

Industrial PC

# PPC-A72-156-C



PN: CS19108R156P

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# PPC-A72-156-C

# **Front View**



# Rear View



# Side View 1



# Side View 2



PPC-A72-156-C Product Overview

### **Product Overview**

The Cortex $^{\$}$ -A72/53 series PPC-A72-156-C (PN: CS19108R156P) is a high-quality industrial panel PC. It features a 15.6" ten-point capacitive touch screen with a resolution of 1920 x 1080 pixels and brightness of 250 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-A72-156-C 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<sup>®</sup>-A72 and a quad-core Cortex<sup>®</sup>-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-A72-156-C 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-A72-156-C 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
- 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 <a href="ntfs-3g">ntfs-3g</a> 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 <a href="mailto:support@chipsee.com">support@chipsee.com</a> for further assistance

PPC-A72-156-C **Optional Features** 

### **Optional Features**

The PPC-A72-156-C 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-A72-156-C Hardware Features

## **Hardware Features**

The PPC-A72-156-C 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-A72-156-C						
СРИ	Rokchip RK3399, Dual-core Cortex-A72 (1.8GHz), Quad-core Cortex-A53 (1.4GHz)					
RAM	4GB DDR3					
еММС	16GB					
Storage	TF Card, Supports up to 32GB SDHC					
Display	15.6" LCD, 1920 x 1080, High Brightness: 250 cd/m <sup>2</sup>					
Touch	10-point capacitive touch screen					
USB	4 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 Out Connector, 2W Internal Speaker					
Buzzer	Yes					
RTC	Yes					
RS232	5 x RS2321					
RS485	2 x RS485 (4 at most, 1 debug port)1					
GPIO	8 Channels					
WiFi/BT	Integrated WiFi/BT Module					
НДМІ	1 x HDMI					
4G/LTE	Supported, Optional					
Power Input	From 15V to 36V					
Current at 15V	800mA Max					
Power Consumption	12W Typical					
Working Temperature	From 0°C to +70°C					
OS	Android 7.1					
Dimensions	402 x 251 x 45mm					
Weight	3200g					
Mounting	VESA & Panel methods					

PPC-A72-156-C Hardware Features

### Table 179 Key Features

**1(1,2)**This product has 7 x UART channels in total. The default configuration is 5 x RS232 and 2 x RS485. UART can be swapped between RS232 and RS485 modes easily, so if you need different RS232/RS485 configuration, please get in touch with the Chipsee Technical Support at **support@chipsee.com** 

PPC-A72-156-C Power Input

## **Power Input**

The PPC-A72-156-C Industrial Panel PC can be powered by a wide range of input voltages: From 15V 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 570: 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 <b>Positive Terminal</b>		
Pin 2	Negative Input	DC Power <b>Negative Terminal</b>		
Pin 3	Ground	Power System Ground		

Table 180 Power Connector



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

PPC-A72-156-C Touch Screen

### **Touch Screen**

The PPC-A72-156-C Industrial Panel PC uses a 10-point capacitive touch screen.



#### 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-A72-156-C 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-A72-156-C Connectivity

## Connectivity

There are many connectivity options available on the PPC-A72-156-C industrial PC. It has  $4 \times 4 \times 1000$  Level 1 x USB 3.0 HOST, 1 x USB Type-C, 1 x RJ45, GbE Ethernet connector, and  $6 \times 1000$  Connectors.

#### **DB9 Connectors**

The PPC-A72-156-C Industrial Panel PC has 6 x DB9 connectors that are configured as RS232 by default as shown on the figure below. You can configure **COM3/COM4/COM5/COM6** as RS485. If you need different RS232/RS485 configuration, contact the Chipsee Technical Support at **support@chipsee.com**.

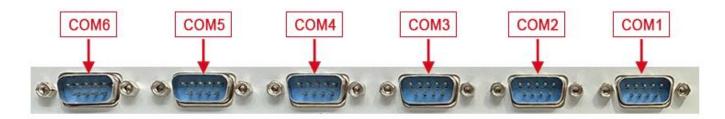


Figure 571: DB9 Connectors

#### **USB Connectors**

There are 4 x dual **USB 2.0 HOST connectors** onboard, as shown on the figure below.



Figure 572: USB 2.0 HOST Connectors

There is also 1 x **USB 3.0 HOST connector** and 1 x **USB Type-C connector**, as shown below.



Figure 573: USB 3.0 HOST Connector

PPC-A72-156-C USB Connectors



Figure 574: USB Type-C Connector

PPC-A72-156-C 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 575: RJ45 LAN Connector



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

PPC-A72-156-C WiFi & BT Module

#### WiFi & BT Module

The PPC-A72-156-C 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).

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

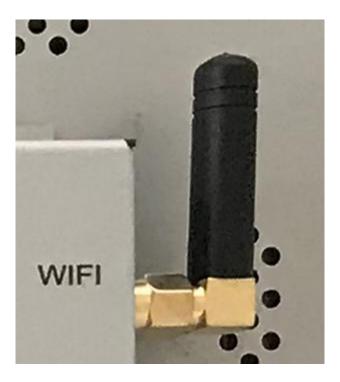


Figure 576: WiFi+BT Antenna

PPC-A72-156-C 4G/LTE Module

### **4G/LTE Module**

The PPC-A72-156-C 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-A72-156-C.



