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SOFTWARE OPERATING INSTRUCTIONS

for

SCHRS

Operating instructions for SCHRS software, version 1.32

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CE

Spis treści

1 IMPORTANCE OF THE USAGE INSTRUCTION

In case of any doubts regarding interpretation of this usage instruction, please contact directly with the manufacturer.

We look forward to hear from our users about any suggestions, opinions and critical remarks. All suggestions and opinions can be submitted by telephone or in written form. This will help us to make this instruction more friendly for our users, including their request and requirements.

The device, to which this instruction is attached contains impossible to remove potential threats for peoples and material properties. Therefore, each person who operates this device or performs any activities connected with operation and maintenance of this device must be properly trained and familiar with potential threats generated by this device.

Each user of this device must carefully read, understand and observe all usage instruction, especially guidelines regarding safety.

In this instruction are used units of the physical magnitudes and their writing methods according to the Ordinance of the Minister of Economy, Labour and Social Politics of May 12, 2003 regarding legal measurements units (Journal of Laws, No. 103, item 954). All units not regulated by this Ordinance (especially regarding information values and transmission rates) are used according to recommendation of the National Institute of Standards and Technology (http://physics.nist.gov/cuu/Units/index.html).

2 Purpose of the software

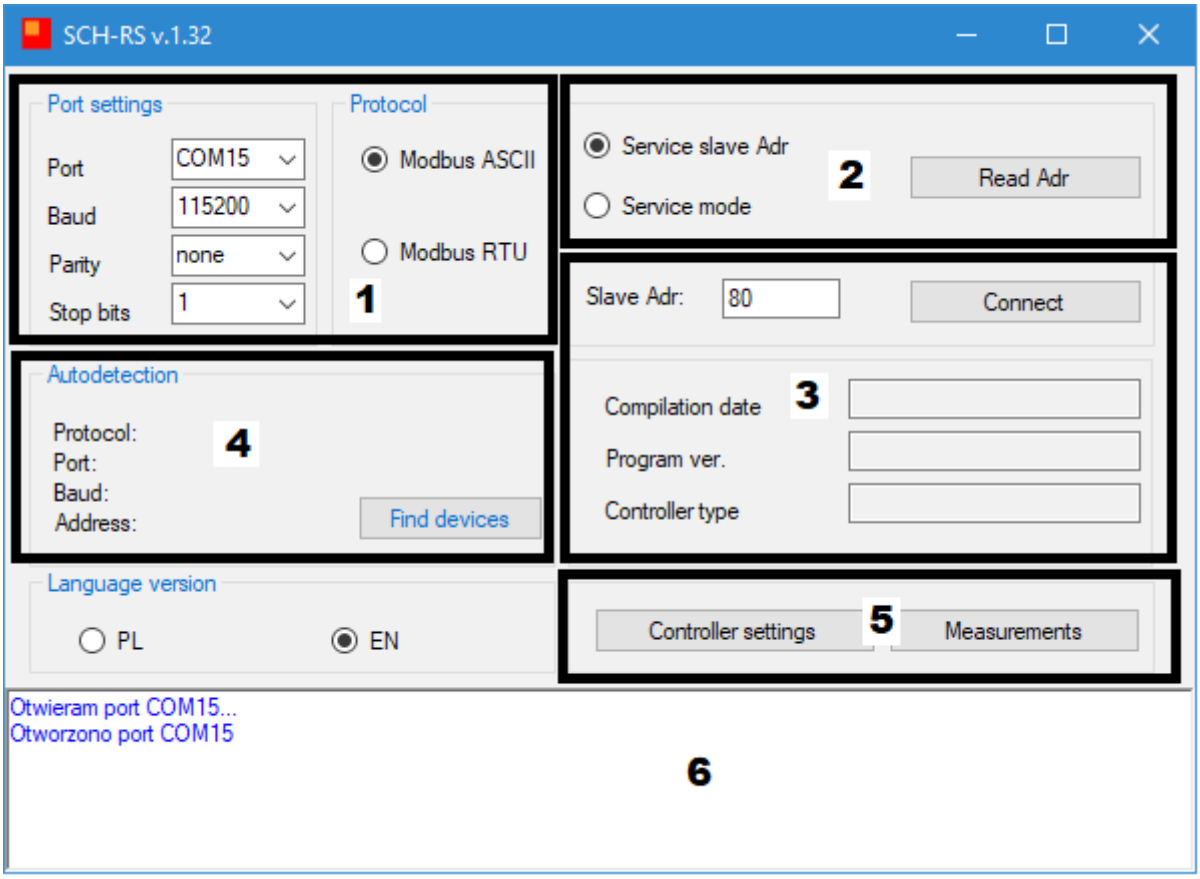
The **SCHRS** software is designed to support synchronism-check relays of the type: SCH-1, SCH-2 and SCH-3, as well as synchronoscopes of the SMV-1 type.

