

Industrial PC

PPC-A35-101



PN: CS12800-STMP25-101P

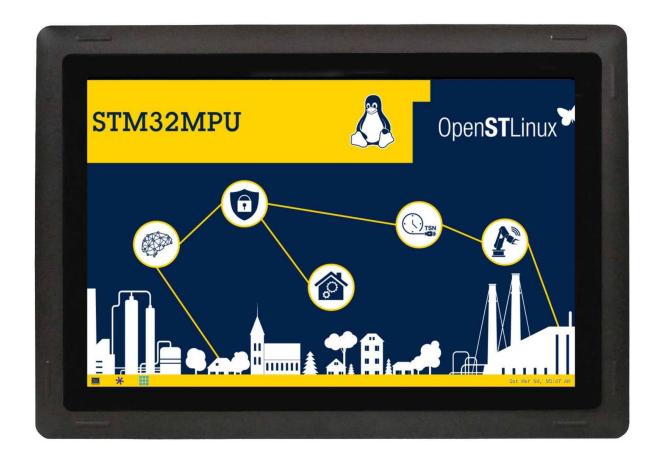
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PPC-A35-101

Front View



Rear View



Side View 1



Side View 2



PPC-A35-101 Product Overview

Product Overview

The Cortex $^{\$}$ -A35 series PPC-A35-101 (PN: CS12800-STMP25-101P) is a high-quality industrial panel PC. This single board computer features a 10.1" 10-point capacitive touch screen with a resolution of 1280 x 800 pixels and a brightness of 400 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 as a device hosed in an aluminum casing with bezels.

The PPC-A35-101 Industrial Panel PC is based around the STM32MP257F System on Chip (SoC), powered by the STMicroelectronics low-power processor which integrates a dual(2)-core Cortex[®]-A35 1.5GHz processor.

The STM32MP257F supports multi-format video decoders and has a high-performance DDR4 4GB RAM capable of sustaining demanding memory bandwidths. It also provides a complete set of peripheral interfaces.

It also features a 1.35 Tops NPU for Al features.

PPC-A35-101 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 the PPC-A35-101 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 also be obtained from the Software Documentation section, along with the detailed installation instructions.

Yocto Linux



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-A35-101 Optional Features

Optional Features

The PPC-A35-101 Industrial Panel PC: Does not include the 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-A35-101 Hardware Features

Hardware Features

The PPC-A35-101 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-A35-101 | | | | |
|----------------------|---|--|--|--|
| СРИ | STM32MP257F, Dual(2)-core Cortex-A35 (1.5GHz) | | | |
| GPU | VeriSilicon GC8000UL - Open GL ES 3.2.8 - Vulkan 1.2, 900 MHz, up to 150 Mtriangle/s or 900 Mpixel/s | | | |
| NPU | VeriSilicon GC8000UL - TensorFlowLite - ONNX - Linux NN, 900 MHz, 1.35 TOPS | | | |
| RAM | DDR4 4GB | | | |
| еММС | 32GB | | | |
| PCle | 1 x PCle2.0 x1, M.2 M-Key 2230/2242/2260/2280 socket | | | |
| 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 | 2 x USB 2.0 HOST, 1 x USB Type-C | | | |
| LAN | 1 x RJ45, GbE, optional Power over Ethernet (PoE) port | | | |
| Audio | 3.5mm Audio In/Out Connector, 1W Internal Speaker | | | |
| Buzzer | Yes | | | |
| RTC | High accuracy RTC with farad capacitor, can work 1 week after power off (default). High accuracy RTC with lithium coin battery, can work 3 years after power off (optional). | | | |
| RS232 | default 2 x RS232 (Optional 6 x RS232 at most, including 1 debug port)1 | | | |
| RS485 | default 2 x RS485 (Optional 3 x RS485 at most)1 | | | |
| CAN | default 2 x CAN FD (2 x CAN FD can be configured to RS232 optionally or 1 x CAN FD can be configured to RS485 optionally) | | | |
| GPIO | 8 Channels Isolated IO, 4 x Input and 4 x Output | | | |
| WiFi/BT | Integrated WiFi/BT Module | | | |
| 4G/LTE | Supported, Optional | | | |
| Power Input | From 15V to 30V (supports optional 24V ignition signal) | | | |
| Current | 500mA max at 15V, 400mA typical at 15V | | | |
| Power Consumption | 7.5W max, 6W typical | | | |
| | From -20°C to +70°C | | | |

