

DESIGN BUREAU "FIZELEKTRONPRIBOR"

OKP 42 1550



Moisture analyzers (moisture meters) FIZEPR-SW100

Technical Description and Manual
operating instructions
VIGT.415210.100-05 RE

**Instructions for setting up and
software description**

SWLite

(ed. 5.1)

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1. Introduction

FIZEPR SWLite— a program for displaying and storing humidity and temperature measurement results from the FIZEPR-SW100 moisture meter on a computer (laptop). The program supports simultaneous operation with up to eight moisture meters, plots temperature and humidity graphs, alerts when readings exceed set limits, and archives the data for later analysis.

Digital communication between the computer and the moisture meters is carried out via the RS485 interface using the MODBUS RTU protocol; a converter is used to connect the moisture meters. RS485 - USB. The program supports FIZEPR-SW100 moisture meters with all firmware versions.

The program is installed on a personal computer (laptop) with Windows 7 (or higher) OS installed.

Program features:

- Simultaneous polling of up to 8 moisture meters via independent COM ports;
- Real-time humidity (W, %) and temperature (T, °C) graphs;
- Configurable alarm thresholds with visual and text warnings;
- Automatic recording of measurements in CSV - for one device or for all at once;
- Built-in CSV file explorer with charts, period comparison and statistics;
- Event log for each device (connections, connection breaks, errors);
- Switching calibration tables directly from the interface;
- Dark and light design theme;
- Built-in interactive training (button "Properties" → "Take training").

The fastest way to get started

Before reading further, try the built-in interactive tutorial: click the "Properties" button in the main window header and select "☐ Start Tutorial" (or press F1). The program will highlight the main interface elements step by step and explain their functions. This doesn't replace a real manual, but it allows you to master the basic steps in a couple of minutes without opening a document.

2. System requirements and device connection

- OS Windows 7 or newer; recommended screen resolution is at least 1280×720 pixels;
- A free COM port (physical RS485 or USB↔RS485 or RS232↔RS485 interface converter) for each connected moisture meter;
- The interface converter driver installed in Windows (the port should be visible in the Device Manager; the port number can be changed there if necessary).

Default communication parameters (factory settings):

- communication speed – 19200 baud;
- number of data bits – 8;
- parity check – not performed;
- number of stop bits – 2;
- address – 127 (during operation, any address from 1 to 127 can be specified);
- timeout between requests 100ms.

2.1. File composition and installation

The program comes as three files: SWLite.exe, SWLite.ini, and TabDescr.ini. The program does not require installation—it can be run from any folder where all three files are copied.

Important. Do not run the program directly from the CD - copy all files to your computer's hard drive or flash drive and run it from there

Advice. Before the first launch, connect all devices to the interface converter and ensure that the corresponding COM ports appear in the system—their list is automatically picked up by the program in the settings and in the drop-down list on the device card.

3. Main window - general overview

The main window consists of three areas: the top button panel, the instrument card area (with scrolling) and the status bar at the bottom.

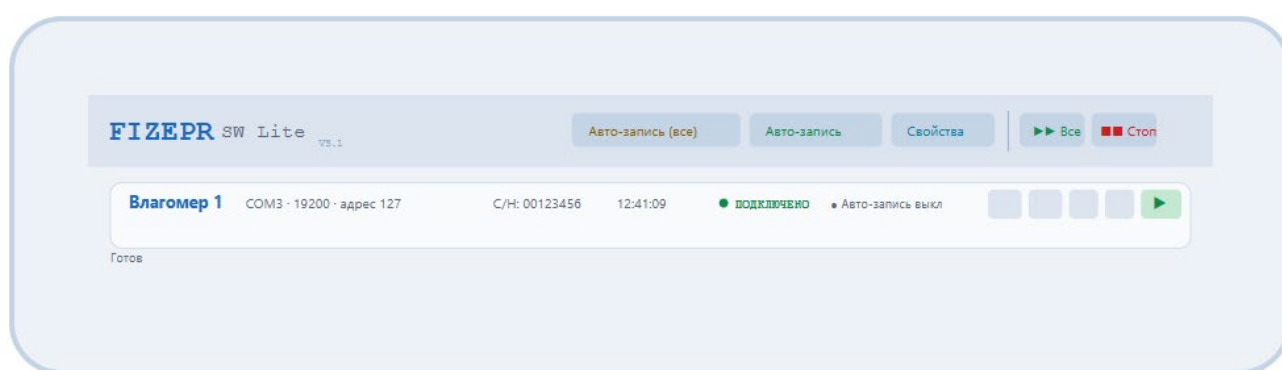


Fig. 1 — Main window header and device card title (diagram, light theme)

