

Poly-Spectrum-8/EX

12-Channel Miniature Wireless Digital ECG System

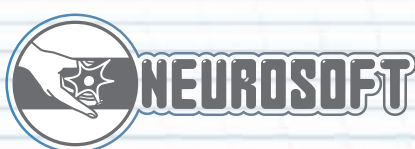


Do you remember the feeling that appeared when you used the radiophone for the first time? There was no «affection» towards one place. You could move, stand, sit, lie and at the same time speak over the phone freely. The same feeling appears in those who started working with our new digital ECG system **Poly-Spectrum-8/EX**. This system is not connected by cable with the computer! It can be placed right on the patient's body. The ECG of the patient is transferred by radio with the use of Bluetooth technology on up to 7 meters distance!

In spite of the fact, that data from this digital ECG system are transferred by radio, it has specifications exceeding considerably the ones provided by the wire digital ECG systems represented on the market. The sampling rate of our device is 1000 Hz and A/D converter is 24 bits. Such sampling rate parameters in the aggregate with powerful digital filters which are used for ECG processing in computer, allow to provide the high quality ECG recording.

The digital ECG system **Poly-Spectrum-8/EX** (base delivery set) allows to register from 1 to 12 ECG leads and 1 breath channel, perform automatical ECG measurement and interpretation, store and print ECG.

This system is more applicable for exercise testing (cycle ergometry, test on treadmill, ortho-test, test on Barany chair, etc.). Just under conditions of patient's intensive movements you can define the advantages of wireless ECG transfer. As far as the digital ECG system is placed on the patient's body, you can use short ECG cable, and this cable vibration will not influence the electrocardiogram quality any more!



Ideal Digital ECG Stress Test System! And not on

High-quality ECG Recording During Exercise Testing

What is more important when you choose the digital ECG system for cycle ergometry or treadmill?

Of course, the way, the ECG is displayed under conditions of patient's intensive movements.

What are the causes of noises during the exercise testing?

There are three causes for that:

1. Electrical signals emerging during the big muscles movement (myographic noises).
2. Shift of electrodes on the surface skin.
3. ECG cable vibrations that lead to its permittance change, and as a result to ECG baseline deflections.

The purpose of exercise testing is an ECG study at considerable increase of heart work. It is achieved due to big muscles contraction. That is why this cause of noises can not be eliminated. It can be smoothed down by applying myogram filters or arranging the electrodes on places with minimal impact of big muscles contraction on ECG quality.

The shift of electrodes on the skin surface can be eliminated with the use of special electrode systems. The most reliable and simple system is the one with disposable electrodes. The most inexpensive system is the one with rubber tapes for electrode fixation. The most expensive system is the one with vacuum electrodes fixation.

Finally, one of the most serious problems is the cable vibration. How can it be eliminated? Easily. First, it is recommended to shorten the cable length. Second, you should place the digital ECG system... on the patient's body!

Poly-Spectrum-8/EX made the quality ECG registration during exercise testing possible. This device weights about 200 grams and has no wire connection to computer. It can be placed right on the patient's body. The ECG is transferred by radiochannel via Bluetooth interface.

The communication range within the direct visibility is not less than 7 meters. For registration you can apply both disposable and reusable electrodes fixed by rubber tapes. And the set of specially developed filters allows to eliminate even powerful noises.



Exercise testing on ergometer with the use of disposable ECG electrodes.



Exercise testing on treadmill with the use of reusable ECG electrodes fixed by rubber tapes.



ECG checkup performing with the electrocardiogram displaying in the pocket PC.



"Classic" ECG checkup with the use of reusable limb clamp ECG electrodes and reusable precordial suction chest ECG electrodes.

Convenience and New Capacities

If you have **Poly-Spectrum-8/EX**, you can:

- Arrange the cycle ergometer or treadmill in any place within 7 meters from computer;
- Perform such exercise tests as Harvard step test which was impossible with usual digital ECG systems because of noises;
- Spin your patient on the Barany chair or table for passive ortho-test according to your opinion;
- Preview the patient's electrocardiogram when she/he is sitting in the corridor behind the door of your room and define, whether the patient's tachycardia is a result of "white doctor's smock" effect.

The new possibilities are also opened for those who register ECG with the use of pocket PC. It is not required to connect the computer to digital ECG system by cable. All the process looks the following way. The electrodes are placed on the patient's body, and the digital ECG system is fixed on an individuals' body or in her/his hands. At the same time the pocket PC is in the doctor's hands who can be within 7 meters from the patient. The doctor can see the ECG on the screen, monitor it for a long time, save it in a PC memory or send it by e-mail if the computer is connected to Internet (for example, with the use of mobile phone).

ECG Measurement and Interpretation

Poly-Spectrum-8/EX base delivery set includes ECG measurement and interpretation software

Poly-Spectrum-Analysis.

In ECG measurement and interpretation mode a doctor can see the selected cardiocomplex or the one averaged by all the entire record.

In the reference points of cardiocomplex the program sets the markers automatically. If the doctor clicks the cardiocomplex in any lead with the mouse, it can be zoomed in, measured with the software ruler and markers can be corrected manually if it is necessary.



Table of Cardiocomplex Amplitude-Time Parameters

Besides the results of the main measurements used for the routine ECG interpretation, the program generates the detailed table of amplitude-time parameters of the analyzed cardiocomplex.

