



The Most Accurate & Versatile Nutritional Management provided in a compact/bed-side solution

- ▶ Indirect calorimetry (continuous VO_2 , VCO_2)
- ▶ Accurate measurement of Resting Energy Expenditure (REE) & Metabolism substrate (RQ, FAT, CHO, PRO)
- ▶ Provided with Canopy Hood & Disposable Face Masks
- ▶ Suitable for either Spontaneously Breathing subjects or Mechanically Assisted patients



Versatile Nutritional Assessment

The assessment of the nutritional needs of critically ill patients is vital as over-feeding and negative energy balance can be detrimental to their health and recovery.

The Quark RMR is the latest innovation in Indirect Calorimetry designed to accurately and instantaneously measure a patient's energy requirements and response to artificial nutrition during prolonged hospitalization or admission to the intensive care unit. The Quark RMR is an essential piece of equipment for:

- ▶ Clinical Nutrition & Research
- ▶ Intensive Care Units
- ▶ Cancer Centers, neurological and coma patients, burn patients, Transplants patients
- ▶ Bariatric Centers

By measuring REE and providing the correct energy balance in critically ill patients, Hospital may improve patient outcome, and decrease the length of hospitalization which will have a significant and immediate impact on the bottom line.

Accurate Indirect Calorimetry

The Quark RMR uses latest technology in gas analyzers. It is provided with an Infrared (NDIR) CO₂ sensor and a fast-response, stable, durable and non-consumable Paramagnetic O₂ sensor. Both sensors are virtually maintenance free and reliable, even after for many years of use.

Key features

- ▶ Indirect calorimetry VO₂, VCO₂, RQ, REE and related parameters
- ▶ Substrate utilization (%FAT, %CHO, %PRO)
- ▶ High FiO₂ kit for elevated O₂ levels (option)
- ▶ Suitable for both spontaneously breathing subjects or mechanically ventilated patients (option)
- ▶ The Canopy blower flow rate is directly measured with digital turbine flowmeter
- ▶ Automatic quality control during test is provided by a random check on gas concentrations.

Ease of use & immediate results

Executing a test with the Quark RMR is simple; you can choose the length of the protocol, and monitor breath by breath data during the entire test. Features of our user-friendly software:

- ▶ Users can set-up their own workspace (choosing parameters, graphs and icons to display)
- ▶ Automatic steady state calculation based on user defined criteria.
- ▶ Calculate REE by selecting any time interval during a test.
- ▶ Calculate NPRQ by manually individual Ureic Nitrogen level.

Ultimate Software

The software is designed for Windows XP and compatible with VISTA. User-friendly interface, intuitive commands and icons are the perfect tools for fast and reliable data collection and interpretation in any hospital department or doctor's office.

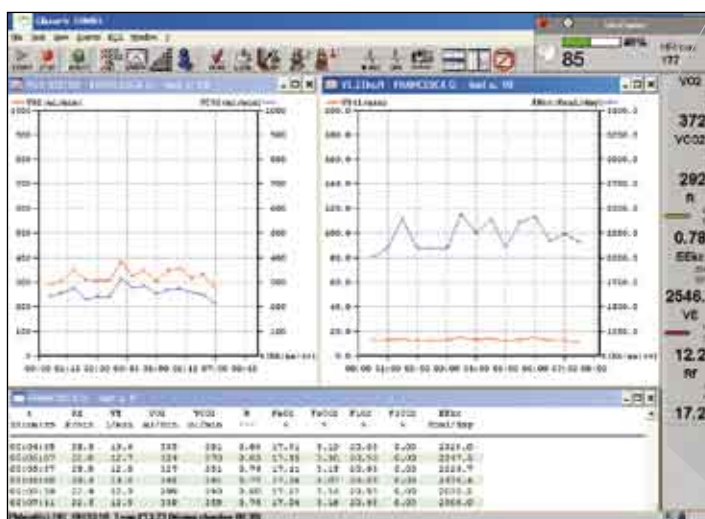
- ▶ Complete patient archive, diagnosis database and customizable clinical reports
- ▶ Automatic generation of PDF files with user-defined file names
- ▶ Batch printing of multiple reports
- ▶ Network compatible on any Microsoft network.



