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Model: M31-AXAX8080G

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1. OVERVIEW

The CDBAIRUI M31-AXAX8080G is a distributed remote IO module designed for industrial automation applications. It features 8 digital inputs (DI) and 8 digital outputs (DO), supporting both Modbus TCP and Modbus RTU protocols. This module allows for flexible system expansion and integration with various control systems such as PLCs, touch screens, and host computers.



Figure 1: Front view of the CDBAIRUI M31-AXAX8080G Distributed Remote IO Module, showing connection terminals and LED indicators.

2. KEY FEATURES

- **Flexible Splicing and Expansion:** Designed for distributed IO architecture, allowing for cost-effective expansion of host IO interfaces. Supports up to 16 expansion modules.
- **Multi-channel I/O:** Provides multiple switching and analog inputs and outputs.
- **Dual Control Interface:** Features both Ethernet and RS485 for versatile connectivity.
- **Modbus Protocol Support:** Compatible with Modbus-TCP and Modbus-RTU protocols, enabling integration with PLCs, HMI touch screens, and host computer configurations.
- **LED Indicators:** Equipped with PWR (Power), LINK (Signal), STA (Status), and DI/DO (Input/Output) LED indicators for real-time status monitoring.
- **Easy Configuration:** Supports quick Modbus address configuration via dial codes, eliminating the need for a host computer for basic setup.
- **Remote Upgrade Function:** Firmware upgrade support for both host and expansion modules.
- **DI Filtering:** Automatic anti-jitter filtering for cleaner and more stable input signals.
- **DI Input Compatibility:** Supports both PNP and NPN inputs.
- **Configurable Analog Input Ranges:** Suitable for 0-20mA and 4-20mA sensors/transmitters with factory-

calibrated accuracy.

- **Multiple Socket Links:** Supports up to 5 simultaneous connections.
- **Robust Design:** Anti-mold, anti-moisture, and anti-salt spray protection for industrial environments.

3. INCLUDED COMPONENTS

The package for the CDBAIRUI M31-AXAX8080G module typically includes:

- 1 x MST-AX80G (M31-AXAX8080G Host Module)
- 2 x Ethernet Cables

4. SETUP

4.1 Physical Installation

The module supports both positioning holes and rail mounting for flexible installation in industrial cabinets or control panels.



Figure 3: Detailed wiring diagram for the M31-AXAX8080G module, showing VCC, GND, DI, DO, and COM connections.

4.3 Modbus Address Configuration

Modbus addresses can be quickly configured using the integrated dial codes on the module. This eliminates the need for a host computer for initial address setup.

Support for dial code configuration

ModBus addresses can be quickly configured by dialing codes without the need for a host computer.



Figure 4: Illustration of the dial code switches used for rapid Modbus address configuration on the module.

After setting the dial codes, a "Double-click Reload" action can quickly configure IO expansion modules without requiring a host computer.

5. OPERATION

5.1 Communication Protocols

The M31-AXAX8080G supports both Modbus TCP and Modbus RTU protocols. Ensure your control system (PLC, HMI, host computer) is configured to communicate using the appropriate protocol.

Support ModBus system

Support PLC, touch screen and host computer group configuration



HMI touch screen

Can be connected to the existing ModBus system, do not need to worry about protocol matching.



Configuration software

Can be connected to the existing ModBus system, do not need to worry about protocol matching.



PLC

Can be connected to the existing ModBus system, do not need to worry about protocol matching.

Figure 5: Diagram illustrating the module's compatibility with HMI touch screens, configuration software, and PLCs within a Modbus system.

5.2 Rapid Debugging and Parameter Configuration

The module supports upper computer software for rapid debugging and parameter configuration. This software allows for monitoring DI status, DO state switching, AI input acquisition, and AO output range adjustments.

Support rapid debugging operation

Support the upper computer software to realize the rapid debugging and parameter configuration of equipment