- Auto-record (all) - opens the auto-record dialog for each device in sequence (section 9.2).
- Auto-Record - Opens the Auto-Record Explorer window (section 12).
- Properties - menu: training, go to the site, "About the program".
- ▶▶ All / ■■ Stop — start and stop polling of all devices with one button (hot keys F5 / F6).
- The settings, theme switcher and window control buttons are located to the right (outside the picture).

Below the header is an area with instrument cards: each connected moisture meter has one card. Cards can be dragged using the handle in the upper left corner to change the display order. At the bottom of the window is a status bar with a brief summary (number of instruments, graph window width, polling interval, current theme, number of calibration descriptions).

4. Device card

The card is the program's core operating element. Each connected moisture meter has its own card, completely independent of the others.

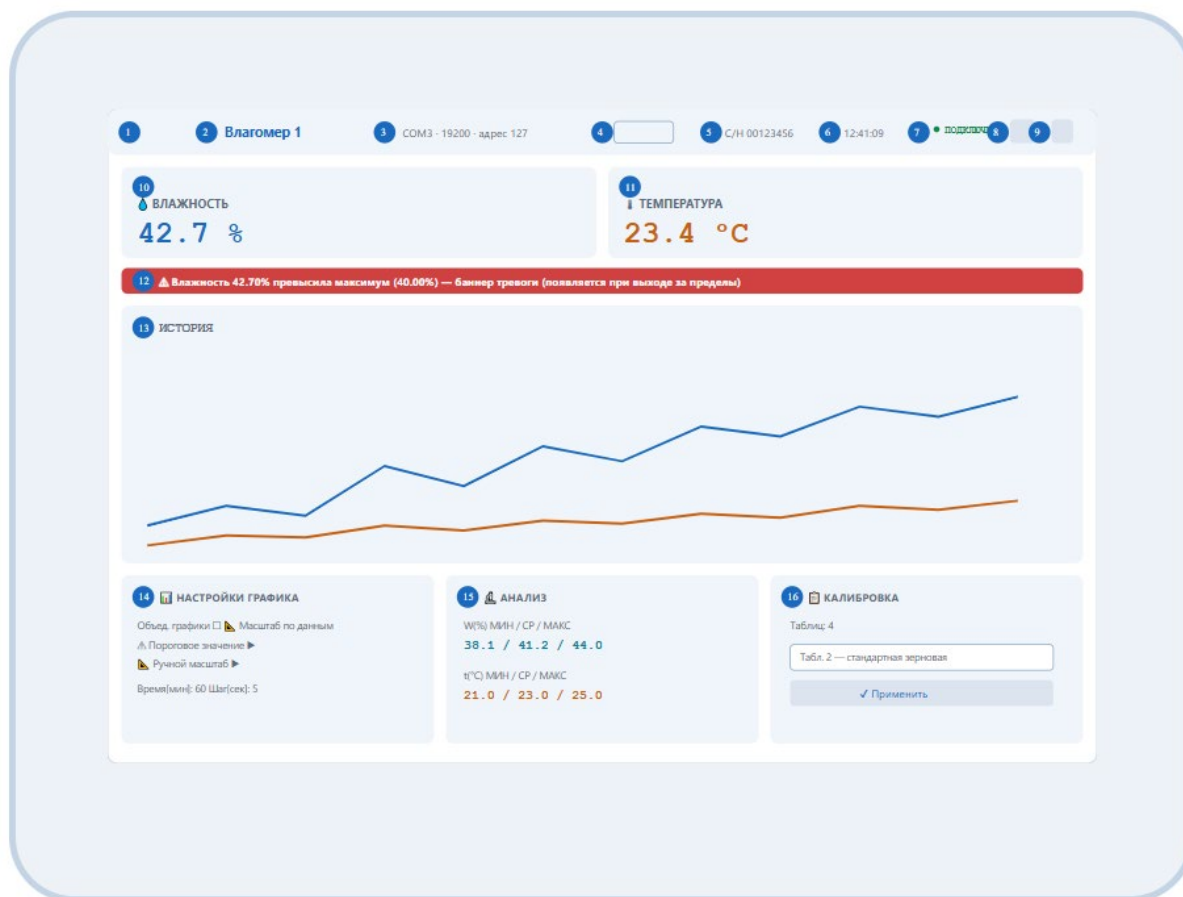


Fig. 2 — Anatomy of the device card (diagram, light theme)

