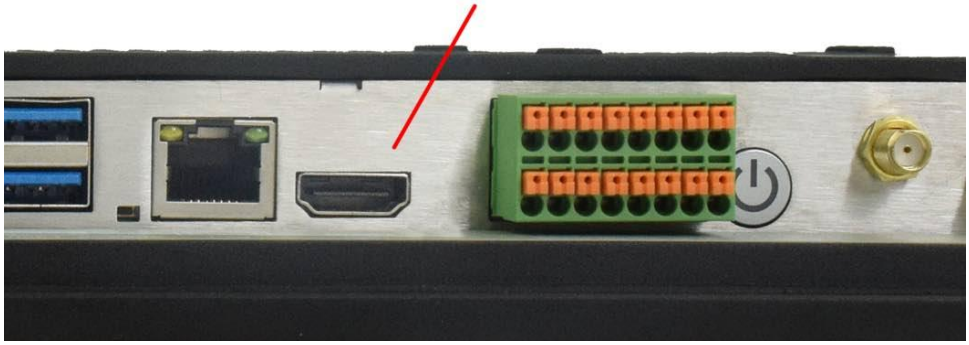
Audio Connector

The PPC-A55-101S Industrial Panel PC features a **3.5mm audio input/output jack**. This product doesn't have internal speaker, it also doesn't have a buzzer.

Audio Connector

HDMI Connector

The PPC-A55-101S Industrial Panel PC is equipped with 1 x HDMI OUT port. The HDMI connector allows connecting an additional (external) monitor. HDMI output resolution can be configured by the software.



HDMI Connector

PROG Button

The PPC-A55-101S Industrial Panel PC has one button on the board marked as PROG, as shown in the figure below.

When the button is pressed before powering up, the PPC-A55-101S will enter Recovery mode(LOADER Mode). In this mode you can use a USB cable to upgrade its operating system. You can use this feature to flash another OS to the internal eMMC.

When the button is not pressed before and during power up, the PPC-A55-101S will boot normally.

There is no need to press the button during regular operation. However, if you need to flash the OS in Recovery mode, the button will be used. Please refer to the software documents for more information.

PROG Button

Mounting Procedure

You can mount PPC-A55-101S with VESA mounting (guide): **100 x 100** mm, 4 x **M4** (6mm) screws.

You can mount PPC-A55-101S with panel mounting method (guide).

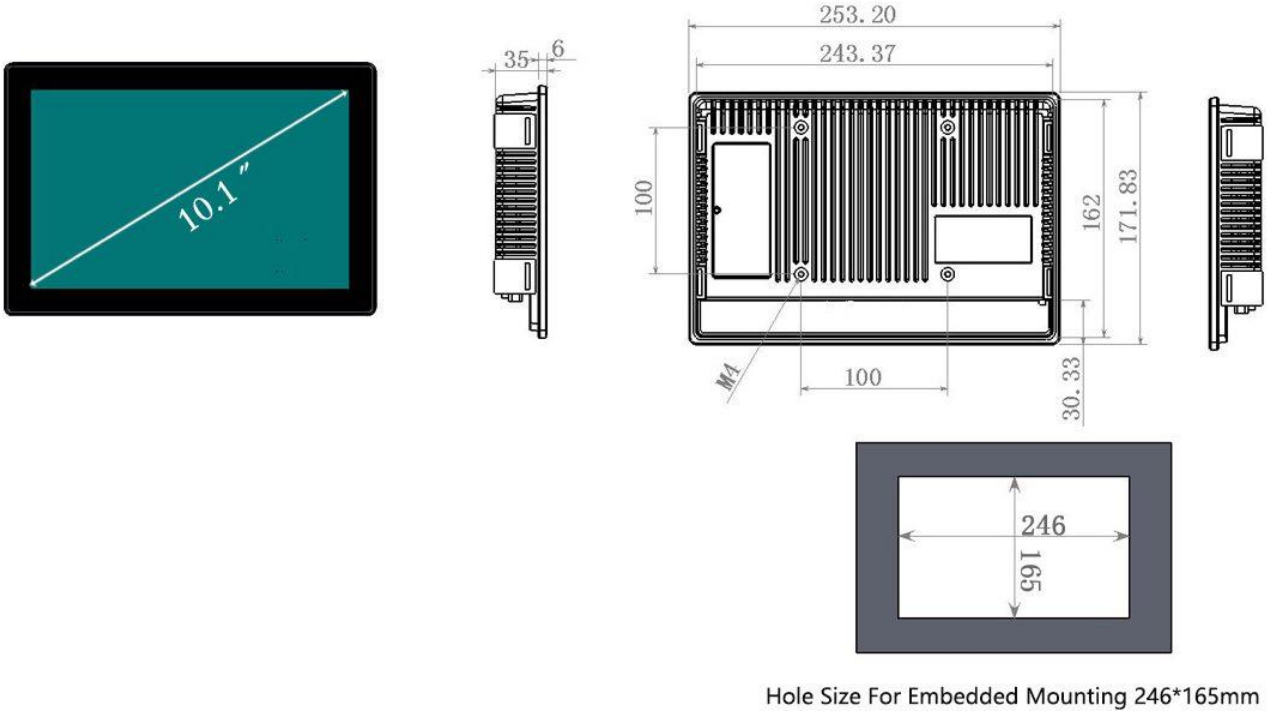
You can also mount PPC-A55-101S with wall mounting or desktop mounting method.

> **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

For PPC-A55-101S, the outer mechanical dimensions are 253.20 X 171.83 X 36mm (W x L x H).



Technical Drawing and Cutout Dimensions

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