The following operations can be carried out with this software

- read and modify the **slave** address of the device,
- read device information (compilation date, software version No., automation device type),
- read and modify controller settings (including transmission rate and protocol),
- calibrate controller measurement circuits,
- ad "online" measurements: voltages and frequencies of input signals, phase difference and logical status of conditions under control.

3 Program description

Main window of the program

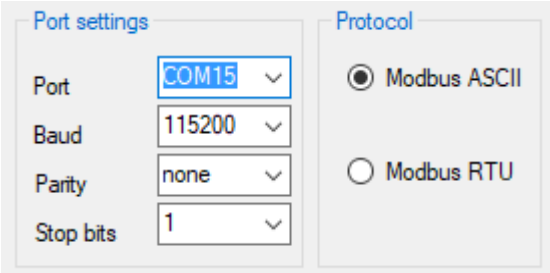


Rys.1 The main window of the program

The main window of the program consists of the following elements:

1. **Program** settings of transmission parameters.
2. The button for reading the **slave** address (by means of a servicing address or servicing mode).
3. The field for selecting the slave **address** and reading controller-related information.
4. Controller auto-detection field.
5. Controller settings and Measurements buttons.

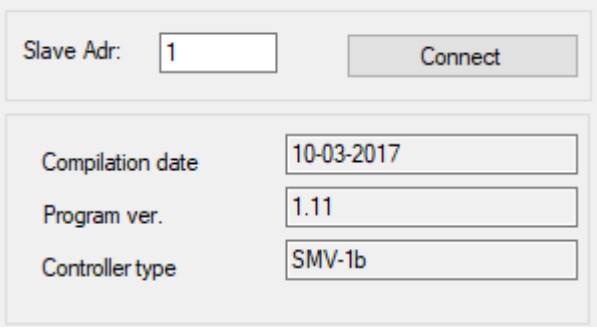
3.1 Program settings of transmission parameters



Rys.2 Port COM settings

In this window, the user selects a PC **Com port**, which the controller is to be connected to, the transmission rate of communication with the device (standard value: 19200 Bd) and the protocol type: MODBUS ASCII or MODBUS RTU. If the user does not remember controller settings, the **auto-detection** option can be used.

3.2 Selecting the slave address and reading controller-related information

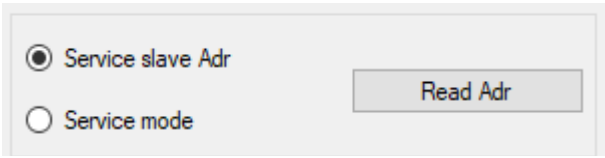


Rys.3 Reading controller-related information

If correct software settings have been selected, controller-related information should appear in the relevant fields, once the correct **Slave address** of the device (within the range between 1 and 247) is typed in and the **Connect** button is pressed. If the controller does not

respond, software settings may be configured incorrectly or the **Slave address** of the device is not correct.

In such case, one can try to read the slave address over the servicing address or through the servicing mode. This mode is enabled with the switch located in the back wall of SMV-1.



Rys.4 Reading slave addres

This functions not available in the current version of SCH-x.

The **Find devices** button may be useful if it is impossible to communicate with the controller.

