# ED-PAC3100

## Datasheet

by EDA Technology Co., Ltd

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# ED-PAC3100

Real-time CODESYS Programmable Automation Controller

- CODESYS Control Real-time (RTE) & Visualization (Web & Target)
- Optimized for Raspberry Pi OS and processor core system allocation to meet real-time demand
- The soft PLC can achieve a control processing cycle time of up to 250μs, and can complete 16-axis motion control within a 1ms processing cycle time
- Support IEC-61131-3 PLCopen languages (FBD, LD, IL, ST, SFC and CFC)
- Upstream connectivity IT/OT communication (MQTT, OPC UA)
- Support EtherCAT Master, and Modbus TCP Master protocols
- Integrated isolated interfaces, 2 x RS232, 2 x RS485
- Wide voltage power input range of DC 9V~36V with reverse polarity protection, overvoltage protection and overcurrent protection
- Integrated super capacitor (backup power supply), RTC, EEPROM and crypto authentication
- Wide temperature range of -25℃~60℃ for working environment
- Support DIN-rail installation

## Specifications

| Hardware System | |
|---|---|
| CPU | Broadcom BCM2712, quad core Cortex-A76 (ARM v8) 64-bit SoC @ 2.4GHz |
| VPU | H.265 (HEVC), up to 4Kp60 decode |
| GPU | OpenGL ES 3.1 & Vulkan 1.2 |
| Memory | Options for 2GB, 8GB LPDDR4-4267 SDRAM |
| Storage | Options for 16GB, 32GB eMMC storage<br>1 x Micro SD card slot (user storage expansion)<br>1 x M.2 B-Key interface (for 2230/2242 SSD storage expansion, optional 128GB/256GB/512GB supported) |

| CODESYS | |
|---|---|
| Runtime | Multicore CODESYS Control Runtime System (pre-installed by default), with the Singlecore CODESYS Control Runtime System available as an optional add-on |
| Programming Mode | IEC 61131-3 programming languages, including ST, LD, FBD, SFC and CFC |
| IDE | CODESYS V3.5 |
| Fieldbus | CODESYS EtherCAT Master and CODESYS Modbus TCP Master |

| CODESYS | |
|---|---|
| Motion Control | Optional CODESYS SoftMotion and CNC+Robotics |
| Visualization | Optional CODESYS TargetVisu and CODESYS WebVisu |
| OPC UA | Support OPC UA Server |

| Software | |
|---|---|
| Operating System | Raspberry Pi OS (Desktop) 64-bit<br>Raspberry Pi OS (Lite) 64-bit |

| Front I/O | |
|---|---|
| Power | 1 x DC IN, 2-Pin 3.5mm pitch phoenix terminals with screw holes. It supports 9V~36V input, the signal is defined as VIN+/GND. |
| RS485/232 | 2 x RS232 and 2 x RS485 ports, 12-Pin 3.5mm pitch phoenix terminals with IO isolator, which are equipped with electrostatic and surge protection. |
| 1000M Ethernet | 1 x adaptive 10/100/1000M ethernet port, RJ45 connector. It can be used to access the network. |
| 100M Ethernet | 1 x adaptive 10/100M ethernet port, RJ45 connector. It can be used to access the network. |

| Rear I/O | |
|---|---|
| SD Card Slot | 1 x Micro SD card slot, using to install Micro SD card for storing user data. |
| Micro USB | 1 x Micro USB port, supporting to flash to eMMC for the system. |

| Side I/O | |
|---|---|
| HDMI | 1 x HDMI port, Type-A connector. It is compatible with HDMI 2.0 standard and supports 4K 60Hz. |
| USB 2.0 | 2 x USB 2.0 ports, Type-A connector, supporting up to 480Mbps. |