Resting Energy Expenditure with Canopy hood.



The Disposable/single use face mask is provided with a high efficiency anti-bacterial filter to prevent cross contamination (patent pending)



Real time display of all the measured parameters in a tabular or graphical format.

VO2	372
	292
372	
VCO2	292
	232
292	
R	0.83
	0.75
0.78	
EEkc	2546.6
	2019.6
2546.6	
VE	14.6
	12.0
12.2	
Rf	28.6
	17.2
17.2	

Options / Accessories

Ventilator Kit	Ventilator Option (integrating with ventilators through their exhalation port).
Ethanol Burning kit	For Quality Control of the respiratory quotient (RQ).
Gas Mixture	Calibration cylinders of different concentrations and sizes.
Silicon Face Masks	Reusable facial mask with ergonomic head-cap (5 sizes available).
Medical Cart	Medical Graded cart compact and easy to transport for bed-side applications.
High/low FiO ₂ Kit	For Elevated O ₂ level applications.
Single patient Use Face Mask	Disposable Face Mask (patent) with integrated bacterial filter eliminates risk of cross contamination.




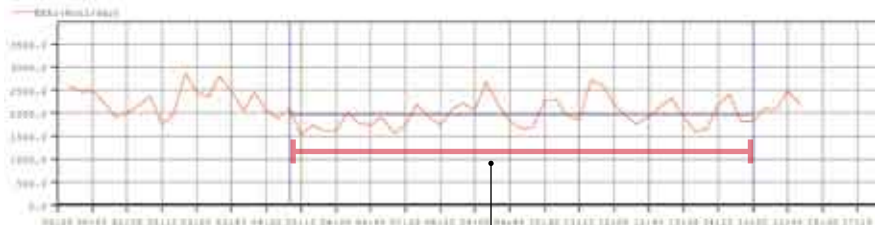
Optional medical grade cart for comfortable bed-side application.

Investment Protection

COSMED has done everything to protect customer's investment by keeping operating costs as low as possible. The product's was designed to eliminate ordinary maintenance and make troubleshooting as easy as possible. Free software upgrades for the first 12 months to keep you up to date with the latest scientific guidelines.