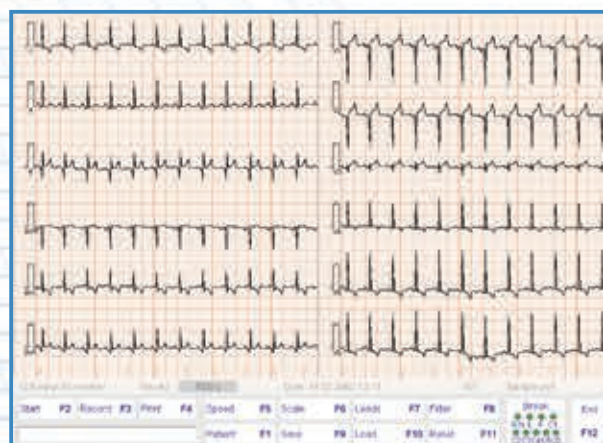


Automatic Report Generation

After test termination, **Poly-Spectrum** software generates the report automatically. It can include the most representative ECG fragments (at user's option) with QRS complex amplitude-time parameters tables, etc.

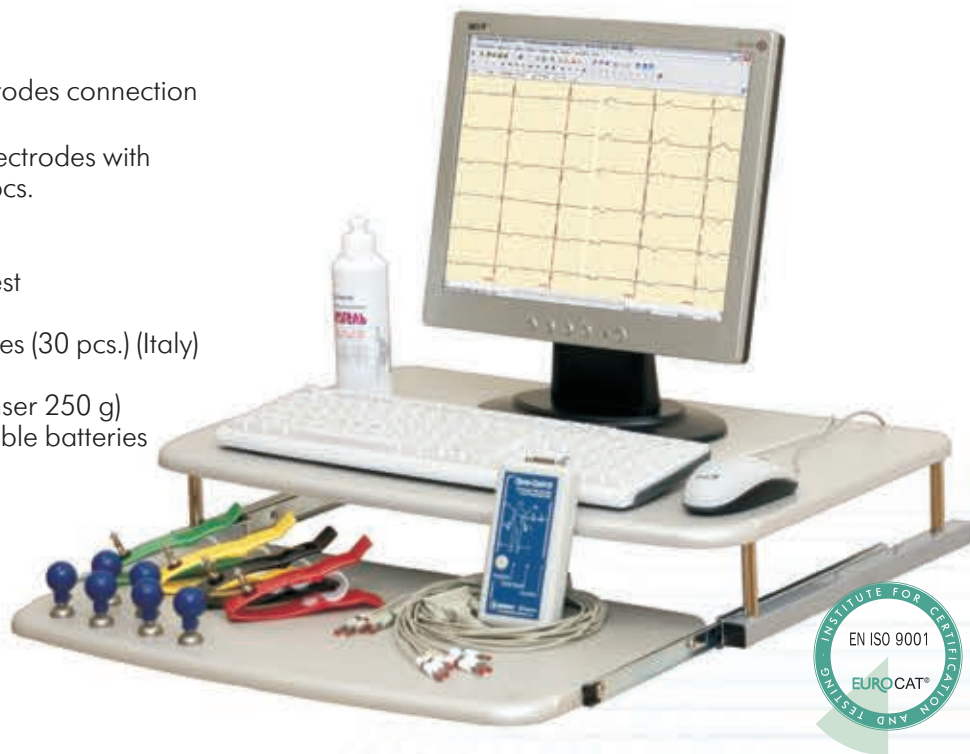
Poly-Spectrum-Express Software

Poly-Spectrum-Express is a simple and convenient program for ECG recording which provides high carrying capacity of digital ECG system and allows to use it for mass ECG checkups.



Delivery Set

- Electronic unit
- Elastic belt with push-in buckle
- Patient cable for reusable electrodes connection for **Poly-Spectrum-8/EX** (1.3 m)
- Adapter for disposable ECG electrodes with "button" connector (Italy) – 10 pcs.
- Reusable limb clamp ECG electrode (Italy) – 4 pcs.
- Reusable precordial suction chest ECG electrode (Italy) – 6 pcs.
- Set of disposable ECG electrodes (30 pcs.) (Italy)
- Adapter Bluetooth Class 1 USB
- Electrode gel (bottle with dispenser 250 g)
- Charger with Ni-MH rechargeable batteries of AA type (R6)
- Software
- User manual
- Technical manual
- Registration certificate
- Transportation bag



Specifications

ECG Channels

Number of channels	8
ECG leads	I, II, III, aVR, aVL, aVF, V1, V2, V3, V4, V5, V6; X, Y, Z (by Frank)
Voltage range	0.03 – 15 mV
Bandpass	0.05 – 250 Hz
HR measurement range	30 – 240 1/min
Control of electrodes break in the process of ECG registration	yes
Defibrillation protection	yes
Common-mode rejection	not less than 100 dB
Input impedance	not less than 20 MΩ

General Parameters and Specifications

A/D converter	24
Sampling rate (user selectable)	250, 500, 1000 Hz
Interface	Bluetooth
Communication range in the direct visibility	no less than 7 meters
Electronic unit dimensions	140×70×24 mm
Electronic unit weight (including batteries)	not more than 0.2 kg
Safety	BF type

Temperature Measurement Channel

Number of channels	1
Measurement range	30 – 45°C

Breath Channel

Number of channels	1
Breath channel bandpass	0.06 – 7.5 Hz

Power Supply

Electronic unit	2 Ni-MH or Ni-Cd rechargeable batteries of AA type (R6)
Continuous working time with one rechargeable batteries set (capacity 2200 mAh)	not less than 6 hours
Desktop PC-based system	220 – 230 V AC (50 Hz)/110 V AC (60 Hz)
Notebook PC-based system	220 – 230 V AC (50 Hz)/110 V AC (60 Hz)/int. battery



Neurosoft Ltd.

5, Voronin str., Ivanovo, 153032, Russia

P.O. Box 10, Ivanovo, 153000, Russia

Phone: +7 (4932) 24-04-34 Fax: +7 (4932) 24-04-35

E-mail: com@neurosoft.ru Internet: www.neurosoft.ru