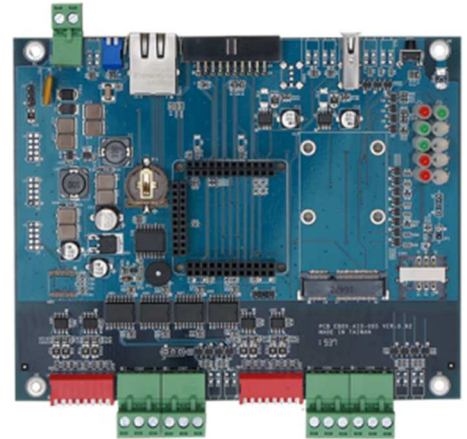
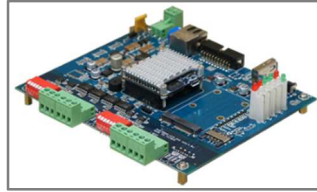


- ✓ **FriendlyARM NanoPi Core specific cape for IoT and Industrial control applications**
- ✓ **9~24VDC Input Working Power**
- ✓ **1-Channel 100/1000Mbps Ethernet communication interface**
- ✓ **4-Channel RS-485 serial equipment data transmission communication**
- ✓ **RS-485 2KV Isolation protection**
- ✓ **12 Digital Control Points (GPIO)**
- ✓ **With RTC Chip and battery holder**
- ✓ **Expandable 4G / Wi-Fi / NB-IoT**
- ✓ **With simple & easy human machine interface**



Product Features

☒ **Specific cape for NanoPi NEO Core**

LLD-AIO-005 is a tailor-made cape for NanoPi NEO Core design by LLD technology. Through the signal conversion function on LLD-AIO-005, NanoPi developers can connect all kinds of target device easily. Complete the development and testing of industrial automation, common data communication monitoring and state control application.

☒ **Stable DC power conversion and protection function**

LLD-AIO-005 has direct current (DC) 9~24V working voltage input function. Not only let developer can use the power easily, but also match with the actual application of the power supply °

☒ **With multiple network communication functions**

LLD-AIO-005 has a high-speed Ethernet interface and built-in dedicated mini-PCIe expansion wireless network interface, such as 4G, 5G mobile communication, Wi-Fi or NB-IoT etc. commonly used in the Internet of Things to make network communication functions more complete.

☒ **Terminal block for easy connection**

LLD-AIO-005 provides standard RJ45 connector as 10/100Mbps network interface and USB Type-A connector as USB extension interface.

The power input, RS-485 interface use industrial pluggable terminal block and digital I/O uses a needle type simple block header. Besides convenient for testing, it's easy to make cable and connect with other I/O signal conversion modules.

☒ **Simple and Easy Demo Program**

The RS-485 and GPIO interface of the LLD-AIO-005 has a corresponding Demo program. The developer can easily get started to achieve the purpose of familiar with the product and executive function. Then accelerate the development of the system or program for corresponding application.

☒ **Serial transmission interface**

The RS-485 is still the main communication interface of card reader, thermometer, power meter and other small equipment or instrument.

LLD-AIO-005 converted NanoPi's high speed serial port (UART) signals into half duplex RS-485 allowing users to connect to the target device for development and testing.

The RS485 serial communication interface of LLD-AIO-005 is more equipped with 2KV isolation protection, so that the long-distance RS-485 equipment connection operation of LLD-AIO-005 can be more stable and reliable.

☒ **Digital I/O Control Interface**

LLD-AIO-005 extended the NanoPi's 12 GPIO points to the 20-pin simple box header, the Digital Input and Output can be controlled through the program. Can also match with LLD-M13 Digital I/O control module (4 sets of Relay control and 4-point dry contact and 1-point wet contact input) to develop switches or sensors for physical connections and reach the goal of monitoring application development and testing.

