

Bio-Well Sputnik Sensor Manual
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Bio-Well Sputnik Sensor Manual

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Terms

Area – *Bio-Well Software* parameter calculated as number of pixels on the GI related to the object being analyzed.

Bio-Well Account/Subscription – an account (Login and Password) created on www.bwacc.com website that allows *User* to work with the *Bio-Well software* in *Online mode*.

Bio-Well device – is an impulse analyzer device that is able to extract *electro-photonic emission* from the conductive object placed on its electrode, capture the resulting *gas (air) discharge* (created by excitation of air molecules by the *electro-photonic emission*) and send the created *glow images to the computer via USB cable*.

Bio-Well Server – Internet server that hosts the code for analyzing/processing the *Scans* made by the *Bio-Well device* and keeps the *Bio-Well User's databases* of *Cards* and *Scans*.

Bio-Well software – is a computer program that is able to read the captured *glow images* from the *Bio-Well device* via USB cable, edit them and send to the remote server for calculation of the various parameters.

Deviation S – *Bio-Well software* parameter calculated as standard deviation of the *Area* parameter of the last 20 captured GI.

Electro-photonic emission – irradiation from a conductive object under the influence of high frequency high intensity electro-magnetic impulse.

Electro-Photonic Imaging (EPI) – technology (synonym of GDV) based on Kirlian effect that allows to capture and process digital images of the gas discharge (Glow).

Energy – *Bio-Well Software* parameter derived as numeric evaluation of the energy of the Glow captured by the *Bio-Well device* and calculated by multiplication of *Area* on *Average Intensity* on correction coefficient.

Entropy – *Bio-Well Software* parameter calculating standard deviation of the *Area* allowing you to see the moments of shifts.

Environment – regime or mode of capturing images of the installed on the glass electrode of the *Bio-Well device* calibration metal cylinder with fixed interval between captures, to which an external electrode is connected: *Bio-Well Glove*, *Sputnik sensor* or *Water sensor*.

Gas discharge (Glow) – light emitted by the gas (air) due to the excitation of its molecules by the electrons and photons from an object under study with the use of EPI technology. **Glow Images (GI)** – digital images created by the *Bio-Well software* after processing the *Glow* from the object placed on the glass electrode of the *Bio-Well device*.

Gas Discharge Visualization (GDV) – same as EPI (synonym).

Intensity - *Bio-Well Software* parameter calculated as average value of intensity (brightness from 0 (black) till 255 (white)) of pixels on the GI related to the object being analyzed.

Kirlian effect – phenomenon of *electro-photonic emission* from conductive objects under the high intensity high frequency electro-magnetic field.

Offline mode – regime of the *Bio-Well software* functioning without Internet connection, that allows to capture the GI, but doesn't allow to process them and get any parameters.

Online mode - regime of *Bio-Well software* functioning with Internet connection, that allows to capture the GI, process them and calculate parameters.

Scan – an experiment made by the *Bio-Well User* in “*Stress test*” or “*Environment*” modes in the *Bio-Well Software*.

User – person that has his/her own registered *Bio-Well Account/Subscription* on www.bwacc.com website.

Purpose

Bio-Well Sputnik sensor is an attachment for the Bio-Well device designated for the measurements of the electrical capacity of the space around Sputnik. It can be used for evaluation of the auspiciousness of the environment and for relative studies of various effects on the environment.

NB! Before using Bio-Well Sputnik sensor please read the Bio-Well device and software manual! You can find it on www.bio-well.com/gb/resources.

Technical Information about Bio-Well device

Bio-Well device belongs to electrical equipment for use in ordinary locations. The device is intended for use in Dry Location — A location not normally subject to dampness or wetness.

Bio-Well device provides no risks to life and property.

The device is intended for working with a personal computer.

Operating conditions:

- ambient air temperature from +10°C/50°F to +35°C/95°F;
- relative air humidity 75% at a temperature of 30°C;
- atmospheric pressure from 84 to 106.7 kPa (630–800 mmHg);
- direct current power supply with operating voltage of 5V.

NB! Main parameters, characteristics, dimensions and warranties are provided in the Passport of the Bio-Well device (supplied with every device).

Important Remarks and Safety Measures

User should pay special attention to the following:

- While touching the glass electrode of the Bio-Well device do not touch any grounded conductive objects (like heating pipes, etc.).
- During the scanning process keep the Bio-Well device at least 50cm from the computer.
- Always keep the glass electrode of the Bio-Well device in clean condition (using alcohol or wet tissues with alcohol – best option; if not possible – use regular screen cleaner).
- If Bio-Well device was in a cold environment (less than 10°C/50°F) before starting using it please wait for at least 1 hour to warm up.
- During “Environment” Scan (experiment) shifts in relative humidity should not exceed 5% and shifts in air temperature should not exceed 5°C.
- During “Environment” Scans do not turn on/off electrical devices within the room where the Bio-Well device is operating.
- Do not use cell phones near the Bio-Well device or Sputnik sensor as it can alter the result.
- Presence of different people in the room may affect the measurement results.
- Do not take “Environment” measurements during strong atmospheric changes as they can affect the readings.

- Be aware of changes in geomagnetic background (e.g. Sun and Moon rise/recess, magnetic storms) during “Environment” measurements.

Preparing to measurements

In order to make measurements with the Sputnik sensor User should first prepare the Bio-Well device.

1. Check the connection of the USB cable between the Bio-Well device and computer.
2. Take out the finger insert from the Bio-Well device and install the calibration insert instead.
3. Note that calibration is not mandatory for conducting measurements with Sputnik sensor.
4. Connect one end of the wire from the Sputnik sensor package to the Sputnik sensor and
 - another one to the calibration cylinder (for BW 1.0 & 2.0);
 - another one to the accessories insert (for BW 3.0).