Rys.5 Finding devices

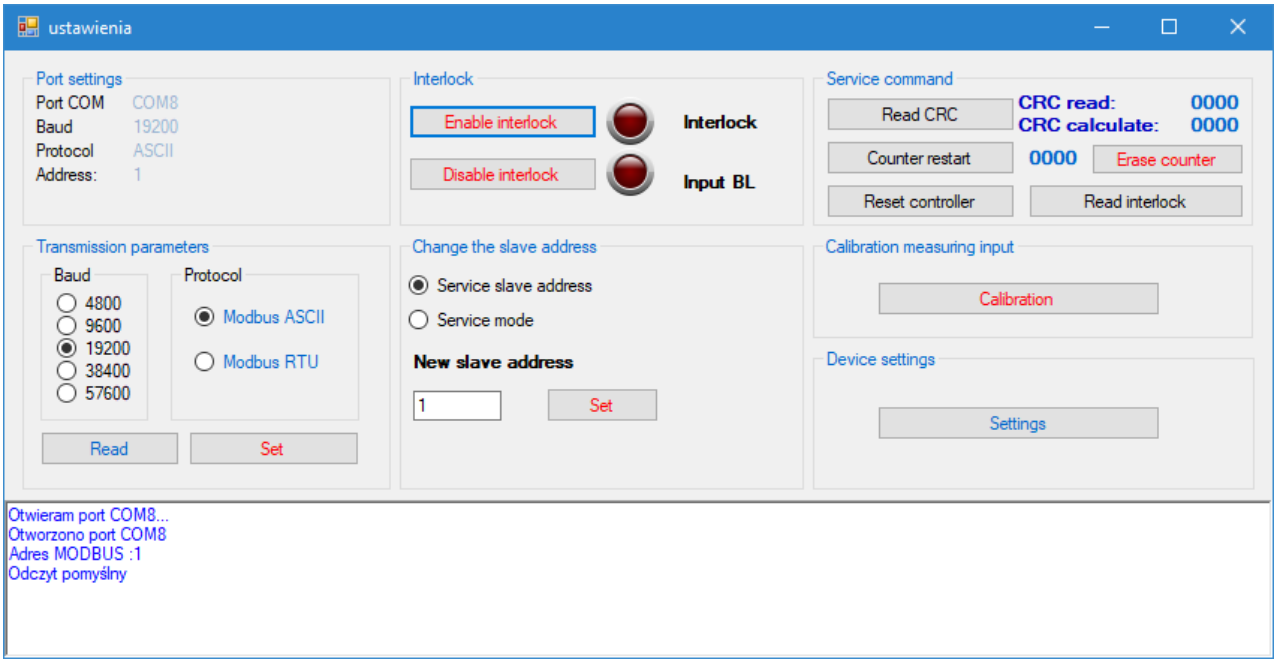
For instance, the user does not remember the protocol that was set in the device. In such case, the **relevant COM port of the computer** should be selected and the **Find Bd** button should be clicked. This will make the program check automatically, if a controller is connected to the port. If the device connected to the port starts to respond at any of the rates, the **transmission rate** and **protocol** fields will get highlighted in green and the fields with controller-related information will get automatically filled in.

3.3 Controller settings

Once communication parameters are correctly configured, the user can proceed to define controller settings.

Rys.6 Controller settings

The following options are available:

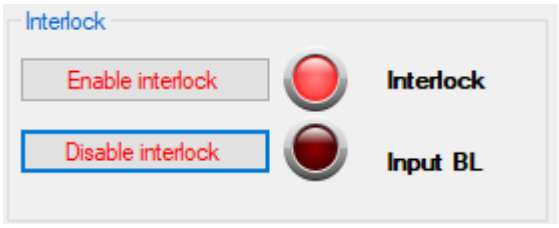


Rys.7 Controller settings

1. Modify transmission parameters of a controller
2. Change the slave address of an automaton
3. Read servicing-related information (checksum and restart counter)
4. Go to controller settings dialog box – **Settings** button
5. Go to controller calibration dialog box – **Calibration** button

All the operations described below will be permanently written into the controller only if a interlock signal is sent to the BL input of the controller.

