

"CH1-1022/2 control panel" Software Description and Operation Procedure

Description

"CH1-1022/2 control panel" software is intended for demonstration of CH1-1022/2 frequency standard control and status monitoring capabilities via the integrated serial port interface. Manufacturer constantly works on improvement of its product therefore your software version may slightly differ from the specified description.

Operation procedure

To proceed with operation the available CH1-1022/2 frequency standard should be energized and connected to a serial port of the PC where this software is planned to be used. The software (hereinafter referred to as the "application") does not need installation and may be run directly from the supplied CD. Minimum PC system requirements: 1 GHz processor, 1 GB RAM, 15 MB available hard disc space and CD-ROM drive, keyboard and Microsoft Mouse or its equivalent.

To start using your software launch the application by double clicking the mouse button or pressing the "Enter" key. If successful, then the main application window will open (Fig. 1).

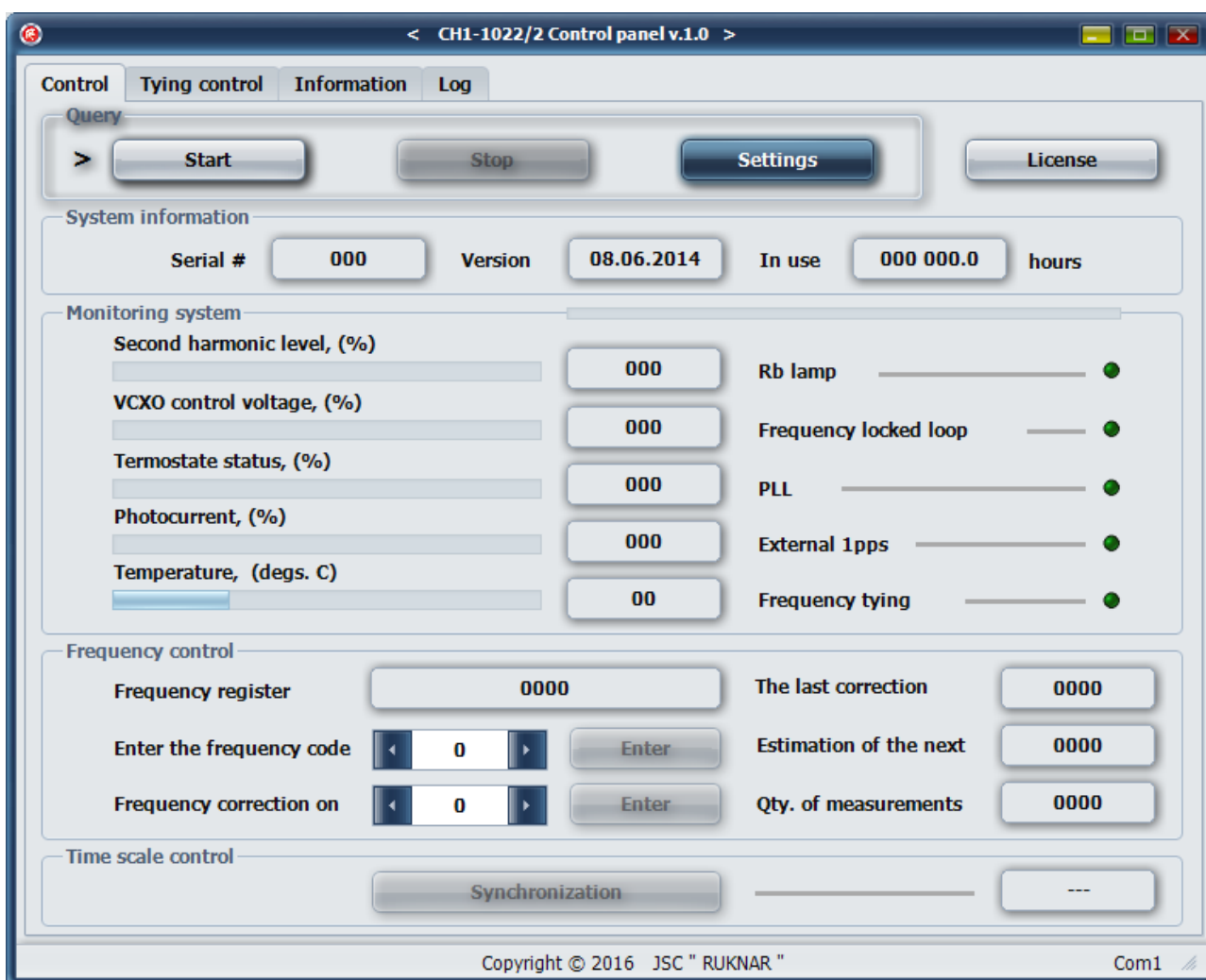


Fig. 1 Main application window

By default the English language interface will be launched and this document is dedicated exactly to description of the English language interface. Russian language interface operation

