# 00 The ohmSTAR Companion app



**AT A GLANCE**

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|---|---|
| **For** | Running an ohmSTAR or ohmSTAR+ from a desktop: set values, simulate sensors, sweep, run tests, log. |
| **You need** | A Windows, macOS or Linux computer, the box's USB cable, the box switched on. |
| **Try it** | Plug in the box. The app finds it and connects. On the **Device** page, type `10k` in **Set resistance** and press Enter. The box's LCD shows `10000.00` (ohmSTAR+) or `10000.0` (ohmSTAR). No box? Press **Mock ohmSTAR+** first. |

## Install

Download: [download link]

| System | File | First start |
|---|---|---|
| macOS (Apple Silicon) | `.dmg` or `.zip` | Not notarised. Right-click the app, **Open**, confirm. |
| Windows | `-setup.exe` | Not signed, so SmartScreen warns. |
| Linux | `.deb` or `.AppImage` | See the port access steps below. |

### Linux port access

- `.deb`: installs the udev rule `99-ohmstar.rules` for you.
- AppImage: copy the rule yourself: `sudo cp 99-ohmstar.rules /etc/udev/rules.d/ sudo udevadm control --reload-rules && sudo udevadm trigger`
- Not logged in at the computer itself: `sudo usermod -aG dialout "$USER"`, then log out and in (`uucp` on Arch).

## Connect

1. Plug the box in and switch it on. The app connects by itself.
2. The top bar shows **Connected**, model, firmware, port and USB chip serial, with **Disconnect**.
3. Not found: press **Detect** in the top bar; it says why. Or, on the Device page, **Search for a box**, or **Choose a port** and **Connect**.
4. No box: **Mock ohmSTAR** or **Mock ohmSTAR+**.

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| Serial link | FTDI FT232R, 9600 baud, 8N1 |
| Ports searched | FTDI only: USB `0403:6001`, `6014`, `6015`. Nothing is sent to other ports. |
| Port names | Windows `COMn` · macOS `/dev/cu.usbserial-*` · Linux `/dev/ttyUSB*` |

> **One program per box.** The app holds the port while connected. Press **Disconnect** before using the command-line tool, Python or another serial program.

## The pages at a glance

| Page | What it does |
|---|---|
| **Device** | The box's drawn front panel with its live value and keypad. **Set resistance** has two tabs: **Ohms** (`4700`, `10k`, `1.5M`, or a typed list) and **Temperature** (a sensor and a value). Folded below: **Quick values** (memories 0–9, quick keys A–D), **Table upload and download** (slots 1–9, read back and compared), **Box settings** (standby delay, display contrast, restart, firmware). A console shows every command sent, and takes your own. |
| **Compact window** | **Compact** in the top bar: only the box and Set resistance or temperature. Tick **Keep on top**. **Full window** returns. |
| **Sensor library** | 128 curves: RTDs, thermistors, strain gauges, potentiometers. Search, plot, send a curve to the box as a table. |
| **Temperature to ohms** | Pick a sensor, enter a temperature (°C or °F), strain or position; the box outputs the matching resistance. |

| Page | What it does |
|---|---|
| **Custom tables** | Build a table from a formula (RTD Callendar-Van Dusen, thermistor Beta or Steinhart-Hart, strain gauge and more), a table file or two-column CSV, or a library sensor. **Run table** steps the box through its points; **Send to box** stores it in a slot. |
| **Sweeps** | One page. Mode: **Resistance** (Ω), **Temperature** (library sensor, °C/°F) or **Strain gauge** (με; R0 120, 350, 1000 Ω or custom, gauge factor, lead resistance). Shape: **Steps**, **Hold**, **Step load**, **Ramp**, **Cycles** (triangle or sine), **List**. Up to 5,000 values a pass, 1–100,000 loops, hold 0.3 s to 24 h. |
| **Sequences and reports** | Steps of a resistance or sensor value, a label and what to check. Run with **Unit under test** and **Operator**; mark each step Pass, Fail or Skip with a reading and note. Each finished run is saved; **Save PDF** or **Save CSV**. |
| **CSV logging** | Every value sent, one file a day: `ohmstar-YYYY-MM-DD.csv`. Columns: `time,box,port,ohms,source,table,table value,table units`. Graph or File view. |
| **Command-line tool** | A command line for the connected box. Chapter 02. |
| **Multiple boxes** | Several boxes at once, set one by one or all together. Chapter 06. |
| **Local network API** | HTTP and MCP server for scripts and AI clients. Chapters 03 and 05. |
| **AI assistant** | Ask a language model to work the box; it asks before each change. Chapter 05. |
| **Settings** | **Appearance**: Dark, Light or Match this computer. Presets: Everything, Just the box, Standard, HVAC and sensors, Test automation, Cal lab. Each module switches on or off. Always on: connecting, setting a resistance, the console, the mock device. |
| **Calibration bench** | Off until switched on in Settings; then a **Calibration Bench** tab appears at the top. See the *ohmSTAR Calibration Guide*. |

## Where files go

| Kind | Folder | File |
|---|---|---|
| Sweeps | `Documents/ohmSTAR Companion/Sweeps` | `.ohmsweep` |
| Sequences | `…/Sequences` | `.ohmseq` |
| Reports | `…/Reports` | `.ohmreport` |
| Tables | `…/Tables` | `.ohmtable` |
| CSV logs | `logs` in the app's user data folder | `.csv` |

Plain JSON, one file per item; back them up like any document. Each library starts with an `Examples` folder. Deleting moves a file to the trash.

## Rules the app keeps

- Every value is checked against the connected model before it is sent, and rounded to its step. Out of range is refused, never clipped.
- Before anything that changes what the box stores, or a command not in the manual, the app asks first.
- Sweeps, typed lists and sequences won't start while a table is active on the box: values would be read in the table's units.