

# PowerCube<sup>®</sup> Ergo



The versatile system  
for perfect  
ergospirometry

**GANSHORN**  
MEDIZIN ELECTRONIC

# PowerCube®

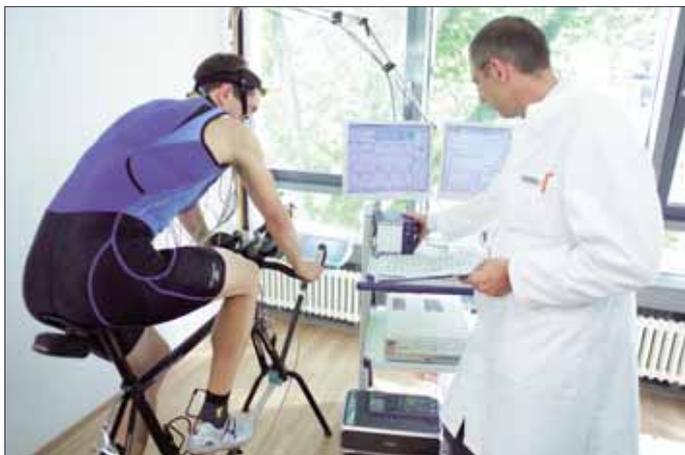
**Ergospirometry with the PowerCube® Ergo – state-of-the-art-technology for cardiopulmonary function diagnostics!**

**From the very beginning, a completely adapted system to meet the special requirements of ergospirometry.**

Only a precise flow measurement can be the solid basis of a reliable ergospirometry.

The bi-directional pneumotachograph »Blenden-spirozeptor« used by GANSHORN for all measuring programs, shows its special qualities straight under the high requirements of the ergospirometry:

- absolutely insensitive to moisture of the breathing air, condensation and against water drops (sweat, saliva).
- After cleaning, it is immediately ready for use without any drying time.
- Neither vibrations, nor drifting times or low outside temperatures impair its high precision.
- With only ca. 29 g it is substantially lighter than other systems, and has a small dead space.



**Quick response times and highly accurate measuring values – the PowerCube®-gas-analysers offer ideal conditions for real »breath by breath« measurements.**

The highly accurate measurements of the PowerCube® analysers cannot be disturbed, not even on a running treadmill nor during portable operation.

The system allows a free choice of O<sub>2</sub> analyzers, either the disposable chemical cell, or the micro fuel cell enabling perfect adaptation for personal requirements. Both give accurate results and require no maintenance.

The 2-point gas calibration with economic gas consumption not only performs a fully automated calibration of the analysers, but additionally calibrates the total gas guiding system – exactly as it is required for the measurement.



# Ergo

## Customized ergospirometry: The GANSHORN-Software LF8 for Windows®

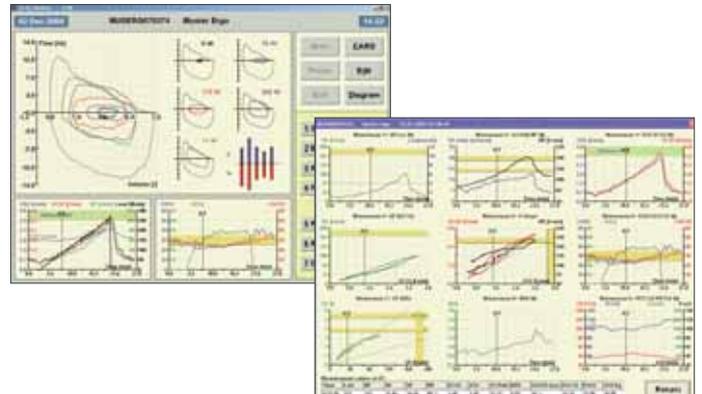
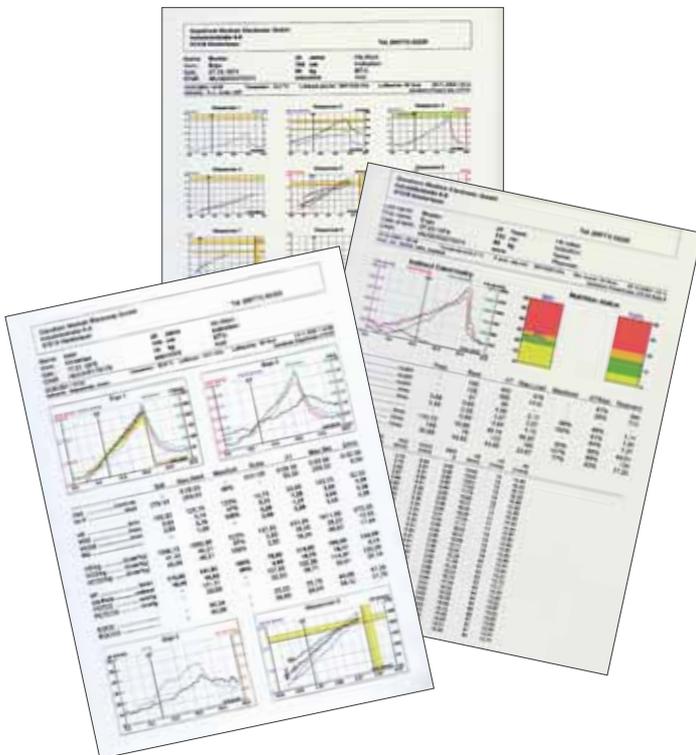
to determine VE, VT, BF, VO<sub>2</sub>, VCO<sub>2</sub>, RER, pulse, PETO<sub>2</sub>, PET CO<sub>2</sub> and heartrate as well as a great range of secondary parameters with real-time monitor displaying.

