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**FFFFF): specify the number of decimal places, ranging from 0 to 5 Together with register 7, they specify the data to be displayed 0xFF**FFFFF**) (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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• lamaLib: #temp	2026/04/23 21:52	tia, scl, lamalibsimatic, source code, energy meter, modbus, register, word
• lamaLib: energyMeterToModbusRegs	2026/04/23 21:52	tia, scl, lamalibsimatic, source code, energy meter, modbus, register, word
• lamaPLC Communication: Modbus	2026/04/23 21:51	modbus, communication, bus, modicon, standard, rtu, tcp, multimaster, coil, register

• lamaPLC: B+G E-Tech DS100 Energy Meter with Modbus	2026/06/05 15:59	communication, modbus, b g, e-tech, ds100, energy meter, em
• lamaPLC: Communication with Eastron Smart X96	2026/06/05 15:59	communication, modbus, energy meter, em, eastron, smart, x96
• lamaPLC: DM56A04 / DM36B06 digital tube display with Modbus Communication	2026/02/14 18:25	dm56a04, dm36b06, eletechsup, 7-segment, display, modbus, rtu, modbus rtu, arduino
• LamaPLC: Eastron SDM 230 with Modbus Communication	2026/06/05 15:50	modbus, modbus rtu, eastron, modbus map, mid, sdm 230, sdm, arduino, code
• LamaPLC: Eastron SDM 630 Energy Meter with Modbus communication	2026/06/05 15:50	modbus, modbus rtu, eastron, modbus map, mid, sdm, sdm 630, arduino, code
• lamaPLC: HT16K33 display controller	2026/04/23 21:51	i2c, 7-segment display, display, ht16k33, arduino
• lamaPLC: LCD 1602/2004 with I²C communication	2026/02/14 18:27	communication, i2c, display, lcd, 1602, 2004, hd44780, pcf8574, pcf8574t, pcf8574at, arduino
• lamaPLC: PTA8C04 4-channel PT100 Modbus Modul	2026/02/14 18:42	pta8c04, sensor, modbus, rtu, rs-485, communication, platine, um72
• lamaPLC: RP2040_ETH_Modul: Modbus TCP example	2026/05/12 16:20	code, micropython, 2026, rp2040 eth, modbus, test
• lamaPLC: RP2040_ETH_Modul: Modbus TCP sniffer	2026/05/12 16:20	code, micropython, 2026, rp2040 eth, modbus, sniffer
• LamaPLC: S7-1500 and Metrawatt EM2389 Modbus TCP communication	2026/04/23 21:52	simatic, s7, modbus, communication, metrawatt, em2389, source code, scl, mid
• LamaPLC: S7-1500 and Sicam Q200 Modbus TCP communication	2026/04/23 21:52	simatic, s7, modbus, tia portal, communication, sicam, q200, sicam q200, source code, scl, class a
• lamaPLC: S7-1500 and UICPAL Temp.humi.sensor Modbus TCP communication	2023/06/19 23:24	bus, communication, s7, simatic, s7 1500, s7 1200, scl, uicpal, temperature, humidity, modbus, example, download, tia portal
• lamaPLC: st756x display drivers	2026/05/20 16:17	display, driver, i2c, spi, lcd, cog, oled, st7565, st7567, gm12864, gm12864-59n, gm12864-03a, gm12864-01a, gme12864-41
• lamaPLC: TM1637 7-segment display	2026/02/14 18:26	i2c, 7-segment display, display, tm1637, arduino
• lamaPLC: TM1650 7-Segment Display with I²C like or Modbus Communication	2026/02/14 18:26	tm1650, stc8g, tp8485e, hyuduo5x1b64edtk1244, 7-segment, display, modbus, rtu, modbus rtu, arduino
• lamaPLC: TTL to RS485 Module	2026/02/14 23:49	modbus, rtu, modbus rtu, hw-097, rs-485, max485
• LamaPLC: UICPAL Temp.humi.sensor	2023/06/25 00:43	simatic, s7, modbus, communication, temperature, humidity, sensor
• LamaPLC: XTM35SC Energy meter with Modbus communication	2026/06/05 15:59	xtm35sc, modbus, modbus rtu, measuring, power, communication, current meter, voltmeter
• lamaPLC: YR-3180 - Weight sensor module with UART or Modbus communication	2026/02/15 00:00	communication, modbus, rtu, sensor, weight, yr-3180, hx710b, arduino, ttl, rs-485

• Modbus for Grundfos pumps	2026/04/23 21:51	modbus, modbus tcp, modbus rtu, grundfos
• NT18B07: 7 Kanal RS485 Temperatur Sensor with Modbus RTU	2026/02/14 18:49	nt18b07, sensor, modbus, rtu, rs-485, communication, platine
• Simatic Modbus S7 error- and statuscodes	2026/04/23 21:52	communication, bus, modbus, error, modbus error code, 7000, 7001, 7002, 7003, 7004, 7005, 7006, 80a1, simatic, s7, siemens, tia
• SSH1106/SSD1306 OLED Display with I²C communication	2026/02/14 18:27	i2c, oled, display, ssd1306, sh1106, ssh1106, arduino, cmos
• Waveshare	2026/04/23 21:52	waveshare, converter, modbus, modbus rtu, modbus tcp, communication
• XTM35SC current / voltage meter	2026/04/23 21:52	xtm35sc, modbus, modbus rtu, measuring, power, communication, current meter, voltmeter

DM56A04, DM36B06, eletechsup, 7-segment, display, Modbus, RTU, Modbus RTU, Arduino