SPECTOR Sci-Tech LLC

Contents

IN-01m CONNECT
SOFTWARE APPLICATION FOR STRESS INSPECTION

Operation Manual

Personal computer requirements

Introduction



Fig.1. IN-01m and IN-02 metal stress indicator and scanner

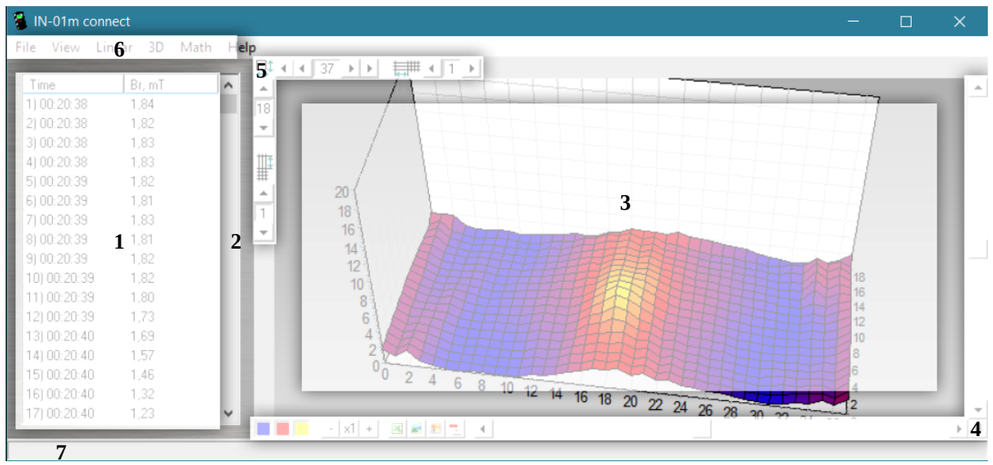


Fig.2 Main window of the IN-01m CONNECT application

1 – Data region, 2 – Slider for scrolling the data area, 3 – Workspace, 4 – Toolbar, 5 – Grid parameter controls, 6 – Main menu, 7 – Status bar.

(a) *(b)*

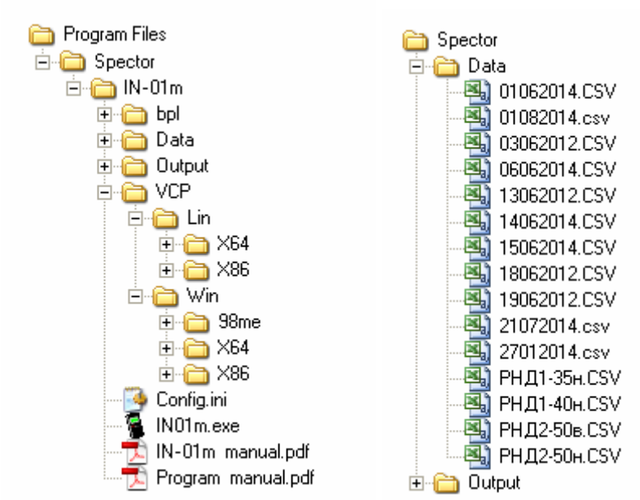


Fig.3. Directory structure of the IN-01m CONNECT software application
a – working directories, b – database

Program Files\Spector

Program Files\Spector\IN-01m

Program Files\Spector\IN-01m\bpl

Program Files\Spector\IN-01m\Data

Program Files\Spector\IN-01m\Output

Program Files\Spector\IN-01m\VCP

1. Installing the IN-01m CONNECT software application on your computer

start → programs menu

Run this program as an administrator

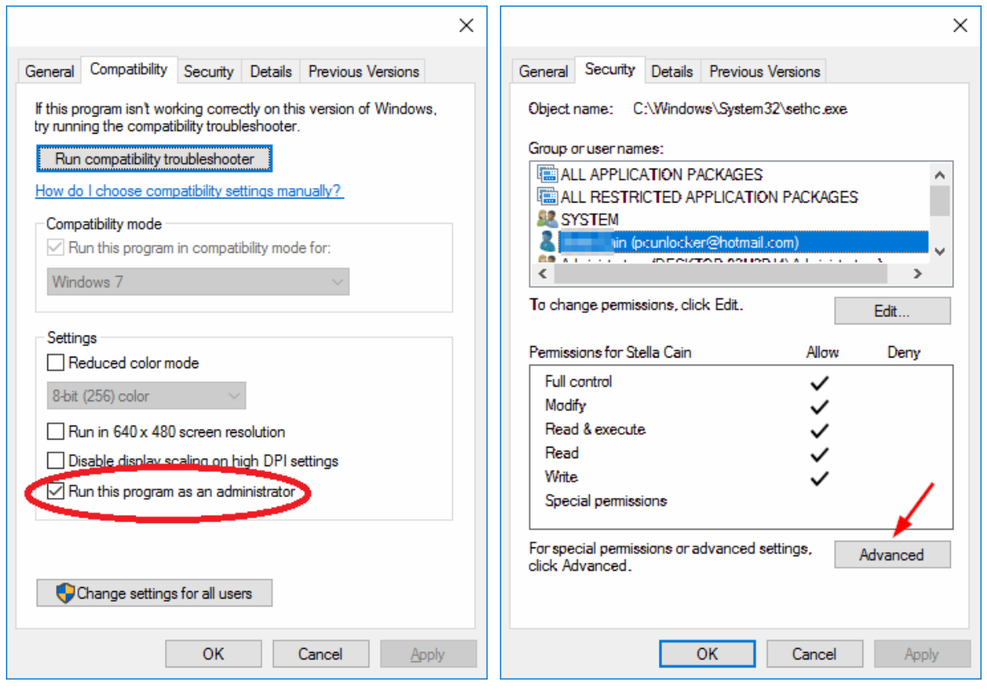


Fig4.Getting full access to system resources

2. Preparing to work

2.1. Installing the software driver for the metal mechanical stress indicator on a personal computer

Attention! Before connecting the metal mechanical voltage metal stress indicator to the computer, do not forget to turn on the power of the device! Connecting the device to a computer with no power will damage its electronic circuitry.

(a) *(b)*



Fig.5. Computer automatically detects the connected IN-01m metal stress indicator

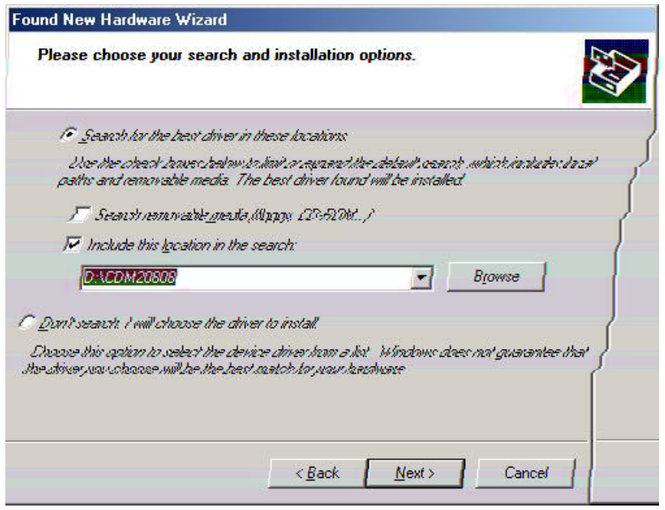


Fig.6 New hardware installation wizard window

Install from the specified location

Next

Attention! Do not disconnect the device from the computer while copying files! This can lead to serious system errors or failure.

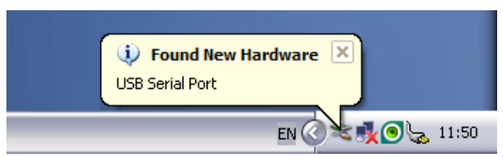


Fig.7. Computer automatically finds the virtual COM port

2.2. Connecting the metal mechanical stress metal stress indicator to a personal computer and performing software check

File – Receive data

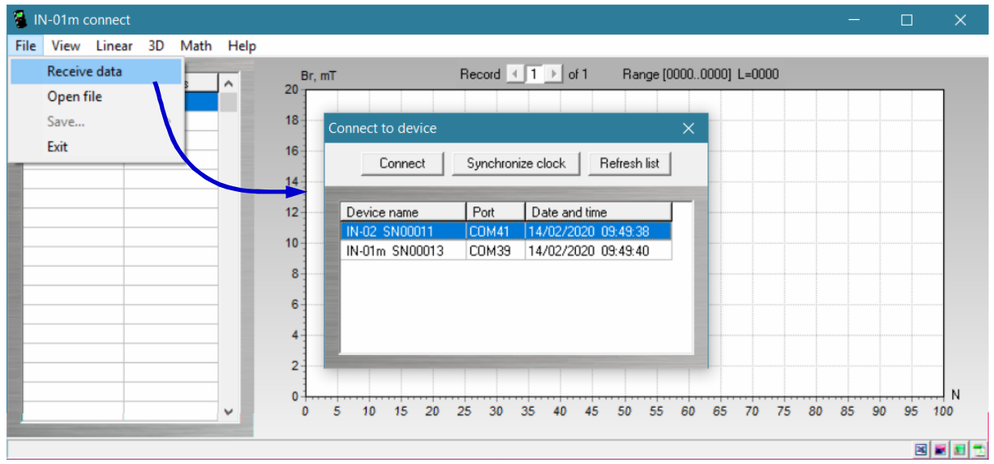


Fig.8. File – Receive data command opens the device selection window

Connect Synchronize clock Refresh list

Refresh list

(a) *(b)*

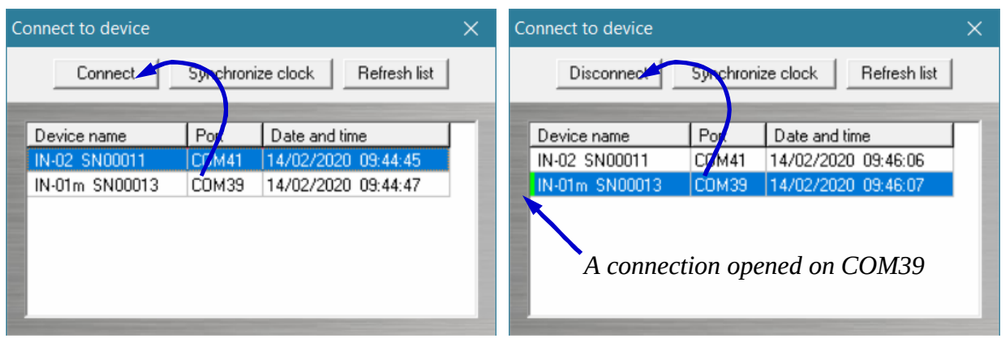


Fig.9. Opening and closing a connection to selected devices

Synchronize clock

Open *Close*

Attention! If there is a green check mark next to the metal stress indicator, you cannot disconnect its cable from the computer! This will cause the connection to fail. To safely disconnect, you must first close the established connection (Fig. 9b).

