

Industrial PC

PPC-A72-101



PN: CS12800R101P

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PPC-A72-101

Front View



Rear View



Side View 1



Side View 2



PPC-A72-101 Product Overview

Product Overview

The Cortex[®]-A72/53 series PPC-A72-101 (PN: CS12800R101P) is a high-quality industrial panel PC. It features a 10.1" ten-point capacitive touch screen with a resolution of 1280 x 800 pixels and brightness of 400 cd/m².

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-A72-101 Industrial Panel PC is based around the powerful CS-SOM-RK3399 System on Module (SoM), powered by the Rockchip RK3399 low-power processor which integrates a dual-core Cortex[®]-A72 and a quad-core Cortex[®]-A53 with a separate NEON coprocessor.

The RK3399 supports multi-format video decoders and has a high-performance dual-channel external memory interface (DDR3/DDR3L/LPDDR3/LPDDR4) capable of sustaining demanding memory bandwidths. It also provides a complete set of peripheral interfaces.

PPC-A72-101 Ordering Options

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 PPC-A72-101 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 be also obtained from the Software Documentation section, along with the detailed installation instructions.

- Buildroot Linux Qt5.14*
- Android 7.1
- Android 11
- Debian 10
- * (Formerly Chipsee Linux) Based on buildroot that has been integrated with:
 - 1. Chipsee Hardware Test Application
 - 2. An initialization script for GPIO/Buzzer/Audio
 - 3. Multiple libraries, such as the libQt5Sql to develop Qt application with SQL
 - 4. Various packages, such as the ntfs-3g to use NTFS file system



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

PPC-A72-101 **Optional Features**

Optional Features

The PPC-A72-101 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. PPC-A72-101 Hardware Features

Hardware Features

The PPC-A72-101 Industrial Panel PC offers a broad range of performance and connectivity options for scalable integration, providing expandability to meet future needs. Some of the key features are listed in the table below.

PPC-A72-101				
СРИ	Rockchip RK3399, Dual-core Cortex-A72 (1.8GHz), Quad-core Cortex-A53 (1.4GHz)			
RAM	4GB DDR3			
еММС	16GB			
Storage	TF Card, Supports up to 128GB SDHC			
Display	10.1" LCD, 1280 x 800, High Brightness: 400 cd/m ²			
Touch	10-point capacitive touch screen			
USB	1 x USB 2.0 HOST, 1 x USB 3.0 HOST, 1 x USB Type-C			
LAN	1 x RJ45, GbE			
Audio	3.5mm Audio In/Out Connector, 2W Internal Speaker			
Buzzer	Yes			
RTC	Yes			
RS232	3 x RS232 (Optional 5 x RS232 at most, 1 debug port)1			
RS485	2 x RS4851			
GPIO	8 Channels			
WiFi/BT	Integrated WiFi/BT Module			
4G/LTE	Supported, Optional			
Power Input	From 12V to 36V			
Current	700mA Max(15V)			
Power Consumption	12W Typical			
Working Temperature	From 0°C to +60°C			
OS	Android 7.1, Android 11, Buildroot Linux Qt5.14, Debian 10			
Dimensions	PPC-A72-101 (PN: CS12800R101P): 275.5 x 193.5 x 46.0mm			
Weight	PPC-A72-101 (PN: CS12800R101P): 1600g			
Mounting	PPC-A72-101 (PN: CS12800R101P): Panel, VESA			

Table 132 Key Features

PPC-A72-101 Hardware Features

1(1,2)
This product has 5 x UART channels in total. The default configuration is 3 x RS232 and 2 x RS485, including 1 debug port. UART can be swapped between RS232 and RS485 modes easily, so if you need a different RS232/ RS485 configuration, please get in touch with the Chipsee Technical Support at support@chipsee.com

PPC-A72-101 Power Input

Power Input

The PPC-A72-101 Industrial Panel PC can be powered by a wide range of input voltages: From 12V to 36V DC. The power input connector is a **3-pin, 3.81mm terminal**. The polarity and the pinout is clearly marked on the housing of the product as shown on the figure below.