1	Drag handle - change the order of cards.
2	Device name (double click to rename).
3	Connection parameters: COM port, speed, Modbus address.
4	Quickly change the COM port without opening the settings.
5	Serial number - read automatically upon connection.
6	The time of the last successful response from the device.
7	Status: DISCONNECTED / NO CONNECTION / CONNECTED, below is the auto-recording status.
8	 Auto-write — setting up saving data to CSV (section 9).
9	 Event log of this device (section 10).
10 / 11	Current humidity (%) and temperature (°C) values.
12	Alarm banner - appears when readings go beyond the thresholds (section 7).
13	Measurement history graph (section 6).
14	Graph settings: scale, alarm thresholds, window width, polling interval.
15	MIN/SR/MAX statistics and resonance parameters (Fcalib., Fres., K).
16	Selection and application of a calibration table (Section 8).

Tip: In addition to icons 8–9, there are three more buttons on the right side of the card header (outside the image): ▼ compact mode (collapse/expand the card), ⏻ quick restart of the survey, and  /  start/stop the survey of this particular device.

5. Starting and stopping the survey

5.1 All devices at once

The   All and  Stop buttons in the main window header (hot keys F5 / F6) start and stop polling of all configured devices simultaneously.

Important: Before changing the COM port in the settings or physically disconnecting the device, be sure to click " Stop" - an occupied port cannot be reassigned.

5.2. Separate device

The  /  button on the right side of the card header controls only that device, without affecting the others. This is convenient if you need to restart one moisture meter without interrupting the others.

5.3. Quick Restart

The  button stops the poll, closes and reopens the COM port, and then restarts the poll—all with one click. This is useful if the device freezes or loses connection: there's no need to press  and then  manually. The measurement history and card settings are saved.

5.4. Compact mode

The  /  button collapses the card to a single header row—graphs and measurement panels are hidden, but instrument polling continues in the background. This is convenient for large numbers of instruments: collapse those you don't need to monitor right now.

6. History chart and data analysis

The graph displays the accumulated measurement history: the blue line is humidity W (%), and the orange line is temperature T (°C). The graph window width is set in the "Time [min]" field (from 1 to 1440 minutes, or up to 24 hours), and the polling interval is set in the "Step [sec]" field in the " Graph Settings" card.

- Combine graphs - switch between one combined graph and two separate ones;
-  Scale by data - with one click, select the scale of the Y-axis based on the actual minimum and maximum data on the chart;
-  Manual scale (drop-down block) - set the Y-axis boundaries manually for W and T;
- Hover your cursor over the graph line to see the exact value and recording time (HH:MM:SS).

The " Analysis" panel displays MIN/AVG/MAX humidity and temperature statistics for the current graph window, as well as three technical parameters of the device: Fcalib. — the reference calibration frequency, Fres. — the current resonant frequency of the sensor, and K — the wave deceleration coefficient. These values are recalculated automatically with each new measurement.

7. Anxiety (going beyond the threshold)

When the measured value goes beyond the limits set in the " Threshold Value" section of the graph settings card, a red banner with text appears above the graph, for example:

-  Humidity 42.70% exceeded the maximum (40.00%)

-  Temperature -5.20°C below minimum (0.00°C)

At the same time, the device card is framed with a red border to attract attention. The banner and border disappear automatically once readings return to the acceptable range. Alarm thresholds are set separately for each device and are saved along with the rest of the card settings.

8. Calibration of the device

The "📄 Calibration" block at the bottom of the card allows you to select the active moisture meter calibration table:

- The icon in the upper right corner of the block shows the number of the table downloaded from the device;
- "Tables" - the total number of calibration tables stored in the device;
- The drop-down list contains all available tables with descriptions (loaded from the Tab-Descr.ini file).

To switch the table: start the device polling () , select the required table in the list and click “✓ Apply” - the command will be sent to the device via Modbus.