LF8 allows you to perform measurements and evaluate the data according to your requirements. The measuring process, the evaluation and the displaying of the measured data – everything can simply be configured according to your desire.

Important calculated measurements round off the spectrum of the PowerCube®-Ergo already in the basic LF 8 software.

- Nutrition
- Flow/volume-curves under charge (intra-breath)
- Maximum voluntary ventilation MVV
- Spirometry / Flow/volume

The modular concept of the PowerCube® permits the later integration of further interesting measurements, of cardio pulmonary diagnostics (e.g. Cardiac Output, SPO<sub>2</sub>) or of the classical lung function (e.g. oscillatory resistance).



- Simultaneous screen display of all 9 Wasserman-panels – also online during the measurement
- Fullscreen on every Wassermann-panel possible, enabling the perfect detection of the anaerobic threshold .
- The final data report is freely configurable, displaying the desired parameters via the assistance of numeric tables or graphics for the screen, printer, intranet or graphic-file.
- Method to predetermine the anaerobic threshold can be selected: V-Slope, CO<sub>2</sub> - excess, EQO<sub>2</sub> - minimum, or REE=1, manual determination is possible at any time
- Re-evaluation of all recorded measurements based on the raw datas.
- Monitoring includes alarm functions.
- Manual input of external measured data during and after measurement possible.
- Online transfer of blood pressure, BGA and SpO<sub>2</sub> measured data to the measurement protocol (option).
- Automated interpretation scheme according to Karlman Wasserman.
- **Can be combined with the analysis software LFSport – the perfect addition to LF8**





## Team power

The PowerCube® Ergo includes software interfaces for ECG, ergometer, treadmill, blood pressure measurement and blood gas analysis.

Tested and easy to handle interfaces can be offered for most devices available on the market. GANSHORN cooperates with leading manufacturers.

In these cases only one program needs to be operated – for patient data entry and measuring data transfer – to control the complete ergospirometry including ergometry and peripheral devices.

Furthermore a software assistant is available to quickly generate and store any required work load protocols, used for complete control of the testing with the PowerCube®. The use of other measuring equipment such as the heart rate belt can be easily intergrated to match the requirement.

## Ergospirometry measurement module PowerCube®-Ergo

**337 040** with software LF8 for Windows® and basic accessories (calibration syringe, ergospirometry masks, mouth pieces and others)

## PowerCube®-Ergo measurement system

**337 043** Ergospirometry measurement module PowerCube®-Ergo with software LF8 for Windows® and basic accessories, trolley with 230 V insulation transformer 1000 VA, movable cable arm, support for gas cylinders, PC, CD-ROM, keyboard, mouse, configured for LF8 with TFT-monitor and ink jet color printer

## Options

- 337 048** Option O2-measurement via micro-fuel cell
  - 337 046** CO<sub>2</sub>- Rebreathing (Cardiac Output) to determine the stroke volume
  - 223 020** Pulseoximetry SpO<sub>2</sub>
  - 337 025** Oscillatory Resistance Ros
  - 221 101** Accu-pack for portable use
  - 223 030** Capnography
- LF8 is network-capable and has a network-interface as well as interfaces for intranets
- 870 010** intranet release and configuration
  - 871 040** Multiple workstation license to install several workstations
  - 554 030** Evaluation software LFSport

Further options, ECG monitors, ergometers, peripheral devices, interfaces, as well as information on computer requirements can be requested.

## Technical Specifications PowerCube®-Ergo

Active medical product of class II a  
Automatic BTPS-correction via »environmental module«  
RS 232 - infrared interface for 4 KV-separation between PowerCube® and PC  
Dimensions measurement module (d x w x h): 21 x 15 x 15 cm  
Weight measurement module: about 2,5 kg  
Dimensions complete measurement system (d x w x h): ca. 65 x 65 x 150 cm  
Weight complete measurement system (d x w x h): about 70 kg  
Flowsensor: pneumotach »Blendenspirozeptor«  
Measurement principle: difference pressure measurement with variable orifice.  
O<sub>2</sub>- analyzer: chemical, 0 - 100% O<sub>2</sub>  
Optional: Solid electrolyte, 0 - 21% O<sub>2</sub>  
CO<sub>2</sub>- analyzer (patented): ultrasound 0 - 15% CO<sub>2</sub>

**GANSHORN operates with a certified quality assurance system in accordance with EN ISO 9001/12.2000 / EN ISO 13485/11.2000**



Illustrations shown do not necessarily correspond with the basic equipment. Subject to technical modifications and improvements, as well as to the availability of the devices and options mentioned. 10/06

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