3. Working with the IN-01m CONNECT software application

3.1. Receiving and saving the measured data after metal stressed state inspection

File – Receive data

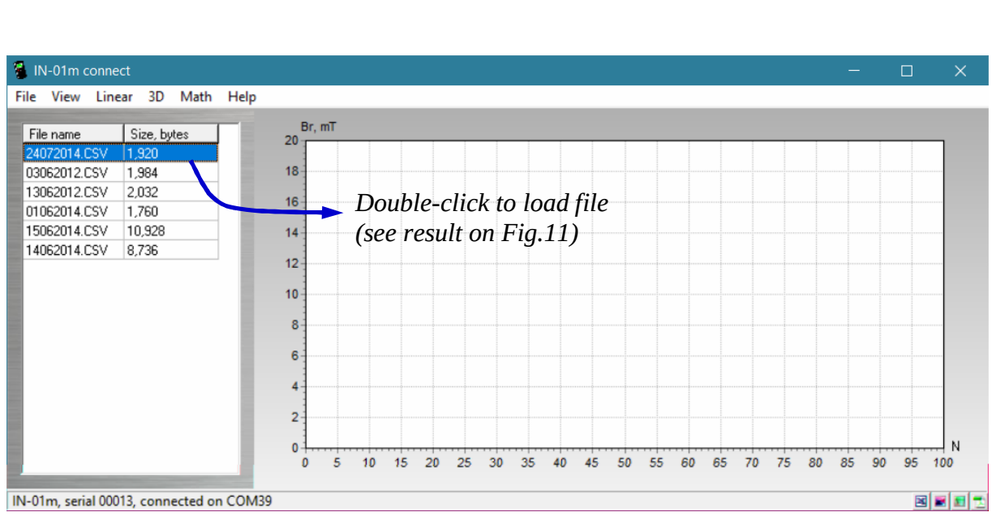


Fig.10. Main window of the IN-01m CONNECT application when the connection is open with IN-01m metal mechanical stress indicator

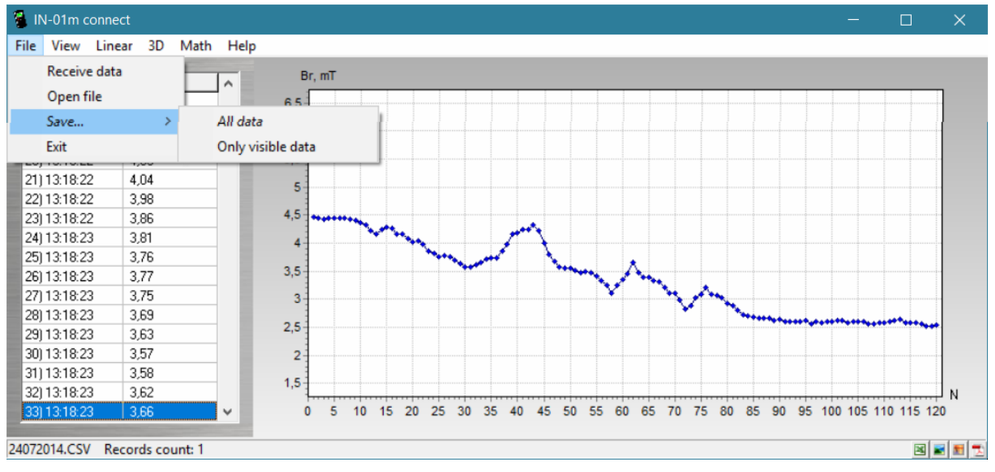


Fig.11. Saving downloaded file to your computer

File menu – save...

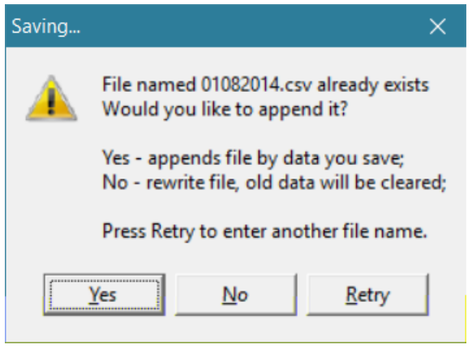


Fig.12. Options for matching file names

Insert separator

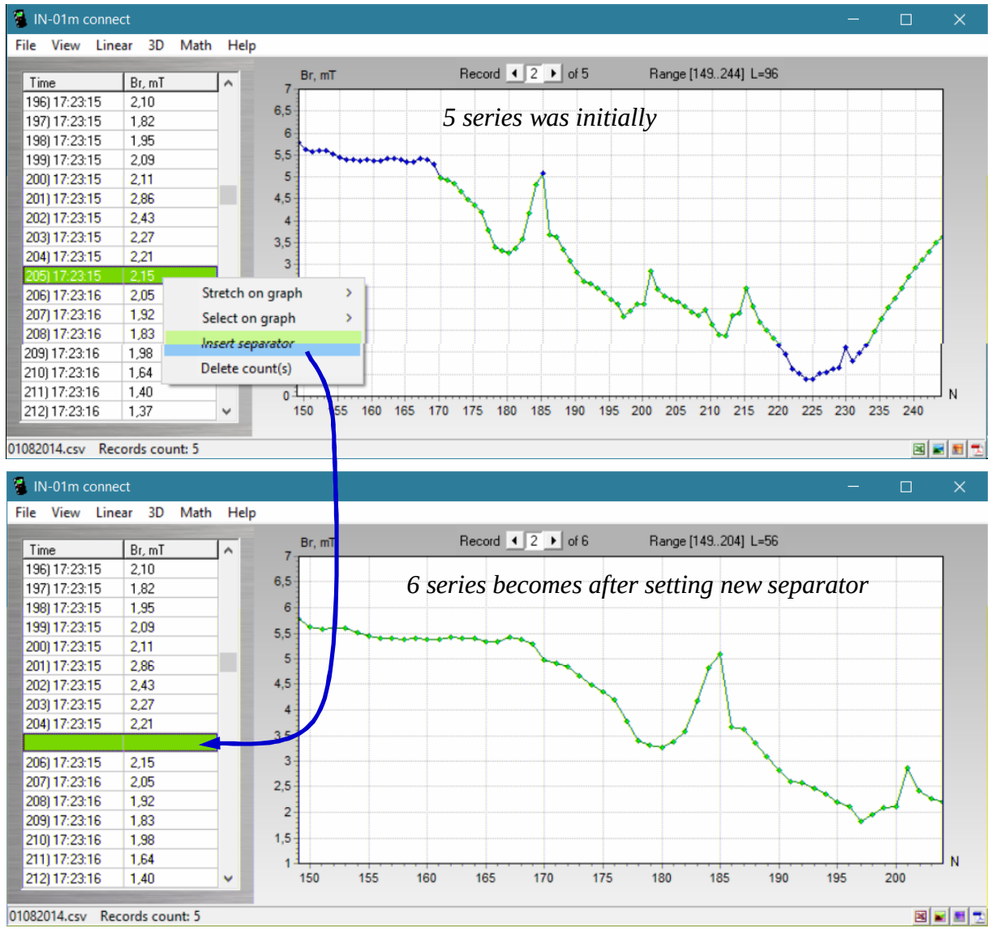


Fig.13. Setting the record separator manually

Delete count(s)

Return

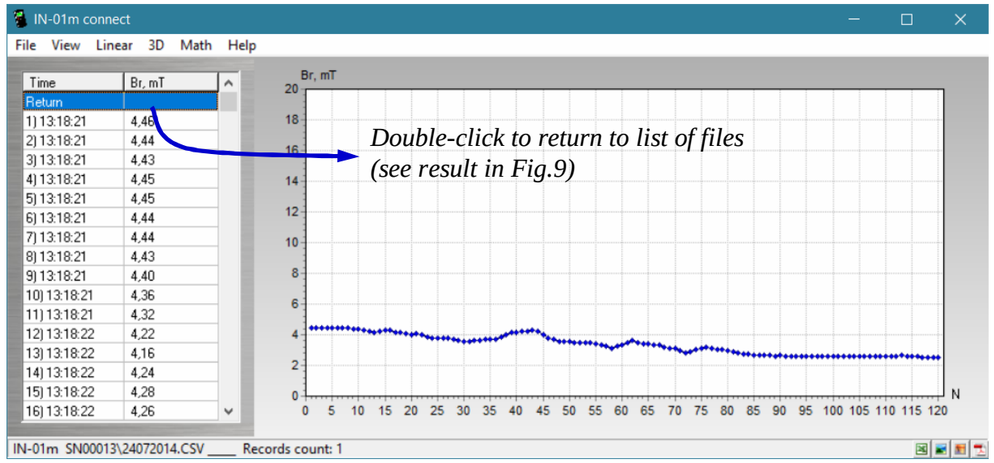


Fig.14. Return to the list of metal stress indicator files

Attention! **Before disconnecting the metal stress indicator cable from the computer, make sure that this connection is closed. To do this, click the *Refresh list* button, and after the green check box turns off (Fig.9), the device can be disconnected.**

Disconnect

3.2. Practical recommendations for organizing a computer database of results of metal stressed state inspection

Types of objects inspected	**Practical example**	**Storage method**	
		Built-in memory card of the metal stress indicator	**PC database**

Example 1.

