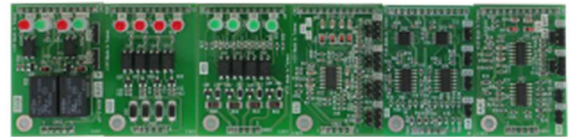
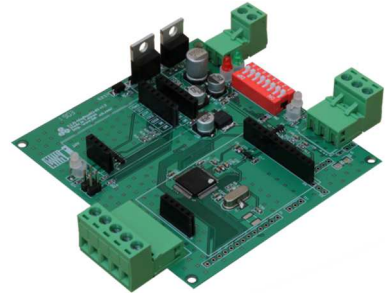




## LLD-ModbusIO-02 Modbus I/O Expandable Control Module (Modbus-RTU)

- ✓ RS-485 remote equipment data transmission communication
- ✓ LoRa wireless remote communication interface
- ✓ Expandable I/O module for various applications
- ✓ Standard Modbus-RTU communication protocol
- ✓ Provide Relay Output control
- ✓ Provide Open Collector Digital Output control
- ✓ Provide optically isolated digital input control interface (Isolated DI)
- ✓ Provide 12-bit Analog Input control Interface (AI)
- ✓ Provide 12-bit Analog Output control interface (AO)
- ✓ 24V DC/AC power supply mode
- ✓ Expandable DDC Function



### Production introduction

LLD-ModbusIO-02 is a DAM control module with flexibility and high performance-to-price ratio. It has Digital Input/Output and Analog Input/Output common control and acquisition interface for measurement data. The user, depending on application requirements, can select one expansion I/O module (ModIO module series) of different function to easily obtain the previously mentioned control interface; with specific carrier, the control module is commonly seen to be installed on standard guide rail in industrial environment.

#### ✘ Flexible I/O Interface

LLD-ModbusIO-02 provides one set I/O module expansion function. With installation of different modules, the user can obtain different I/O function, enabling more flexible control and data acquisition function to meet different requirements.

I/O module can freely install Digital I/O, Analog I/O and Relay control module, up to 4 control points.

#### ✘ Easy Management Tool

LLD-ModbusIO-02 has a simple management tool, window and menu design, easy for setting up LLD-ModbusIO-02. It also provides real time operating status monitoring function, allowing remote monitoring for operating status at each point.

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

LLD-ModbusIO-02 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.

#### ✘ LoRa communication interface

LLD-ModbusIO-02 provides a LoRa module slot and wireless communication ability through the installation of LoRa module. As long as the host side has the LoRa communication interface and the wireless parameters to be set in the same frequency band and ID as LLD-ModbusIO-02, then the system can work like the wired RS-485 communication to let the remote management be performed through the Modbus-RTU protocol for data acquisition and remote control.

