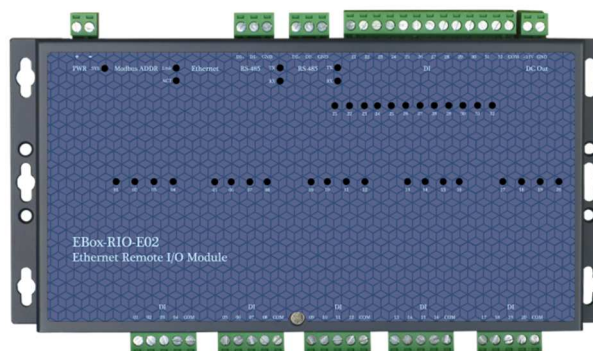


## EBox-RIO-E Series Ethernet I/O Modules

- ✓ **Compound I / O combination · Suitable for various monitoring applications**
- ✓ **10/100Mbps Ethernet interface**
- ✓ **Standard Modbus-TCP/Modbus-RTU communication protocol**
- ✓ **Relay digital output control(Relay DO)**
- ✓ **Open collector digital output control (Open Collector DO)**
- ✓ **Optically isolated digital input control interface (Isolated DI)**
- ✓ **Analog input control interface (AI)**
- ✓ **Analog output control interface (AO)**
- ✓ **24V DC/AC power supply model**
- ✓ **RS-485 possess Modbus-RTU Client/Server Function**



### ✘Diverse I/O Configurations

EBox-RIO-E Ethernet I/O Modules configure 32-20 different monitoring points according to different models · i.e. one EBox-RIO-E can also have the Digital Input · Digital Output · Analog Input · Analog Output etc. multiple monitoring points ·

### ✘Diverse Power Configuration

EBox-RIO-E Ethernet I/O Modules working voltage could be 24VAC or 24VDC ·

We have designed a set of 15V@200mA DC Output for EBox-RIO-E · Mainly used as various types of sensors and sensing power supply ·

The combination characteristic of 15V DC Output and available with 24V AC input power designed in EBox-RIO-E could save part of the planning and configuration cost of power adapter for those sensors · such as central air conditioning monitoring applications ·

### ✘TCP/IP Ethernet plus dual RS-485 Interface

EBox-RIO-E in addition to a standard 10/100Mbps Ethernet interface · is also equipped two RS-485 communication interface · That is EBox-RIO-E series can not only communicate with remote monitoring host via internet · but also communicate with proximal end host (such as small HMI panel) or old host via RS-485 · let system configuration more flexible ·

### ✘Standard Modbus Communication Interface

EBox-RIO-E Ethernet Interface with Modbus-TCP Protocol · RS-485 Interface with Modbus-RTU Protocol · All digital control points could be monitored via standard coil and all analog signals could be conducted data access via register ·

### ✘RS-485 possess Modbus-RTU Master/Slave Function

The 2 RS-485 Modbus-RTU interface in EBox-RIO-E could be set to Slave or Master mode independently · When set to Slave mode · it is mainly used for connecting with monitoring host or HMI to receive host commands · When set to Master mode · it can be used to connect RS-485 of EBox-RIO Remote I/O Modules to expand more control points · Just let the system through one EBox-RIO-E can obtain complete control over the host software to simplify the complexity ·