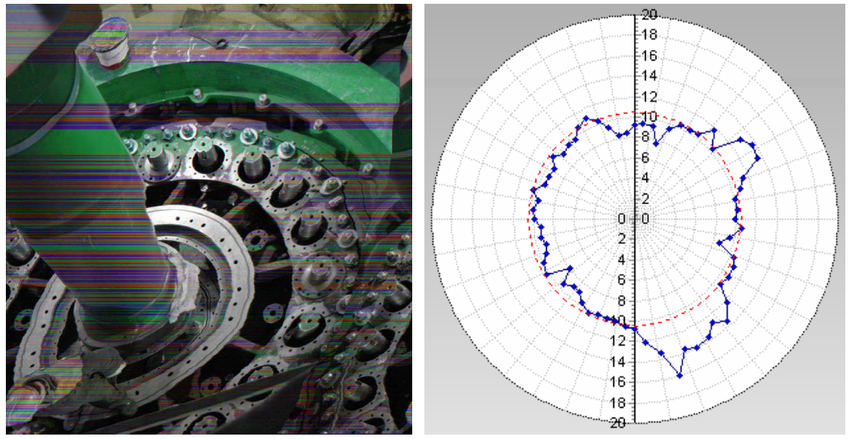


Fig.15. Example of results of magnetic inspection of the tightening force of group threaded connections for power equipment enclosures

Example 2.

Stop

Stop

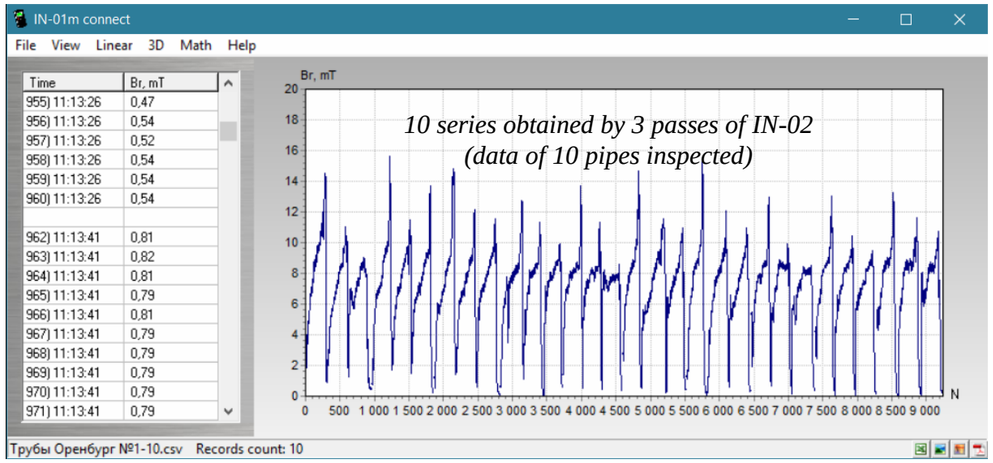


Fig.16. Measured data for metal stressed state inspection of 10 steel pipes

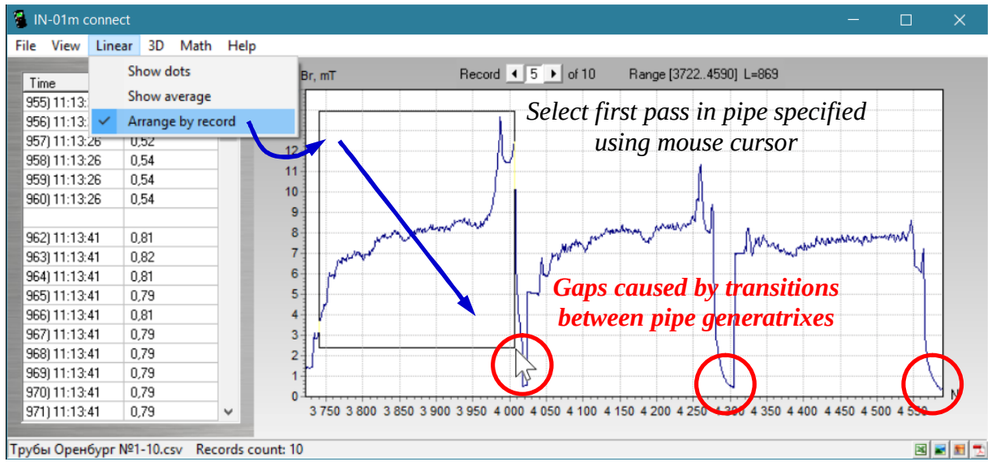


Fig.17. One series of measurements made in 3 passes (through pipe 5)

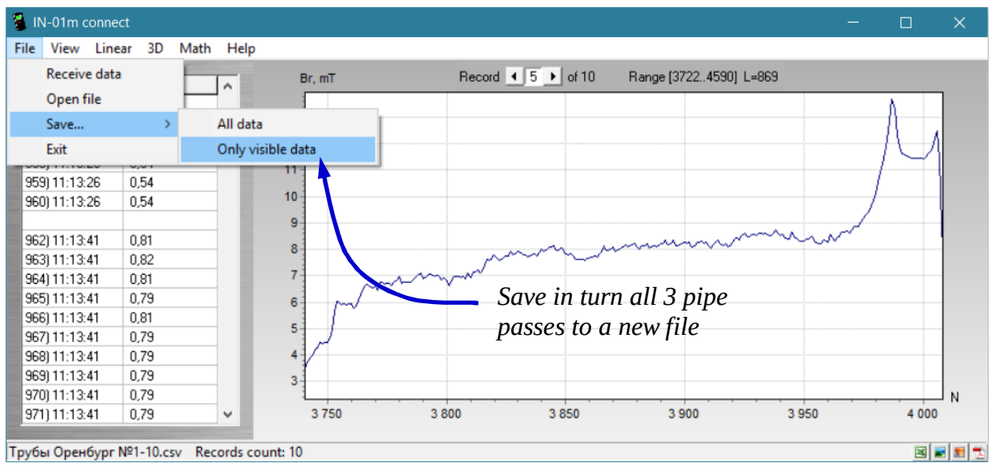


Fig.18. Saving measured data to a database

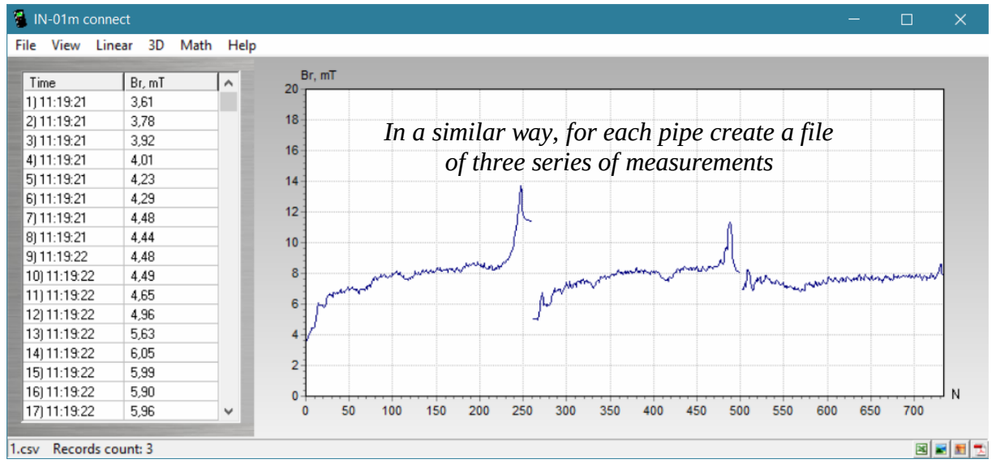


Fig.19. Pipe number 5 data file saved in the database (compare. with Fig.15)

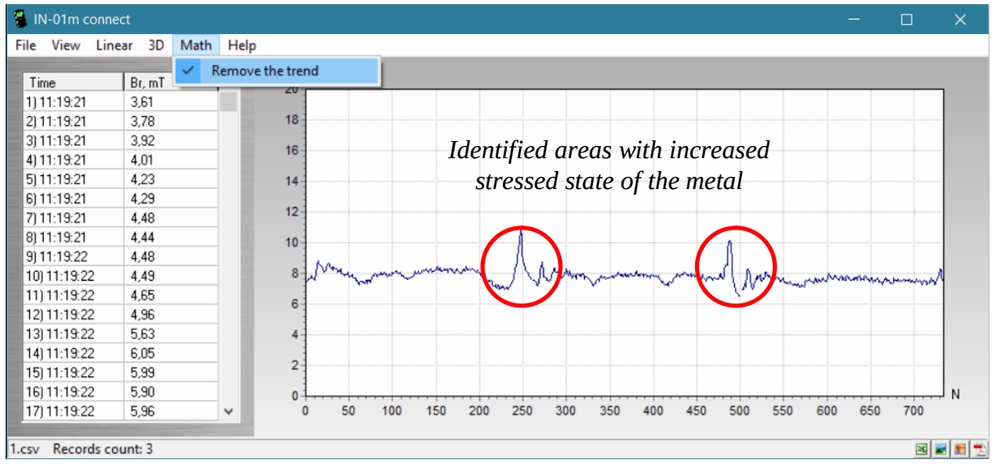


Fig.20. Automatic removal of the nonlinear trend of the measured signal

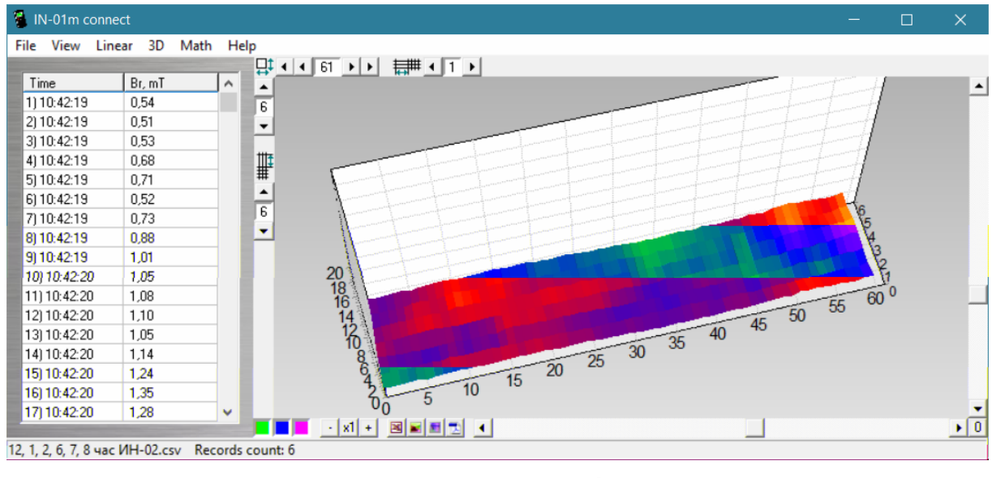
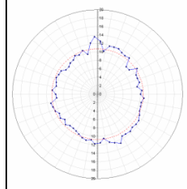
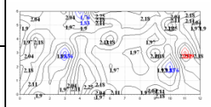
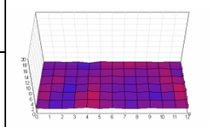
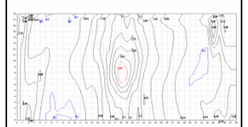
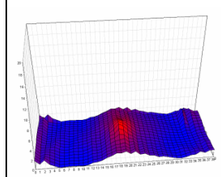