PPC-A35-101 Hardware Features

| PPC-A35-101 | | |
|---|---|--|
| Working Temperature | | |
| os | Yocto Linux | |
| Dimensions | PPC-A35-101 (PN: CS12800-STMP25-101P): 275.5 x 193.5 x 46.0mm | |
| Weight | PPC-A35-101 (PN: CS12800-STMP25-101P): 1300g | |
| Mounting PPC-A35-101 (PN: CS12800-STMP25-101P): Panel, VESA | | |

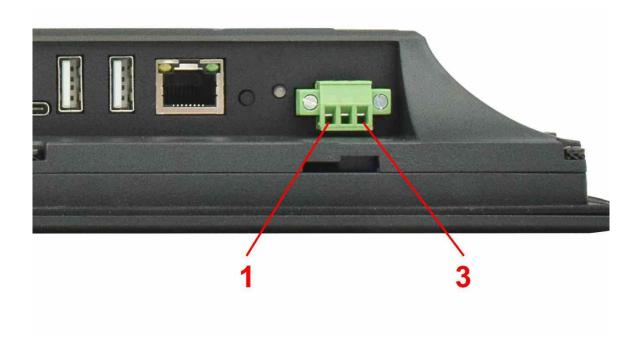
Key Features

1(1,2)This product has 6 x CPU UART, the default configuration is 2 x RS232 and 2 x RS485, including 1 x RS232 debug port. There are 2 x CAN FD that can be configured to RS232, or 1 x CAN FD that can be configured to RS485. UART can be swapped between RS232 and RS485 modes easily, if you need a different RS232/RS485/ CAN configuration, please get in touch with the Chipsee Technical Support at **support@chipsee.com** when placing an order.

PPC-A35-101 Power Input

Power Input

The PPC-A35-101 Industrial Panel PC can be powered by a wide range of input voltages: From 15V to 30V (supports optional 24V ignition signal) DC. The power input connector is a **3-pin, 3.81mm terminal**. The polarity and the pinout is shown in the figure below.



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 | |
| Pin 3 | Ground | Power System Ground | |

Power Connector



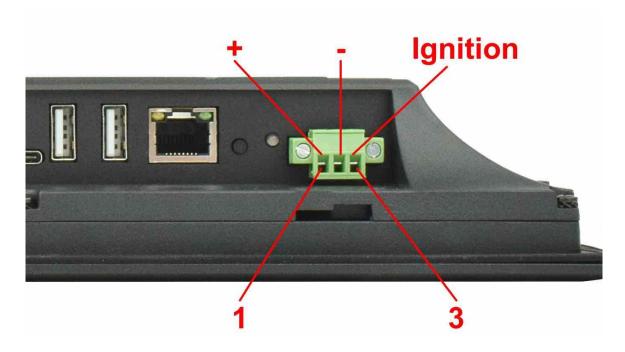
The system ground "**G**" is connected to power negative "-" on board.

PPC-A35-101 Ignition Signal

Ignition Signal

The product has a "ignition signal" **optional** feature. By default the ignition signal is not installed. If you need this feature you can contact us when placing an order. In this setup, Pin 3 is the ignition signal pin.

To use this feature, apply a 24V DC input (relative to -) to Pin 3. If Pin 3 detects a low input voltage, the product will be shutdown. If Pin 3 detects a high input voltage, the product will be boot and running.



Power Input (with Ignition Signal)

| 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 | Ignition | Ignition Signal | |

Power Connector with Ignition Signal

PPC-A35-101 Touch Screen

Touch Screen

The PPC-A35-101 Industrial Panel PC uses a 10-point capacitive touch screen. The touch layer is connected through USB.



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-A35-101 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 problems 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.