Ventilator and Plugs are easily reachable on the back of the Quark RMR

	 <p>COSMED s.r.l. P.O. BOX 3, 00040 Rome, Italy tel: +39-069315492; fax: +39-069314580 http://www.cosmed.it; E-mail: info@cosmed.it</p>	Header (user defined)																																																												
Patient information	<p>Case name: RICH Patient name: JAMES</p> <p>Age: 34 Sex: M Test number: 1 Barometric pressure (cmHg): 737 Height (cm): 185.9 Age: 34 Test date: 08/08/2001 Temperature (degrees C): 37 Weight (kg): 83.8 % of ideal: 84 Test time: 11:43 % FIO2: 0.766 BMI (kg/m²): 23 Exercise (kcal/min): 00:14:00 STPD exp: 1.828 RMR (kcal/day): 188 RMR (kcal/2h): 2.2 RMR (kcal/2h): 24.4</p>																																																													
List of main parameters	<table border="1"> <thead> <tr> <th>Parameter</th> <th>Real</th> <th>Pred.</th> <th>% Pred.</th> <th>BMI Statements</th> </tr> </thead> <tbody> <tr> <td>Time (min:sec)</td> <td>10:00</td> <td>10:00</td> <td>100.0%</td> <td>Underweight <18.5</td> </tr> <tr> <td>RMR (kcal/day)</td> <td>1882.7</td> <td>2091.3</td> <td>94.8%</td> <td>Normal 18.5-24.9</td> </tr> <tr> <td>R (-)</td> <td>0.82</td> <td>0.86</td> <td>97.1%</td> <td>Overweight 25.0-29.9</td> </tr> <tr> <td>VO2 (ml/min)</td> <td>297</td> <td>325</td> <td>94.3%</td> <td>Obesity class I 30.0-34.9</td> </tr> <tr> <td>VCO2 (ml/min)</td> <td>237</td> <td>270</td> <td>89.8%</td> <td>Obesity class II 35.0-39.9</td> </tr> <tr> <td>RF (l/min)</td> <td>13.7</td> <td>12.0</td> <td>114.8%</td> <td>Obesity class III >>40</td> </tr> <tr> <td>VE (l/min)</td> <td>8.0</td> <td>8.0</td> <td>100.0%</td> <td></td> </tr> <tr> <td>HR (bpm)</td> <td>57</td> <td></td> <td></td> <td></td> </tr> <tr> <td>FAT% (%)</td> <td>49.2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>CHO% (%)</td> <td>33.7</td> <td></td> <td></td> <td></td> </tr> <tr> <td>BMI (kg/m²)</td> <td>24.4</td> <td>Normal</td> <td></td> <td></td> </tr> </tbody> </table>	Parameter	Real	Pred.	% Pred.	BMI Statements	Time (min:sec)	10:00	10:00	100.0%	Underweight <18.5	RMR (kcal/day)	1882.7	2091.3	94.8%	Normal 18.5-24.9	R (-)	0.82	0.86	97.1%	Overweight 25.0-29.9	VO2 (ml/min)	297	325	94.3%	Obesity class I 30.0-34.9	VCO2 (ml/min)	237	270	89.8%	Obesity class II 35.0-39.9	RF (l/min)	13.7	12.0	114.8%	Obesity class III >>40	VE (l/min)	8.0	8.0	100.0%		HR (bpm)	57				FAT% (%)	49.2				CHO% (%)	33.7				BMI (kg/m ²)	24.4	Normal			BMI management
Parameter	Real	Pred.	% Pred.	BMI Statements																																																										
Time (min:sec)	10:00	10:00	100.0%	Underweight <18.5																																																										
RMR (kcal/day)	1882.7	2091.3	94.8%	Normal 18.5-24.9																																																										
R (-)	0.82	0.86	97.1%	Overweight 25.0-29.9																																																										
VO2 (ml/min)	297	325	94.3%	Obesity class I 30.0-34.9																																																										
VCO2 (ml/min)	237	270	89.8%	Obesity class II 35.0-39.9																																																										
RF (l/min)	13.7	12.0	114.8%	Obesity class III >>40																																																										
VE (l/min)	8.0	8.0	100.0%																																																											
HR (bpm)	57																																																													
FAT% (%)	49.2																																																													
CHO% (%)	33.7																																																													
BMI (kg/m ²)	24.4	Normal																																																												
		% of variation for each parameter during the selected steady state																																																												
	<p>02/01/2003 16:44 Page 1 Quark v° 01151.4</p>	User defined steady state selection																																																												

Technical Specification

Analyzers	Oxygen (O ₂)	Carbon dioxide (CO ₂)
Type	Paramagnetic	NDIR
Range	0-100 %	0-10 %
Accuracy	± 0.03%	± 0.03%
Response time	<120ms	<120 ms
Warm-up time	0 min	5 min

Flowmeter

Type	Bi-directional digital turbine (Ø 18 mm)
Range	0-50l/min
Accuracy	±2%
Resistance	<0.7 cmH ₂ O/l/sec @ 3 l/sec

Hardware

Dimensions & weight (Quark RMR unit) 17 x 30 x 45 cm/8 Kg
Dimensions & weight (Canopy) 16l/0.6 Kg

Standard Packaging Includes

Quark RMR unit, Canopy, RMR flowmeter, RMR disposable masks, antibacterial filters, PC software RMR, calibration syringe, Polar® HR monitor (receiver & transmitter), power supply cable, USB cable, user manual

Available languages

Italian, English, French, Spanish and German

Electrical requirements

Quark RMR unit 110-240V ±10%; 50/60Hz
Internal emergency battery 12V; 1,2 Ah

PC configuration required

PC Pentium or higher, Windows XP, 64 Mb RAM, USB or RS 232, CD reader, 20 Mb space free on HD, Monitor VGA, SVGA, XGA

Safety & Quality Standards

Quark RMR is in compliance with the European Directive 93/42/CEE concerning medical devices.
Equipment complies with MDD (93/42 EEC) and FDA 510 (k)

CE
0476