Fig.21. Preparing illustrations for the report

3.3. Graphical modes for displaying measured data

Mode	Appearance	Application	Examples of objects inspected
			
			
			
			
			
			

Config.ini

3.3.1. Linear chart mode

View

Linear

N

Br

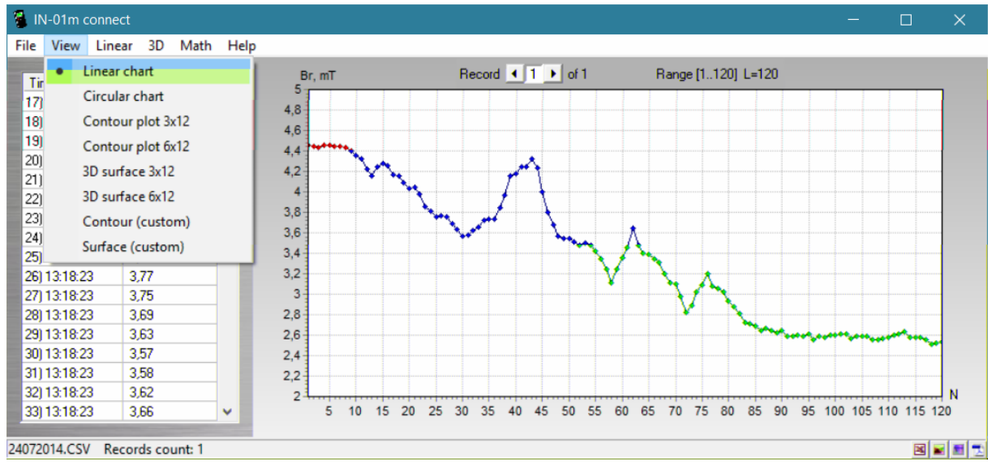


Fig.22. Linear Mode

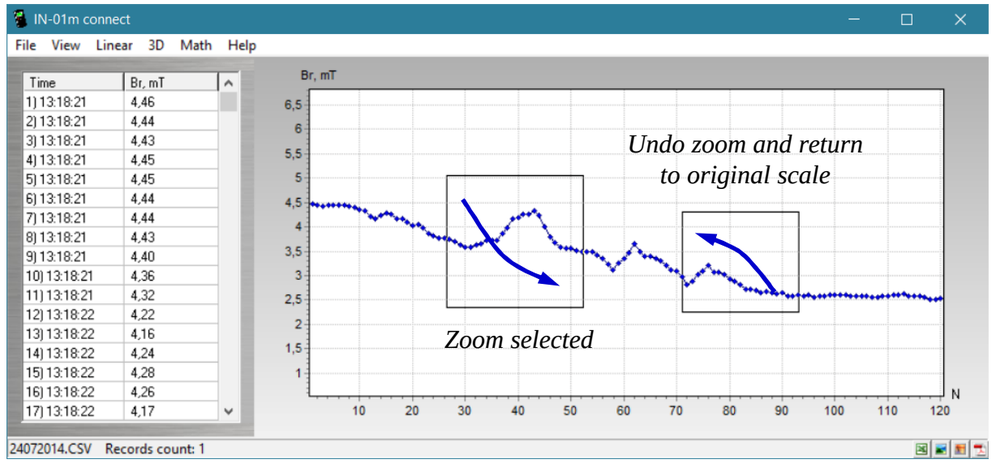


Fig.23. Working with the screen magnifier tool

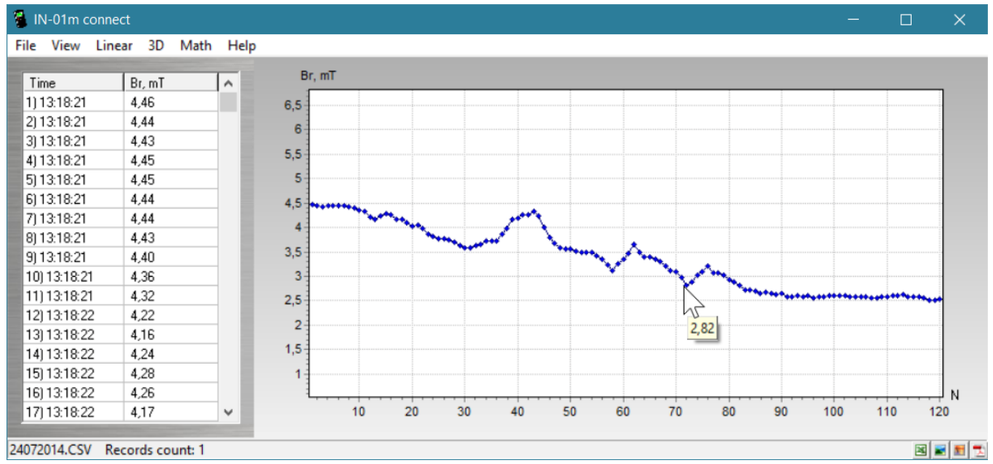


Fig.25. Interactive metal stress indicator hovering the cursor over the chart

Arrange by record

View

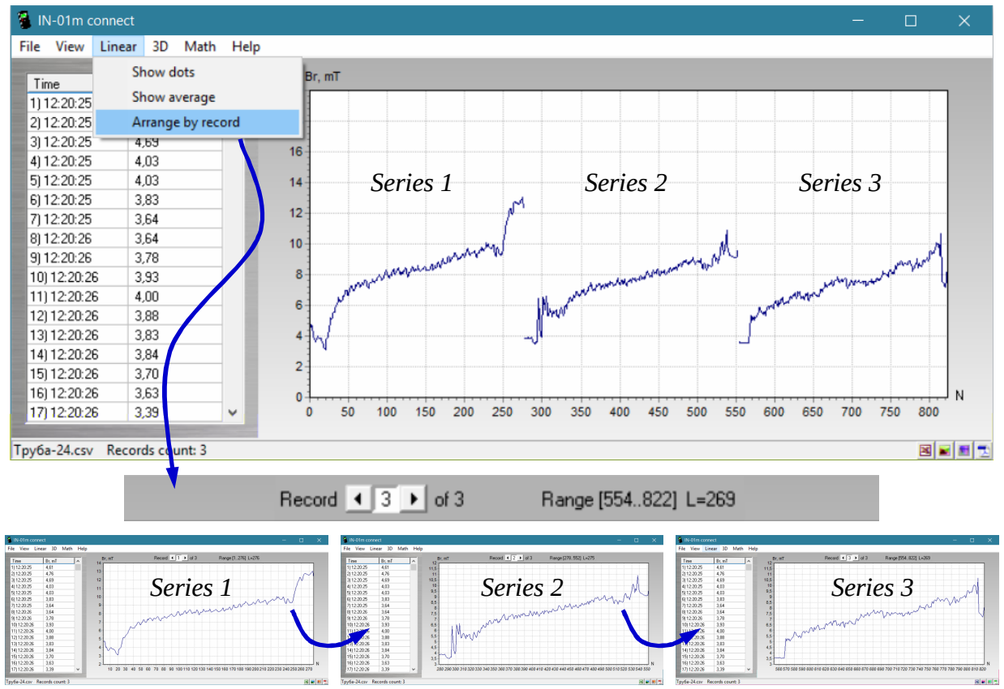
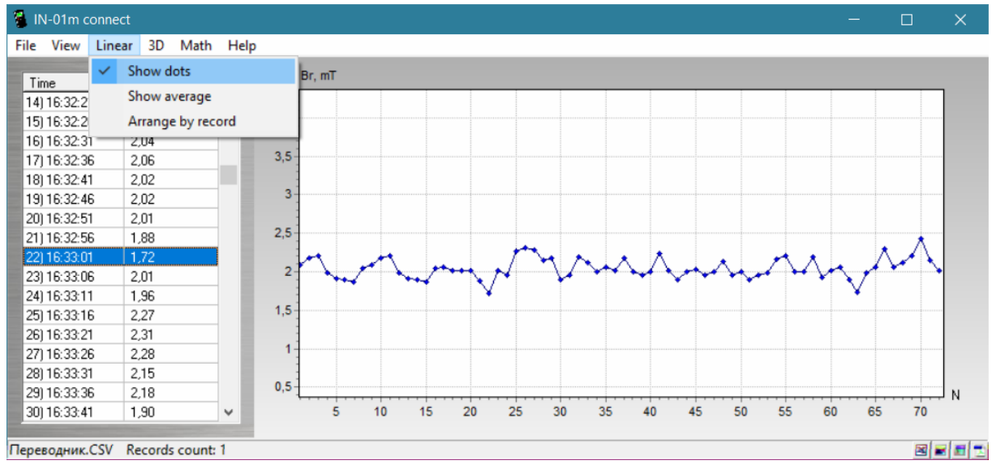