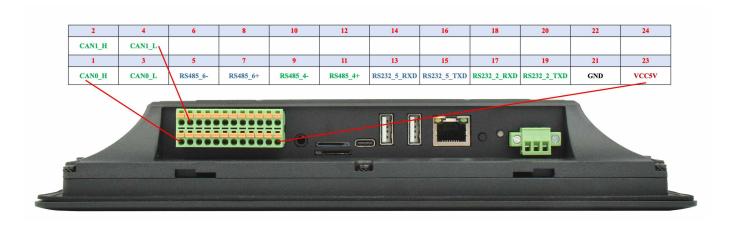
PPC-A35-101 Connectivity

Connectivity

There are many connectivity options available on the PPC-A35-101 industrial PC. It has 2 x USB 2.0 HOST, 1 x USB Type-C; 1 x RJ45, GbE, **optional** Power over Ethernet (PoE) port; up to $6 \times \text{UART}$ terminals (RS232/RS485), up to $2 \times \text{CAN}$ FD.

RS232/RS485/CAN

The serial communication interfaces (RS485, RS232, and CAN) are routed to a **phoenix terminal**, as illustrated on the figure below.



RS232, RS485 and CAN

This product has 6 x CPU UART, the default configuration is 2 x RS232 and 2 x RS485, including 1 x RS232 debug port. There are 2 x CAN FD that can be configured to RS232, or 1 x CAN FD that can be configured to RS485.

| Pin Number | Definition | Description | OS Node |
|-------------|--|--|--------------|
| 2 | CAN1_H | CPU CAN1 H signal | |
| 4 | CAN1_L | CPU CAN1 L signal | CAN1 |
| 1 | CAN0_H | CPU CAN0 H signal | |
| 3 | CAN0_L | CPU CAN0 L signal | CAN0 |
| 5 | RS485_6- | CPU UART6 RS485 –(B) signal | |
| 7 | RS485_6+ | CPU UART6 RS485 +(A) signal | /dev/ttySTM3 |
| 9 | RS485_4- | CPU UART4 RS485 –(B) signal | |
| 11 RS485_4+ | | CPU UART4 RS485 +(A) signal | /dev/ttySTM2 |
| 13 | RS232_5_RXD | CPU UART5 RS232 RXD signal | |
| 15 | RS232_5_TXD CPU UART5 RS232 TXD signal | | /dev/ttySTM1 |
| 17 | RS232_2_RXD | CPU UART2 RS232 RXD signal, Debug Port | |

PPC-A35-101 RS232/RS485/CAN

| Pin Number | Definition | Description | OS Node |
|------------|-------------|--|--------------|
| 19 | RS232_2_TXD | CPU UART2 RS232 TXD signal, Debug Port | /dev/ttySTM0 |
| 21 | GND | System Ground | |
| 23 | +5V | System +5V Power Output, No more than 1A Current output | |

Connectivity Section



Attention

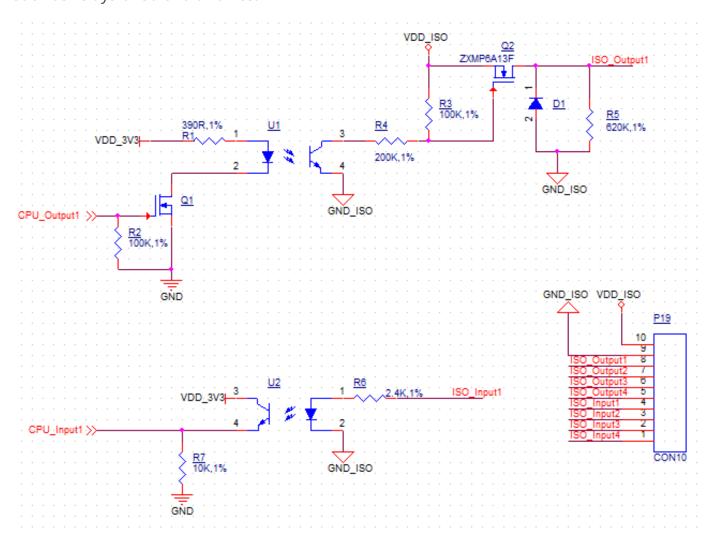
- 1. RS485 can control the input and output direction automatically. There's no need to control it from within the software.
- 2. The 120Ω match resistor for the RS485 is NOT mounted by default.
- 3. The 120Ω match resistor for the CAN bus is NOT mounted by default.