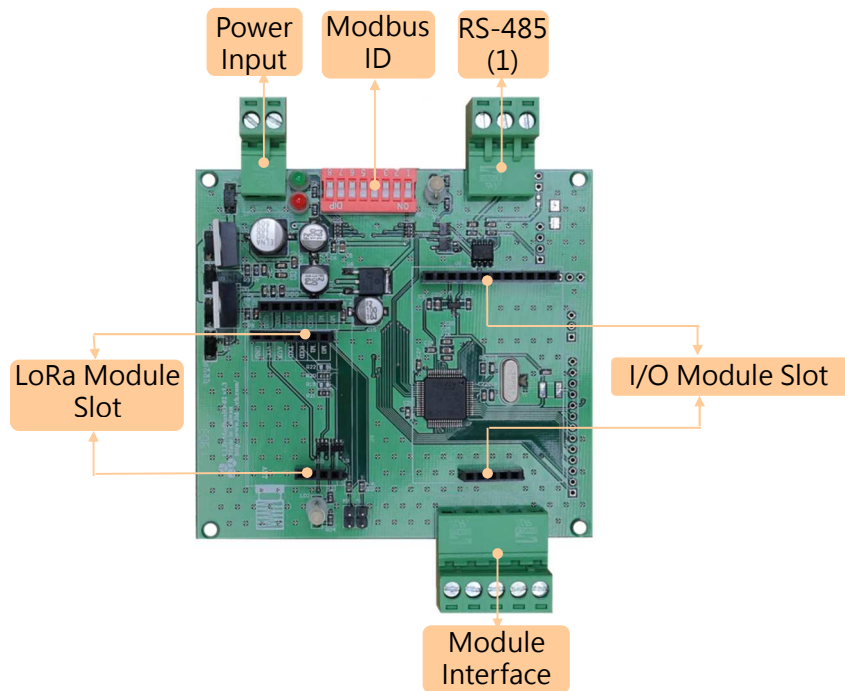
#### ✘ Remote Upgrade Function

The user can monitor computer via the management tool specialized for LLD-ModbusIO-02 and conduct remote software upgrade via RS-485 communication port, which can reduce system operating cost.



## LLD-ModbusIO-02MCU Board

### Exterior description



#### System Core

- ▶ MCU : ST STM8L15xR8
- ▶ Memory : 64KB FLASH, 4KB SRAM, 2KB EEPROM

#### RS-485 Serial Port Interface

- ▶ Quantity : 1
- ▶ RS-485 Signal : Data+, Data-, GND
- ▶ Protection : 15KV ESD
- ▶ 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

#### IO Module Expansion Slot

- ▶ Quantity : 1
- ▶ Connector A : 2.54mm 12-pin pin header
- ▶ Connector B : 2.54mm 5-pin pin header
- ▶ Connector C : 5.00mm 5-pin terminal block

#### Mechanism

- ▶ Control board dimensions : 92 x 87 x 23 mm

#### Power Supply

- ▶ Working voltage : 24V AC/DC
- ▶ Power connector : 2-pin 5.00mm terminal block
- ▶ Power consumption : 0.5~2W

#### Others

- ▶ LED indicator : power · serial port
- ▶ DIP Switch : MODBUS Slave address
- ▶ Applicable temperature : 0~50°C
- ▶ Applicable humidity : 20%~80% RHG
- ▶ Certification : CE/FCC

## Specified I/O Expansion Module

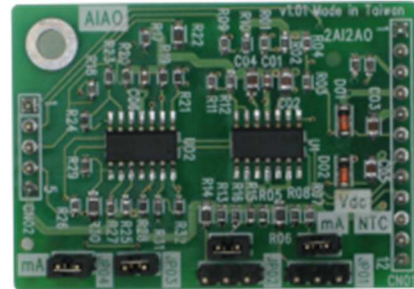
### Common Specifications

- ▶ Dimension : 35x50mm
- ▶ Fixation hole : 3.5mm x 1
- ▶ Pin header A : 2.54mm 12-pin x 1 (connect to carrier MCU)
- ▶ Pin header B : 2.54mm 5-pin x 1 (connect to carrier exterior connector )

### AI/AO Module (ModIO-AIO)

#### Analog Input / Output Control

- ▶ AI quantity : 2 points
- ▶ AO quantity : 2 points
- ▶ Signal type : 4~20mA / 0-10VDC / NTC (by jumper)
- ▶ Resolution : 12-bit
- ▶ Frequency : 10Hz
- ▶ Protection : OP input/output buffer



### AI Module (ModIO-AI)

#### Analog Input Control

- ▶ Quantity : 4 points
- ▶ Signal type : 4~20mA / 0-10VDC / NTC (by jumper)
- ▶ Resolution : 12-bit
- ▶ Frequency : 10Hz
- ▶ Protection : OP input buffer



### AO Module (ModIO-AO)

#### Analog Output control

- ▶ Quantity : 4 points
- ▶ Signal type : 4~20mA or 0-10VDC (by jumper)
- ▶ Resolution : 12-bit
- ▶ Frequency : 10Hz
- ▶ Protection : OP output buffer



### DI Module (ModIO-DI-S)

#### Digital Input Control

- ▶ Quantity : 4 points
- ▶ Mode : wet contact / sink mode
- ▶ Input voltage range : 5~24VDC
- ▶ Input protection : 2000Vrms optically isolated protection and 400W surge protection
- ▶ LED indicator : DI status