9. Auto-write data to CSV

9.1 For one device

The  button in the card header opens the auto-record dialog.

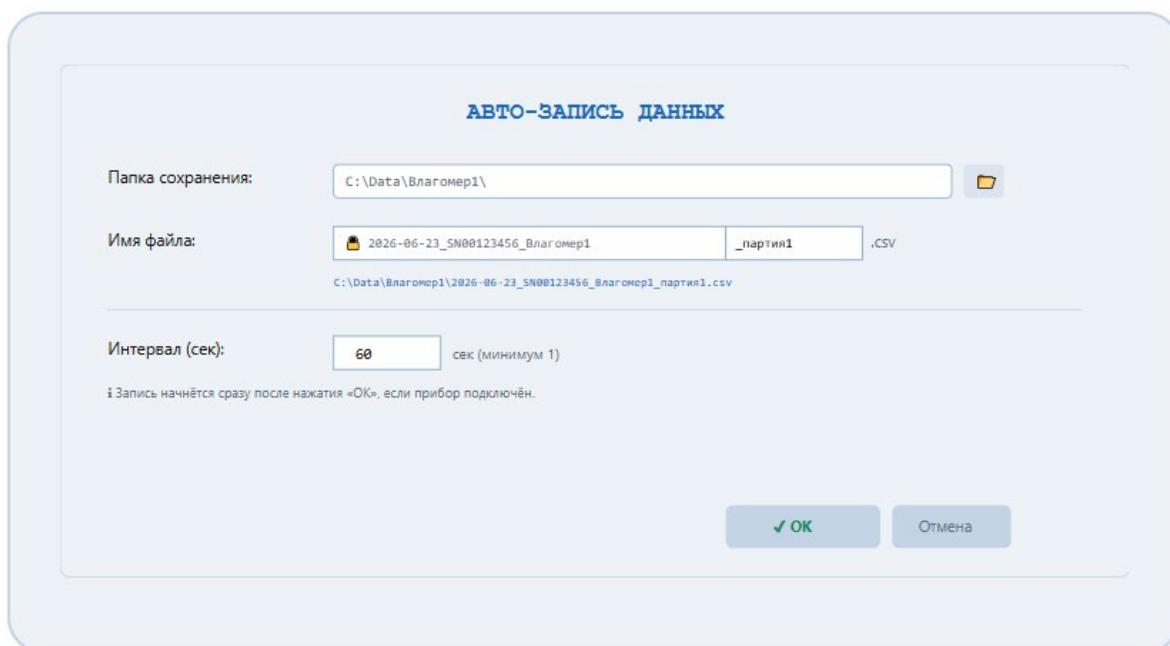


Fig. 3 — Data auto-recording dialog (diagram, light theme)

Dialogue fields:

- Save folder — where to write the CSV file (the  button opens the folder overview);
- File name - the fixed part (date, serial number, device name) is generated automatically and cannot be edited; you can add your own suffix in the field on the right, for example, _batch1;
- Interval (sec) — how often to write to the file (minimum 1 second).

Important: Auto-recording must always be re-enabled for each program session—it doesn't start automatically at startup, even if it was previously enabled. This is by design: if you change the device on a different port, recording won't start with the old (unrelated) serial number settings by mistake.

9.2. For all devices at once - the "Auto-record (all)" button

The "Auto-record (all)" button in the main window header opens the auto-record dialog for each configured device one by one, in the "Next → Next" wizard format:

1. The first device's auto-recording window opens. The button on the right is labeled Next → (1/N) instead of the usual "OK."
2. Check/set the path, file name and interval, click "Next →" - the settings are saved, the window of the next device opens.
3. On the last device the button changes to ✓ Done.
4. If you click "Cancel" at any step, the wizard stops; all already confirmed devices retain their settings, and the remaining ones are skipped.

Tip: This mode is convenient when you need to quickly check or reconfigure the auto-recording paths for all moisture meters before starting a measurement session, without opening each card one by one.

10. Event log

The  button in the card header opens the event log for a specific device.