procedure is identical with the above mentioned one. To set up the Russian language interface press the "Settings" button in the "Control" tab and open modal window "Settings" (Fig. 2).

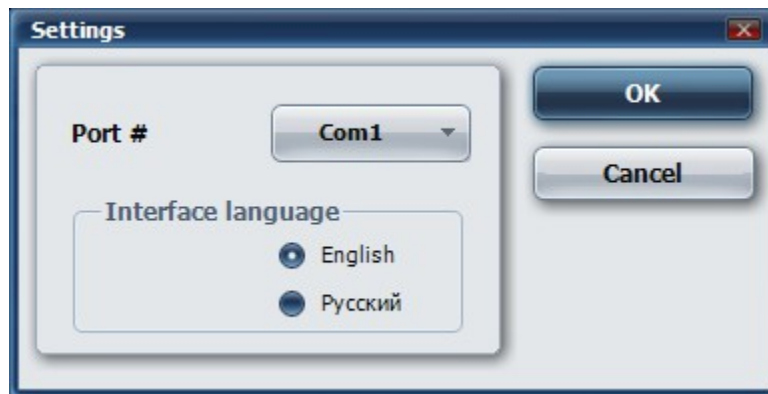


Fig. 2 Modal window "Settings"

Left click on item "Russian" in the "Interface language" field and then press "OK" button. "Settings" window will close and main application window will change as follows (Fig. 3).