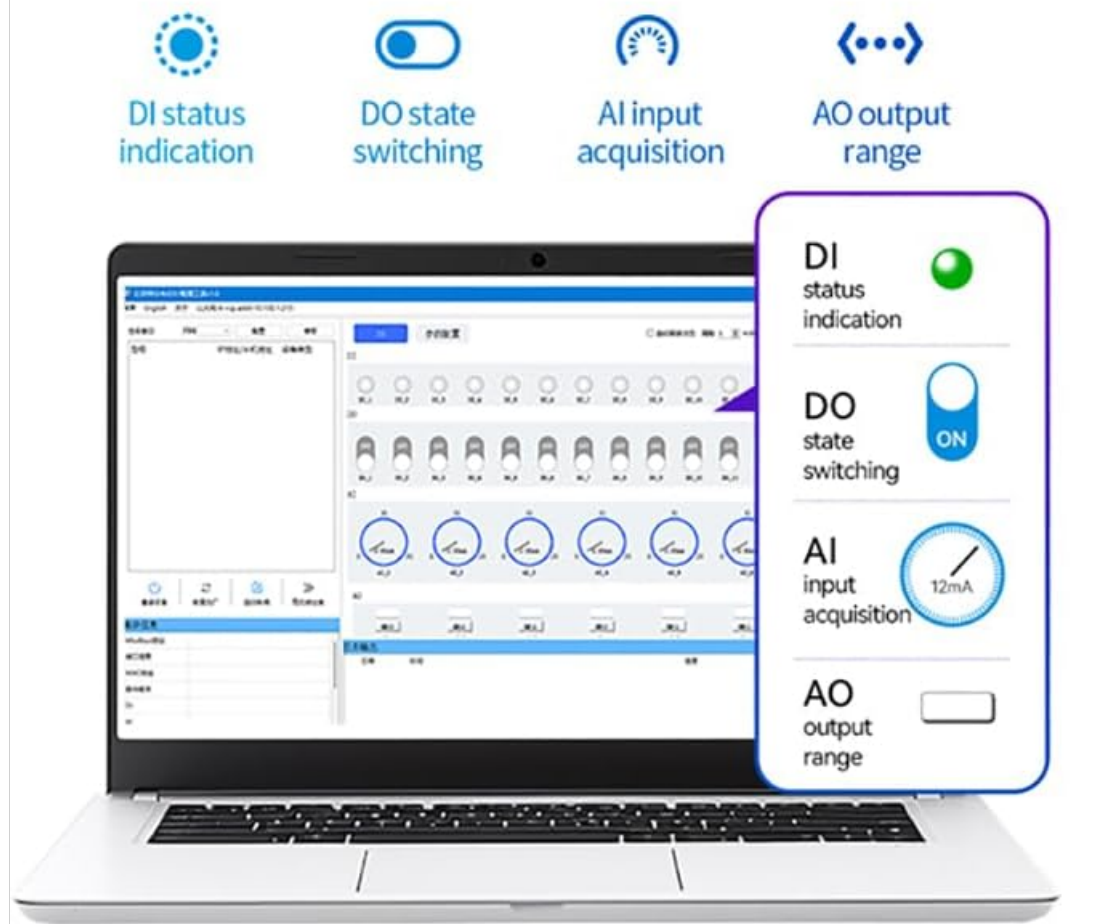


Figure 6: Screenshot depicting the upper computer software interface for debugging and configuring the module's parameters.

5.3 Analog Input Configuration

The analog inputs are configurable to support both 0-20mA and 4-20mA sensors and transmitters. The module is factory-calibrated to ensure high accuracy in analog data acquisition.