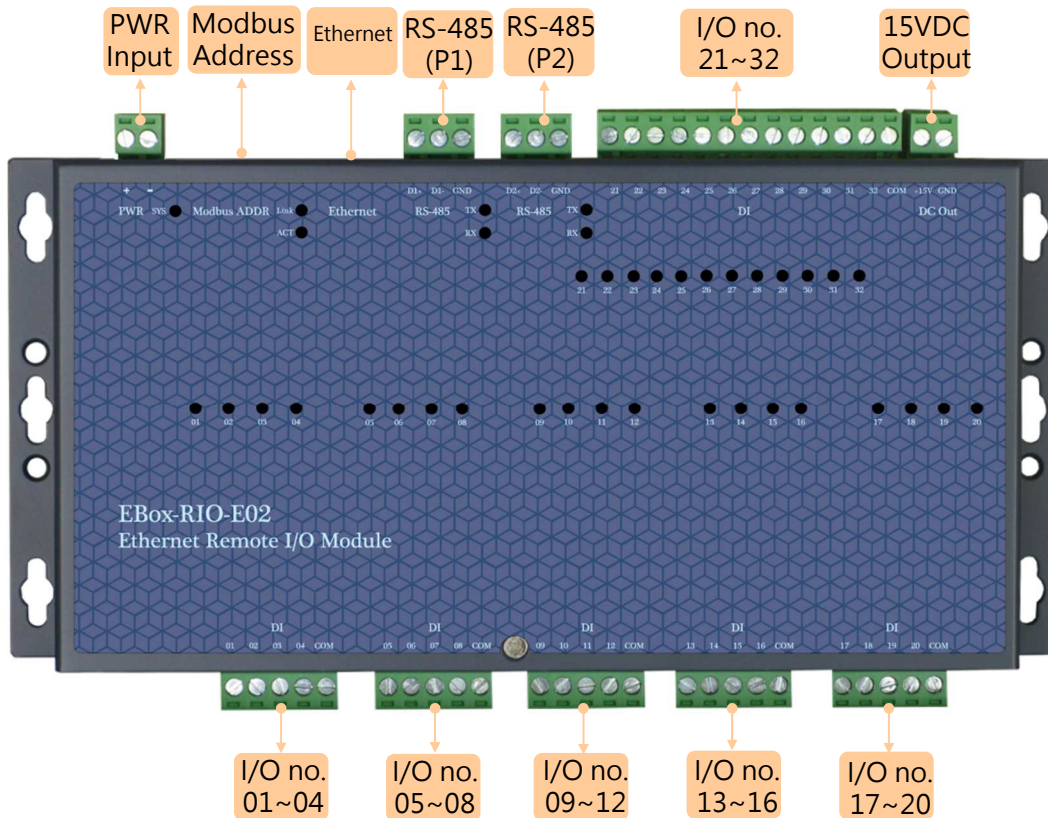
### ✘Expandable DDC Function (Direct Digital Control)

EBox-RIO series could expand DDC function for input reading · output control · math operations · comparison · time · HVAC · PID...ect. over 50 common functions · allowing the user to directly develop and debug DDC program with the online menu from the management tool · You can also define an 8-digit password to protect the on-site operating DDC program when you process the upload/download and debug program.

### DDC Utility



## EBox-RIO-E Exterior Description



## Product Basic Specifications

### System Core

- ▶ MCU : ST STM32F207VE (Cortex™-M3 32-bit)
- ▶ Memory: 512KB FLASH, 128KB SRAM, 8KB FRAM, 2048KB SPI FLASH

### Network Interface

- ▶ Quantity : 1
- ▶ Type : 10/100BaseTEthernet
- ▶ Connector : RJ45

### RS-485 Serial Port interface

- ▶ Quantity : 2
- ▶ RS-485 Signal : Data+, Data-, GND
- ▶ Protection : 15KV ESD and 400W Surge Protection, 2KVrms isolation protection (**Optional**)
- ▶ Connector : 5.00mm 3-pin terminal block
- ▶ Baud Rate : 4,800 ~ 115,200 bps
- ▶ Parity : None, Even, Odd
- ▶ Data Bits : 8
- ▶ Stop Bit : 1, 2 bits
- ▶ Terminal resistance : Built-in 120Ω(Need to open enclosure and insert Jumper)

### I/O points

- ▶ No. of points : 20 or 32(Depending on models)
- ▶ Function : DI / DO / AI / AO / Relay(per model no.)
- ▶ Connectors : I/O no. 1~20 – 5-pin 5.00mm Terminal Block, I/O no. 21~32 – 13-pin 5.00mm Terminal Block