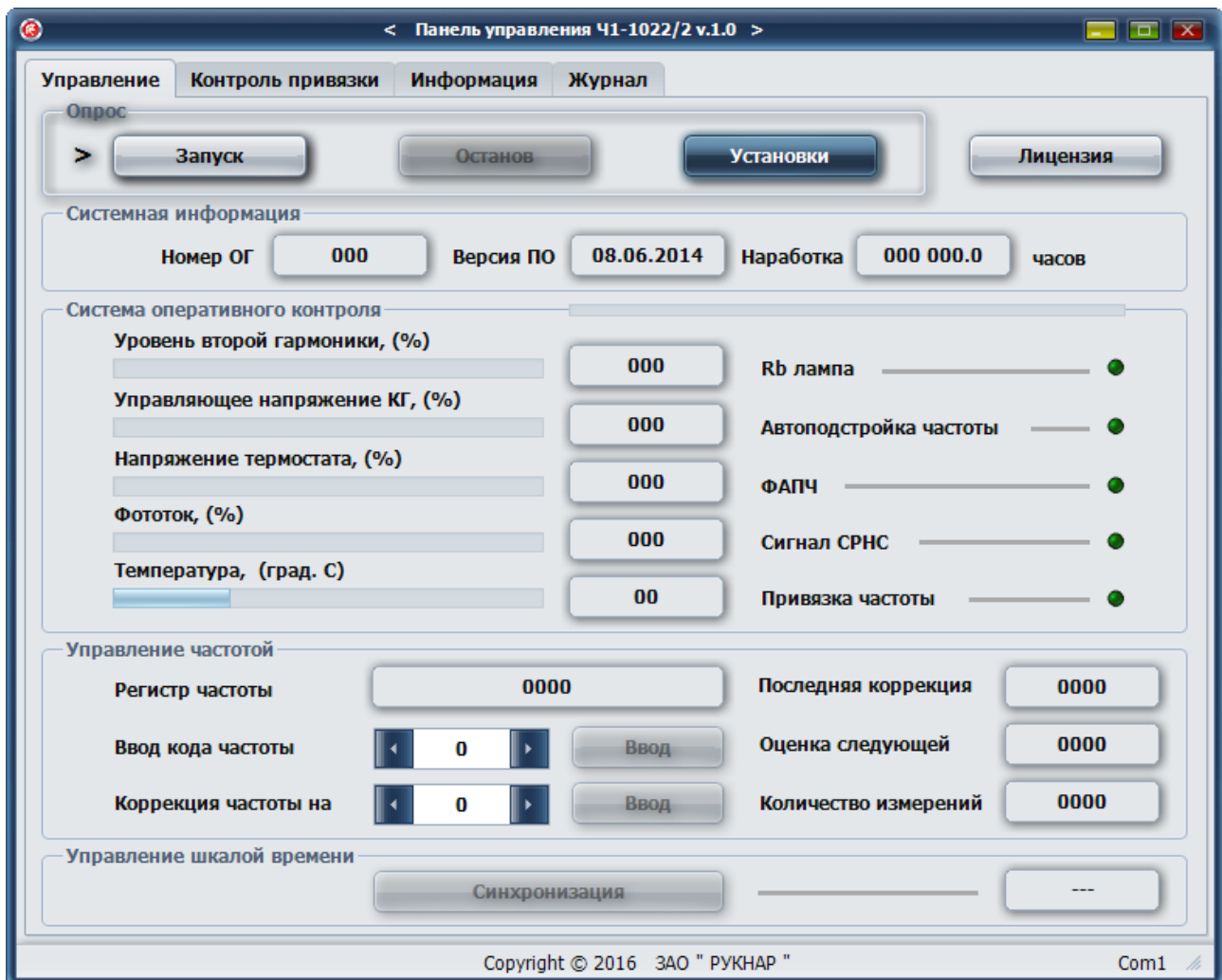


Fig. 3 Main application window with the Russian language interface

Main application window consists of the status bar and four tabs: "Control", "Tying control", "Information" and "Logs". "Information" tab contains reference data about interface parameters and CH1-1022/2 frequency standard command system. "Logs" tab represents a system log where all actions with the instrument performed by user via this application are being recorded. The log may be saved and exported into a text file at any time by pressing the button "Save the log to file". After pressing the button a standard system dialogue will appear and offer file name, inclusive of current date and time, along with the file saving location (Fig. 4). By default file saving location is identical with the catalogue where the application has been run from, so be careful when launching the software via the supplied CD.

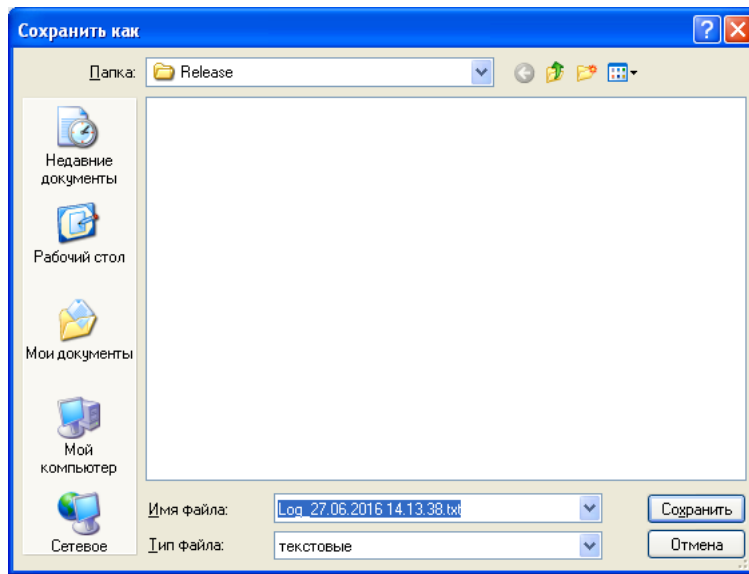


Fig. 4 Log saving dialogue

ATTENTION! Remember that this application is designed specifically for CH1-1022/2 instrument and does not support CH1-1022/1 and CH1-1022/3 versions. CH1-1022/1 and CH1-1022/3 models are supplied with their own version-compatible software.

Connection establishment

To configure the connection open modal window "Settings" once again and select the number of the PC serial port to which CH1-1022/2 frequency standard is connected in the "Port #." drop-down menu (Fig. 5).