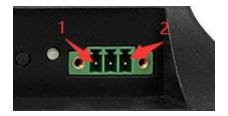


Figure 424: Power Input

Note that the "+" sign represents the positive power input, and it is printed both at the casing and as a silk-screen on a PCB of the embedded version. 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		
Pin 3	Ground	Power System Ground		

Table 133 Power Connector



The system ground "**G**" is connected to power negative "-" on board.

PPC-A72-101 Touch Screen

Touch Screen

The PPC-A72-101 Industrial Panel PC uses a 10-point capacitive touch screen.



Figure 425: Capacitive Touch Screen 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-A72-101 Power Input connector (pin 3) is properly connected to the Power System Ground to provide sufficient EMI shielding and eliminate the problem entirely.
- 3. Bad GND problem can also be confirmed by touching pin 3 of the Power Input connector with one hand while operating the capacitive touch screen with the other hand. In this case, the operator's body acts as the Power System Ground.

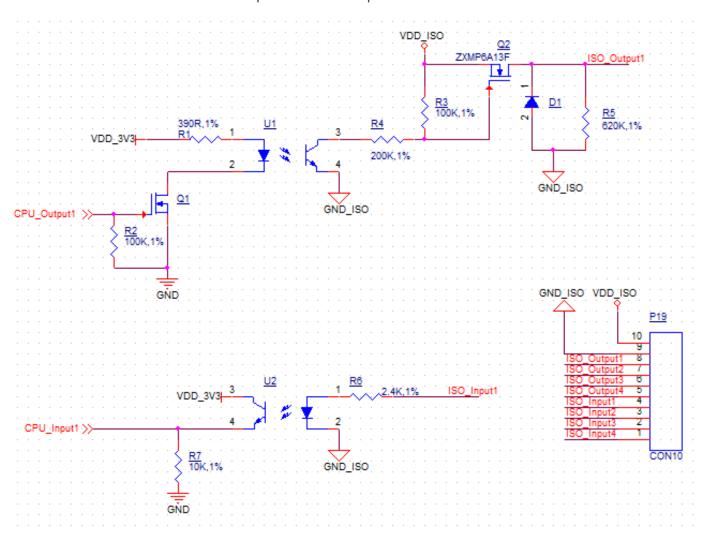
PPC-A72-101 Connectivity

Connectivity

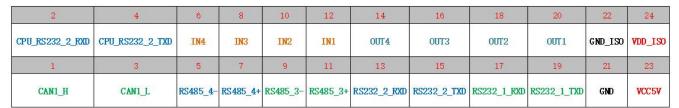
There are many connectivity options available on the PPC-A72-101 industrial PC. It has 1 x USB 2.0 HOST, 1 x USB 3.0 HOST, 1 x USB Type-C, 1 x network connector (RJ45) supporting up to 1 Gbps, 8xGPIO and $5 \times UART$ terminals (RS232/485).

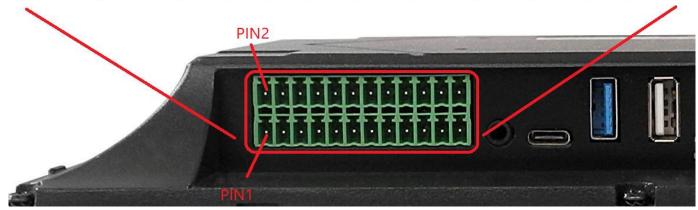
RS232+RS485+CAN+GPIO Connector

The serial communication interfaces (RS485, RS232, and CAN) are routed to a **12-pin 3.81mm terminal**, as illustrated on the figure below. Serial communication on both RS485 and RS232 interfaces can reach up to 115200 kbps.



