lamaPLC: DM56A04 / DM36B06 digital tube display with Modbus Communication


Description

- Working voltage: **DC 5 - 28V**
- Working current: 4.3 - 42mA *(related to the brightness of the digital tube)*
- MODBUS RTU protocol, 03 read command, 06 or 16 write command.
- Device address: 1~247, **default 1**, by modifying the 485 address, up to 247 modules can be used in cascade (more than 32, please use RS485 repeater)
- Digital tube color: red
- Digital tube tube digits: 6 digits 0.36 inches / 4 digits 0.56 inches
- Communication interface: RS-485 (Modbus RTU)
- Function: It can display numbers, ASCII characters, letters, floating-point numbers, negative numbers, etc., and the brightness can be adjusted; it supports electronic label function, and the initial display content can be set after power-on
- Supported baud rates: 1200 2400 4800 **9600** (default) 19200 38400 57600 115200,

Character-set

The data between 00H and 1FH in the ASCII code is a control character and cannot be displayed, and 20H represents a space character. 21H to 7EH are visible ASCII characters. The characters that can be correctly displayed on the digital tube screen are as follows.


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Modbus Features

Modbus connection characteristics:
Default Modbus settings: 9600 baud, 8N1, RTU communication, slave ID: 1
Function Code: 06/16 control, 03 read status

Address	Function	R/W
0	ASCII code The 1st digit tube displays the contents	R/W
1	ASCII code The 2nd digit tube displays the contents	R/W
2	ASCII code The 3st digit tube displays the contents	R/W
3	ASCII code The 4st digit tube displays the contents	R/W
4	ASCII code The 5st digit tube displays the contents	R/W

5	ASCII code The 6st digit tube displays the contents	R/W
6	Used in combination with register 7 (0x**FFFF**FFFF), cannot be used alone. High 4 bits of the high byte (0x**F**FFFFFFF): 0 indicates a positive number, 1 indicates a negative number Lower 4 bits of the high byte (0xF**F**FFFFFF): specify the number of decimal places, ranging from 0 to 5 Together with register 7, they specify the data to be displayed 0xFF**FFFFFF**) (for data above 65535, three bytes are needed; this byte indicates the highest 8 bits of the data. *Note: This register should be used together with register 7. To write data to these two registers, use the write multiple holding register (16 function code) when displaying data.*	R/W
7	Display data. Can be used in combination with register 6 (0xFFFF**FFFF**), or separately. (1) Together with register 6, this register indicates the data to be displayed (the data is represented by 3 bytes, 0xFF**FFFFFF**), the high byte of this register indicates the middle 8 bits of the data (0xFF**FF**FF), and the low byte indicates the lowest 8 bits of the data (0xFFFF**FF**). The **high byte** comes first and the low byte comes second. (0x**FF**FF) *Note: This register is used in conjunction with register 6 to write data to these two registers using the Write Multiple Holding Register (16 function code) when displaying data.* (2) When used independently, write a hexadecimal number into the register, and the digital tube will be converted into a decimal number for display.	R/W
8	Blink control register. Each bit represents one digital tube; the lowest bit represents the first digital tube, and so on. **0**: no blinking (default), **1**: Blinking *Note: This parameter is not saved when power is lost.*	R/W
9	Digital tube brightness level, **1..8**, 6 digits default 4, 4 digits default 8. *Note: This parameter is saved upon powering down.*	R/W
10	Display content is saved. **0**: No saving (default), **1**: Save all digital tube display content *Note: this parameter is saved when powered off.*	R/W
11	Digital tube power-on initial display mode setting. **0**: Display “0”; (default), **1**: Display the RS485 address of the module, **2**: Display of saved data. *Note: This parameter is saved at power down.*	R/W
251	00: Restore factory settings Telegram: *FF 06 00 FB 00 00 ED E5*	R/W
252	Data return delay: 0..25 (* 40 ms); Return data interval time after receiving the command (unit 40 ms)	R/W
253	RS485 Address / Slave Address: 1..247, default: 1	R/W
254	Baud rate: 0..255; 0:1200, 1:2400 2:4800, **3:9600□default)**, 4:19200, 5□38400, 6□57600, 7□115200, Other: Restore factory settings	R/W
255	Parity bit: 0..2; **0 :None(default)**, 1: Even Parity, 2: Odd Parity	R/W

Arduino Required Components

To use these displays with an Arduino, you need an RS-485 to TTL converter module (like a MAX485 module) to translate the signals. You'll also use the Modbus library to send commands.

- Arduino Board (e.g., Arduino Uno, Nano)
- DM56A04 or DM36B06 display (4-digit and 6-digit variants, respectively)
- RS-485 to TTL Converter Module (e.g., a board with a MAX485 chip)
- External 5V to 24V DC Power Supply for the display module (Arduino's 5V pin may not be enough)
- Jumper Wires

Wiring Diagram

Connect the components as follows, using the Arduino's hardware serial pins (Pin 0/RX and Pin 1/TX):

Converter Pin	Arduino Pin	Display Pin	Description
VCC	5V	VCC	Power for converter (use external supply for display)
GND	GND	GND	Ground
RO	Pin 0 (RX)	N/A	Receiver Output
DI	Pin 1 (TX)	N/A	Driver Input
RE & DE	Pin 2	N/A	Receiver/Driver Enable (bridge and connect to one pin)
A	N/A	A (RS485A)	RS-485 Differential Signal +
B	N/A	B (RS485B)	RS-485 Differential Signal -

Note: The RE and DE pins on the MAX485 module should be connected together and wired to a single digital pin (e.g., Pin 2) to control data direction (send/receive).

Required Library

Install the **ModbusMaster** library by *Doc Walker* through the Arduino IDE Library Manager. This library simplifies Modbus RTU communication.

Arduino Example Code (Modbus RTU)

This code uses the ModbusMaster library to send a simple *“display value”* command (Function Code 6) to the display's default address (0x01).

```
#include <ModbusMaster.h>

// Initialize ModbusMaster instance
// Use Hardware Serial on pins 0 (RX) and 1 (TX)
ModbusMaster node;

#define DE_RE_PIN 2 // Pin to control RS-485 direction
```

```
void setup() {
  Serial.begin(9600); // Start serial communication
  node.begin(1, Serial); // Slave ID 1, use the standard Serial port

  // Set the direction control pin
  pinMode(DE_RE_PIN, OUTPUT);
  node.setTransmitBuffer(DE_RE_PIN); // Tell the library which pin controls
direction
}

void loop() {
  static uint16_t value_to_display = 0;
  uint8_t result;

  // Send Modbus command to display the value
  // Function 0x06 (Write Single Register)
  // Address 0x0000 (usually the register for the main value)
  // Value to display
  result = node.writeSingleRegister(0x0000, value_to_display);

  if (result == node.ku8MBSuccess) {
    // Command sent successfully
    value_to_display++;
    if (value_to_display > 9999) { // Adjust max value based on 4 or 6
digits
      value_to_display = 0;
    }
  } else {
    // Handle communication error (optional)
    // Serial.print("Error: ");
    // Serial.println(result);
  }

  delay(1000); // Update every second
}
```

Display, Modbus topics on lamaPLC

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• lamaPLC: S7-1500 and UICPAL Temp.humi.sensor Modbus TCP communication	2026/04/23 21:52	bus, communication, s7, simatic, s7 1500, s7 1200, scl, uicpal, temperature, humidity, modbus, example, download, tia portal
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