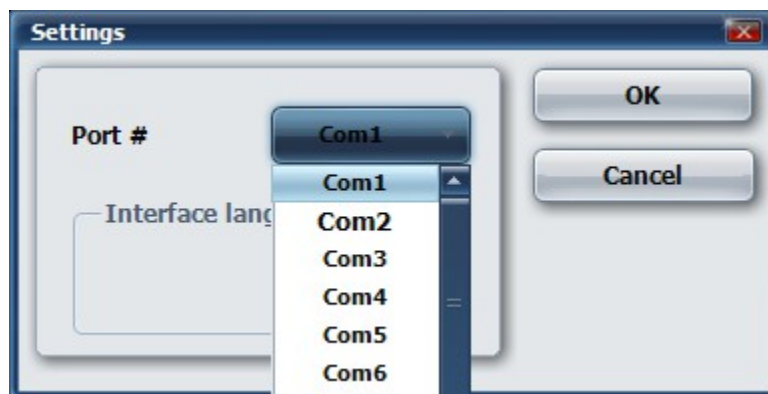


Fig. 5 Serial port selection

Press "OK" button and close the window. Selected serial port number will be displayed in the right-hand corner of the status bar. Press "Start" button in the "Query" field of the "Control" tab and launch connection with the instrument. Track bar located in the upper part of the "Monitoring system" field will change its state after completion of each "query-reply" operation. Unchanged state of the track bar within several tens of seconds is the symptom of some connection problems. In this case the corresponding modal alert window will appear (Fig. 6).



Fig. 6 Connection setup failure alert window

All display panels will be filled in with current instrument parameters in several seconds after connection establishment (Fig. 7). "System information" field shows instrument serial number, software version and current state of the elapsed hours indicator. "Monitoring system" field contains data provided by the instrument in-line check system used to track the state of instrument critical parameters. "Frequency control" field is intended for instrument frequency regulation and tying process control. In this context "Frequency register" panel is used to show current state of the instrument frequency register, and "The last correction", "Estimation of the next" and "Qty of measurements" panels are used to show the last correction value being the result of tying, evaluation of the next correction on the basis of current measurements and the number of current measurements respectively. Tying process data are displayed in the "Tying control tab" in graphical and tabular form (Fig. 8).

Clicking on "Tying control" tab graphs allows the information display mode to be changed (Fig. 9). "Array of measurements" table contains current cycle measurements data, where the least significant digit value is equal to 5 ns. "Array of corrections" table contains data on frequency corrections made as a result of tying since instrument power-on. Graphical and tabular data will be updated automatically. If necessary you can make a request for correction manually by pressing the "Query array of corrections" button. You can also reset the array by pressing the "Clear array of corrections" button, but keep in mind that this action results in reset of the array itself and not its tabular representation.

1pps time scale synchronization

1pps time scale will be automatically synchronized with external time scale pulses provided that an external scale is available on the instrument low-frequency connector. Synchronism will be automatically maintained within the range of $\pm 1\mu\text{s}$. If necessary synchronism may be restored by pressing "Synchronization" button in the "Time scale control" field. Successful completion of operation is indicated by "OK" message popping up in the right-handed part of this field on the display panel.