The interlock can also be enabled by means of the "Enable interlock" button:

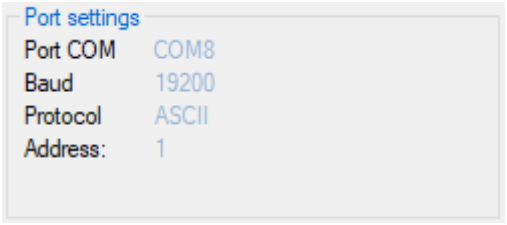


Rys.8 Interlock signal

If the interlock signal is not active, the program will signal with an appropriate message that the relevant command has not been performed.

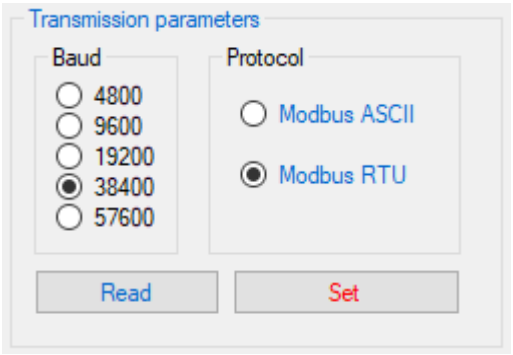
3.3.1 Modify transmission parameters of a controller

All parameter modifications apply to the controller with the **slave address** visible in the top part of the section



Rys.9 Port settings

Once the user has set the required transmission parameters, e.g.:



Rys.10 Transmission parameters

the **Set** button should be clicked.

To write the settings permanently, the user should enable the **interlock signal** (external signal or button).

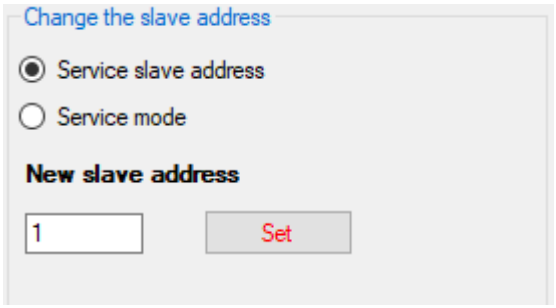
The controller will continue to respond to transmission at the "old" transmission rate and protocol, until it is reset

(e.g. by **powering** the device **down** or pressing the **Reset** button).

Upon resetting the controller, the user should close all windows/dialog boxes (Upon the restart operation, the controller recognizes **new transmission parameters** and it is necessary to set the **transmission** parameters in the program. It is easiest to do this by clicking the **Find Bd** button in the main window).

3.3.2 Change slave address of the controller

When a controller address is changed, communication with the controllers is carried out over address **254** (servicing address) or address **253** (servicing mode).



Rys.11 Change slave address of the controller

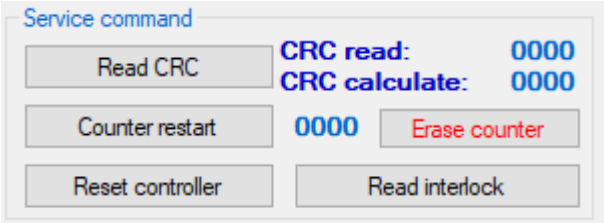
A new address should be typed into the above-presented section and confirmed by clicking the **Set** button.

Once the controllers carries the command out successfully, the new address will be visible in the top left-hand corner of the section . In case the **Set** button is clicked, when the **interlock** is **disabled**, the following message will be displayed:

No response to write EEPROM. Check interlock.

Then, the controller will change its address, but the former slave address will be restored, when the device is powered down (or reset from the program).