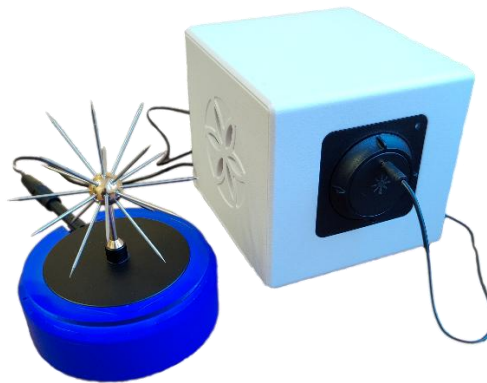
NB! In some cases, the GI can be very weak (very low Area) that forces the Bio-Well software to go in the loop of repeating the capturing process (time loop).

Then you will have to extend the wire between Sputnik and calibration cylinder: take the wire (with “banana” plugs) from the calibration set and connect it with the wire (supplied with the Sputnik sensor). Having two wires between Sputnik and Bio-Well device will increase the electrical capacity and hence the Area of glow.

5. Put the Sputnik sensor at the position that you like.



Pic. 1.1. Connection of the Sputnik sensor to the Bio-Well 1.0 & 2.0 devices.

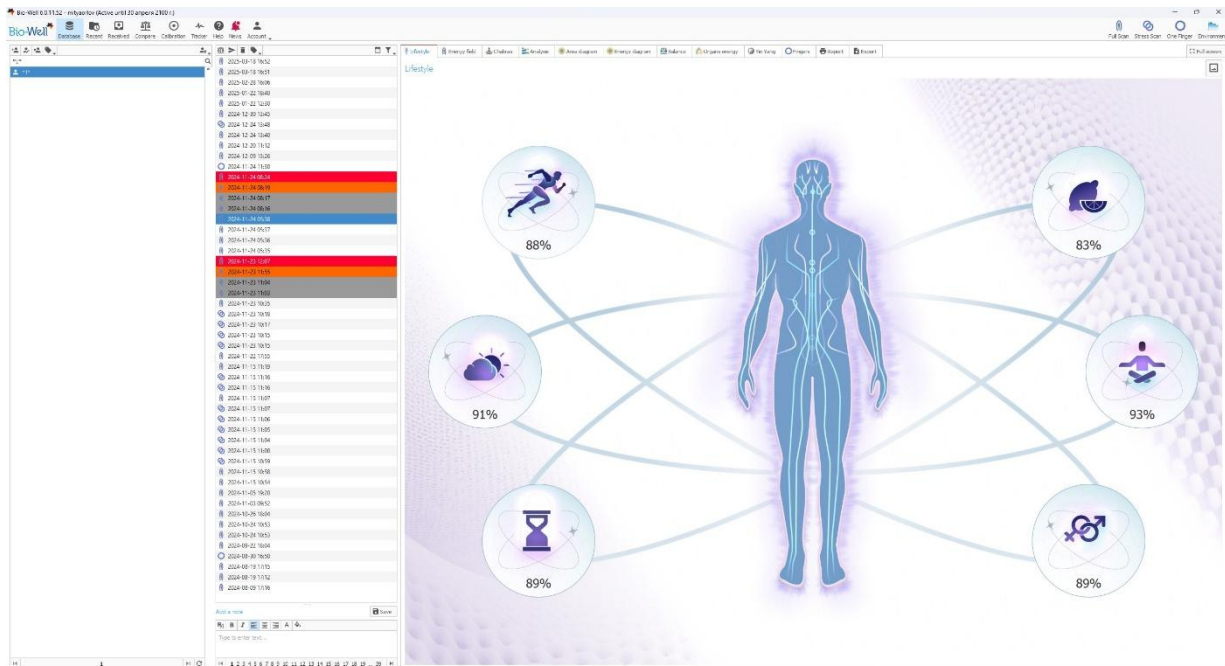


Pic. 1.2. Connection of the Sputnik sensor to the Bio-Well 3.0 device.

Creating a new Scan/Experiment

Select or create a new Card in which you want to make an “Environment” Scan.

In the top right corner of the Main screen of the software interface click “Environment” button to create a new Scan/Experiment.

