Hyuduo MODBUS-RTU-displaymodule

Hyuduo LED 7-Segment MODBUS-RTU Display Module Instruction Manual

Model: MODBUS-RTU-displaymodule

1. Product Overview

The Hyuduo LED 7-Segment MODBUS-RTU Display Module is a 4-digit display designed for industrial applications, particularly for communication with PLCs. It features a bright red LED display and utilizes the Modbus-RTU communication protocol for data exchange.
Key features include:

- **Red LED Display:** Provides clear visibility, with adjustable brightness.
- **Durable Construction:** The display frame is made from high-quality ABS material, ensuring lightweight yet sturdy performance. Serial port terminals are constructed from copper for reliable connections.
- **4-Digit 7-Segment Display:** Includes a decimal point function, with adjustable position.
- **Modbus-RTU Protocol:** Standard communication protocol for seamless integration into existing systems.
- **Wide Power Input:** Operates on a DC voltage range of 5-36V.
- **High Accuracy:** Adjustable decimal point position and baud rate contribute to display accuracy.
- **Easy Installation:** Designed for embedded installation into other devices.

Figure 1: Front view of the Hyuduo LED 7-Segment MODBUS-RTU Display Module, showing the red 4-digit display.

2. Specifications

Feature	Value
Display Type	4-Digit 7-Segment LED (Red)
Communication Protocol	Modbus-RTU
Input Power	DC 5-36V
Decimal Point	Adjustable
Brightness	Adjustable
Frame Material	ABS
Terminal Material	Copper
Product Dimensions	1 x 1 x 1 cm
Weight	60 g
Manufacturer Reference	Hyuduo5x1b64edtk1244

3. Setup

Proper setup involves physical connection and initial Modbus configuration. Ensure all power is disconnected before making any physical connections.

3.1 Physical Connection

The display module features a green terminal block for power and serial communication. Refer to the image below

for terminal identification.

Figure 2: Close-up view of the terminal block, showing connection points for power and serial communication.

Connect the power supply (DC 5-36V) to the appropriate terminals. Connect the serial communication lines (RS485 D+, D-) to your PLC or Modbus master device. Ensure correct polarity for both power and data lines.

3.2 Initial Modbus Configuration

Before displaying data, the module's Modbus address and baud rate may need to be configured to match your system. These parameters are set via Modbus commands.
Modbus commands generally follow the structure: **[Address] [Function Code] [Starting Address (2 Byte)] [Value (2 Byte)] [Checksum (CRC16 2 Byte)]**.
To configure the module, you will send specific Modbus Write commands (Function Code 06 for writing single registers).

- **Set Baud Rate:** The baud rate can be set using a value from 0 to 7, corresponding to standard rates:
  - 0 = 1200 bps
  - 1 = 2400 bps

- 2 = 4800 bps
- 3 = 9600 bps (Default)
- 4 = 19200 bps
- 5 = 38400 bps
- 6 = 57600 bps
- 7 = 115200 bps

Example command (assuming Slave Address = 1):01 06 00 07 00 [0-7] [CRC][CRC]

- **Set Modbus Address:** The module's slave address can be set from 0 to 255.Example command (assuming Slave Address = 1): 01 06 00 08 00 [0-255] [CRC][CRC]

It is recommended to use a Modbus command parser or a PLC programming environment to construct and send these commands correctly, including the CRC checksum.

4. Operating Instructions

Once the module is powered and configured, you can send data and adjust display settings via Modbus commands.

4.1 Displaying Data

To display a 4-digit value, send a Modbus Write command to the data register. The value should be sent as a 2-byte (16-bit) integer.

- **Display Data:** Example command (assuming Slave Address = 1, to display a value):01 06 00 00 [VAL][VAL] [CRC][CRC]. Replace [VAL][VAL] with the 2-byte hexadecimal representation of your desired value.

4.2 Adjusting Display Settings

Several display characteristics can be adjusted via Modbus commands:

- **Set Decimal Point Position:** The decimal point position can be set from 0 to 3.
  - 0 = No decimal point
  - 1 = Decimal point after the first digit (e.g., X.XXX)
  - 2 = Decimal point after the second digit (e.g., XX.XX)
  - 3 = Decimal point after the third digit (e.g., XXX.X)

  Example command (assuming Slave Address = 1):01 06 00 01 00 [0-3] [CRC][CRC]
- **Set Brightness:** The display brightness can be adjusted from 0 (dimmest) to 7 (brightest).Example command (assuming Slave Address = 1): 01 06 00 02 00 [0-7] [CRC][CRC]
- **Set Flash Mode:** Enable or disable a flashing display mode.
  - 0 = No flash
  - 1 = Flash enabled

  Example command (assuming Slave Address = 1):01 06 00 06 00 [0-1] [CRC][CRC]

4.3 Reading Stored Values

You can read the currently configured values for settings like baud rate using Modbus Read commands (Function Code 03 for reading holding registers).

- **Read Baud Rate:** Example command (assuming Slave Address = 1):01 03 00 07 00 01 [CRC][CRC]. The response will contain the current baud rate setting.

5. Maintenance

The Hyuduo LED 7-Segment MODBUS-RTU Display Module is designed for durability and requires minimal maintenance.

- **Cleaning:** Keep the display surface clean using a soft, dry cloth. Avoid abrasive cleaners or solvents that could damage the display or housing.
- **Environmental Conditions:** Operate the module within its specified temperature and humidity ranges. Avoid exposure to excessive moisture, dust, or corrosive environments.
- **Connection Integrity:** Periodically check all electrical connections to ensure they are secure and free from corrosion.

6. Troubleshooting

This section addresses common issues and their potential solutions.

6.1 Display Not Lighting Up

- **Power Supply:** Verify that the module is receiving the correct DC voltage (5-36V) and that the power connections are secure and correctly polarized.
- **Brightness Setting:** Ensure the brightness setting is not at its minimum (0). Adjust using the Modbus command if necessary.

6.2 Incorrect or No Data Displayed

- **Modbus Communication:** Confirm that the Modbus master (e.g., PLC) is correctly configured to communicate with the display module.
- **Baud Rate and Address:** Ensure the module's baud rate and slave address match the settings on your Modbus master. Reconfigure if necessary.
- **Modbus Command Format:** Double-check the Modbus command structure, function codes, register addresses, and CRC checksums. Incorrect commands will not be processed.
- **Register Information:** This manual provides basic Modbus register information. For advanced configurations or specific register maps, consult the manufacturer or seller for detailed documentation.

6.3 Display Shows Leading Zeros (e.g., 0004 for 4)

The display module may show leading zeros for values that do not fill all four digits (e.g., '0004' for the number 4). This is a characteristic of some 7-segment displays and not a malfunction.

- **Software Handling:** If leading zeros are undesirable, this typically needs to be managed by the Modbus master (PLC) programming. The PLC can format the data before sending it to the display, for example, by sending a blank character or a specific code for leading zero suppression if the module supports it (not explicitly stated in available information).

7. Warranty and Support

Specific warranty details for this product are not provided within this manual. For information regarding warranty coverage, technical support, or service, please contact your retailer or the manufacturer, Hyuduo, directly.
When contacting support, please provide the product model (MODBUS-RTU-displaymodule) and ASIN (B08XLRT25Z) for quicker assistance.