3.3.3 Servicing buttons

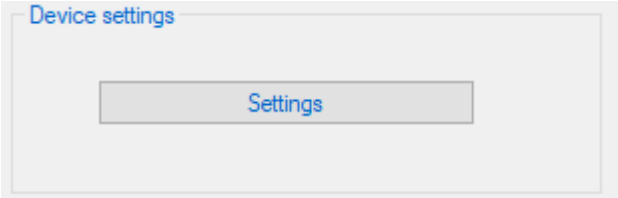


Rys.12 Servicing buttons

These buttons are used to read certain servicing-related data (e.g. software checksum). It is also possible to reset the automaton remotely (without powering the device down) or to read the restart counter value. The value displayed by this counter increments by 1 after each restart.

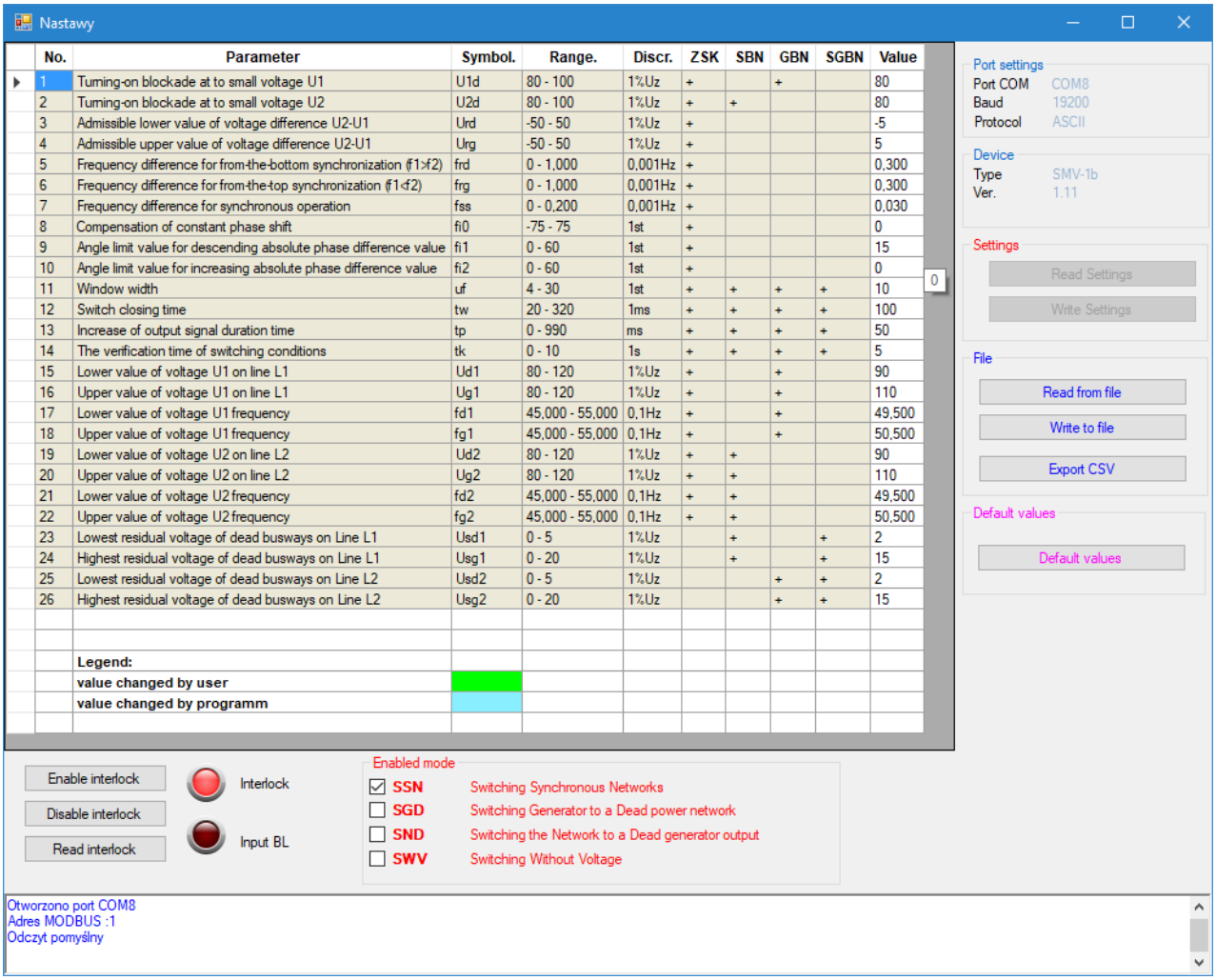
3.3.4 Settings

The **Settings** button is used to read and write controller settings.