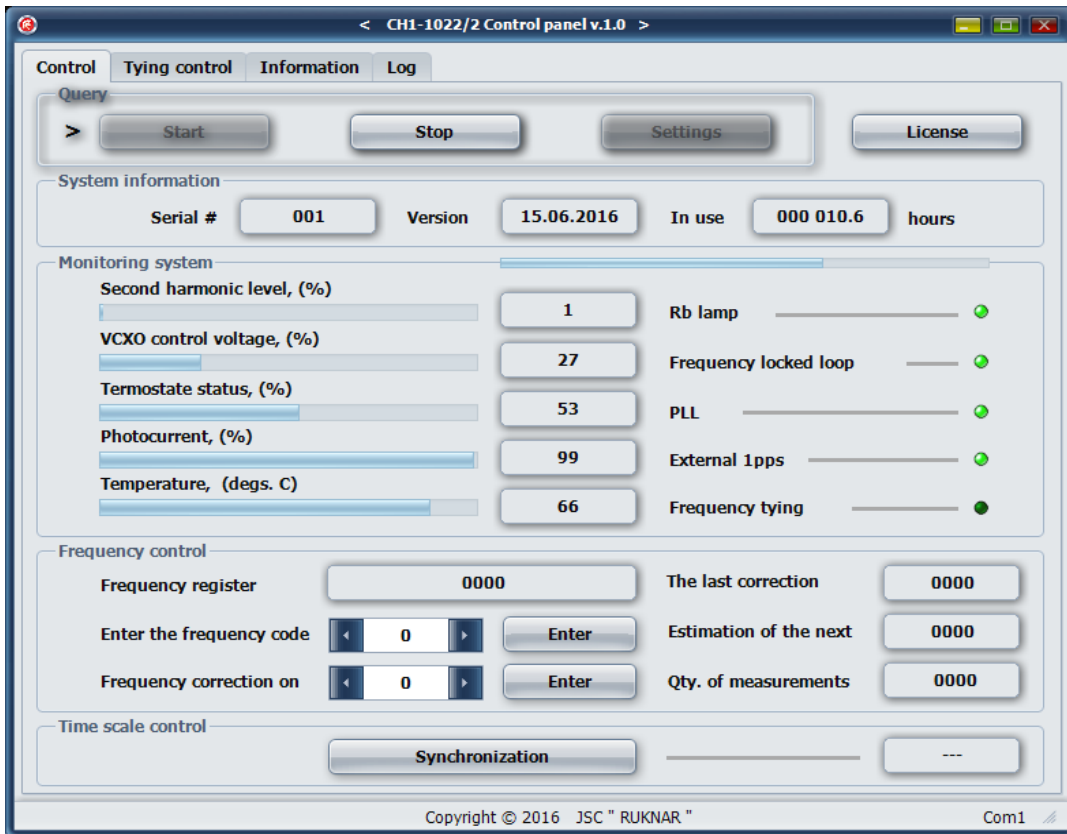


Fig. 7 "Control" tab after connection setup

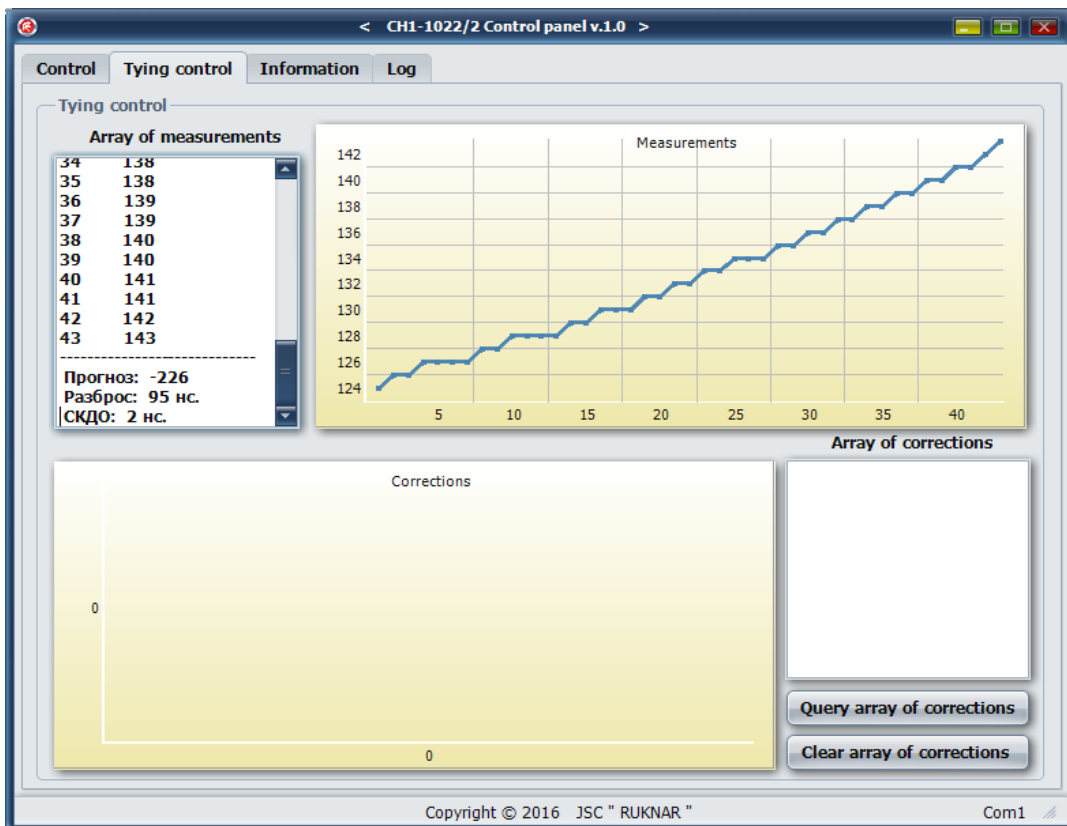


Fig. 8 "Tyling control" tab at the tyling process stage

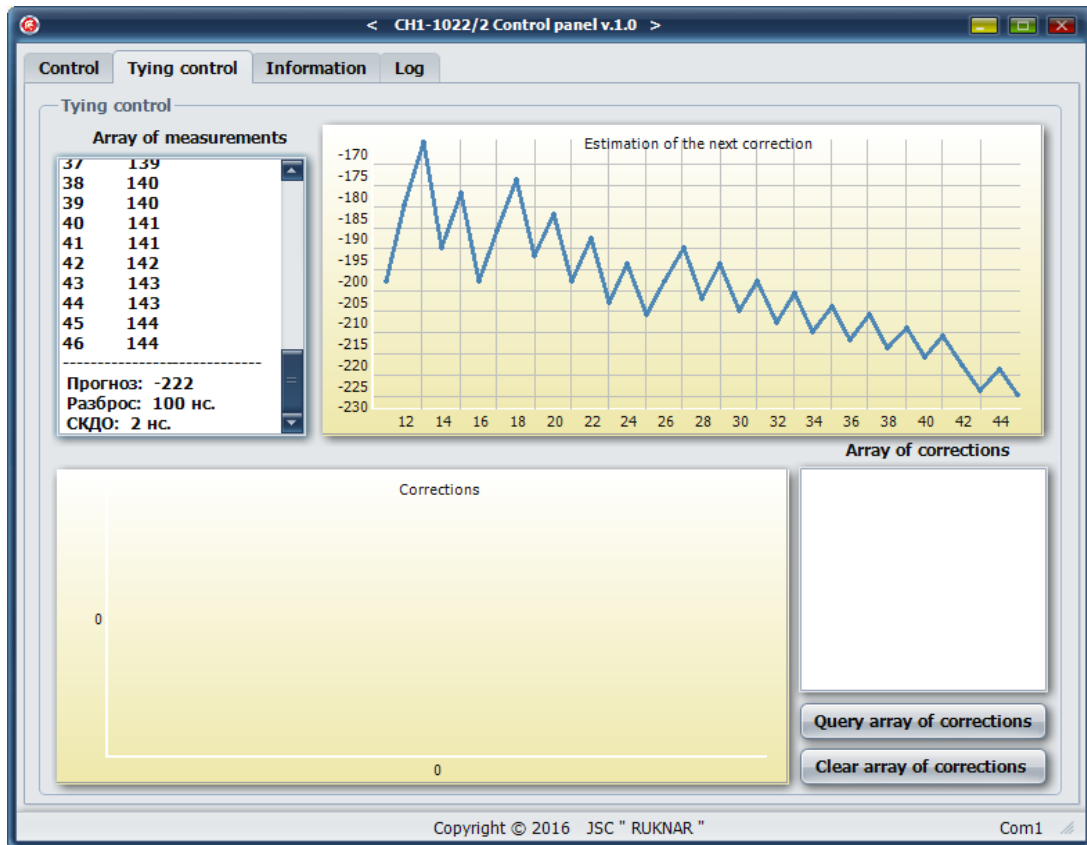


Fig. 9 "Tying control" tab at the tying process stage

Instrument frequency change

Instrument frequency may be manually changed in the "Frequency control" field either via direct frequency code entry into the frequency register or via modifying frequency register state by a certain value. Direct code entry is effected in the "Enter the frequency code" field. Enter numeric value in the range of -9999 to 9999 and press the "Enter" key to the right of this field. If an established connection is available entered value will be saved in the frequency register and the instrument will operate at a different frequency. Remember that the least significant digit value is equal to frequency change by $1 \cdot 10^{-12}$. Instrument frequency correction by a predetermined value is made in a similar way. Just enter correction value in the "Frequency correction on" field and press the "Enter" key to the right of this field. Entered value will be added or deducted depending on the digit in query and current frequency register value whereafter the instrument will operate at a different frequency. Automatic change of frequency register state is possible as a result of tying in which case you should remember that any frequency change via "Frequency control" field control elements leads to termination of the current tying cycle without correction and launching of a new one.

License agreement

To read the license agreement text press the "License" button in the "Control" tab and open "License" window containing the license agreement text and accept and reject buttons as well.

Connection termination

To stop operating the instrument with an active connection press the "Stop" button. Then the application may be closed as usual.