Fig.24. Viewing measured data from records

Linear *Show dots*

Show dots *Linear*

Interactive indicators



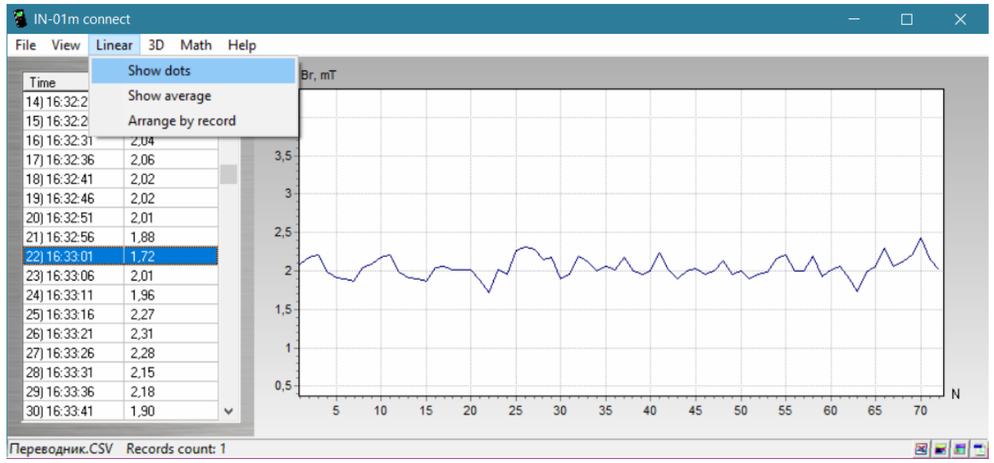


Fig.26. Showing and hiding the dots on the chart

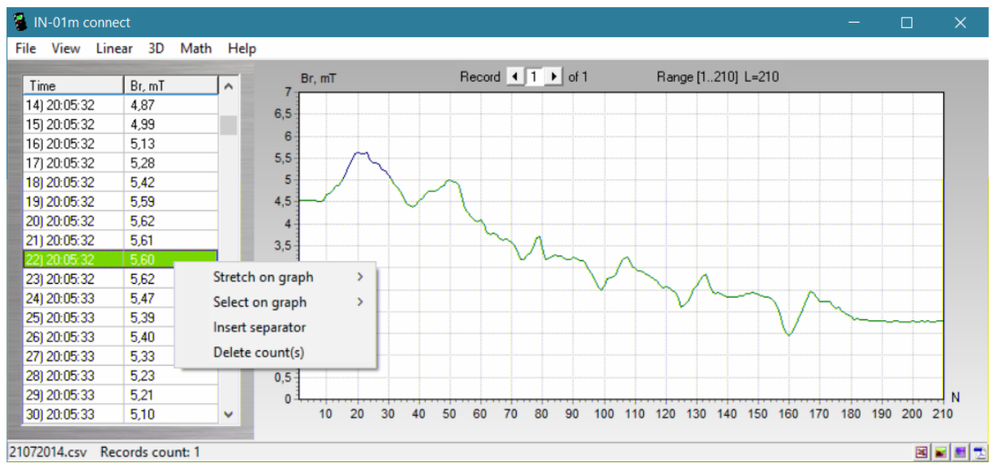


Fig.27. the context menu of the color indicators of the points of the chart

Stretch on graph – Selected samples

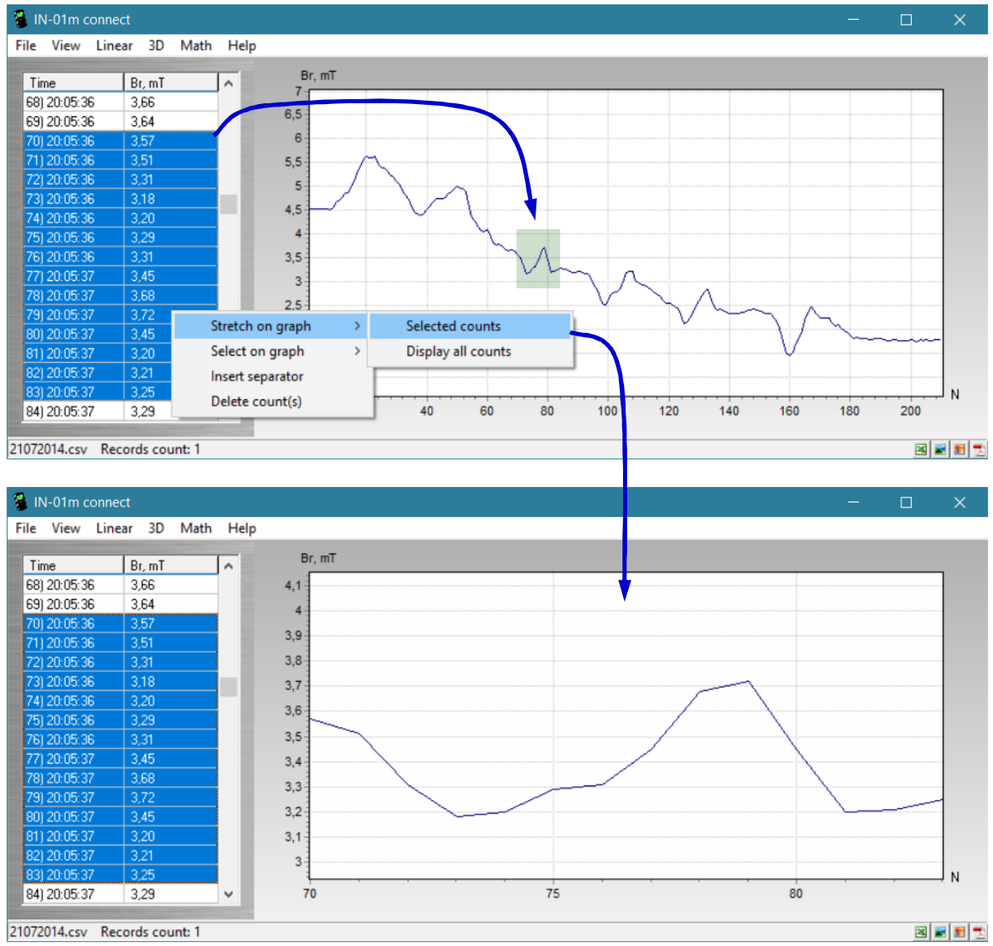


Fig.28. Context menu of the Stretch on graph command and the result of its execution

Select on graph – Selected counts

Select on chart – Deselect count(s)