Rys.13 Settings

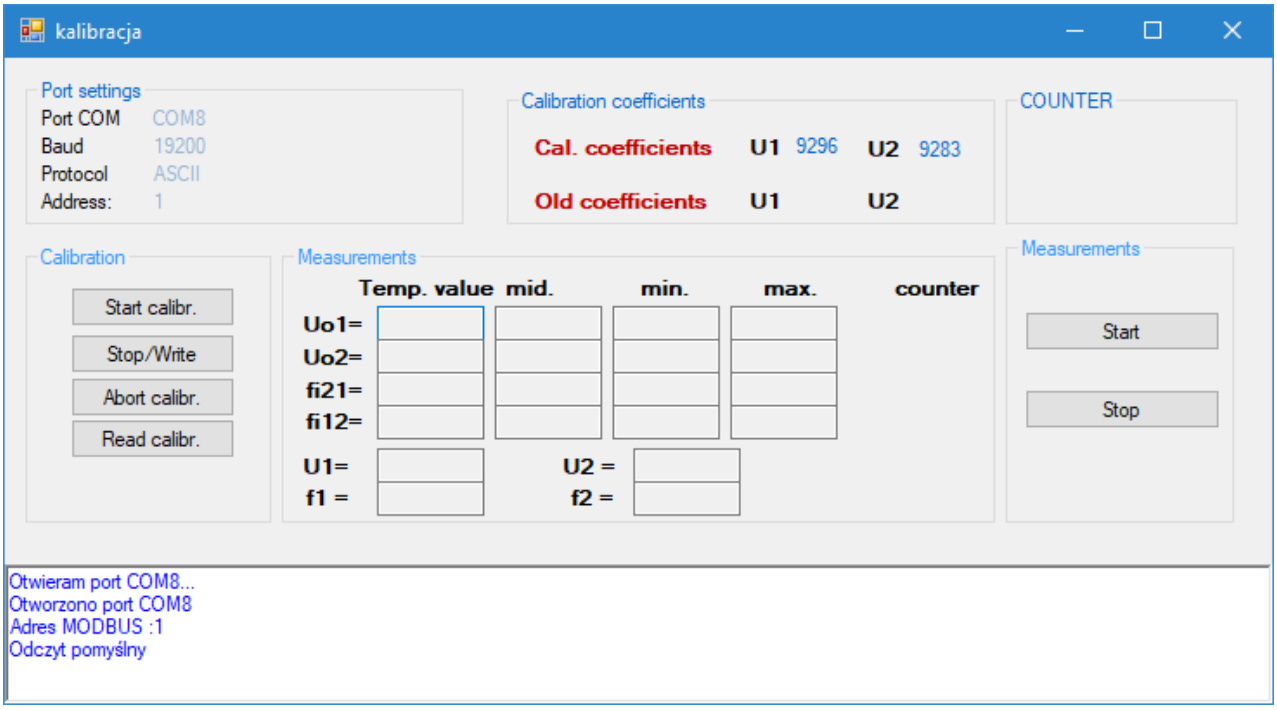
Settings can be saved permanently only when the **interlock** is **enabled.** Once the **Settings** button is clicked, the software displays a dialog box with the list of available settings:



Rys.14 Window settings

3.3.5 Calibration

The **Calibration** button (in the Controller settings window) is used to read calibration coefficients for the measurement circuits of the device. It is also possible to re-calibrate the device. To do so, one should ensure appropriate signals are sent to the measurement inputs.