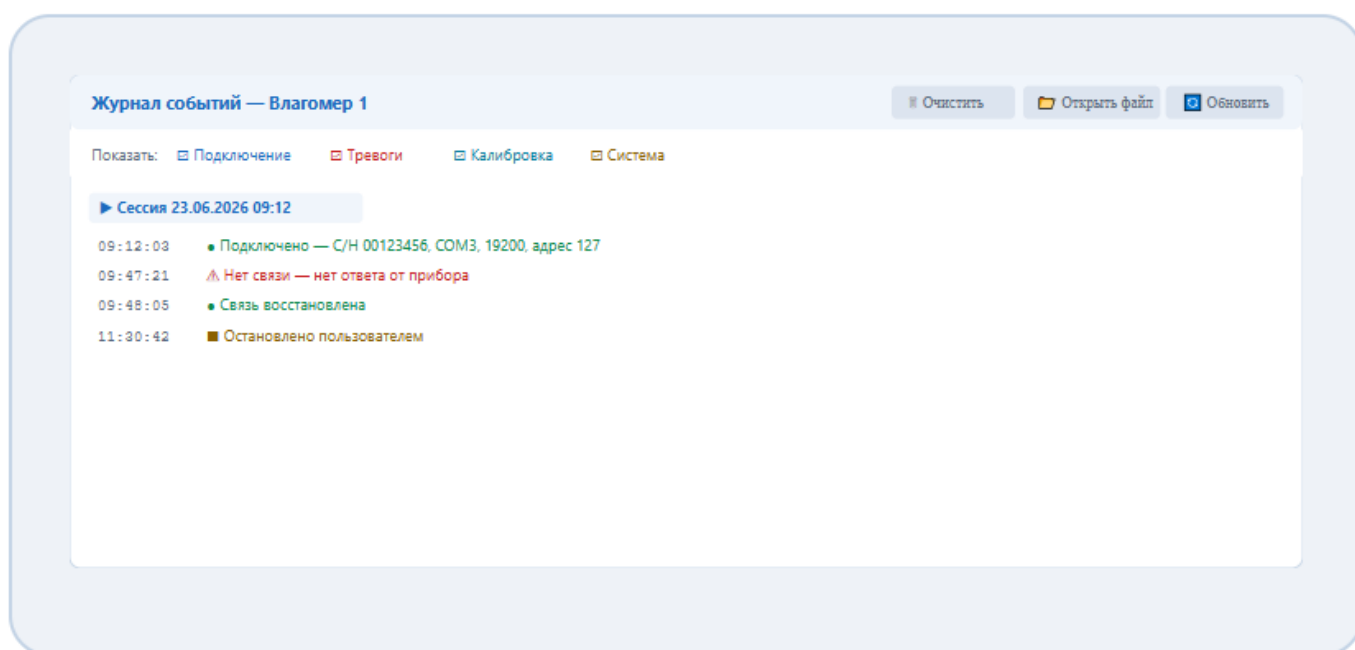


Fig. 4 — Device event log (diagram, light theme)

The journal records:

- session start (date/time, serial number, COM port, speed, address),
- successful connections, connection losses,
- Modbus polling stops and errors.

The filters at the top (Connection / Alarms / Calibration / System) allow you to display only the relevant event categories. The log is physically stored in the SWLite Log.md file next to the

program—the "📁 Open File" button opens it in a text editor, and the "🗑 Clear" button deletes the log file.

11. Program settings

The "⚙ Settings" button in the main window header (hotkey F4) opens a configuration dialog with the following tabs: "⚙ General" and one tab for each device.