Isolated GPIO reduced schematic





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

RS232 / RS485 / CAN / GPIO Pin Definition:				
Pin Number	Definition	Description		
Pin 1	CAN1_H	CAN H signal		
Pin 2	CPU_RS232_2_RXD	CPU UART2, CPU RS232 RXD signal		
Pin 3	CAN1_L	CAN L signal		
Pin 4	CPU_RS232_2_TXD	CPU UART2, CPU RS232 TXD signal		
Pin 5	RS485_4-	USB UART4, RS485 -(B) signal		
Pin 6	IN4	Isolated Input 4		
Pin 7	RS485_4+	USB UART4, RS485 +(A) signal		
Pin 8	IN3	Isolated Input 3		
Pin 9	RS485_3-	USB UART3, RS485 -(B) signal		
Pin 10	IN2	Isolated Input 2		
Pin 11	RS485_3+	USB UART3, RS485 +(A) signal		
Pin 12	IN1	Isolated Input 1		
Pin 13	RS232_2_RXD	USB UART2, RS232 RXD signal		
Pin 14	OUT4	Isolated Output 4		
Pin 15	RS232_2_TXD	USB UART2, RS232 TXD signal		
Pin 16	OUT3	Isolated Output 3		
Pin 17	RS232_1_RXD	USB UART1, RS232 RXD signal		
Pin 18	OUT2	Isolated Output 2		
Pin 19	RS232_1_TXD	USB UART1, RS232 TXD signal		

RS232 / RS485 / CAN / GPIO Pin Definition:				
Pin 20	OUT1	Isolated Output 1		
Pin 21	GND	System Ground		
Pin 22	GND_ISO	Isolated Ground		
Pin 23	VCC5V	System 5V output, up to 1A		
Pin 24	VDD_ISO	Isolated Power Input,support 5V~24V		

Table 134 Connectivity Section



Attention

- \bullet The 120Ω match resistor for the RS485 and CAN bus is NOT mounted by default.
- This products support change 2 x RS485 to 2 x RS232 and support up to 5 x RS232 (include one debug port).
- The GPIO Connector is optional. You can **Contact us** if you need it.
- The GPIO has been Opt-Isolated and it uses the 24V Logic by default. You can use an external isolated power input but the power input range should be from 5V to 24V DC.
- The 4 output channels can drive at most 500mA current on each channel.

PPC-A72-101 USB Connectors

USB Connectors

There are $2 \times \text{USB HOST connectors}$ onboard which includes $1 \times \text{USB } 2.0 \text{ HOST}$, $1 \times \text{USB } 3.0 \text{ HOST}$, $1 \times \text{USB Type-C}$, as shown in the figures below.



Figure 426: USB 2.0 HOST Connectors (embedded/enclosed PC version)



Figure 427: USB 3.0 HOST Connectors (embedded/enclosed PC version)



Figure 428: USB Type-C Connector (embedded/enclosed PC version)



Warning

Be careful not to touch surrounding electronic components accidentally while plugging in USB devices into the embedded IPC version.

PPC-A72-101 LAN Connectors

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.

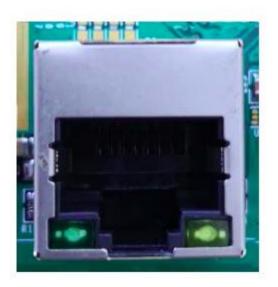




Figure 429: RJ45 LAN Connector



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

PPC-A72-101 WiFi & BT Module

WiFi & BT Module

The PPC-A72-101 Industrial Panel PC is equipped with the popular **Realtek RTL8723 WiFi/BT module** that supports BT/BLE 4.0 (with backward compatibility), as well as 802.11bgn 2.4 GHz Wireless LAN (WLAN).



Figure 430: RTL8273 WiFi/BT Module

The product includes an SMA connector for an external WiFi/BT antenna, as illustrated in the figure below.



Figure 431: WiFi+BT Antenna

PPC-A72-101 4G/LTE Module

4G/LTE Module

The PPC-A72-101 Industrial Panel PC is equipped with a **mini-PCle connector** that can connect to 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-A72-101. SIM card does NOT support hot plug. Power off before inserting or removing SIM card.