Rys.15 Calibration

Calibration of voltage measurement circuits is carried out in the following manner:

- Apply the reference voltage of 100 V AC to the terminal clamps of both measurement inputs. Press the **Start calibr.** button.
- Wait one second or more.
- Press the **Stop/Write** button. At this moment, the calibration coefficients determined on the basis of measurements performed during the last 0.5 second will be written into the EEPROM. It should be ensured that the reference voltage is precisely 100 VAC during the last second before this command is sent.
- If the power supply voltage is turned off or the **Abort calibr.** button is pressed, the calibration coefficients will not be modified.
- Neither are the coefficients changed, when their established value considerably exceeds typical values. This can happen, when the reference voltage is incorrect or the measurement system does not operate correctly.

In this dialog box, it is also possible to carry out measurements of the constant component of measurement inputs, phase and frequency of the signal sent to measurement inputs.

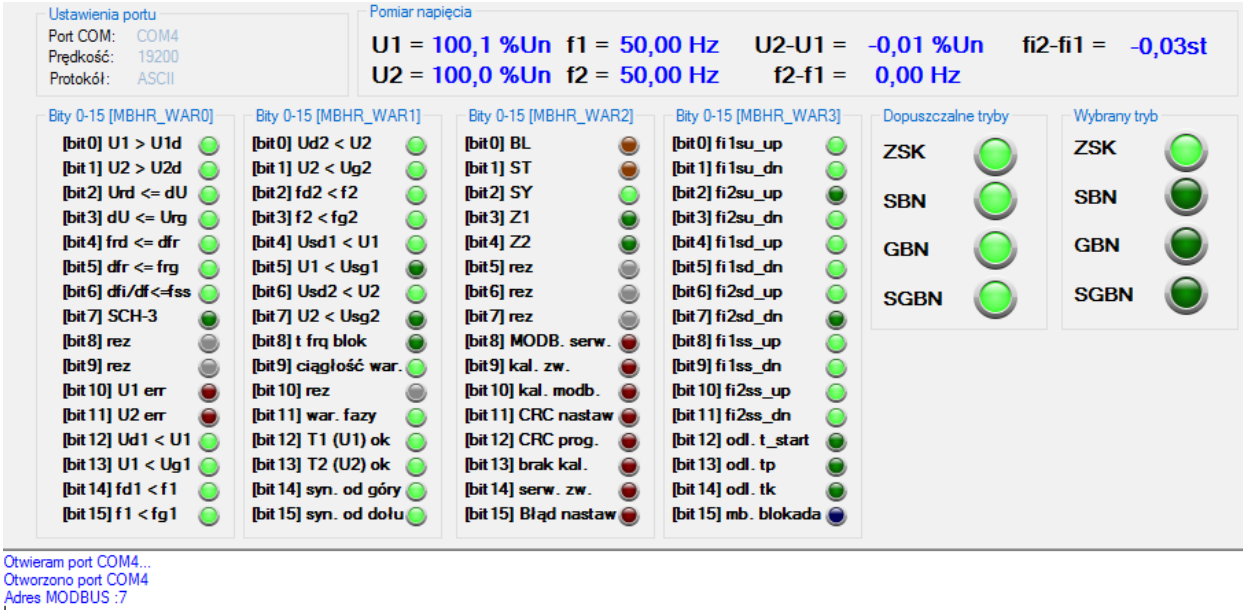
3.4 Measurements dialog box

Attention!

The Slave address field must contain a correct address. Otherwise, the program will report no connection with a controller.

Rys.16 Measurements

The **Measurements** button allows one to view measured values and the status of conditions under control. Attention. This dialog box is identical for all versions of supported devices. Therefore, some control lamps may be "superfluous" for a given version.



Rys.21 Measurements Window

Green means that the corresponding condition is met, while yellow means that the corresponding condition is not met. Energized inputs and outputs are marked in orange, while de-energized ones in gray. Errors are signalled in red. Countdown of intervals related to impulse sending operation are marked in blue. Temporary interlock – enabled with the relevant command over MODBUS or during a second after the appearance of the ST signal – is signalled in orange. Symbols are explained and details are provided in the section focused on the communication protocol in the controller documentation.