

Health, well-being and performance.

eMotion R-R



Heart rate variability

Long term measurements

Advanced automated analysis

Easy-to-understand reports

Versatile analysis tools for research

Mega Electronics Ltd introduces the most reliable and convenient way to measure heart rate variability (R-R intervals). eMotion R-R is ideal solution to be used in research, wellness, exercise and in top sports.

Special features only in eMotion R-R:

Sampling frequency of eMotion R-R is 1000 samples per second giving great measurement accuracy of 1ms. Rechargeable battery and large internal memory enables measurements as long as 5 days. Data from the memory is downloaded easily through USB-connection.

- Compact and lightweight
- Easy to use (single button operation)
- Comfortable to wear (also during sleep)
- Long measurement time
- Accurate measurements
- Less artefacts than in chest strap measurements
- Superior conductivity between skin and sensor
- Easy charging for multiple sensors
- No need for wrist top computer
- Unnoticeable during daily life



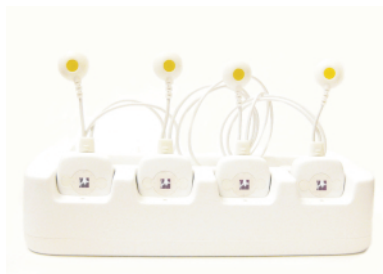
Overcomes common problems related to chest strap measurements:

In eMotion R-R measurement artefacts and interruptions are effectively eliminated with high-end technology and disposable surface electrodes. As there is no need for a strap around the chest, eMotionR-R **overcomes all common problems** and disadvantages associated with chest strap based measurements:

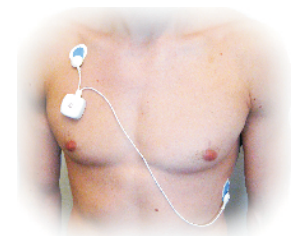
- Measurement artefacts created by movements of chest strap
- Measurement artefacts created by drying of the electrode surfaces
- Discomfort associated in long ambulatory measurements
- Need to use additional device like wrist-top computer
- Altered behaviour due to visual feedback of heart rate in research projects



Individual eMotion R-R sensor



Charger dock with sensors



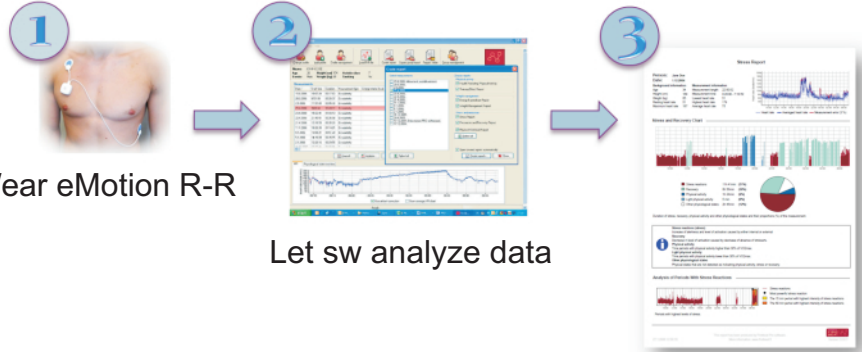
eMotion R-R sensor ready for measurements

Technical specifications:

- Weight: 16 g
- Dimensions: 35 mm x 35 mm x 15 mm
- Sampling frequency: 1000 Hz
- Accuracy: 1 ms
- Capacity of internal memory: 490 000 R-R intervals (aprox 4-5 days)
- Battery: Rechargeable Li-Ion battery
- Battery life: over 96 hours

eMotion R-R package options

3 easy steps to results:



eMotion R-R package options:

- 1) eMotion SPORTS
- 2) eMotion HEALTH
- 3) eMotion LAB

eMotion SPORTS: - *optimize all aspects of athletic*

eMotion SPORTS package includes: 4, 8 or 16 eMotion R-R sensors, Firstbeat SPORTS software and USB interface for downloading of data.

- Optimized training load
- Better critical training decisions
- More individualized training in teams
- Recovery test
- Advanced reporting tools
- Efficient fitness testing

Firstbeat SPORTS is a software tool for professional use in sports testing, coaching, individual athlete and team performance analysis. It may also be used as a research tool.

Firstbeat SPORTS software is designed for:

- Training centers
- Physical conditioning coaches
- Sports medicine clinics
- Fitness testing centers
- Sports research centers

The method is based on advanced analysis of beat-by-beat heart rate data and especially heart rate variability. The software has been successfully applied to support training in many different sports including ice hockey, soccer, track and field, shooting sports, volleyball, swimming, cross-country skiing and more. It is best suited for all endurance sports.

The key benefits of Firstbeat SPORTS are:

- Indicate overtraining
- Indicate undertraining
- Allow individually optimized training
- Monitor athletes fitness level
- Support critical coaching decisions
- Maximize recovery between two training sessions



eMotion R-R package options

eMotion HEALTH - *extensive heart rate variability*

eMotion HEALTH package includes: 4, 8 or 16 eMotion R-R sensors, Firstbeat HEALTH software and USB interface for downloading of data.

- Physical workload assessment
- Promotion of healthy lifestyle
- Stress and recovery analysis
- Occupational research and design
- Weight Management



Firstbeat HEALTH is easy-to-use software tool for heart beat analysis. The solution is developed for the needs of work-related research, occupational health care and applied physiological research.

Firstbeat HEALTH software is designed for applied research and field measurements in situations where accurate information on physiology is needed but the use of obstrusive methods is not desired.

The method is easy to apply as only beat-by-beat (R-R) recording of heart rate is required. Although the data collection procedure is simple, the method is capable of producing meaningful physiological information by deploying advanced heart beat data analysis. This unique and highly developed heart beat analysis enables monitoring of several physiological parameters by using only beat-by-beat heart rate sensor.

eMotion LAB - *easy and fast data handling* -

eMotion LAB package includes: 4, 8 or 16 eMotion R-R sensors, eMotion LAB software and USB interface for downloading of data.

eMotion LAB software is designed for downloading, basic analysis and easy exporting of HRV data. eMotion R-R data can be analyzed with any third party software.

For research purposes R-R data for example can be analyzed with a freely distributed Kubios HRV software (developed in Department of Physics, University of Kuopio, Finland; available at <http://kubios.uku.fi>). This comprehensive software offers easy-to-use graphical user interface with automated and customizable calculation settings. Analysis options include several common time-domain, frequency-domain and nonlinear HRV measures. Software includes also R-R interval artefact correction and advanced detrending options for removal of disturbing low frequency baseline trend components. Practical PDF report sheets are produced automatically and results can be exported in ASCII format.

Mega Electronics Ltd is ISO 13485:2003 and ISO 9001:2000 certified.

Product License Agreement and Disclaimer:

eMotion SPORTS device: by Mega Electronics Ltd, Finland

Firstbeat SPORTS software: by Firstbeat Technologies Ltd, Finland

Kubios HRV software: by Department of Physics, University of Kuopio, Finland

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