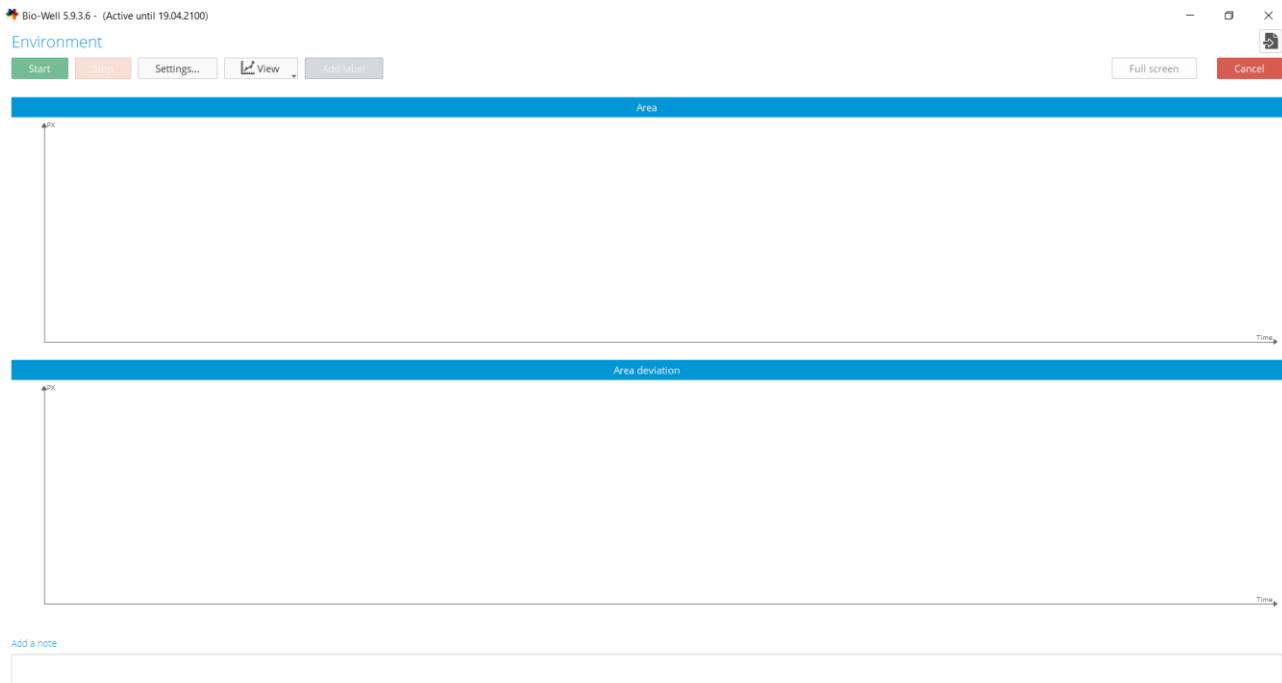


Pic. 2. Main screen of the Bio-Well Software.

Conducting a Scan/Experiment

This mode enables the measurement of dynamic processes (long-term).

Once you click “Environment” button - a special interface will be displayed.



Pic. 3. Interface for conducting an "Environment" Scan.

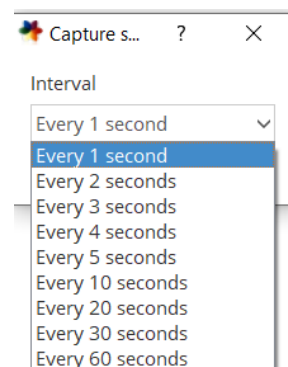
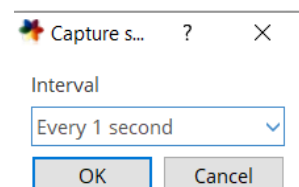
It is recommended that during the readings no other activity would be done at the computer and computer would not switch to sleep mode till the completion of the session.

Click "Cancel" button to return to the Main screen and cancel the experiment.

Before you start the experiment, you can select the time interval between the captures by clicking the "Settings" button. Depending on the type of event, effect of phenomena that you are planning to study you should select the Interval between the captures.

If the effect under study is very short, or the events will change fast – then you should select fastest regime – each 1 second, but if you are planning to study some atmospheric phenomena (sun eclipse or earthquake) or measure the energy of some specific space – then it is better to set longer interval.

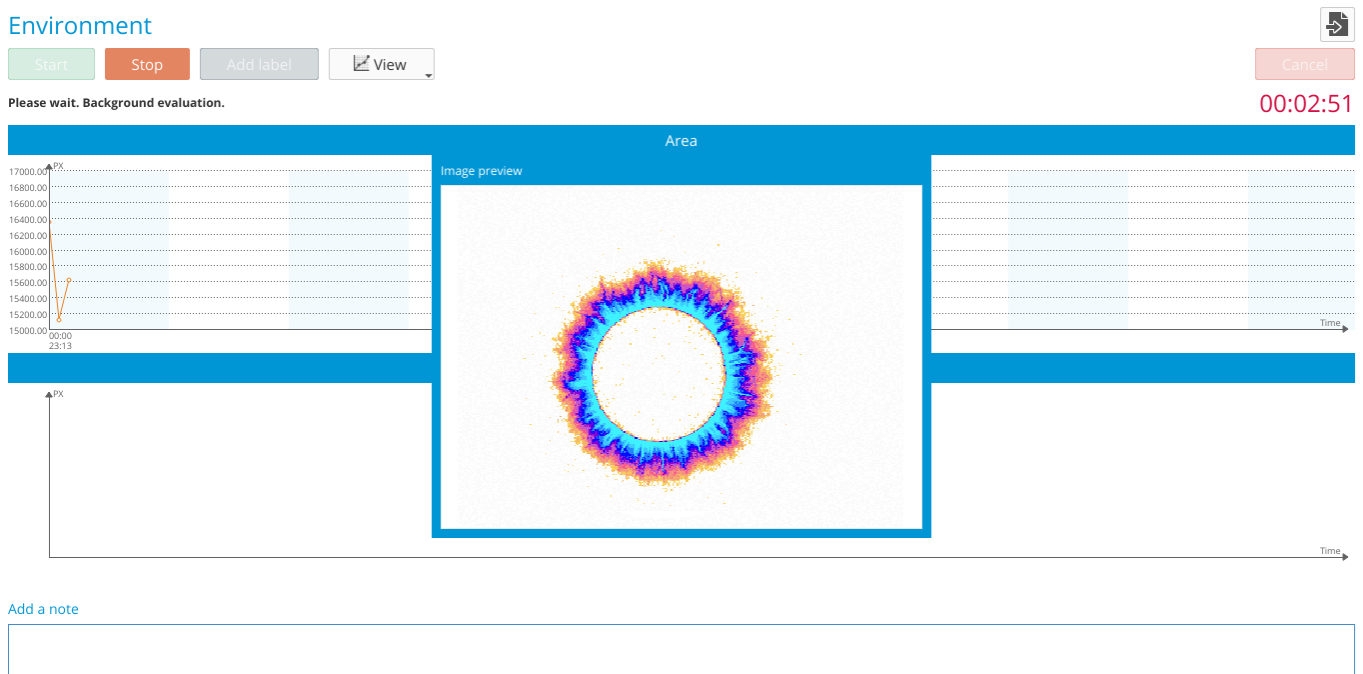
For example, if measurement will take you more than 2 hours – then you can select to scan every 5 or 10 seconds. If you are planning to scan for almost whole day or even more – then you can set interval equal to 60 seconds.