PPC-A35-101 GPIO Port

GPIO Port

The PPC-A35-101 Industrial Panel PC features a **phoenix connector** that provides 8 x opto-isolated GPIO pins, of which 4 x are output, and 4 x are input pins. The terminal also includes an isolated PSU input in the range of 5 to 24 VDC. The exact pinout is given in follow table.

The GPIO **HIGH** output level corresponds to the voltage connected at the isolated Power Input, while the GPIO **LOW** output level corresponds to the isolated Ground Input. Each GPIO output can drive loads up to 500mA, enough to drive various applications directly, such as relays or solenoid valves.

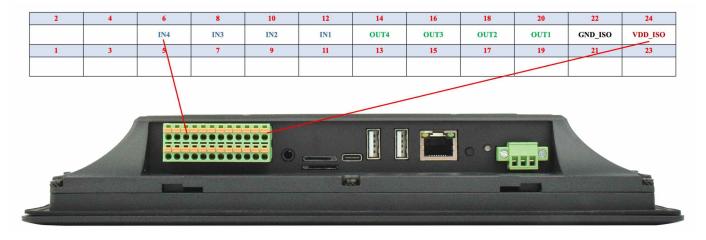


Isolated GPIO reduced schematic

Attention

- If the isolation is not a requirement, it is possible to use a non-isolated PSU instead on the Isolated Power Input.
- The GPIO has been Opt-Isolated and it uses the 24V Logic by default.
- The 4 output channels can drive at most 500mA current on each channel.

PPC-A35-101 GPIO Port



GPIO

| Pin Number | Definition | GPIO | GPIOD Chip | GPIOD Line |
|---------------------------------|--------------------------------|------|------------|------------|
| 6 | IN4 | PZ2 | 11 | 402 |
| 8 | IN3 | PZ3 | 11 | 403 |
| 10 | IN2 | PZ4 | 11 | 404 |
| 12 | IN1 | PZ5 | 11 | 405 |
| 14 | OUT4 | PZ9 | 11 | 409 |
| 16 | OUT3 | PZ8 | 11 | 408 |
| 18 | OUT2 | PZ7 | 11 | 407 |
| 20 | OUT1 | PZ6 | 11 | 406 |
| GND_ISO (Isolated Ground Input) | | | | |
| 24 | VDD_ISO (Isolated Power Input) | | | |

GPIO Connector Pin-out

PPC-A35-101 USB Connectors

USB Connectors

There are $2 \times \text{USB HOST}$ and $1 \times \text{USB DEVICE}$ (for flashing OS) ports onboard: $2 \times \text{USB } 2.0$ HOST, $1 \times \text{USB Type-C}$, as shown in the figures below.



USB 2.0 HOST Port



USB Type-C Port



Warning

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

PPC-A35-101 LAN Connectors

LAN Connectors

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

The LANO port supports **optional** Power over Ethernet (PoE) feature.



RJ45 LAN Connector

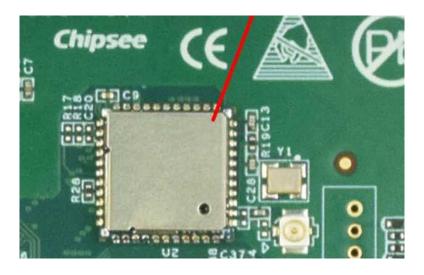


Use CAT5 or better cables to achieve full data throughput over maximum distance defined by the 1000BASE-T standard (100m).

PPC-A35-101 WiFi & BT Module

WiFi & BT Module

The PPC-A35-101 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).



RTL8821CS WiFi/BT Module

The PPC-A35-101 includes an SMA connector for an external WiFi/BT antenna, as illustrated in the figure below.