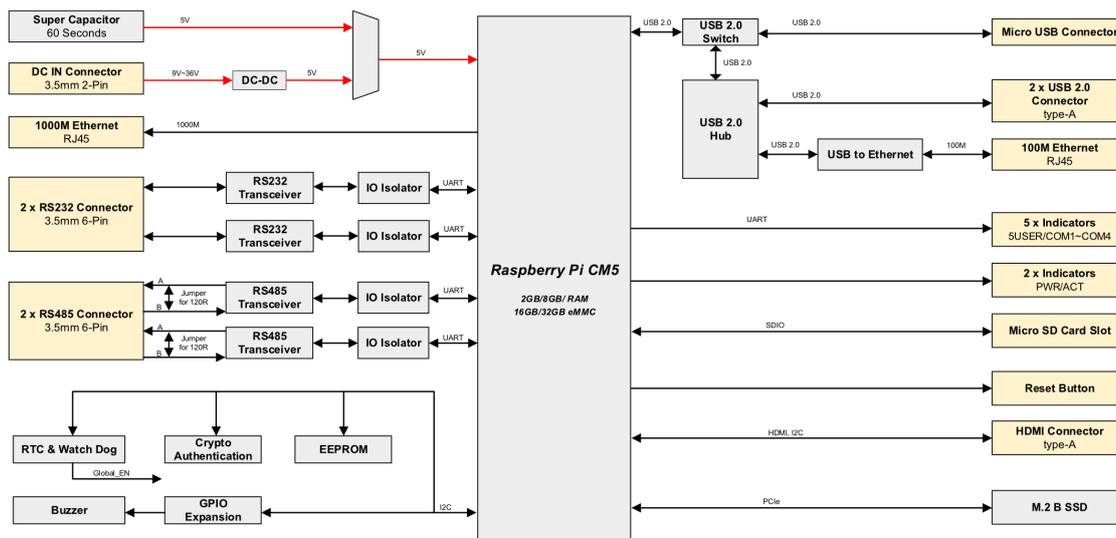| Buttons and Indicators | |
|---|---|
| Reset | 1 x Reset button, which can reset the device. |
| PWR | 1 x red power indicator, using to check the status of device power-on and power-off. |
| ACT | 1 x green system indicator, using to check the working status of device. |
| USER | 1 x green user indicator, user can customize a status according to actual application. |
| COM1~COM4 | 4 x green UART indicators, using to check the communication status of UART port. |

| Expansion Functions | |
|---|---|
| SuperCAP | |

| Expansion Functions | |
|---|---|
| | Integrated 15F supercapacitor backup power supply, to protect the system power supply in 30s~60s from the impact of device power down, improve the reliability of the device. |
| EEPROM | Supports 4K byte storage and improves the ease of use of device. |
| Crypto Authentication | It can be matched to realize the required upper layer application and improves the security of device. |
| RTC | RTC with 1F SuperCAP backup, which can ensure that the system clock is not affected by device power-off.<br>We also provide a battery base, and you can buy a CR1220 battery backup for RTC. |
| Buzzer | A tip or an abnormity can be configured according to actual application, which realizes the alarm function. |

| Electrical Characteristics | |
|---|---|
| Input Voltage | 9V ~ 36V DC |
| Power Consumption | 24W (Max) |