☒ **Simple and easy human machine interface**

LLD-AIO-005 extended and converted part of the NanoPi's GPIO to human-computer interface. 2 points of DIP Switch can be used as input judgment of manual switching for application operation mode. A number of LED lights and 1 set of buzzer can be used as LLD-AIO-005 machine status display or alert function. The judgment or control of these status can be compared to the control of GPIO software development.

☒ **on-board Real-Time Clock**

LLD-AIO-005 has Real-Time Clock (RTC) function, with battery holder to maintain the RTC operation during power outage.

Hardware

Core

- ▶ NanoPi NEO Core Module
(LLD-AIO-005 Cape – Module excluded)

Digital Control (GPIO)

- ▶ Quantity : 18 points
- ▶ Signal Type : 3.3V CMOS
- ▶ 2x10 2.54mm simple box header x 12 GPIO
- ▶ DIP Switch x 2 GPIO
- ▶ LED x 3 GPIO
- ▶ Beeper x 1 GPIO

RS-485 Serial port interface

- ▶ Quantity : 4 (chip : MAX13487E)
- ▶ RS-485 Signal : Data+, Data-, GND
- ▶ Multi-Drop Nodes : 128 (1/4 Load)
- ▶ Built-in Terminal Resistor : 120/600 Ω · By DIP Switch
- ▶ Pull High/Low resistor : 1K/10K Ω · By DIP Switch
- ▶ Protection : 2KV Isolation protection, 2KV ESD Static, 400W Surge protection
- ▶ Connector : 5.00mm 3-pin pluggable terminal block x 4

Debug Console interface

- ▶ Quantity : 1
- ▶ Signal : UART (TxD, RxD, GND)
- ▶ Connector : 3-pin 2.54 mm pin contact

USB

- ▶ Quantity : 1
- ▶ Spec. : USB 2.0
- ▶ Connector : USB Host Type A x 1

Expandable wireless Network interface

- ▶ Quantity : 1
- ▶ Spec. : USB 2.0 · UART
- ▶ Connector : mini-PCIe x 1 · SIM Card x 1
- ▶ Suitable : 4G · 5G · WI-Fi · NB-IoT

Power

- ▶ Working Voltage : DC 9-24VDC
- ▶ Power Connector : 5.00mm pluggable terminal block
- ▶ Power Consumption : <10W (not include USB device)
- ▶ DC Output for NanoPi : 5V (3A max.)
- ▶ DC Output for FAN : 5V (0.1A max.) 2.54 mm 3-pin contact

Others

- ▶ Real Time Clock (RTC) : 1 (chip: DS3231)
- ▶ Real Time Clock battery holder : CR1220
- ▶ Buzzer : 1
- ▶ LED indicator : power, network, serial port, user defined
- ▶ PCB Size : 155 x 127 mm
- ▶ PCB Fixing hole : Φ3.50mm x 4
- ▶ NanoPi Module Fixing hole : Φ2.50mm x 4
- ▶ Wireless Module Fixing hole : Φ3.50mm x 4
- ▶ Applicable temperature : -20~70°C
- ▶ Applicable humidity : 20%~80% RHG

Connect with NanoPi NEO Core

- ▶ 2x12 2.54mm Pin header *2 sets
- ▶ 2x10 2.54mm Pin header *1 set

NanoPi Module built-in connector

- ▶ SD : MicroSD socket x 1

Ordering Info

- ▶ **LLD-AIO-005** NanoPi NEO Core Industrial-Application Module, RS-485 interface
Content : NanoPi NEO Core x 1 · LLD-AIO-005 Cape x 1 · QIG x1 · 10mm pillar x4 · 3mm screw x4
- ▶ **LLD-AIO-005 Cape** NanoPi NEO Core/Core2 Industrial-Application Cape, RS-485 interface
Content : LLD-AIO-005 Cape x 1 · QIG x1 · 10mm pillar x4 · 3mm screw x4

Optional accessories

- ▶ **LLD-M13** 4-ch Relay DO, 5-ch DI Digital Signal Control Module with optical isolation protection in GPIO
- ▶ **CD12V** 100~240V AC to 12VDC Power Adapter (US Type)



LLD-M13