Quark CPET

Cardio Pulmonary Exercise Testing

Compact Metabolic cart for Accurate Pulmonary Gas Exchange & 12-lead Stress Testing ECG

- Breath by Breath Gas Exchange data analysis (VO_2, VCO_2)
- Integrated 12-lead ECG for Stress Testing (option)
- Nutritional Assessment
- Fast response Paramagnetic O_2 Sensor
- Full Spirometry, Exercise SpO_2 monitor
- Windows Vista™ Compatible

COSMED
Pulmonary Function Equipment

Applications

Designed to be the perfect tool for any kind of Cardio Pulmonary Exercise Testing (CPET), Quark CPET includes features for any discipline requiring metabolic assessment.

- Exercise Physiology, Education.
- Sports Science and Human Performance labs.
- Clinical Exercise Testing (Respiratory PFT Labs, Cardiology, Cardiac Rehab).
- Nutrition assessment.

Unsurpassed Accuracy

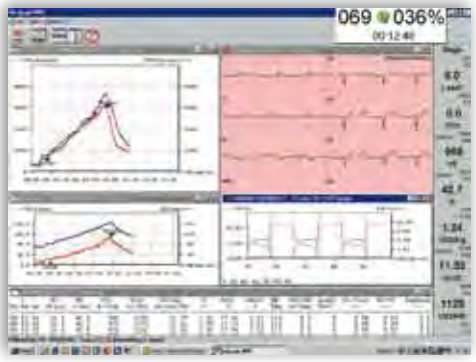
- Superior hardware specifications and quality design assure many years of accurate data.
- Quark CPET exceeds the accuracy standards of both the American Thoracic Society and the European Respiratory Society.
- Paramagnetic Oxygen and NDIR Carbon Dioxide analyzers.
- Bi-directional digital Turbine for Flow and Volume measurement.
- Accurate within a wide flow range (0-300 L/minute).
- Resistance to flow is less than 0.7 $cmH_2O/L/s@12$ L/s.
- Small, Medium and Large sizes face masks for Adults.
- Comprehensive Calibration easy, quick and fully software assisted.
- Low Maintenance costs and Easy Servicing.

Cardio Pulmonary Exercise Testing

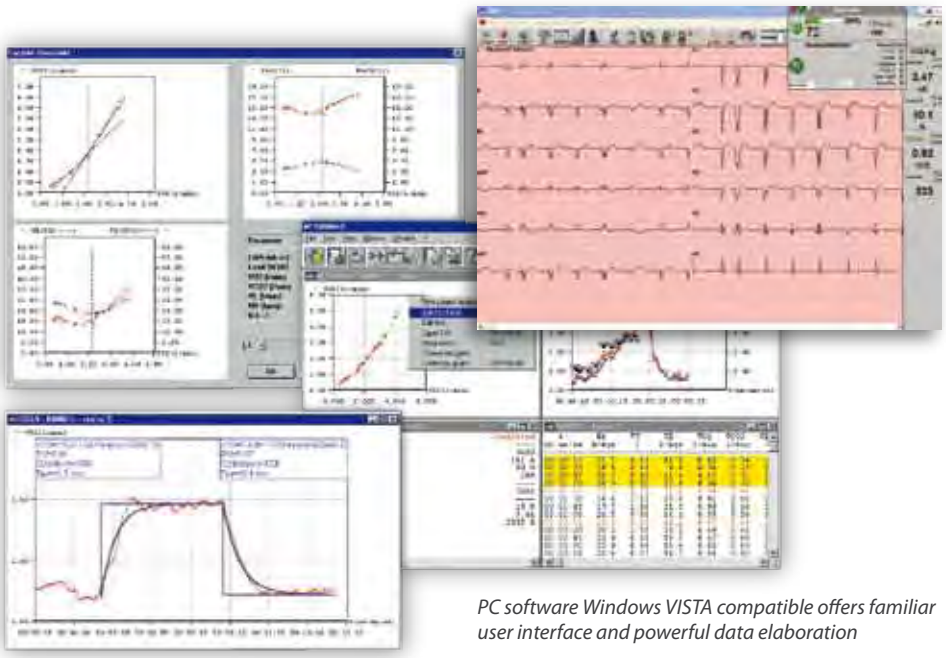
- True Windows™ based program, offering, simplicity, versatility and familiar user interface.
- Display real-time data and graphs in either pre-defined or user formats.
- Real time O_2 and CO_2 waveforms.
- Exercise Flow-Volume loops.
- Ergometer control, via RS-232 interface, allows user easy protocol setup and dynamic changes.
- Advanced Data Elaboration.

