

Modbus Tester

Version
V1.0.0

Read your meters and breakers in plain words.

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1. About Modbus Tester

Modbus Tester reads and writes Modbus devices from a Windows PC. It is made for commissioning and fault-finding on site: power meters, circuit breakers, panel monitors, controllers and any other device that speaks Modbus RTU or Modbus TCP.

It has two modes, switched with **Simple** / **Expert** at the top of the window:

- **Simple mode** - pick your devices from a list, type their Modbus ID, and see their readings as named values with units and status in plain words. This is where most work is done.
- **Expert mode** - every register, function code and setting; the traffic byte by byte; searches for unknown devices and serial settings; raw frames; and a slave simulator.

Your devices and settings are kept between sessions, in a `data` folder beside the program.

2. What you need

- A PC with **Windows 10 or 11** (64-bit).
- For RS-485 (Modbus RTU) devices: a **USB to RS-485 converter** with its Windows driver installed. It appears in Windows as a COM port.
- For network (Modbus TCP) devices: the PC on the **same network** as the device or gateway, and its IP address.
- Each device's **Modbus ID** (1 to 247) and, for RS-485, its **baud rate and parity**. They are set on the device - usually in its display menu or setup software. If you do not know them, the app can search for them (sections 7 and 8).

3. Installing and updating

- 1 Download **Modbus Tester V1.0.0 Setup.exe** from wrulx.com (or from your receipt email).
- 2 Double-click it. No administrator rights are needed. It installs into `C:\Wrulx Modbus Tester` and puts a **Modbus Tester** shortcut on the Desktop.
- 3 Open Modbus Tester from the Desktop shortcut.

Updating: when a new version is out, a green **V1.0.1 available** (or similar) appears at the top of the window - Modbus Tester checks wrulx.com about once a day when online. Click it to open the download page. Close Modbus Tester, then run the Setup file of the newer version. It replaces the program and leaves your licence, devices and settings exactly as they were.

Windows may show a blue "Windows protected your PC" screen the first time, because the installer is new to it. Click **More info**, check the name is Modbus Tester, then **Run anyway**.

4. Trial and licence

Free trial

The first time it opens, choose **Start free trial**. Every feature works for **14 days**. There is no sign-up and no card. When the trial ends it asks for a licence; your devices and settings are kept.

Activating a licence key

- 1 Buy a licence at wrulx.com (or with **Buy a licence** in the app). The key is shown after payment and emailed with your receipt.
- 2 Open **Licence** (top of the window, or the trial badge), paste the key where it says *Paste your licence key*, and press **Activate**.
- 3 It unlocks straight away and shows who it is licensed to.

Activating needs the internet **once**. After that Modbus Tester works offline - on a site with no signal it keeps working. When the PC is online it checks the licence now and then.

Two PCs, and moving to a new one

Each licence can be active on **2 PCs** - a laptop and a desktop, say. To move it, open **Licence** on the PC you no longer need and choose **Move to another PC**, then activate the same key on the new PC. If the old PC no longer starts, email Support@wrulx.com and we will free it.

PCs with no internet

For a PC that never goes online, or a purchase by invoice, ask for an **offline licence**: send the machine code shown on the Licence screen to Support@wrulx.com. You receive a key of 20 letters and digits (like `ABCDE-FGHJK-LMNPQ-RSTUV`) that works on that PC only. Type it in the same place as an online key.

5. The screen at a glance

The screenshot shows the 'Modbus Tester RTU' application in 'Simple' mode. The interface is divided into two main sections: 'Connection' and 'Devices'.

Connection Section:

- Step 1: Connection. Subtitle: 'How this PC talks to the devices'.
- Status: 'Connected'. Subtext: 'Pretend devices - no hardware needed. Reading every device about once a second.'
- Buttons: 'Change settings', 'Pause reading', and 'Disconnect'.

Devices Section:

- Step 2: Devices. Subtitle: 'What is on the line, and what it reads'.
- Buttons: 'Find devices', 'Save readings', and '+ Add a device'.
- Device List: A table showing device details and readings.