Click “Start” button to begin experiment. Test image of the metal cylinder will be shown. It should look like a circle with very little or no pixel noise inside (pic. 4). Only first 10 images will be displayed for you to check if position of cylinder is correct.

During the first three minutes (time digits will be of red color), a baseline signal is recorded - this data is excluded from further analysis.

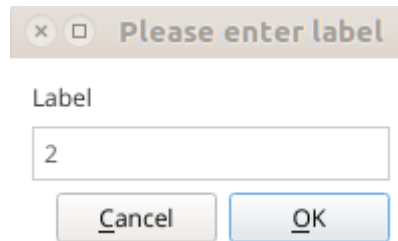
You can click “Cancel” button to return to the Main screen and cancel the experiment at any moment.



Pic. 4. Correct GI of the metal cylinder.

Once warming up time is finished (3 minutes) you will be able to add labels by clicking “Add Label” button. Labels may be added during readings. Just assign a name to every Label that you add and click “OK”.

But in order to provide better accuracy and prevent unneeded errors in the measurement we recommend to write down the log on the paper during the actual experiment. Later on when experiment will be finished you can add labels on the proper place in the experiment timeline.



Pic. 5. Adding labels to the experiment.

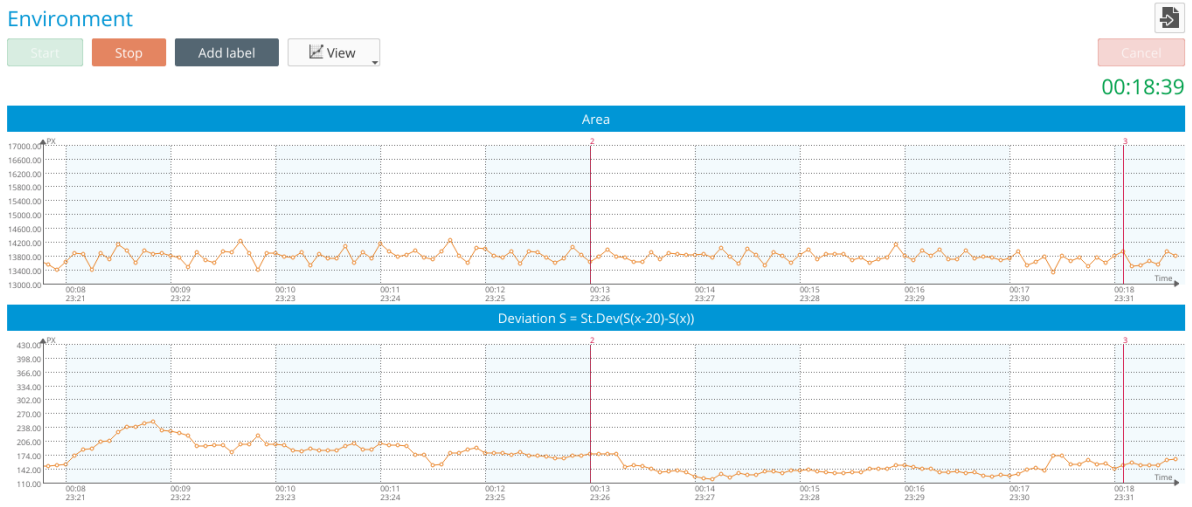
Click “View” button to change the graphs displayed on the screen. Options are: Area, Intensity, Energy, Area Deviation (Standard deviation of Area parameter of the last 20 GI) and Entropy. You can select all of them:



Pic. 6. Several graphs displayed during “Environment” Scan.

In such a case resolution will be low and you will not be able to really analyze any of them by your eyes. We recommend to select 1 or 2 graphs to be displayed during the experiment. It will not affect the final result – anyway all 4 parameters will be calculated for all the experiment.

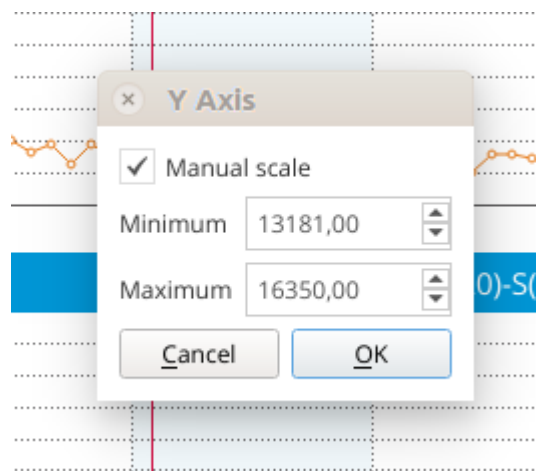
Added labels will be displayed on the graphs as red lines.



Pic. 7. Labels with names "2" and "3" were added.

X axis represents time. Each dot on the graphs represents one Glow Image taken.

Y axis represents the value of the selected parameter on the graph. You can manually change the scale of the Y axis by clicking with left mouse button on the Y axis and specifying the range that you are interested in, and clicking "OK" (see pic. 8).



Pic. 8. Setting up manually scale of the Y axis on the graph.


At the bottom of the screen you can see the "Add a note" field, where you can add any notes about this experiment.

In order to minimize the interference with the experiment you should not add labels during the experiment. There is a possibility to add labels on the timeline (X-Axis) after the experiment is finished and saved.

Clicking “Stop” button and approving it by clicking “Yes” in the pop-up window will save the data on the computer if Offline, or on the server if Online. In Online mode Scan will be automatically processed on the Bio-Well Server and downloaded to your computer – you will see the result on your screen.

Once downloaded the result of the “Environment” Scan will be available for editing and statistical analysis.