- Automatic and manual detection of anaerobic threshold according to the Modified V-Slope method (Wasserman).
- Access data in a spreadsheet format for advanced data elaboration (filtering, smoothing, etc.).
- Standard and custom Exercise protocols design.
- O_2 Kinetics feature automatically provides O_2 debt, O_2 deficit and tau values during any constant stage.
- "Fitting" features on any plot (both linear and exponential).
- Indirect Cardiac Output by "Wassermann Algorithm".
- Export test in a single file (ASCII, Excel, file formats).
- Email test with MAPI compatible application (outlook, eudora etc.).
- Add user defined parameters and predicted equations with custom based formulas.
- Integrated 12-lead Stress Testing ECG.
- True diagnostic quality waveforms.
- Continuous 12 lead viewing.
- Zoom and freeze features.
- Current and reference ST analysis profiled for all 12 leads.
- ST depression and slope trends displayed during test.
- Averaged QRS complexes over reference ECG complex.
- Real time laser printout.

The CPET module add the possibility of performing pulmonary gas exchange analysis during exercise.



Real time graphic and numeric display of a Cardiopulmonary exercise test (Gas exchange and ECG).



PC software Windows VISTA compatible offers familiar user interface and powerful data elaboration

Optional Hardware & Software

Spirometry	Software and hardware to perform screening spirometry (FVC, MVV, broncho-challenge etc.).
Pulse Oximetry	Monitor Oxygen saturation exercise using a pulse oximeter (SpO_2) provided with either finger, ear or reflectance probes.
Canopy Kit	Perform REE measurements by means of canopy hood. Provided with specific flowmeter to increase accuracy at very low ventilations.
High/Low FiO_2 Kit	Kit of accessories for Gas Exchange measurements using hypoxic and hyperoxic gas mixtures.
Ergometers	COSMED provides a wide selection of treadmills and bikes for both clinical and performance applications. Refer to the Treadmill or Bike product brochures.
Physiotrainer	Optional software to dynamically control the work load of any ergometer to target physiological "effort-dependent" parameters such as VO_2, VO_2/Kg, HR and VE.

The SpO2 module is available with different sensor probes: finger, ear and reflectance.

True diagnostic quality 12-lead stress test ECG available in both wireless and Patient-cable configurations .

Nutritional Assessment

- REE, Substrate of Metabolism, NPRQ etc.
- User defined protocols consisting of two phases (1st phase discarded and 2nd phase data averaging).
- Post-analysis and custom selection of the "steady state" phase.