Demo power meter		Modbus ID 4	
Schneider Electric - PowerLogic PM8000 power meter			
✓ Reading OK - updated just now			
CURRENT			
Current L1	Current L2	Current L3	Current average
93.3 A	84.2 A	75.0 A	84.1 A
VOLTAGE			
Voltage L1-L2	Voltage L2-L3	Voltage L3-L1	Voltage L-L average
400.2 V	399.5 V	401.7 V	400.5 V
Voltage L1-N	Voltage L2-N	Voltage L3-N	
232.3 V	229.8 V	231.5 V	
POWER			
Active power L1	Active power L2	Active power L3	Active power total
20.81 kW	18.55 kW	16.76 kW	56.12 kW

Simple mode: the connection (Step 1) above, the devices and their readings (Step 2) below.

- **Simple / Expert** - the two modes.
- **Licence** - trial days left, your licence, moving to another PC.
- **Settings** and **Help (?)** - preferences, and help inside the app.

- **Send feedback** (the speech-bubble icon) - opens the feedback page on wrulx.com, to send an idea, a problem or a question.
- **V1.0.1 available** - appears only when a newer version is out (see section 3).

6. Simple mode, Step 1: connect

Step 1 says how this PC talks to the devices. Press **Change settings** and choose the connection type:

Connection type	Use it for	You set
USB to RS-485 converter	Modbus RTU - the usual way: a USB cable to a small converter, with two or three wires to the devices.	COM port, speed (baud rate), parity
Over the network	Modbus TCP - the device itself, or a gateway such as a Link150 or Com'X.	IP address, port (almost always 502)
Network converter, RTU passed through	Serial-to-network converters that pass Modbus RTU unchanged.	IP address, port as set in the converter
Pretend devices	Practice with no hardware (section 9).	Nothing

Choosing the COM port

The USB converter shows up as a COM port. If there are several and you are not sure which, unplug the converter and see which one disappears. If none is found, plug it in and press refresh; if it never shows, install the converter's driver.

Speed and parity

The speed (baud rate) and parity must be **exactly the same** as the devices'. 9600 or 19200 baud with even or no parity are common. Under **More settings** you can also set how long to wait for an answer, how many times to try again, and the stop bits (almost always 1; some devices with no parity want 2).

Wiring RS-485

- Two data wires go from the converter to each device in turn - a chain, not a star. Makers name them differently: A and B, D1 and D0, or + and -.
- If nothing answers, try **swapping the two data wires**. It is the most common mistake and does no harm.
- Connect the 0 V (common, GND) wire as well if the devices have one.
- On a long cable, fit a 120 Ω resistor across the two data wires at each end of the chain.

Then press **Start reading**. The app reads every device about once a second. **Pause reading** stops asking for new values while keeping the connection open; disconnecting frees the COM port for other programs.

7. Simple mode, Step 2: devices

Adding a device

- 1 Press **Add a device**. Type the model to search the list - for example *PM8240* or *NSX250* - and pick it. For anything not in the list, choose **Another device**.
- 2 **What do you call it?** - any name that tells you which one it is, like *Incomer meter*.
- 3 **Its Modbus ID** - 1 to 247, as set on the device.

- 4 **What to read** - tick the groups you want (status, current, voltage, power, energy...). Some devices, like the CET PMC-592, let you choose parts such as Mains I, Mains II and groups of branch circuits.
- 5 Save. Its readings appear within a moment if Step 1 is connected.

Two devices on the same wires **cannot share an ID** - their answers collide. If two have the same ID, change it on one of the devices, then in the app.

Devices not in the list

Choose **Another device** and add each reading from the device's register list: the **register** number, the **kind of number** (whole number, decimal FLOAT32, large number, counter, power factor...) and, if the manual says the value is scaled, what to **multiply by**.

How does its register list count? Most manuals count from 1 - register 3000 is sent as address 2999. If every value comes out wrong or shifted, try the other setting.

Find devices

Not sure what is on the line? With Step 1 connected, press **Find devices**. It asks every Modbus ID whether something is there and lists what answers, ready to add.

Save readings

Save readings saves every device's readings at that moment as a spreadsheet (CSV) - for a test sheet or a commissioning report. It opens in Excel.

Reading the tiles

Each device shows its readings as tiles with units, and its status in words (for a breaker: *Breaker: Closed, Trip cause: None*). A reading marked *Not on this model* is one that this particular model does not have.