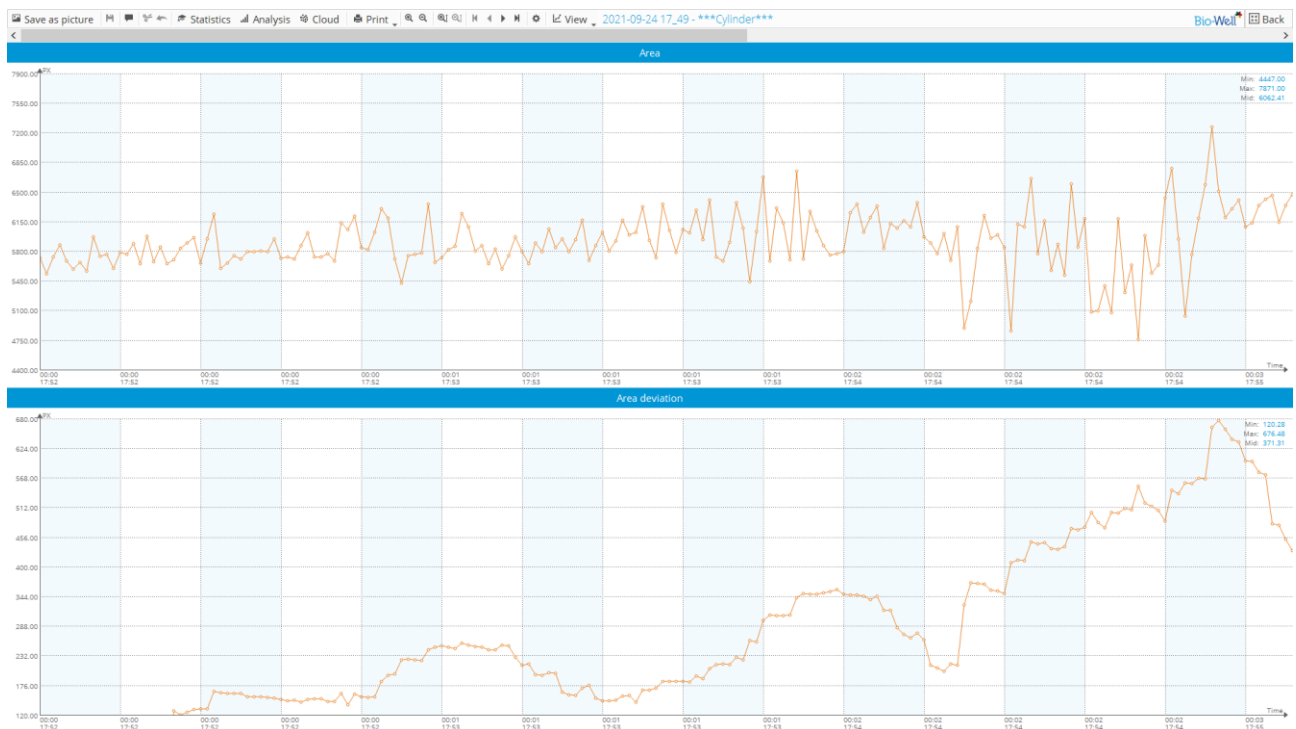
Processing and Interpretation of Results

Select the Scan/Experiment that you want to analyze. In the Scans column of your database such experiments are marked with the following symbol - . You will see the following screen (pic. 9). To enlarge the view – click “Full screen” button.

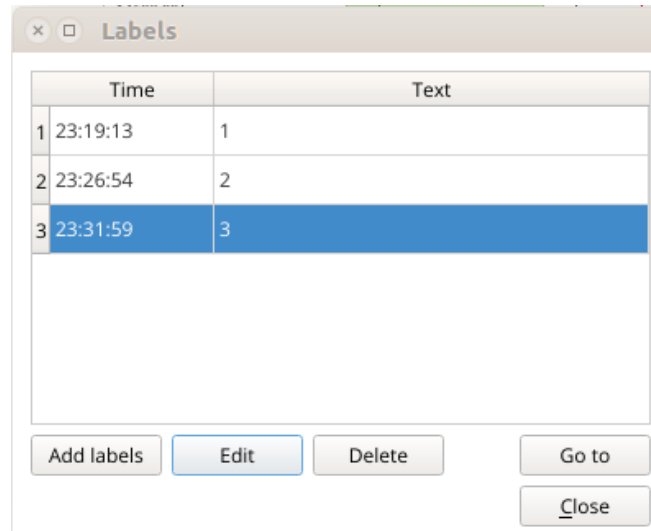
Top bar will give you several instruments to apply:

 Save as picture - save the graphs as an image on your computer (specify the destination folder and name).

 - saves the graphs in BDF file format on your computer.



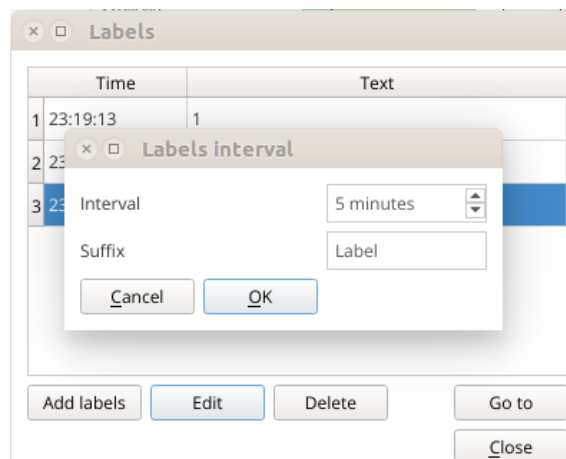
Pic. 9. General view of the "Environment" experiment.



Pic. 10. Editing labels list of the "Environment" experiment.