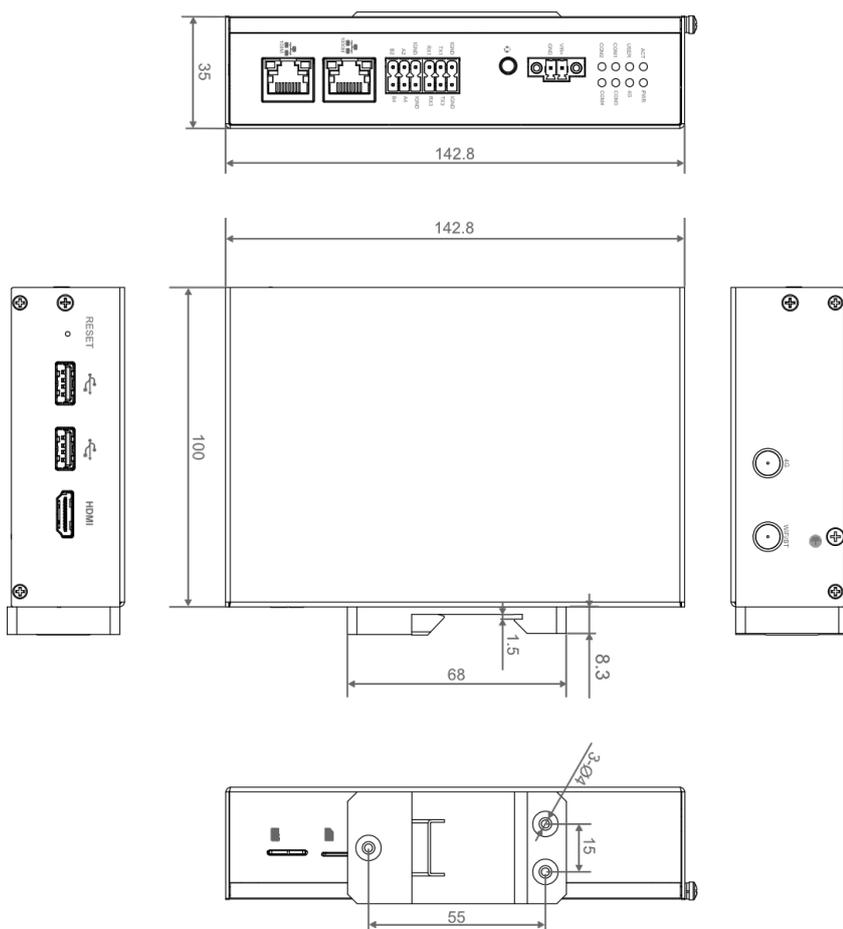| Mechanical Characteristics | |
|---|---|
| Dimensions | 143mm x 100mm x 35mm (WxDxH, DIN-rail bracket is not included.) |
| Weight | 750g |
| Installation | DIN-rail installation |

| Environmental & Regulatory | |
|---|---|
| Operating Temperature | -25°C ~ 60°C |
| Storage Temperature | -25°C ~ 60°C |
| Ambient humidity | 5% ~ 95% (non-condensing) |

# System Diagram



# Dimensions

Unit: mm

# Ordering Code

```
     ED - PAC3110 - 0216 - S
EDATEC
                              S=With Super Capacitor Module

PAC3100 Series
based on Raspberry Pi CM5
2 x RS485 and 2 x RS232       0216=2GB DDR + 16GB eMMC
                              0832=8GB DDR + 32GB eMMC
```
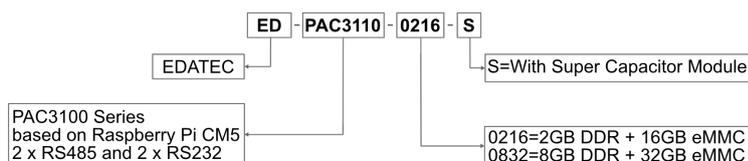
**Example**

P/N: **ED-PAC3110-0216-S**
Configuration: Real-time CODESYS Programmable Automation Controller Based on Raspberry Pi CM5, with 2GB DDR, 16GB eMMC, 2 x RS485, 2 x RS232, Super Capacitor Module and CODESYS Control License (Multicore).

> **TIP**
>
> - The pre-installed CODESYS license includes Multicore, EtherCAT Master, Modbus TCP Master, and OPC UA Server. If you require additional licenses, please purchase them separately from Optional CODESYS Ordering Code.
> - The device supports extended 4G and Wi-Fi, if you need 4G or Wi-Fi function, you can contact us individually.