Select on chart – Deselect all

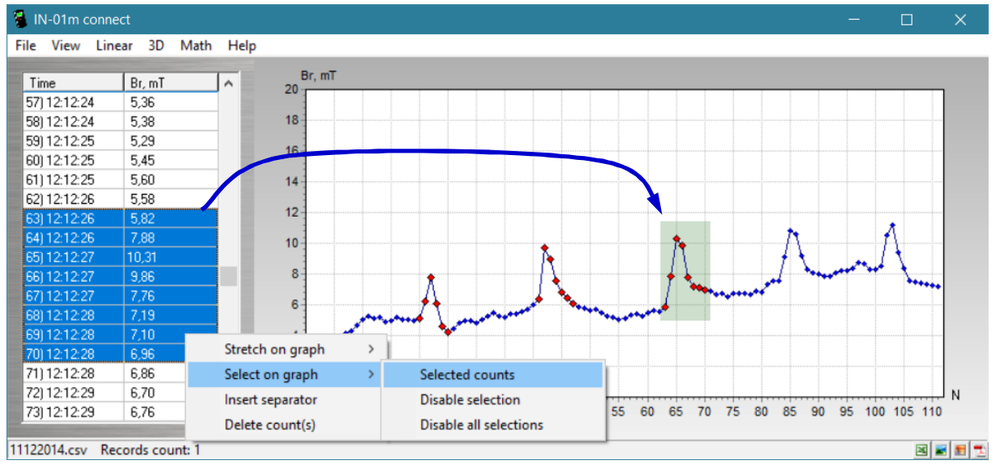


Fig.29. Highlighting local areas on the chart with a contrasting color

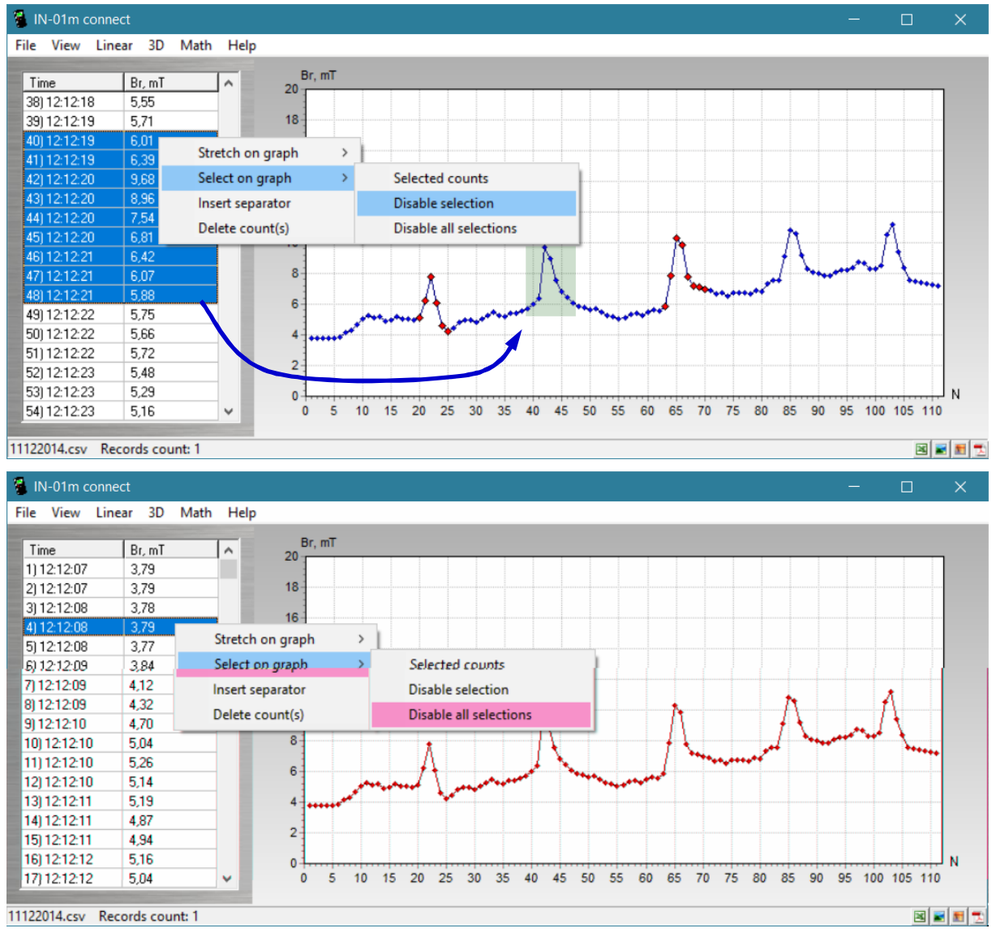


Fig.30. Removing the selection with a contrasting color

Linear *Show average*



Fig.31. Displaying the average and extreme values of the measured data

The average and extreme values

Removal of the nonlinear trend

Linear

Remove trend

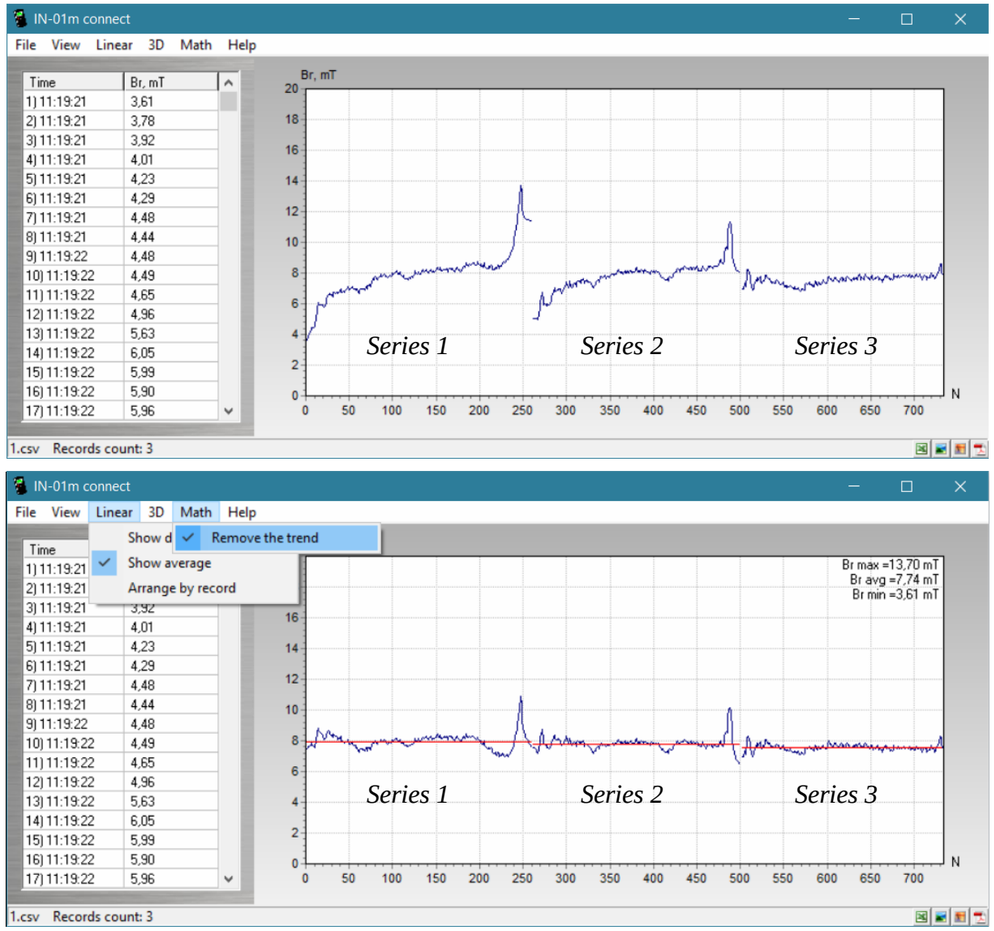


Fig.32. Removing the nonlinear trend of the measured signal

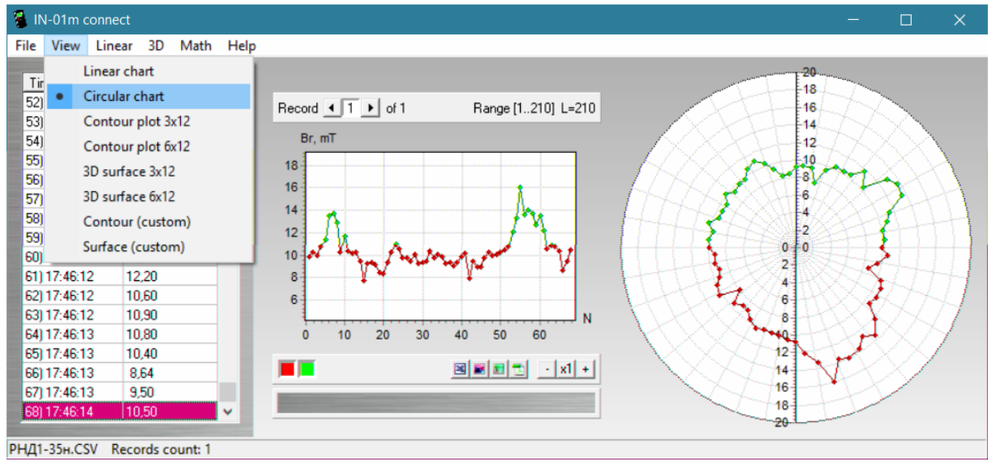


Fig.33. Circular chart mode



Fig.33. Circular chart toolbar

The Circular chart is scaled

The measured data can be viewed

3.3.2. Circular chart mode

View

Circular chart

Interactive indicators

Color indicators for individual points