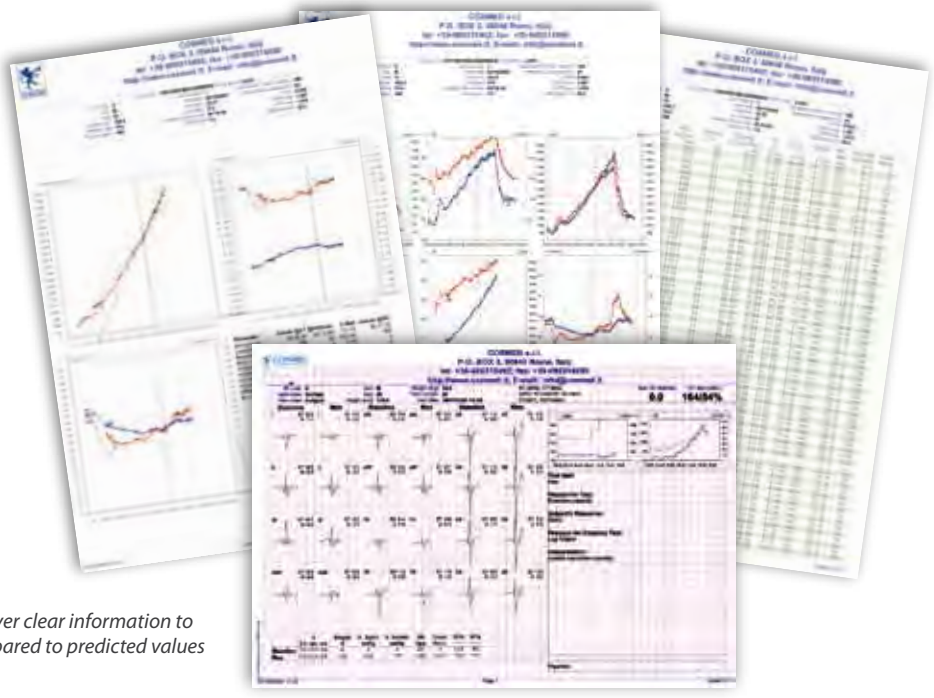
Easy Maintenance & Service

Quark CPET has been designed to minimize the need of ordinary and frequent service inspections. Built with the latest plug & play architecture service and support inquiries can now be handled not exclusively by either factory or specialized service sites.

The modular design of Quark CPET minimizes technical assistance by means of boards replacement.

Powerful Reporting

- Prints any plot or data selection according to user defined criteria.
- ***Ready-to-print*** pre-defined reports.
- ***9-plot Wasserman*** report can provide single page report with the 9 graphs and additional test results for an easy clinical interpretation.
- ***Summary Report,*** provides data for a simple and easy interpretation.
- ***ECG Report*** on standard or grid paper.



Explicative colour printout reports in different formats deliver clear information to user including: graphical test display, numerical data compared to predicted values and automatic interpretation of test results.

Technical Specification

Gas Analysers	Oxygen (O2)	Carbon dioxide (CO2)
Type	*Paramagnetic*	*NDIR*
Range	*0-100%*	*0-10%*
t90	*<120 ms*	*<120 ms*
Accuracy	*±0,01%*	*±0,01%*
Warm-up	*0 min*	*5 min*

Flowmeters	VO2max	RMR (optional)
Type	*Bidirectional Digital Turbine*	*Bidirectional Digital Turbine*
Diameter	*Ø 28 mm*	*Ø 18 mm*
Flow Range	*0.03-20 L/sec*	*---*
Accuracy	*± 2%*	*± 2%*
Resistance	*<0.7 cm H2O s/L @ 12 L/s*	*<0.7 cm H2O s/L @3 L/s*
Ventilation range	*5-300 L/m*	*0-50 L/m*

Environmental sensors	Temperature	Barometer	Humidity
Range	*0-50°C (32 - 122 F°)*	*400-800 mmHg*	*0-100%*

Interface ports

USB A-B, RS-232, HR-TTL, SPO_2

Electrical requirements

Voltage	*100-240V ±10%; 50/60Hz*
Class	*1 Type BF (EN 60601-1)*

Dimensions

Dimensions	*33 x 41 x 16 cm (12,9 x 16 x 6,2 in)*
Weight	*6 Kg (13,2 lb)*

Standard Packaging

Gas Exchange Unit, HR belt, turbine flowmeter, PC software, 3 Adult face masks (S, M, L), 2 Adult Head caps, Calibration syringe (3 liters), Cables and probes, User manual

PC configuration required

Pentium or faster, Windows XP, VISTA 32, 128 Mb RAM or more, USB or RS 232, CD-Rom reader, 80 Mb on HD space available.

Available languages

Italian, English, German, Spanish, French, Portuguese.

Safety & Quality Standards

Equipment complies with MDD (93/42 EEC) and FDA 510(k), EN 60601-1 (Safety) and EN 60601-1-2 (EMC)

CE 0476

COSMED
Pulmonary Function Equipment

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