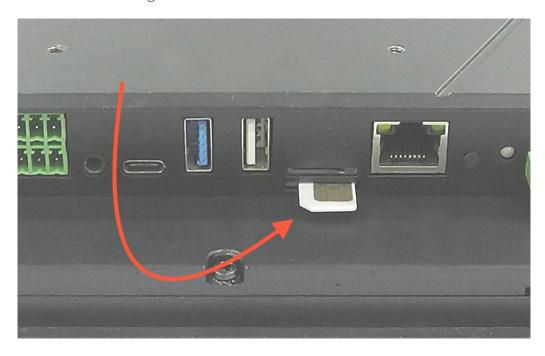


Figure 432: mini-PCIe Connector & 4G Module





Figure 433: SIM Card Holder & 4G Antenna



SIM Card Direction

PPC-A72-101 4G/LTE Module



Attention

The product does not come shipped with the 4G/LTE module by default.

PPC-A72-101 TF Card Slot

TF Card Slot

The PPC-A72-101 Industrial Panel PC features 1 x **TF Card (micro SD) slot**. It can address up to 128GB of memory.



Figure 434: TF (micro SD) Card Slot



The product does not come shipped with the TF Card by default.

PPC-A72-101 Audio Connectors

Audio Connectors

The PPC-A72-101 Industrial Panel PC features some audio peripherals. It has 1 x **3.5mm audio output jack**.

Also, the PPC-A72-101 industrial Pi PC has a miniature 2W internal speaker for audio reproduction, as well as a small buzzer for alarm/notification sounds.



Figure 435: Audio Connector (enclosed PC version)



Attention

By plugging in the headphone cable, the internal speaker will be disabled automatically.

In addition, PPC-A72-101 features a miniature 2W embedded speaker for audio reproduction, as well as a small buzzer for alarm/notification sounds.

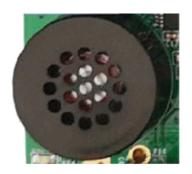




Figure 436: 2W Micro Speaker and Buzzer

PPC-A72-101 Power Button

Power Button

The PPC-A72-101 Industrial Panel PC has a power button, as shown on the figure below. You can use the button to power ON or OFF the industrial PC.





Figure 437: Power Button

PPC-A72-101 Mounting Procedure

Mounting Procedure

The PPC-A72-101 Industrial Panel PC can be mounted with 4 x M4 screws, enabling simplified installation onto any standard mounting fixture.

PPC-A72-101

You can mount PPC-A72-101 with the Vesa (75 \times 75mm) and Panel mounting methods, as shown on the figure below.

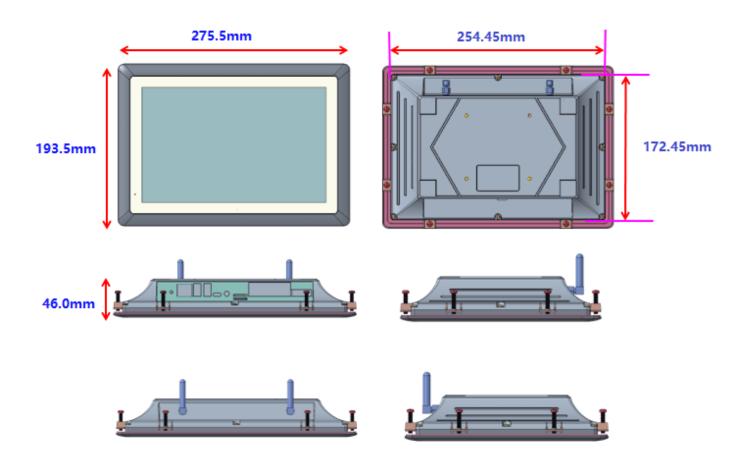


Figure 438: Panel mounting



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.

PPC-A72-101 Mechanical Specifications

Mechanical Specifications

PPC-A72-101

For PPC-A72-101, the outer mechanical dimensions are 275.5 x 193.5 x 46.0mm (W \times L \times H).

PPC-A72-101 3D Model

3D Model

PPC-A72-101 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 PPC-A72-101, select hardware documentation, drag the navigation bar to the 3D Model section.

PPC-A72-101 Disclaimer

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