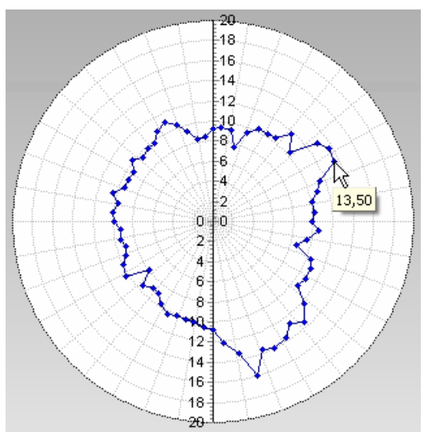


Fig.35 Interactive indicator on a Circular chart

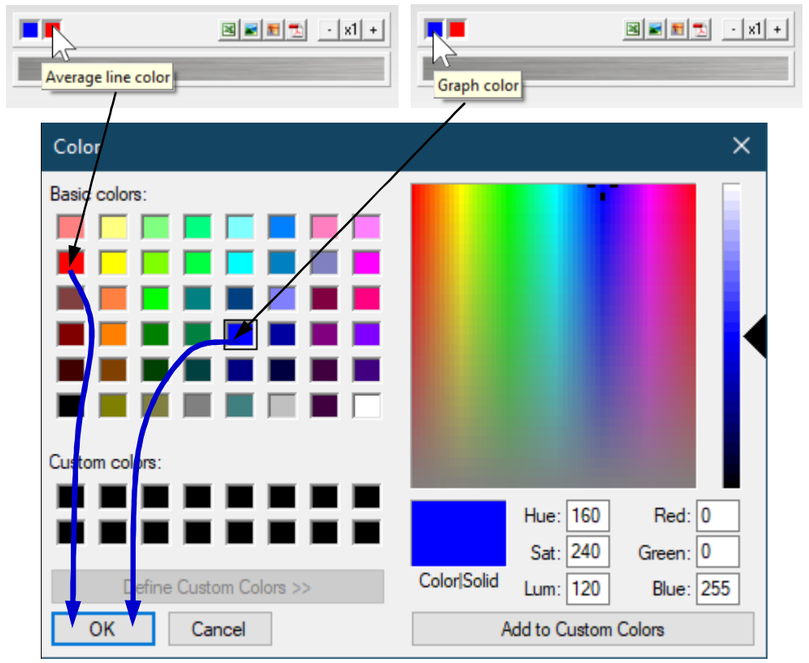


Fig.36. Color palette

3.3.3. Contour plot mode

Contour plot

View

Linear *Show*

dots

Color palette

The average and extreme values

The nonlinear trend

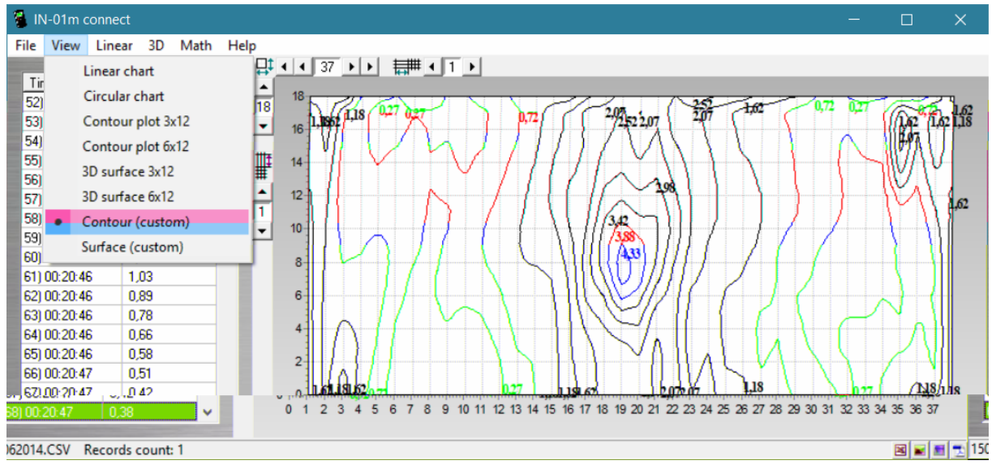


Fig.37. Contour plot mode

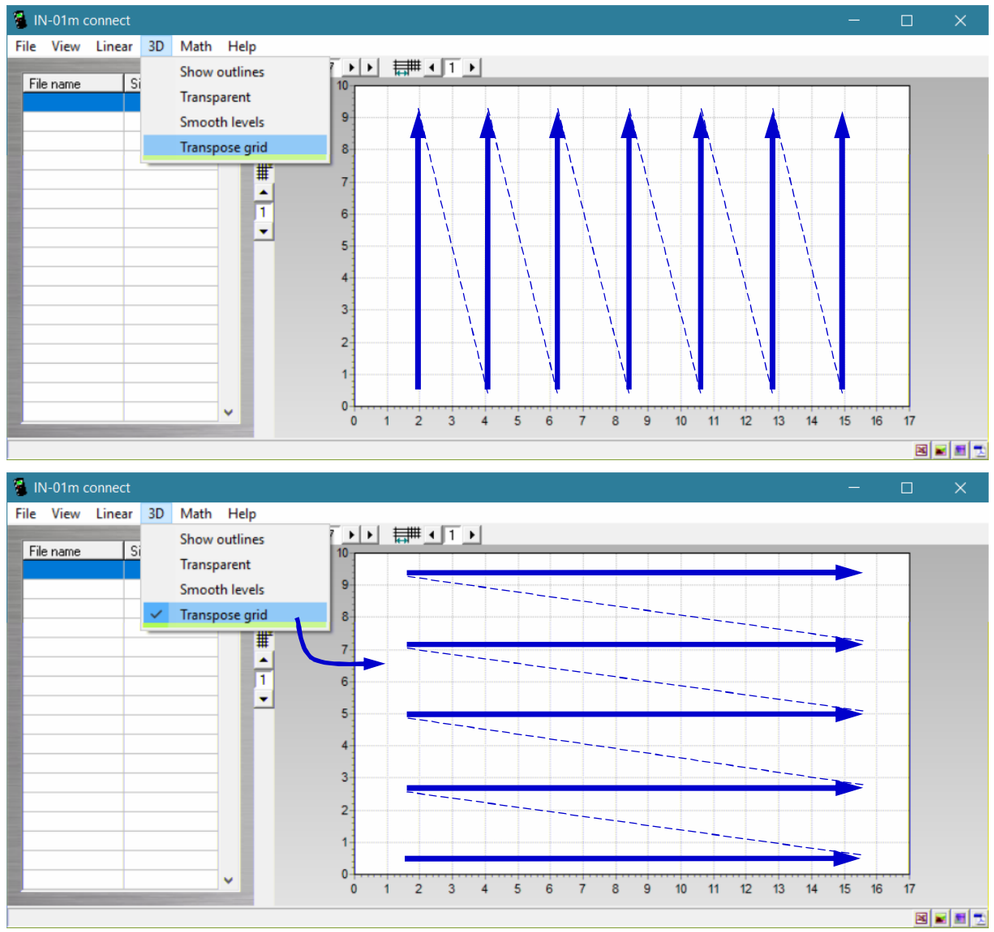


Fig.38. Transpose the coordinate grid of a contour chart

Transpose *3D*

Transpose *3D*

The screen magnifier tool

The configurable parameters

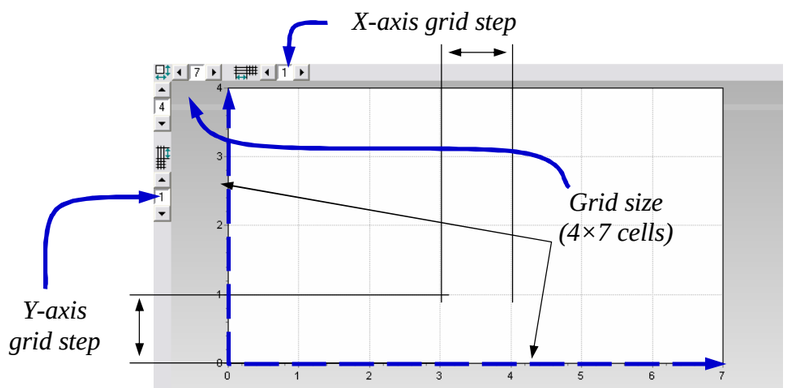
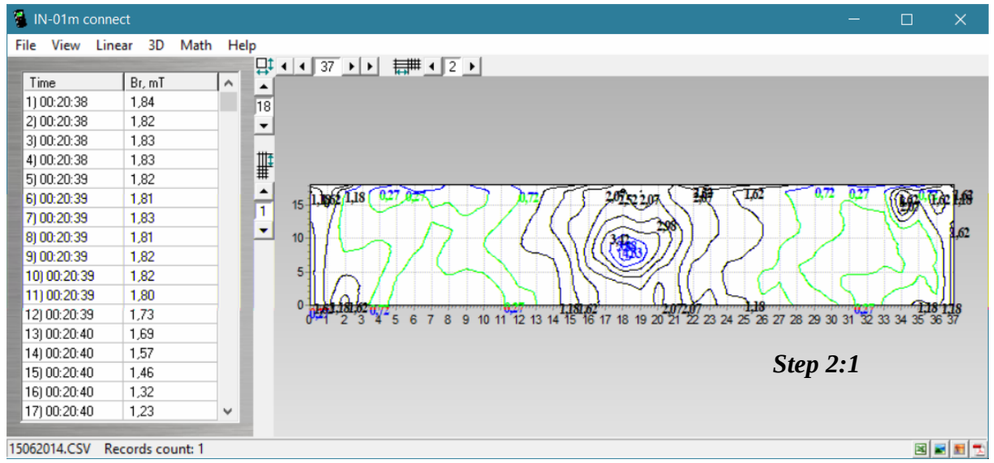
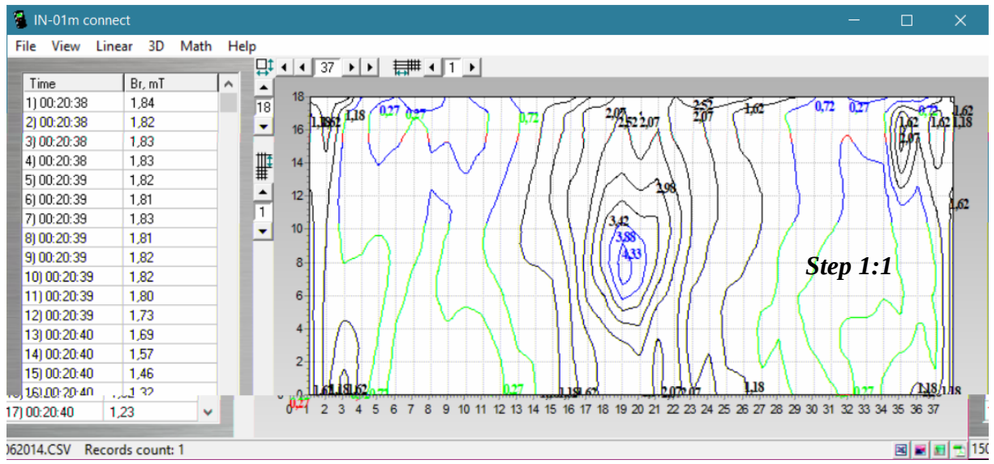


Fig.39. Controls for coordinate grid parameters





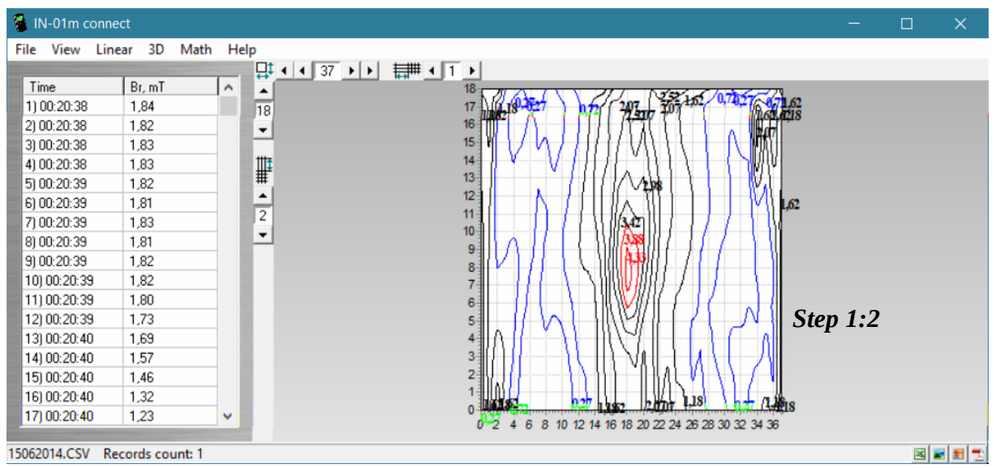
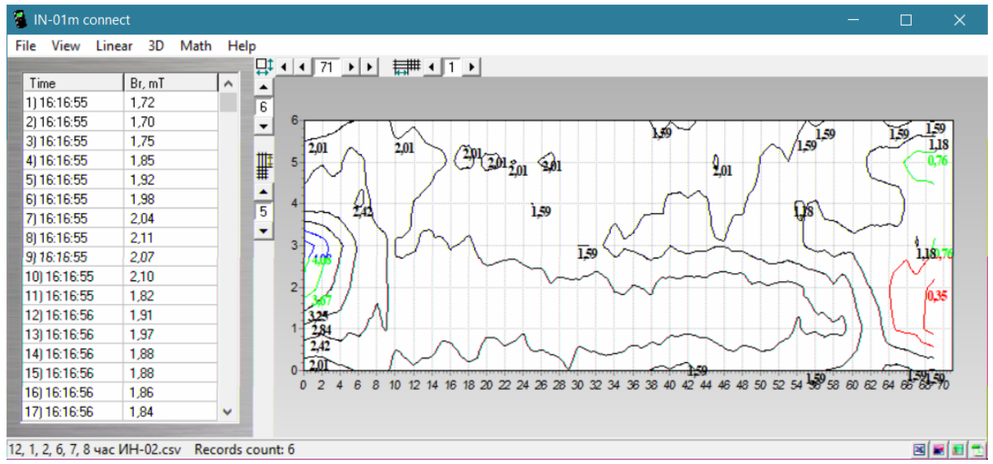