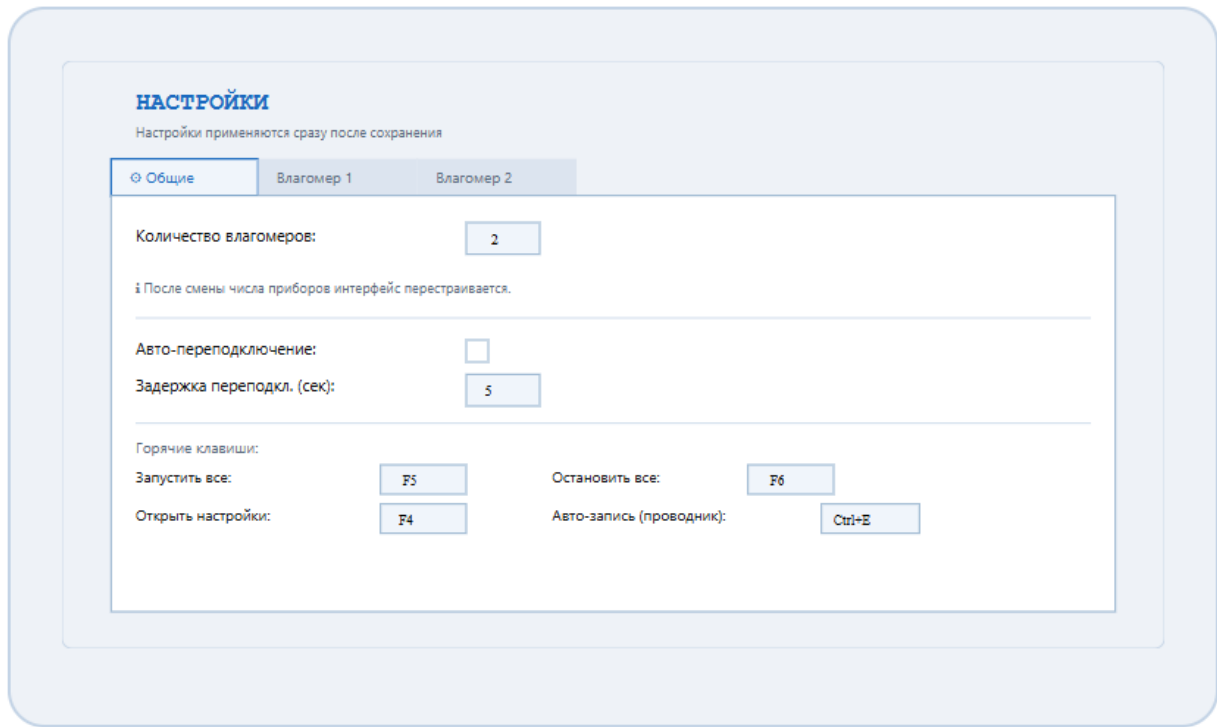


Fig. 5 — Settings window, General tab (scheme, light theme)

11.1. Tab "⚙ General»

- Number of moisture meters (1–8) — after saving, the interface is rebuilt, all active connections are stopped;
- Auto-reconnection - if the connection is lost, the device automatically tries to reconnect after a specified number of unsuccessful polls in a row (the "Reconnection delay" field);
- Hot keys - reassign keys for basic actions (format: F1..F12, Ctrl+X, Alt+X and their combinations; an empty field disables the key);
- A block with a QR code and a link to the manufacturer's website.

11.2. Device tab

For each device there is a separate tab with the following fields:

Field	Meaning, explanation
Name of the device	Displayed in the card header on the main screen
COM Port	USB to RS485 converter port; list taken from system
Speed (baud)	Normal value: 19200 Possible values: 9600, 14400, 38400, 57600, 115200

Stop bits	Factory setting: 2
Address	Modbus Slave ID of the device Factory setting: 127
Humidity - lower/upper limit	Alarm thresholds for W (%); also Y-axis boundaries of the graph
Temperature - lower/upper limit	Alarm thresholds for T (°C); also Y-axis limits of the graph
Auto-write (CSV path)	File path; an empty value disables auto-recording
Recording interval (sec)	How often should I write a line to a CSV file?

Click “**✓ SAVE AND APPLY**” – all settings are written to the program configuration and take effect immediately.

12. Viewing and analyzing auto-recordings

The "Auto-Record" button in the main window header (hotkey Ctrl+E) opens a separate window for viewing and analyzing CSV files saved by the auto-record function.