 - click to edit labels in this experiment (pic. 10).

Here you can add, edit names and delete labels from the list. "Go to" button will show on the screen the part of the graph with the selected label. Adding labels is only automatic here:




Pic. 11. Automatic adding of the labels.

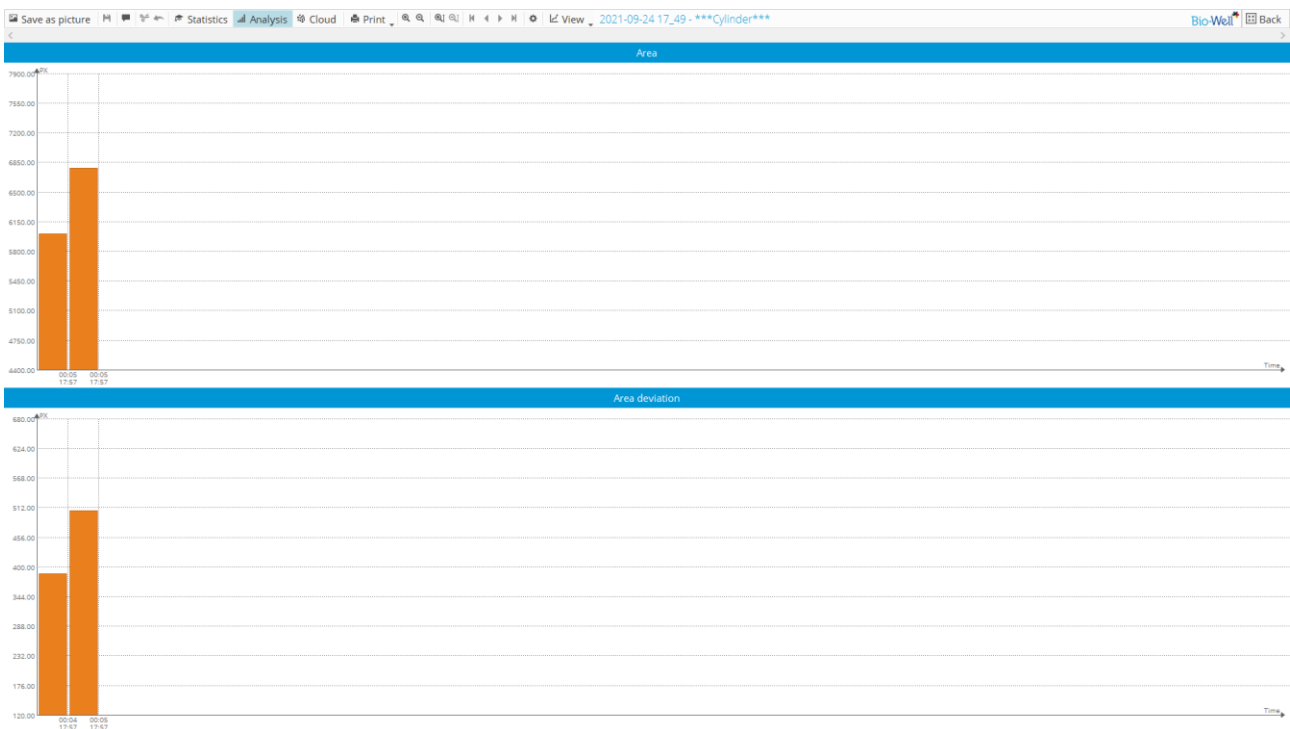
You can specify interval (from 60 seconds to 6000 seconds) and suffix of the labels and click "OK" to automatically add them. In the example above program will add labels every 5 minutes with names "Label1", "Label2", "Label3", etc.

 - click to cut one image (dot on the graph) or series of images from the experiment. Click with the right mouse button on any dot to select it (it will be marked with the green vertical line) or click and hold the right mouse button and then move the mouse cursor to select a range of images (dots) that you want to cut from the graph (the diapason will be colored in green).

 - click this button to undo last change that you have made.

 **Statistics** - click this button once you are ready with all the rest of the features and ready to calculate the statistics – a new window will be opened.

Click “Analysis” button in order to change the representation of the graphs into bars view (pic. 11A). Each bar represents 300 images (scans). Depending on the interval between the consecutive scans each bar will have different time length.

