



Electromen Modbus Starter Kit

USB to RS-485 — Quick Start and User Guide

Purpose of this guide

Connect a Windows PC to an Electromen motor controller with an RS-485 Modbus RTU interface and verify communication with the Electromen Simple Modbus Test Tool.

Compatibility

Use this kit only with Electromen products equipped with an **RS-485 Modbus interface**. It is not suitable for products using a 5 V TTL-level Modbus connection.

What you need

- Electromen motor controller with RS-485 Modbus RTU
- Product manual and product-specific Modbus register documentation
- USB to RS-485 converter and connection cables
- Windows 10 or Windows 11 computer, 64-bit
- Electromen Simple Modbus Test Tool

Safety first

Modbus commands may change parameters or cause motor movement. Prevent unexpected movement and begin with register reading only.

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Quick connection card

Important first step

Connect the USB to RS-485 converter to the computer before connecting RS-485 wiring. Wait until Windows has completed driver installation; the first installation may take several minutes.

1

Connect the converter to the PC

Use a direct USB connection or the supplied extension cable. Wait for Windows driver installation to finish.

2

Find the COM port

Open Device Manager, expand **Ports (COM & LPT)** and note the FTDI or USB Serial Port number.

3

Switch off controller power

Disconnect the supply before installing or changing RS-485 wires. Make sure the motor cannot start unexpectedly.

4

Connect RS-485 wiring

Use the terminal markings in the controller documentation. For the first test, connect one controller only.

Converter	Motor controller
A+	RS-485 A
B-	RS-485 B
GND	RS-485 reference ground, when provided

5

Check wiring and apply power

Check A/B, loose strands, supply polarity and mechanical safety. Then apply controller power.

6

Start the test tool

Extract the complete ZIP, start the application, select the COM port and verify communication settings.

7

Read a documented register

Start with FC04 or FC03. TX should flash for the request and RX for the reply. Do not write before communication is verified.

Communication settings and addressing

The settings must match the motor controller. Check the product documentation; not every Electromen product necessarily uses the same settings.

Setting	Typical initial value	Meaning
COM port	Detected manually	Windows port assigned to the converter
Baud rate	19200	Communication speed
Data bits	8	Serial data bits
Parity	Even	Serial parity
Stop bits	1	End of serial character
Slave address	1	Address of the controller

Register addressing

Enter the protocol address expected in the Modbus request. Register lists may show zero-based protocol addresses or reference numbers such as 30001 and 40001.

Address example

Protocol address **0** is entered as **0**. Holding Register reference **40001** commonly corresponds to protocol address **0**. Follow the convention stated in the product-specific documentation.

Function	Area	Operation
FC04	Input Register	Read operating or status value
FC03	Holding Register	Read parameter or command value
FC06	Holding Register	Write one permitted 16-bit value

Separate address areas

The same numeric address may refer to different data with FC04 and FC03. Use the function specified in the product register documentation.

Using the Simple Modbus Test Tool

1. Select and verify the connection

- Press **Refresh** and select the converter's COM port.
- Set baud rate, data bits, parity, stop bits and slave address to match the controller.
- Close any other application using the same COM port.

2. Read an Input Register — FC04

- Enter a documented protocol address in the **Read Input** section.
- Press **Read value**; the returned 16-bit value is shown in the value field.

3. Read a Holding Register — FC03

- Enter a documented protocol address in the **Holding Register** read field.
- Press **Read value** and compare the result with the documentation.

4. Write a Holding Register — FC06

Enable writing only when necessary

Verify address, access, unit, scale and allowed range. An incorrect value may change operation immediately or be stored as a parameter.

- Select **Enable writing**; the warning remains visible.
- Enter the documented protocol address and permitted value.
- Press **Write value**. Read the same register with FC03 to verify the result when appropriate.

5. Use the communication log

The log shows transmitted and received Modbus RTU frames and reports CRC, timeout and Modbus exception errors.

Value interpretation

Interpret signed values, scaling, units and multi-register data exactly as defined in the controller's product-specific Modbus documentation.

Troubleshooting

Symptom	Checks
COM port not shown	Wait for driver installation, reconnect, try another USB port and check Device Manager.
COM port cannot be opened	Close other serial applications and verify the selected port.
TX does not flash	Check the selected COM port and send the command again.
TX flashes, RX does not	Check controller power, slave address, serial settings, A/B wiring and controller bus settings.
Timeout	Check settings, wiring and the requested slave address.
Modbus exception	Check function code, protocol address, access rights and value range.
Incorrect value	Check FC03 versus FC04, zero-based addressing, signed interpretation, scaling and word order.
Intermittent communication	Use twisted pair, check termination and ground, shorten wiring and separate it from power cables.

A/B naming

RS-485 A/B naming is not fully consistent between manufacturers. If all settings are correct but no reply is received, switch off controller power before checking or interchanging A and B.

Bus wiring

- Use one controller and a short point-to-point cable for the first test.
- Use a twisted pair for A and B; connect reference ground when specified.
- Keep RS-485 away from motor phase, braking resistor and high-current wiring.
- Use termination according to the topology. The converter has integrated 120 ohm termination.

Safe commissioning checklist

- The controller is an RS-485 model, not a 5 V TTL-level model.
- The correct manual and register documentation are available.
- Supply voltage and polarity have been checked.
- A, B and reference ground follow the product documentation.
- COM port, serial settings and slave address match.
- Unexpected motor or load movement cannot cause injury or damage.
- The first test is a documented FC04 or FC03 read.
- Writing stays disabled until address, scale and range are verified.

Product-specific information

This general guide does not define controller register addresses, scaling or allowed ranges. Use the Modbus register documentation for the exact controller model.

Support information

When requesting support, include the controller model and version, slave address, serial settings, selected COM port, function code, register address, and relevant log lines or error message.

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