Configurable input ranges

Suitable for 0-20mA/4-20mA sensors/transmitters

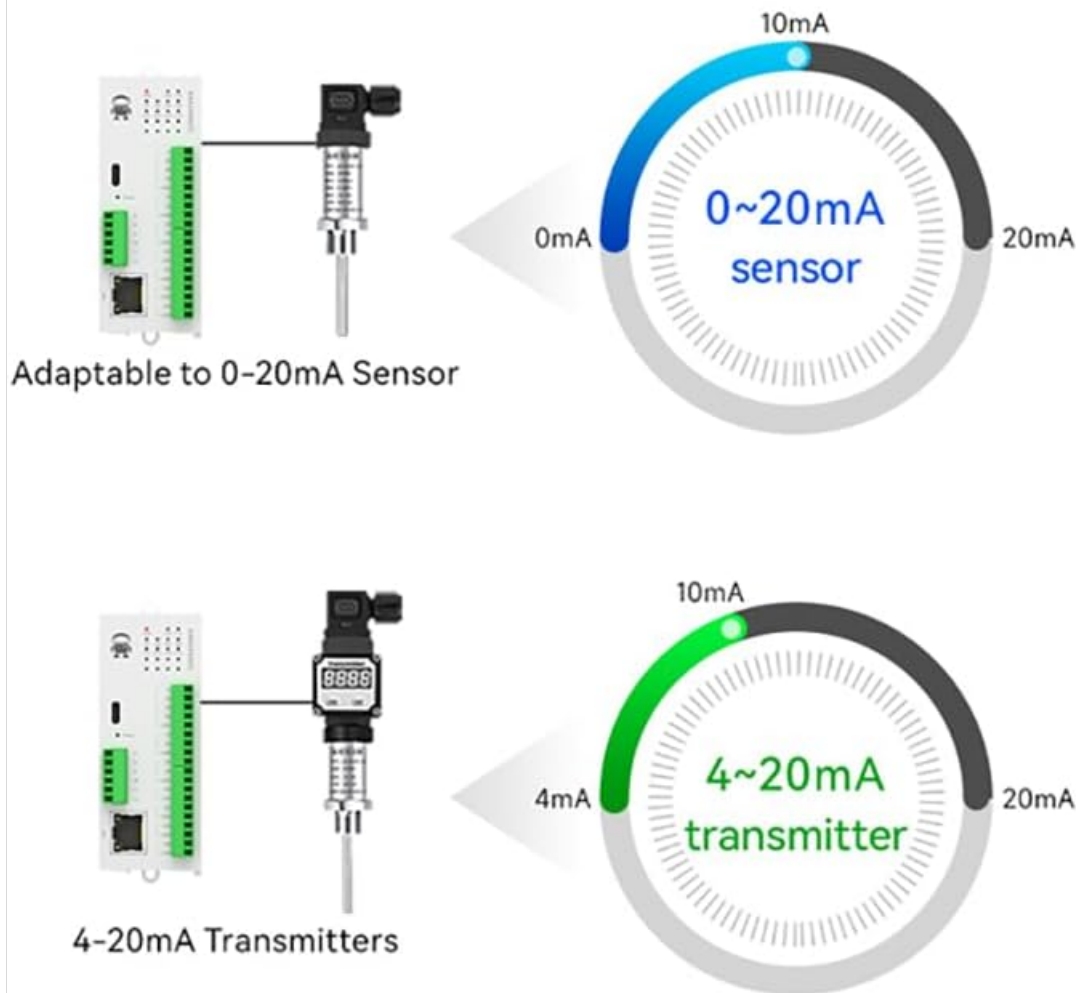


Figure 7: Visual representation of the module's adaptability to 0-20mA sensors and 4-20mA transmitters for analog input.

5.4 LED Indicators

Monitor the LED indicators on the module for operational status:

- **PWR:** Power indicator. Illuminates when power is supplied.
- **LINK:** Communication link indicator. Indicates active network connection.
- **STA:** Status indicator. Provides general operational status feedback.
- **DI/DO:** Input/Output indicators. Show the status of individual digital inputs and outputs.

6. MAINTENANCE

6.1 Firmware Upgrade

The module supports remote firmware upgrades for both the host and any connected expansion modules. Refer to the manufacturer's website or software documentation for instructions on performing firmware updates.

6.2 DI Filtering

The built-in DI filtering automatically suppresses jittery signals, ensuring the stability and cleanliness of input signals. No user configuration is typically required for this feature.

6.3 Environmental Protection

The module is designed with anti-mold, anti-moisture, and anti-salt spray properties. Regular cleaning of the exterior with a dry, soft cloth is recommended. Avoid using harsh chemicals or abrasive materials.

7. TROUBLESHOOTING

If you encounter issues with your CDBAIRUI M31-AXAX8080G module, consider the following common troubleshooting steps:

- **No Power (PWR LED off):** Check power supply connections and voltage. Ensure the power source is active and within the specified range.
- **No Communication (LINK LED off or blinking erratically):** Verify Ethernet or RS485 cable connections. Check network settings, Modbus addresses, and protocol configurations in your control system.
- **Incorrect I/O Readings:**
 - For Digital Inputs: Ensure sensors are correctly wired (PNP/NPN) and providing the expected signal levels.
 - For Analog Inputs: Verify sensor type (0-20mA/4-20mA) matches module configuration. Check sensor calibration and wiring.
 - For Digital Outputs: Check wiring to actuators and ensure control commands are being sent correctly.
- **Module Not Responding:** Try power cycling the module. If the issue persists, perform a "Double-click Reload" to reconfigure IO expansion modules.
- **Software Connection Issues:** Ensure the correct IP address and port are used for Modbus TCP, or correct COM port and baud rate for Modbus RTU. Disable any firewalls that might block communication.

For persistent issues, consult the manufacturer's technical support or detailed product documentation.

8. SPECIFICATIONS

Feature	Detail
Model Name	M31-AXAX8080G
Brand	CDBAIRUI
Connectivity Technology	Ethernet, RS485
I/O Configuration	8 Digital Inputs (DI), 8 Digital Outputs (DO)
DI Input Type	PNP and NPN compatible
Analog Input Ranges	0-20mA / 4-20mA (Configurable)
Protocols Supported	Modbus TCP, Modbus RTU
Max Expansion Modules	16

Feature	Detail
Material	Copper (internal components)
Special Features	Remote Upgrade, DI Filtering, Anti-mold, Anti-moisture, Anti-salt spray
Compatible Devices	Desktop (for configuration software), PLC, HMI
Specific Uses	Industrial Automation, Data Acquisition, Control Systems

9. WARRANTY AND SUPPORT

For warranty information, technical support, or further assistance with your CDBAIRUI M31-AXAX8080G module, please refer to the official CDBAIRUI website or contact their customer service directly. Keep your purchase receipt and model number handy when seeking support.

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