Figure 577: SIM Card Holder



#### Attention

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

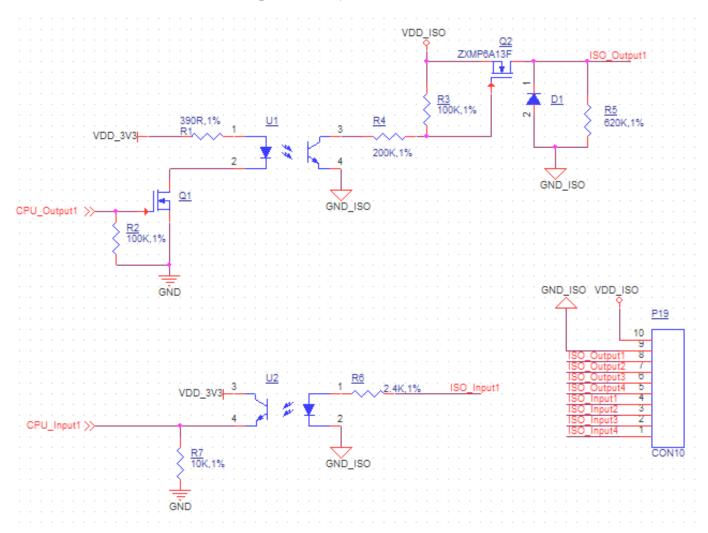
PPC-A72-156-C Expansion Connector

## **Expansion Connector**

The PPC-A72-156-C Industrial Panel PC has 1 x **Expansion Connector** (closed by default), as shown on the figure below. This connector has connected to isolated GPIO signals. The table below gives details about the definition of every Pin.



Figure 578: Expansion Connector



Isolated GPIO reduced schematic

Expansion Connector Pinout					
PIN	Function	PIN	Function		
1	VDD, lsolated Power Input (+5V – +24V)	2	GND_ISO		
3	OUT1	4	OUT2		
5	OUT3	6	OUT4		
7	IN1	8	IN2		
9	IN3	10	IN4		

PPC-A72-156-C **Expansion Connector** 

### Table 181 Expansion Connector Pinout



#### Warning

Since the PCB traces of the port are connected to the processor directly, be careful not to cause electrostatic discharge or over voltage on the pins, as it may damage the processor. Take all the necessary precautions while working with electrostatic-sensitive equipment.

PPC-A72-156-C TF Card Slot

## **TF Card Slot**

The PPC-A72-156-C Industrial Panel PC features 1 x **TF Card (micro SD) slot**. It can address up to 32GB of memory.



Figure 579: TF (micro SD) Card Slot



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

PPC-A72-156-C Audio Connectors

# **Audio Connectors**

The PPC-A72-156-C Industrial Panel PC features some audio peripherals, as well. It has 1  $\times$  **3.5mm audio output jack**.



Figure 580: Audio Out Connector

PPC-A72-156-C HDMI Connector

## **HDMI Connector**

The PPC-A72-156-C Industrial Panel PC is equipped with 1 x **HDMI connector**. The HDMI connector allows connecting an additional (external) monitor. HDMI output resolution can be configured by the software.



Figure 581: HDMI Connector

PPC-A72-156-C Power Button

## **Power Button**

The PPC-A72-156-C 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 582: Power button

# **Measurements and Mounting Procedure**

The outer mechanical dimensions of PPC-A72-156-C are 402 x 251 x 45mm (W x L x H).

The PPC-A72-156-C Industrial Panel PC can be mounted with 8 x M4 screws or  $4 \times M4$  screws using the VESA (100x100cm or 75x75cm) and Panel mounting methods, enabling simplified installation onto any standard mounting fixture.

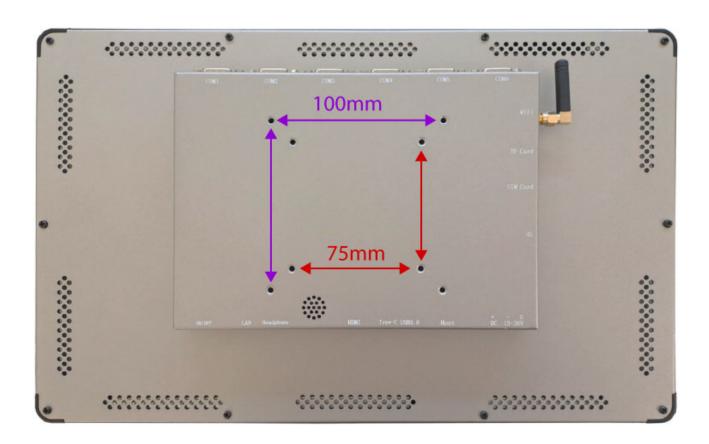


Figure 583: Mounting Method



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-A72-156-C 3D Model

## **3D Model**

PPC-A72-156-C 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-A72-156-C, select hardware documentation, drag the navigation bar to the 3D Model section.

PPC-A72-156-C Disclaimer

## **Disclaimer**

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