

RS485 Modbus Logger

User Manual

Version 2.0

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1. Introduction

The RS485 Modbus Logger is a portable instrument for monitoring, decoding, transmitting and logging Modbus RTU traffic on RS485 networks. It provides live monitoring, data logging to a microSD card, register decoding using CSV database files and Modbus master transmit functions.

2. Features

- RS485 Modbus RTU monitoring
- Modbus RTU transmit functions
- Raw frame logging
- CRC validation
- Slave node discovery
- CSV register database support
- OLED display with rotary encoder interface
- Firmware update from SD card
- EEPROM configuration storage
- Configurable baud rate, data bits, parity and stop bits
- Switchable RS485 bus termination

3. Modbus RTU Overview

Frame Format:

[Slave][Function][Data][CRC Low][CRC High]

Supported function codes:

01 Read Coils

02 Read Discrete Inputs

03 Read Holding Registers

04 Read Input Registers

05 Write Single Coil

06 Write Single Register

15 Write Multiple Coils

16 Write Multiple Registers

All received frames are CRC checked before decoding.

4. SD Card Structure

Root

LOGxxxxx.CSV

FIRMWARE.BIN

/MODBUS/

*.CSV register database files

5. Database Format

#Slave,Function,Register,Name,Scale,Offset,Unit

1,3,40001,Temperature,0.1,0,C

1,3,40002,Pressure,0.01,0,Bar

1,4,30001,BatteryVoltage,0.1,0,V

6. Menu System

Main Menu

- Start/Stop Logging

- Modbus Monitor
- Transmit
- Database
- Settings

Transmit

- Poll Device
- Write Register
- Write Coil
- Back

Settings

- Date/Time
- Baud Rate
- Data Bits
- Parity
- Stop Bits
- RS485 Termination

7. Status Screen

Displays:

- Firmware version
- RS485 configuration
- Terminator status
- Selected database
- SD card status
- Logging status

- Current date and time

8. Modbus Monitor

Displays decoded register values from the selected CSV database while simultaneously logging raw Modbus frames to the SD card.

9. Modbus Transmit

Poll Device

Configure Slave Address, Function Code, Register, Count and Poll Period for continuous polling.

Write Register

Write a single holding register by specifying Slave Address, Register Number and Value.

Write Coil

Write a single coil by specifying Slave Address, Coil Number and ON/OFF state.

10. Log File Format

CSV format:

Date,Time,Status,Length,Frame

Status:

V = Valid CRC

E = CRC Error

11. Firmware Updates

1. Copy FIRMWARE.BIN to the root of a FAT32 microSD card.
2. Hold the encoder push button.
3. Apply power.

4. Release the button after the bootloader starts.

After successful programming the firmware file is renamed FIRMWARE.OK.

12. SD Card Compatibility

Supported media

- microSD and microSDHC
- 4 GB to 32 GB recommended
- FAT32 format required
- exFAT is not supported
- Class 10 cards recommended

The logger supports safe SD card removal and reinsertion. If a compatible card is inserted it is automatically detected and mounted.

13. Troubleshooting

- Check RS485 wiring and termination.
- Verify baud rate, data bits, parity and stop bits.
- Confirm the correct database is selected.
- CRC errors usually indicate wiring or serial configuration problems.
- Ensure the SD card is FAT32 formatted.

14. Technical Specification

Protocol: Modbus RTU over RS485

Storage: microSD / microSDHC (FAT32)

Display: OLED

User Interface: Rotary encoder with push button

Firmware Update: SD card bootloader

Configuration Storage: EEPROM