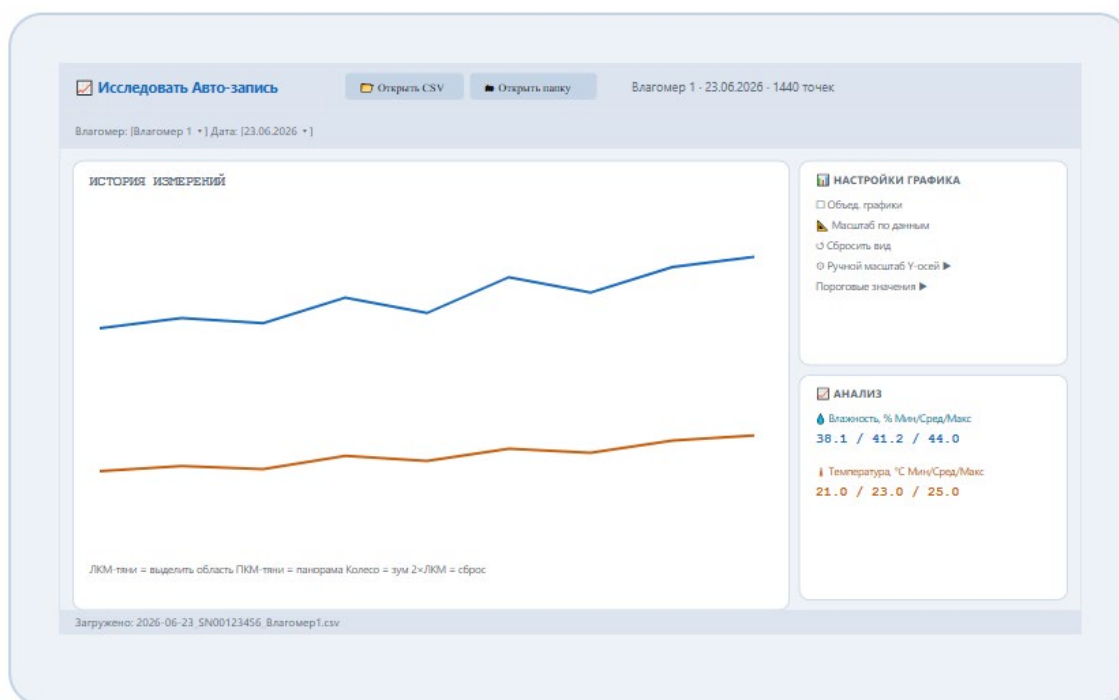


Fig. 6 — Auto-recording explorer (diagram, light theme)

- Open CSV – upload one specific file;
- Open Folder — scans the entire folder; the "Moisture Meter" and "Date" filters appear for switching between found files;
- Drag & Drop - you can simply drag a file or folder into the window;
- Comparison of periods - overlay data from several dates or several devices simultaneously on one graph (each period has its own color);
- Graph control: LMB-drag to select an area for zoom, RMB-drag to pan, mouse wheel to zoom along the X axis, double-click to reset the scale.

13. Design theme

The  / ☾ button in the main window header (hotkey: Ctrl+T) toggles between dark and light themes. The choice is saved and applied automatically the next time you launch the program. Dark theme is convenient for long-term observation and low-light conditions; light theme is for printing and working in bright light (as in this tutorial).

14. Hot keys

Key	Action
F5	Run a poll of all devices
F6	Stop polling all devices
F4	Open Settings
Ctrl+E	Open Auto-Record Explorer
F1	Launch interactive training
Ctrl+T	Switch the theme

All keys can be reassigned in the section “ Settings” → “ General” (section 11.1).

15. About the program and contacts

The "Properties" → "About" menu opens a window with the program version, description, manufacturer information, and a QR code for quickly saving the contact to your phone.