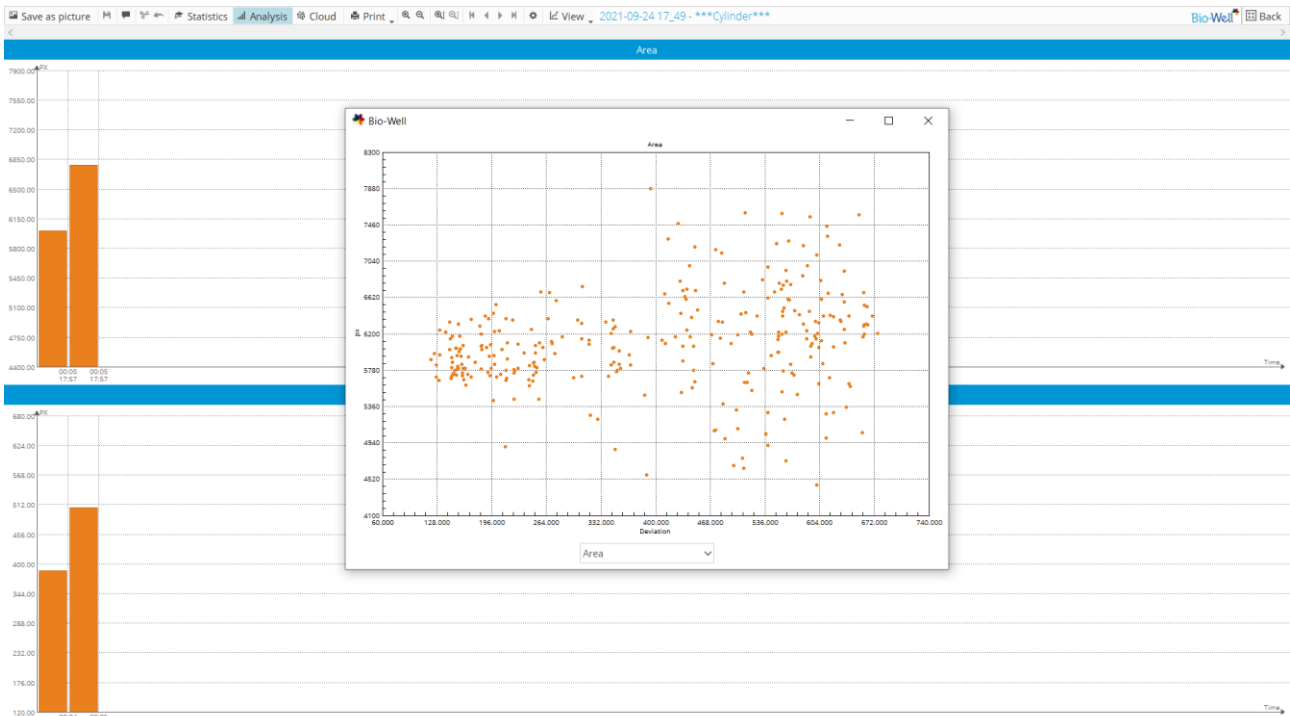


Pic. 11A. Analysis view of the “Environment” experiment.

Click “Cloud” button in order to have a different view of the data (pic. 11B).

Y-Axis can represent Area, Intensity or Energy parameter, while X-Axis will show the Deviation of the selected parameter.

This way of representing the data is very convenient for comparing several experiments. This will be discussed later in the manual.




Pic. 11B. Cloud view of the "Environment" experiment.


 **Print** - click to open a drop-down list:

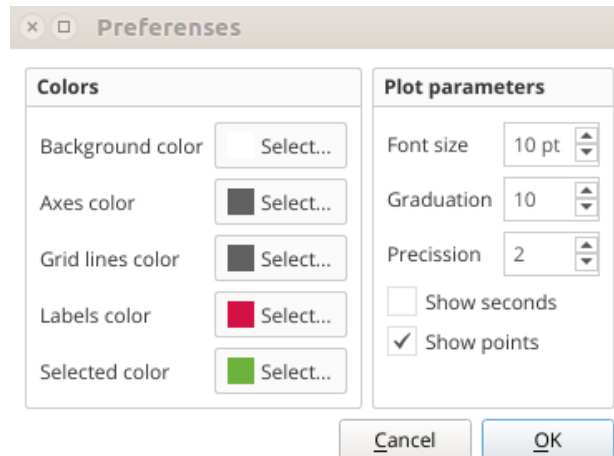
- Print all: send to printer all the available graphs (4).
- Print selected: send to printer only selected graphs that you see on the screen.
- Save as CSV: save all the experiment with all 4 parameters calculated to a CSV file format.

 - click these buttons to maximize or minimize the scale of the X axis.

 - click these buttons to maximize or minimize the scale of the Y axis.

 - click these buttons to navigate through the graph. You can also use horizontal scroll bar on the top of the graphs to navigate through experiment.

 - click this button to open a pop-up window with the parameters of the plot (pic. 12).



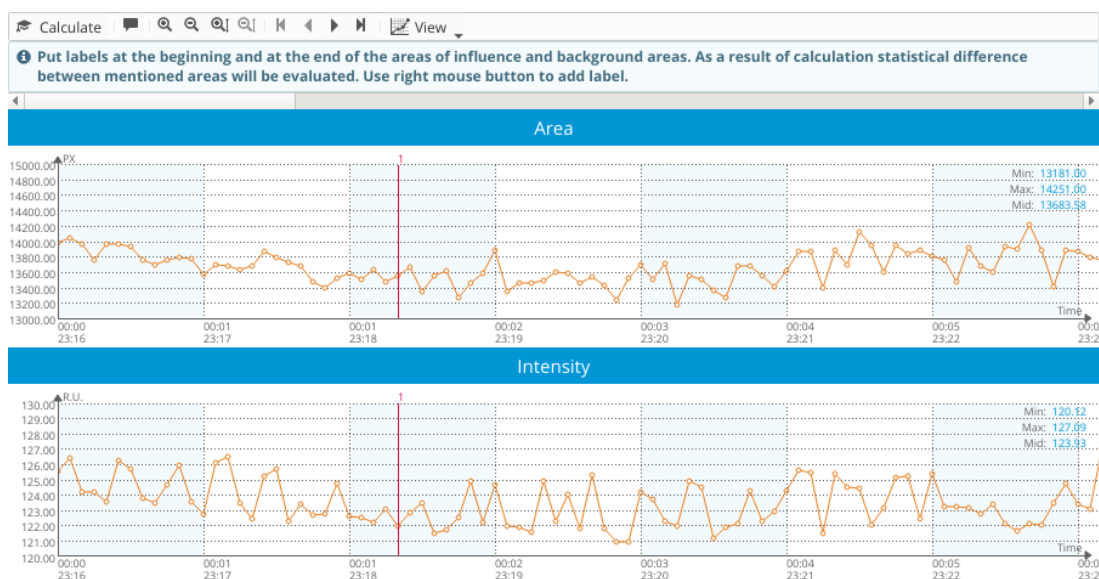
Pic. 12. Parameters of the plot that you can edit.

Change any of the available parameters and click “OK” to apply them.

As soon as you have made all the preparations to statistical analysis – click “Statistics” button – a new window will be opened (pic. 13).