Fig.40 scaling the longitudinal and transverse step of the coordinate grid

Removal of the nonlinear trend

Math

Remove trend



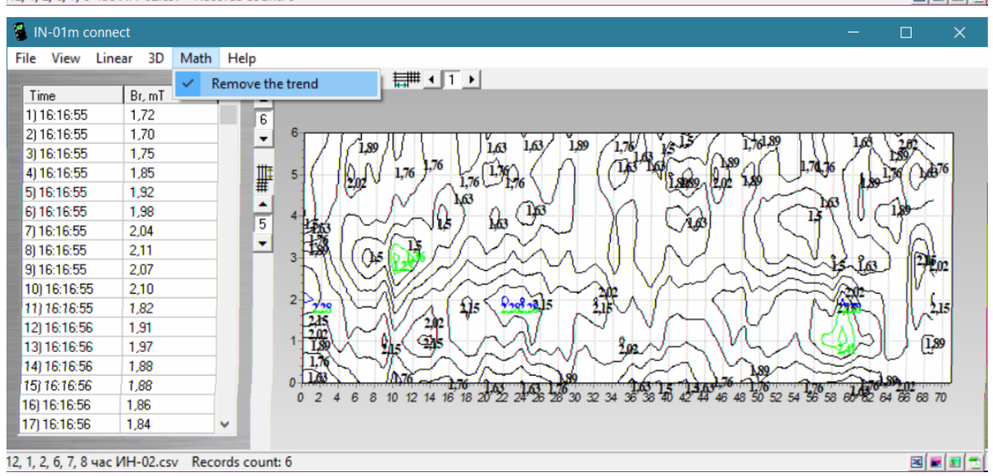


Fig.41. Deleting a non-linear signal trend on a contour chart

3.3.4. 3D surface plot mode

3D

surface *View*

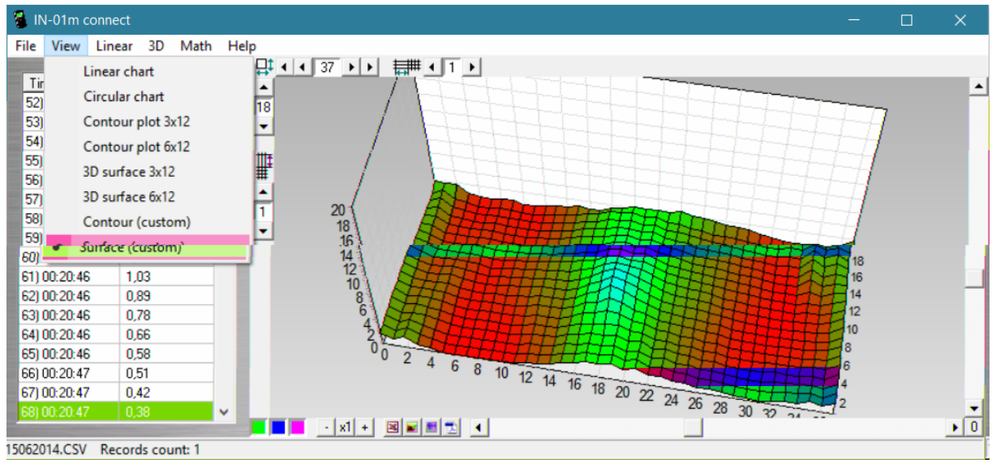


Fig.42. 3D surface plot mode

3D surface 3x12 *3D surface 6x12*

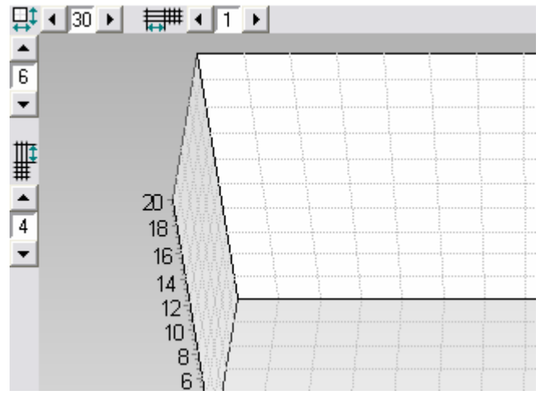


Fig.43. Controls for coordinate grid parameters

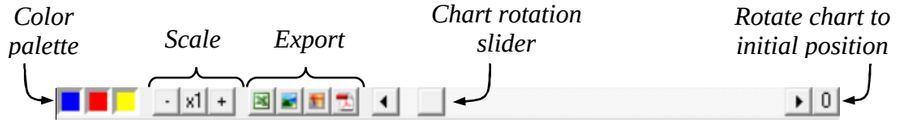


Fig.44. 3D surface plot toolbar

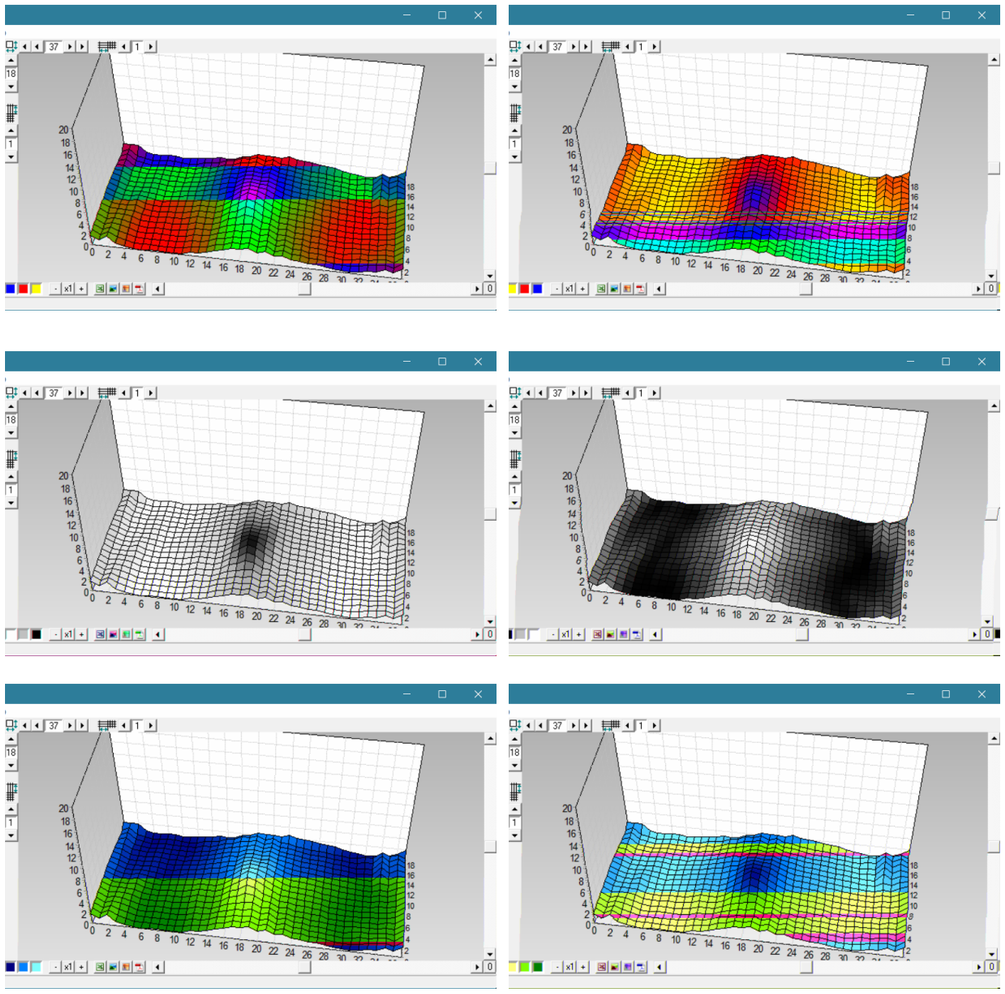
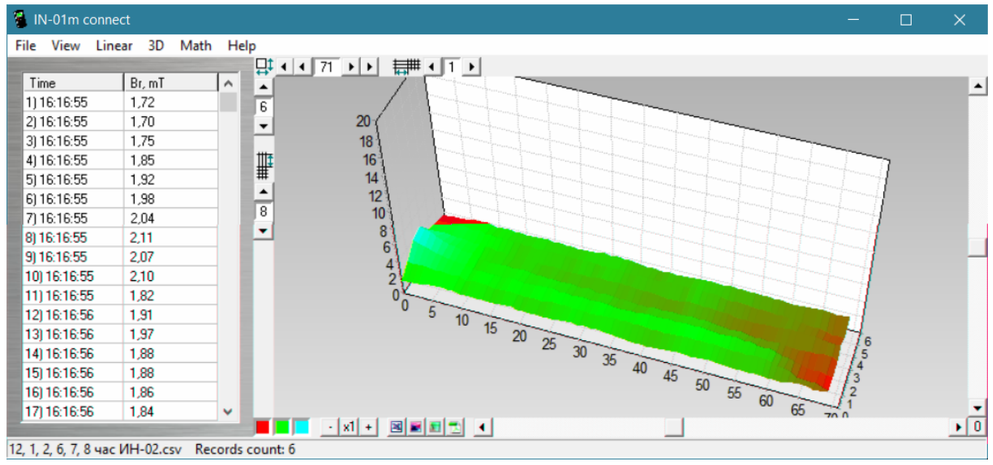


Fig.45. Different combinations of surface reference colors

Removal of the nonlinear trend

Math

Remove trend



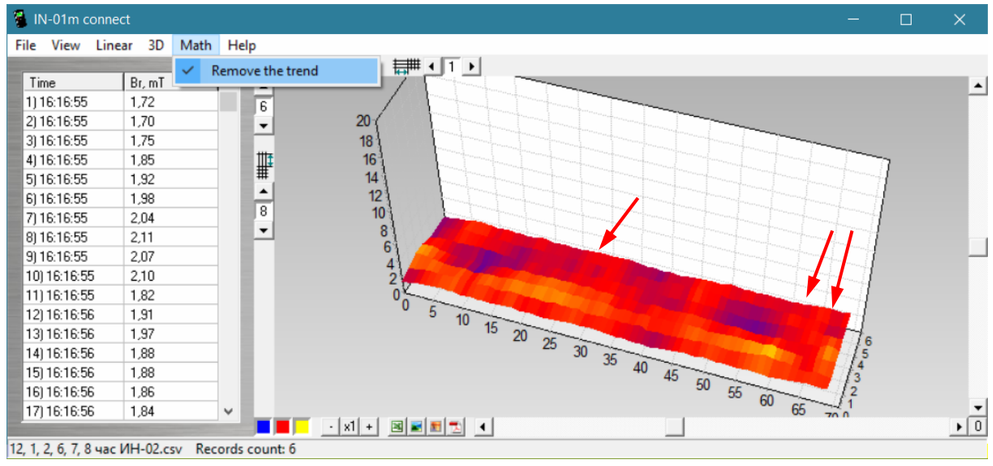


Fig.46. Removing a nonlinear signal trend on a curved surface

3.4. Exporting measured data and graphs to a report-friendly form

Linear Circular Contour Surface

Output

4. Updates to the IN-01m CONNECT software application

Regulatory references