# Optional CODESYS Ordering Code

CODESYS licensing includes TargetVisu, WebVisu, Softmotion, CNC+Robotics, EtherCAT Master, Modbus TCP Master, OPC UA Server and Multicore functional modules. You can choose different models according to actual needs.

| Model[1] | EtherCAT Master | Modbus TCP Master | OPC UA Server | TargetVisu | WebVisu | Softmotion | CNC+ Robotics | Multicore |
|---|---|---|---|---|---|---|---|---|
| ED-CODESYS-TV-MC | √ | √ | √ | √ | | | | √ |
| ED-CODESYS-WV-MC | √ | √ | √ | | √ | | | √ |
| ED-CODESYS-TV-WV-MC | √ | √ | √ | √ | √ | | | √ |
| ED-CODESYS-TV-SM-MC | √ | √ | √ | √ | | √ | | √ |
| ED-CODESYS-WV-SM-MC | √ | √ | √ | | √ | √ | | √ |
| ED-CODESYS-SM-CNC-MC | √ | √ | √ | | | √ | √ | √ |
| ED-CODESYS-WV-SM-CNC-MC | √ | √ | √ | | √ | √ | √ | √ |

| Model[1] | EtherCAT Master | Modbus TCP Master | OPC UA Server | TargetVisu | WebVisu | Softmotion | CNC+ Robotics | Multicore |
|---|---|---|---|---|---|---|---|---|
| ED-CODESYS-TV-WV-SM-CNC-MC | √ | √ | √ | √ | √ | √ | √ | √ |

[1]: The license cannot be purchased separately, you can only purchase it together with the hardware device.

# Optional EtherCAT I/O Modules

## EtherCAT Coupler

| Model | Description |
|---|---|
| ED-EIOBRG-EC | EtherCAT Coupler |

## I/O Modules

| Model | Description |
|---|---|
| ED-EIO8XP | 8-channel digital input module (PNP) |
| ED-EIO8XN | 8-channel digital input module (NPN) |
| ED-EIO16XP | 16-channel digital input module (PNP) |
| ED-EIO16XN | 16-channel digital input module (NPN) |
| ED-EIO8YP | 8-channel digital output module (PNP) |
| ED-EIO8YN | 8-channel digital output module (NPN) |
| ED-EIO16YP | 16-channel digital output module (PNP) |
| ED-EIO16YN | 16-channel digital output module (NPN) |
| ED-EIO4YR | 4-channel digital output module (Relay) |
| ED-EIO4ADV | 4-channel analog input module (voltage), -5~5V/0~10V/-10~10V, configurable |
| ED-EIO4ADA | 4-channel analog input module (current), 4-20mA/0-20mA, configurable |
| ED-EIO8ADA | 8-channel analog input module (current), 4-20mA/0-20mA, configurable |
| ED-EIO4AD | 4-channel analog input module (voltage/current mixed), -5~5V/0~10V/-10~10V/4-20mA/0-20mA, configurable |
| ED-EIO4DAV | 4-channel analog output module (voltage), -5 ~ 5V/0 ~ 10V/-10 ~ 10V, configurable |
| ED-EIO4DAA | 4-channel analog output module (current), 4-20mA/0-20mA, configurable |

| Model | Description |
|-------|-------------|
| ED-EIO4RTD | 4-channel RTD Module |
| ED-EIO4TC | 4-channel TC Module |
| ED-EIO2HCD | 2-channel High Speed Counter Module |
| ED-EIOPWR | Power Expansion Supply Module |
| ED-EIOTERM | Bus End Cover |

## Optional Accessory

You can choose a power adapter according to actual needs.

| Model | Description | Picture |
|-------|-------------|---------|
| ED-PSU1202-UK-3.5PL | 100~240VAC to12VDC/2A Adapter, with UK AC plug, 3.5mm pitch phoenix plug with lock |  |
| ED-PSU1202-US-3.5PL | 100~240VAC to 12VDC/2A Adapter, with US AC plug, 3.5mm pitch phoenix plug with lock | |
| ED-PSU1202-AU-3.5PL | 100~240VAC to 12VDC/2A Adapter, with AU AC plug, 3.5mm pitch phoenix plug with lock | |
| ED-PSU1202-EU-3.5PL | 100~240VAC to 12VDC/2A Adapter, with EU AC plug, 3.5mm pitch phoenix plug with lock | |
| NOTE: Each model contains only one of the UK, US, AU and EU plugs. | | |

## Packing List

- 1 x ED-PAC3100 Unit