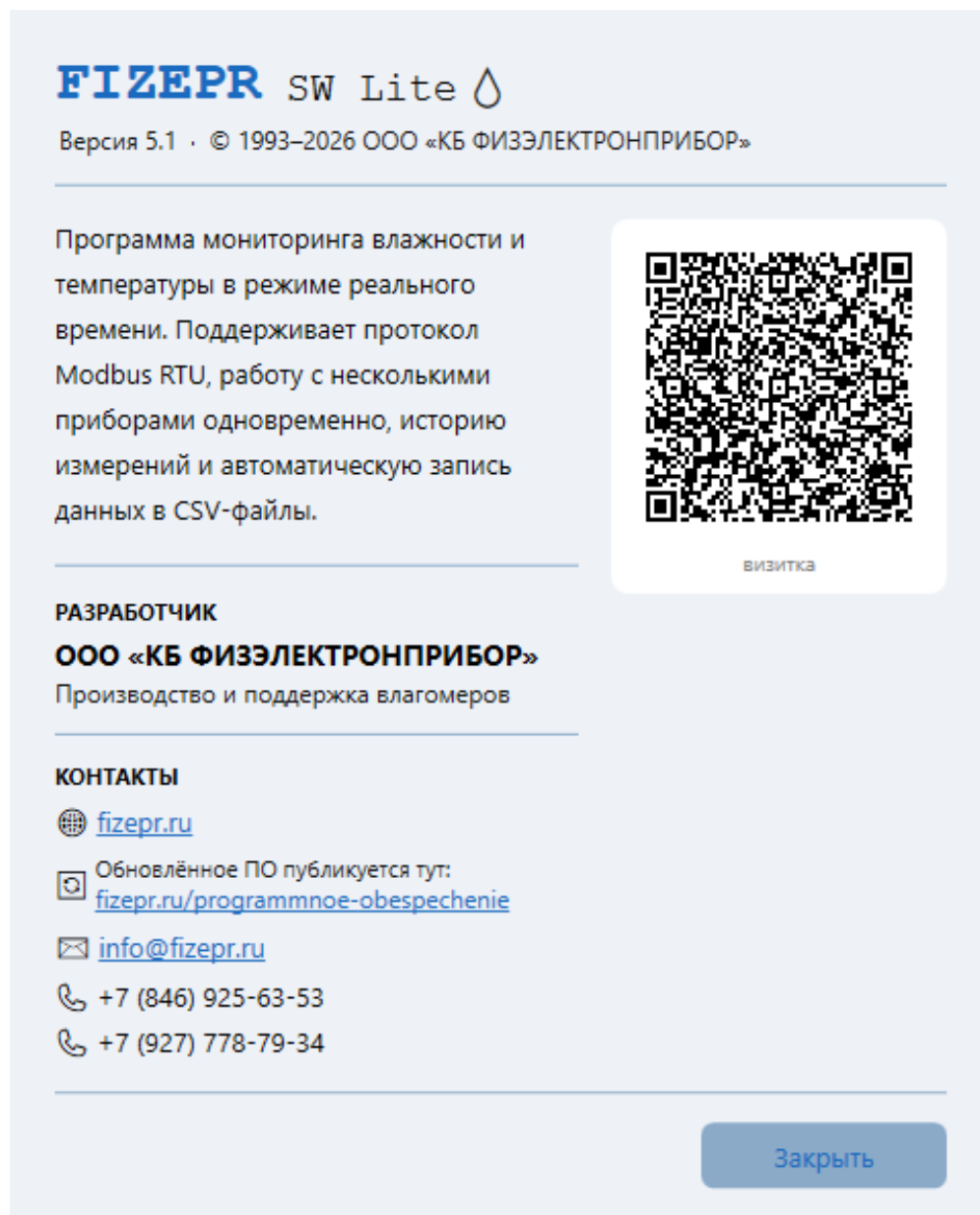


Fig. 7 — About the program window (diagram, light theme)

Props	Meaning
Manufacturer	LLC "KB FIZELECTRONPRIBOR"
Website	fizepr.ru
Software updates	fizepr.ru/programmnoe-obespechenie
Email	info@fizepr.ru
Phone 1	+7 (846) 925-63-53
Phone 2	+7 (927) 778-79-34

Tip: If your company information changes (website address, phone number, email), the current version of the "About" window will be updated when you install the new version of the program.

16. Solving typical problems

Problem	Possible cause and solution
The status "NO CONNECTION" immediately after starting the survey	Check: the correct COM port is selected; the device is physically connected and turned on; no other program (for example, another instance of SWLite) is occupying the same port; the Modbus baud rate and address match.
You can't select a COM port in the settings.	The port is already open by a running poller. Click "■ Stop" before changing the port settings.
Auto-recording does not start when the program is launched.	This is normal behavior: auto-recording must be enabled manually in each work session (see section 9.1) - this protects against recording data under the old serial number after changing the device on the port.
The serial number does not appear in the card header.	The serial number is only read after a successful connection to the device. Start the poll () and wait for the "CONNECTED" status.
The auto-recording dialog doesn't open when you press the  button on the card.	The separate  button requires a pre-read serial number for the device—connect to the device first. The "Auto-Record (All)" button in the window header, on the other hand, doesn't require a serial number and is immediately available.
The card flashes a red frame / shows an alert banner	The readings exceeded the thresholds set in "  Graph Settings" → "  Threshold Value" or on the device's settings tab. This is not a program error, but a signal of a real deviation in the measured value.
You need to repeat the interface training.	"Properties" → "  Complete training" in the main window header, or press the F1 hotkey.