8. Expert mode

Switch to **Expert** for full control. It has five pages, a traffic panel and a recorder. The connection is set in the bar at the top: serial port (with baud rate, parity and stop bits) or network.

Monitor

Read registers continuously. Add a **block**: a slave ID, a function (coils, discrete inputs, holding or input registers) and a range of addresses. Each block has its own number format and word order:

- **Formats** - unsigned or signed 16, 32 and 64-bit, 32 and 64-bit float, hex, binary, text, and Schneider 4-quadrant power factor.
- **Word order** - ABCD (high word first, the Modbus default), CDAB (word swap), BADC, DCBA. If a 32-bit value looks absurd, try CDAB.

Tick **Poll** on the blocks to read, then press **F5** to start or stop polling - or **Read now** for a single read. A trend chart shows chosen values moving over time.

Write

Write single or multiple coils and registers, mask writes, and text. Slave ID 0 is a **broadcast**: every device acts and none replies. Everything written in the session is listed, so you can see exactly what was changed.

Take care when writing. Writing to a live device can change its settings or switch equipment. Check the register in the device's manual first, and never write to protection settings of a breaker in service.

Scan

- **Find devices** - asks every slave ID in a range and lists what answers; optionally asks each one to identify itself (functions 43 and 17, where supported).
- **Find serial settings** - for a device whose baud rate and parity you do not know: it tries every combination until one answers.

Frames

Send any Modbus frame typed or pasted in hex - for example from the traffic log or a manual - and see the reply decoded field by field. The checksum (CRC) can be added for you, or switched off to send exactly what you typed.

Traffic panel and recording

The **traffic panel** shows every frame sent and received, byte by byte, with timing - and can be paused or saved to a file. **Record** saves the polled values continuously to a CSV file until you stop it.

9. Practising and simulating

Pretend devices

In Simple mode, choose **Pretend devices** in Step 1 to practise with no hardware. Six simulated devices answer at 9600 baud with no parity: ID 4 is laid out like a Schneider PM8000 power meter, ID 5 like a ComPacT NSX breaker and ID 6 like a CET PMC-592; IDs 1 to 3 are a generic meter, controller and flow meter. Add them with those presets to see how everything works.

Simulate (Expert mode)

The **Simulate** page makes this PC act as a Modbus slave - on a COM port, as a Modbus TCP server, or as an RTU over TCP server - so you can test a PLC, SCADA or gateway that acts as master. You can see what the master asked, and **misbehave on purpose**: answer with an exception, or answer every slave ID, to check how the master copes.

10. When something does not answer

What you see	What to check
Nothing answered	Speed and parity in Step 1 match the device; the two data wires are not swapped; the device is switched on; the Modbus ID is right. Use Find devices , or in Expert mode Find serial settings .
Something answered, but garbled	The speed or parity is slightly wrong, or two devices share this ID.
Every value wrong or shifted	Change How does its register list count? (from 1 / from 0). For 32-bit values in Expert mode, try word order CDAB.
No converter found	Plug the USB converter in and press refresh. If it never shows, install its driver.
Connection lost - trying again	The converter was unplugged or the network dropped. It reconnects by itself when the line comes back.
The device does not support this function code	The device answered with an exception: it does not have this kind of data (for example holding vs input registers). Check its manual.
Could not reach the licence server	Activating needs the internet once. A company firewall can block it - try another network, or ask for an offline licence.

11. Help and support

- Inside the app: **Help (?)** at the top of the window, and **Send feedback** (the speech-bubble icon) for ideas and problems.
- Email **Support@wrulx.com** - say what you see on screen, and which device and connection you use. A copy of the traffic log helps.
- Your orders, receipts and licence keys: **wrulx.com** → My orders.
- Uninstalling: delete the folder `C:\Wrulx Modbus Tester` and the Desktop shortcut. To use the licence on another PC, choose **Move to another PC** first.

Device register maps are taken from the makers' published documentation; always confirm against your device's own manual. Schneider Electric, PowerLogic, Acti9, ComPacT, MasterPact, MicroLogic and Com'X are trademarks of Schneider Electric; CET is a trademark of its owner. Wrulx is not affiliated with them.