WiFi+BT Antenna SMA

PPC-A35-101 4G/LTE Module

4G/LTE Module

The PPC-A35-101 Industrial Panel PC is equipped with a **mini-PCle 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-A35-101. SIM card does **NOT** support hot plug. **Power off** before inserting or removing SIM card.



mini-PCIe Connector & 4G/LTE Module



SIM Card Direction (Micro SIM Card)



PPC-A35-101 4G/LTE Module

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.

PPC-A35-101 TF Card Slot

TF Card Slot

The PPC-A35-101 Industrial Panel PC features 1 x **TF Card (micro SD) slot**. TF Card can address up to 128GB of storage.



TF (micro SD) Card Slot



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

PPC-A35-101 Audio Connectors

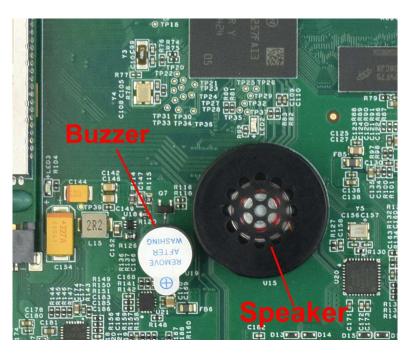
Audio Connectors

The PPC-A35-101 Industrial Panel PC features some audio peripherals. It has a **3.5mm** audio input/output jack, an internal speaker, as well as a small buzzer.



Audio Connector

The miniature 2W embedded speaker is handy for audio reproduction, the small buzzer can play alarm/notification sounds.



2W Micro Speaker and Buzzer

Attention

PPC-A35-101 Audio Connectors

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

PPC-A35-101 PROG Button

PROG Button

The PPC-A35-101 Industrial Panel PC has one button on the board marked as PROG, as shown in the figure below. It controls how the device will be booted.

When the button is not pressed while powering up, the PPC-A35-101 will boot normally from eMMC.

To boot from USB-C port for flashing operating system image, press and hold the PROG button, then connect the power supply, hold the button for a few seconds, it will be boot to the flashing OS mode.

By default the product doesn't support booting from Micro SD card, however if you need to boot from Micro SD card, you can contact us before placing an order.



PROG Button

PPC-A35-101 **Mounting Procedure**

Mounting Procedure

You can mount PPC-A35-101 with VESA mounting (guide): 75 x 75 mm or 100 x 100 mm, 4 x M4 (6mm) screws, enabling simplified installation onto any standard mounting fixture.

You can also mount PPC-A35-101 with panel mounting method (guide).



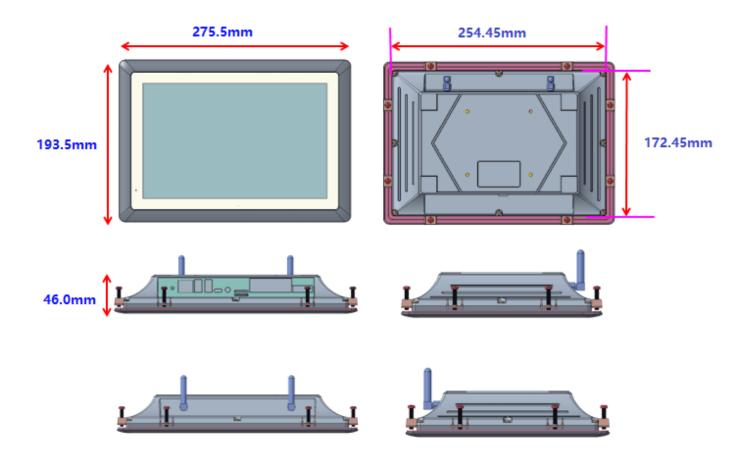
Attention

Please make sure the display is not exposed to high pressure when mounting into an enclosure.

PPC-A35-101 Mechanical Specifications

Mechanical Specifications

For PPC-A35-101, the outer mechanical dimensions are 275.5 x 193.5 x 46.0mm (W \times L \times H).



Dimensions (PPC-A35-101)

PPC-A35-101 Disclaimer

Disclaimer

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