### Power Spec.

- ▶ Working Voltage : 24V AC/DC
- ▶ Power connector : 2-pin 5.00mm Terminal Block
- ▶ Protection : 1A fuse (Open enclosure)
- ▶ Power Consumption : 1~11W(15VDC Output excluded)(vary depending on different models)
- ▶ VDC Output : 15V DC @ 200mA
- ▶ Power connector : 2-pin 5.00mm Terminal Block

### Others

- ▶ LED Indicator : Power · Serial Port
- ▶ DIP Switch : MODBUS Slave Address & RS-485 type
- ▶ Size : 228 x 109 x 33mm (incl. mounting ear)
- ▶ Applicable temperature : 0~50°C
- ▶ Applicable humidity : 20%~80% RHG
- ▶ Certification : CE/FCC

## I/O points specifications

### Analog Input Control

- ▶ Signal Type : 4~20mA / 0-10VDC / NTC (Open enclosure to setup by jumper)
- ▶ Resolution : 12-bit
- ▶ Protection : OP input buffer

### Analog Output Control

- ▶ Signal Type : 4~20mA or 0-10VDC(Open enclosure to setup by jumper)
- ▶ Resolution : 12-bit
- ▶ Protection : OP output buffer

### Relay Output Control

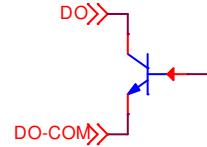
- ▶ Signal Type : SPDT Relay  
Ch-A : N.O. / COM  
Ch-B : N.O. / N.C. / COM
- ▶ Control Mode : Automatic / Manual Control(Open enclosure to setup by jumper)
- ▶ Contact capacity : 1A@120VAC, 2A@24VDC
- ▶ Signal protection: 2000Vrms optically isolation protection
- ▶ LED indicator : DO status

### Isolated Digital Input Control

- ▶ Mode : Wet Contact / sink mode
- ▶ Input voltage range : 5~24VDC
- ▶ Input protection : 2000Vrms optically isolation protection
- ▶ LED indicator : DI status

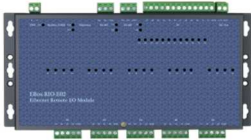
### Isolated Digital Output Control

- ▶ Signal Type : Open Collector
- ▶ Load capacity : 5~30 VDC @ 200mA
- ▶ Signal protection : 2000Vrms optically isolation protection
- ▶ LED indicator : DO status



## EBox-RIO-E Series Model No. Description:

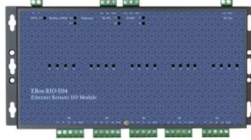
### EBox-RIO-E02



#### Ethernet Modbus Remote I/O with 2 RS-485, 32DI

- ▶ 32DI : Coil 0x00~0x1F

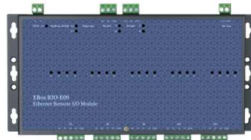
### EBox-RIO-E04



#### Ethernet Modbus Remote I/O with 2 RS-485, 20DI

- ▶ 20DI : Coil 0x00~0x13

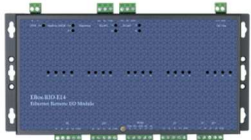
### EBox-RIO-E09



#### Ethernet Modbus Remote I/O with 2 RS-485, 12DI+8DO

- ▶ 12DI : Coil 0x00~0x0b
- ▶ 8DO : Coil 0x0c~0x13

### EBox-RIO-E14



#### Ethernet Modbus Remote I/O with 2 RS-485, 4DI+4DO+6AI+2AO+2Relay

- ▶ 4DI : Coil 0x00~0x03
- ▶ 4DO : Coil 0x04~0x07
- ▶ 2Relay : Coil 0x0a~0x0b
- ▶ 6AI : Register 0x0c~0x11
- ▶ 2AO : Register 0x12~0x13

## Optional Accessories

### LLD-DDC32E

EBox-RIO-E DDC SW License

### DK-P01

DIN-Rail Kit



- ▶ Quantity : 2
- ▶ Screw : 4