Top bar instruments panel is almost the same as on the initial screen with the “Environment” Scan results.

If you point mouse cursor on any dot on the graph and click the right mouse button – you will add a new label. You will be prompted to enter the name of the new label.



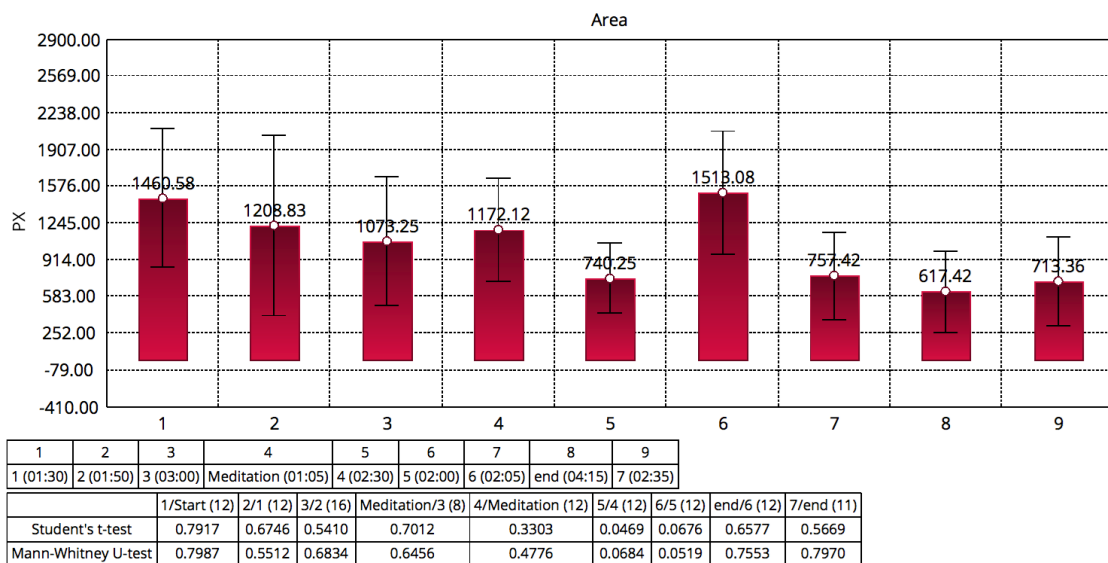
Pic. 13. Statistics window for the “Environment” Scan.

Once you have finished editing labels manually – click “Calculate” button to get the statistical analysis of the 4 parameters for the periods between the labels that you have added.

The Bio-Well Server will calculate parameters for all labeled intervals and parametric / non-parametric statistical values. Every interval is compared with the previous interval (pic. 14).

NB! For more correct statistical analysis please make sure that intervals that are compared to each other contain same time period in them. In example, each interval is 5 minutes long – then they will contain equal number of images in them. Time volume of the intervals depends on the kind of phenomenon under study.

Red columns in the report show the average value of the parameter of a specific interval. Black vertical lines on top of them are showing the deviation of this parameter from the average value during the interval (called confidence interval). If these black lines (confidence interval) intersect with the confidence interval of another interval – then there is no statistically significant difference between these intervals for this parameter.



Pic. 14. Statistical analysis of the intervals between the labels in the “Environment” Scan.

In this report you can scroll through the pages with 4 different parameters calculated for every interval specified. You can “Save as picture”, “Save as PDF”, “Save as CSV” or print this report.

Standard report consists of 5 pages: one page for each parameter – Area, Intensity, Energy, Area deviation and Entropy.

There is one more parameter that Bio-Well software is able to calculate for intervals (between two consecutive labels) that are more than 360 images (scans) long - Activity Level of Environment (ALE). This is an experimental parameter that is trying to analyze how auspicious is the space for a human. This parameter was developed (by Dmitry Orlov) for experiments with Sputnik sensor only. If at least one of the intervals (between 2 consecutive labels) in your experiment is 360 images long – then your report will have 6th page with ALE parameter value.

If you want to find out the ALE of a specific place in a room or on earth – then place the Bio-Well device with Sputnik there and leave for at least 6 minutes (if interval between scans is 1 second) or, in example, for 30 minutes (if interval is 5 seconds) without any external influences (exclude all that you can, or if you are unable to exclude the influence of some phenomenon – control it in order to consider it during interpretation of the results).

Also, you can evaluate ALE during various events like: meditation, concerts, mass events, performances, etc. Then you can somehow assess the influence of the event on the environment and ALE parameter.

Offline Mode

Readings may be taken when not connected to the Internet. Data will be saved in the computer and processed when the Internet connection becomes available.

In Offline Mode it is necessary to add a Name, Date of birth (or date of the experiment in case of making “Environment” Scan) and Gender (not needed for “Environment” Scans) and select the mode of the Scan: “Environment” (pic. 15).

Offline Scans will be saved as BDF files on the computer’s drive. When next time you will be logged in online, an “Upload” button will appear; click it to send the data to the server to be processed.

While doing Offline Scans in “Environment” mode – program will not show you any graphs as it is unable to calculate the parameters locally – they are calculated only on the Bio-Well Server.

New experiment

Bio-Well Offline mode

1. Enter person or environment name:

Enter name, birthdate and gender of existing user exactly as the information appears in your account. If information is entered into "Work Offline" fields for a new user, a new profile will automatically be created upon next log-in.

Name

Birthday

Sex Male Female

2. Choose scan type:

Pic. 15. Offline mode interface.

Comparing "Environment" scans

Analysis and Cloud modes are the easiest way to compare two or more experiments between each other. Cloud mode is the most convenient and visual one. It allows to see if there is any intersection between the clouds of experiments.

See the example on Pic. 16.



Pic. 16. Comparing Sputnik experiments in the Cloud mode.