camntech

Cardio

innovation in technology

Main Features

- Record a full single channel ECG Waveform for up to 31 hours
- Simultaneously record 3-axes of acceleration
- Combine heart rate and activity to calculate energy expenditure – validated against Doubly Labelled Water
- Use acceleration data to record body position
- Non-invasive technology
- Compact and light-weight
- Non-volatile memory
- Rechargeable

The Actiwave Cardio is a waterproof ultra-miniature single channel ECG waveform recorder. It consists of two electrodes connected by a short lead which simply clip onto two standard ECG pads worn on the chest. It also contains a tri-axial accelerometer, the signal from which allows the user to determine resting body position. For a single channel 24 hour holter recording the Actiwave Cardio gives unsurpassable wearability. The very small size allows for continuous monitoring in a wide range of patients and applications.

ECG recording with the Actiwave Cardio

The Cardio is ideally suited for Heart Rate Variability (HRV) and Inter-beat Interval (IBI) measurements in ambulatory settings. The Cardio measures the ECG waveform and 3-axes of acceleration. The data is transferred to the Cardio Viewer software (or can be exported to 3rd party software as EDF+ files) which performs the Heart Rate Variability analysis. Some selected statistics available include:

Average IBI: Average Inter-beat Interval (IBI) for the analysis epoch

Standard Dev: Standard Deviation of the IBI data

Min & Max IBI: Minimum and maximum IBI in the epoch

VLF, LF, HF: The very low, low & high frequency component of the IBI, derived using an FFT

RMSSD: The Root Mean Square Successive Difference: a time domain measure of HRV

Position: The position of the subject's body calculated using the accelerometer

Rotation: The rotation of the Cardio

Energy expenditure

The Cardio is an ideal device for measuring energy expenditure in free living for short periods of time. The following parameters are provided:

RMR: Resting metabolic rate

AEE: Activity Energy Expenditure

TEE: Total Energy Expenditure

Technical Specification

ECG

Range:	8mV p-p
Impedance:	10MΩ
Frequency:	0.3 - 50 Hz

Acceleration

Range:	± 4g
Frequency:	0 - 10 Hz

Bibliography

Elbaz, M. (2008) Actiwave: new technology of sleep recording. *Medecine du Sommeil*

Evans, T. (2008) CamNtech report on Actiwave Sleep Trial carried out by the University of Surrey.

Unit type	Order Code	Memory	Recording time*	Weight	Size (mm)
Cardio	08-603	24 Mbytes	31 hours**	10.3g	32diam.x10

*Example recording times are based on 128 Hz 8 bit recording.
**Assuming 3 axes acceleration measured at 32 Hz.

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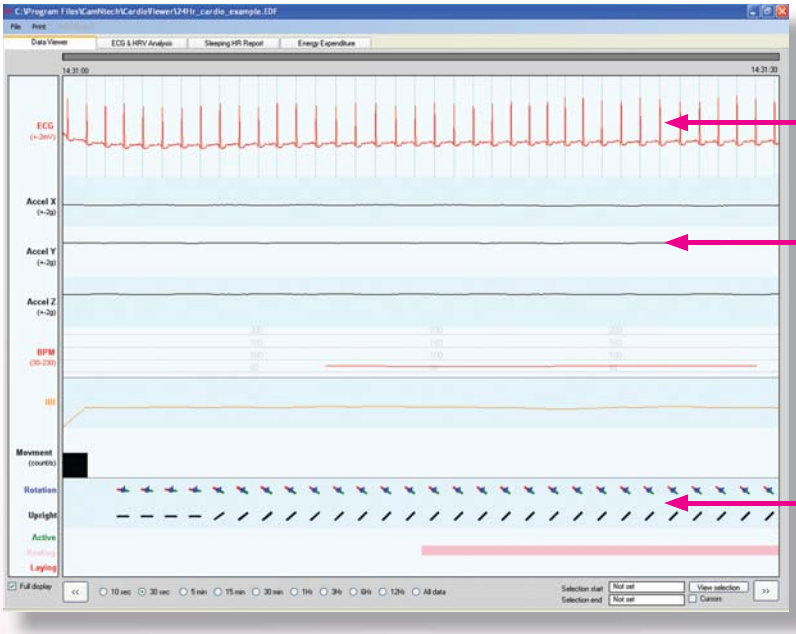
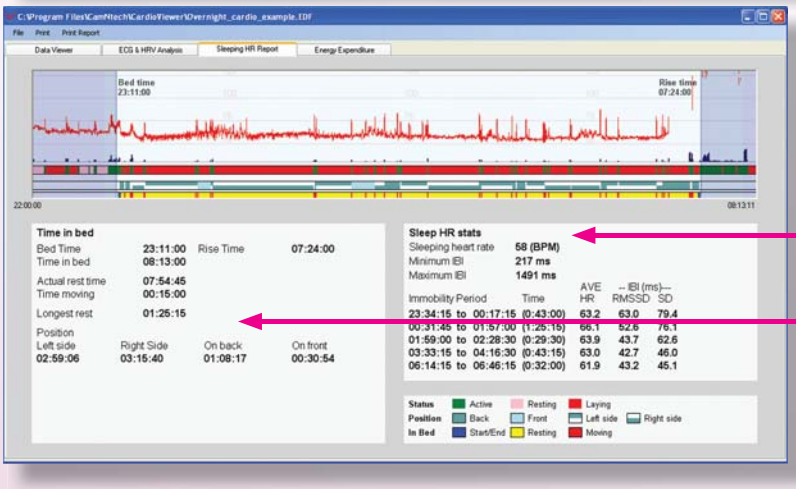
Cardio Analysis Software

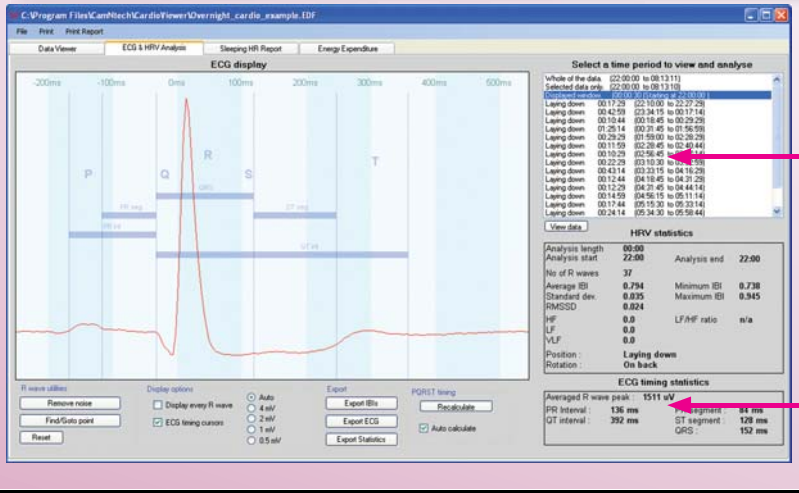
Actiwave Cardio ECG and Activity Analysis



Actiwave Cardio Sleep Analysis



Cardio R Wave Analysis



Cardio, Accessories and Software	Order code
Cardio	08-603
CardioDock: 3 channel Cardio reader/charger plus software and cable	08-733
CombiDock: 4 channel plus 1 channel Cardio reader/charger plus software and cable	08-727
CamNtech Cardio Analysis software	08-176
Chest Band	08-306