



Directly connected to a USB port turns any PC into a spirometer

- ▶ Full Spirometry testing (FVC, SVC, MVV and Pre-Post bronchial challenge test)
- ▶ Bronchial Challenge test (Metacholine and bronchial dilator)
- ▶ Automatic diagnosis according to ERS/ATS standards and COPD diagnosis (GOLD)
- ▶ Advanced software, patient database, diagnosis, real-time tests, professional prints, trends
- ▶ Digital turbine flowmeter validated by LDS Hospital (ATS Standards)



**microQuark** is the new PC spirometer designed by COSMED for lung function screening. It can be used with any PC, either desktop or laptop, by simply installing the application software and connecting the USB cable to the USB port of the computer.

The great competitive advantage of this product is the newly developed software that allows any user to manage reliable screening spirometry in a fast, simple and cost effective way. All maneuvers (FVC, SVC and MVV) are displayed in real time, so the user can monitor tests while they are performed.

## Applications

microQuark features may be appreciated in different application fields: Small Clinic, Family Practice, General Practitioner, Occupational Health, Preventive Medicine, Sports Medicine.

## Accurate & Reliable Flow/Volume measurements

The flowmeter ensures maximum precision throughout a wide range of flows (up to 20 l/s) and a very low flow resistance (less than 0.7 cm H<sub>2</sub>O/l/s at 12 l/s). Calibration is carried out in a second using a 3 litres calibration syringe. microQuark has a built-in temperature sensor, for the automatic correction of the results to BTPS conditions.

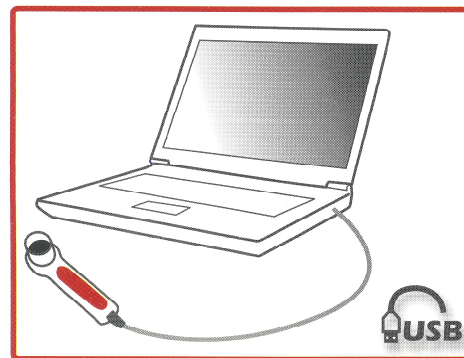
COSMED's turbine flowmeter complies with ATS and ERS recommendations. All flow and volume measurement systems are pre-tested in our lab by means of a pulmonary waveform generator system, according to the ATS 94 standards (24 + 26 curves, BTPS conditions).

## Technology

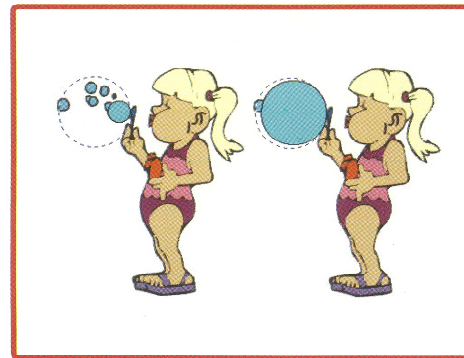
No batteries are required for the new microQuark. Power is supplied by the PC through the USB connection. A special microQuark with a RS232 connection and power supply through PS2 port is available in case the PC has no USB port, managed through the PC allowing real-time display on the PC screen.

## PC Software

- ▶ Complete database management for patients, diagnosis, clinical report, bronchial challenge protocols;
- ▶ User defined protocols to easily manage bronchial challenge tests;
- ▶ Detailed printing of F/V, V/t, bronchial challenge response graphics, PD 10, 15 and PD 20 calculation;
- ▶ Pre-Post test with either bronchial dilator or metacholine;
- ▶ Powerful post analysis elaboration on data with possibility to overlap tests performed in different test sessions;
- ▶ Multiple parameter trend analysis.
- ▶ Batch print of multiple spirometry tests;
- ▶ Built-in temperature sensor for the automatic BTPS correction;
- ▶ Software encouragement tool for pediatric and non-cooperative patients;
- ▶ Several selectable sets of predicted values: ERS, NHANES III, etc;
- ▶ Create custom parameters and user defined set of predicted equations;
- ▶ FEV6 parameter and related calculations now measured;
- ▶ Printout report according to the ERS-ATS requirements;
- ▶ Customizable printouts as per user's needs;

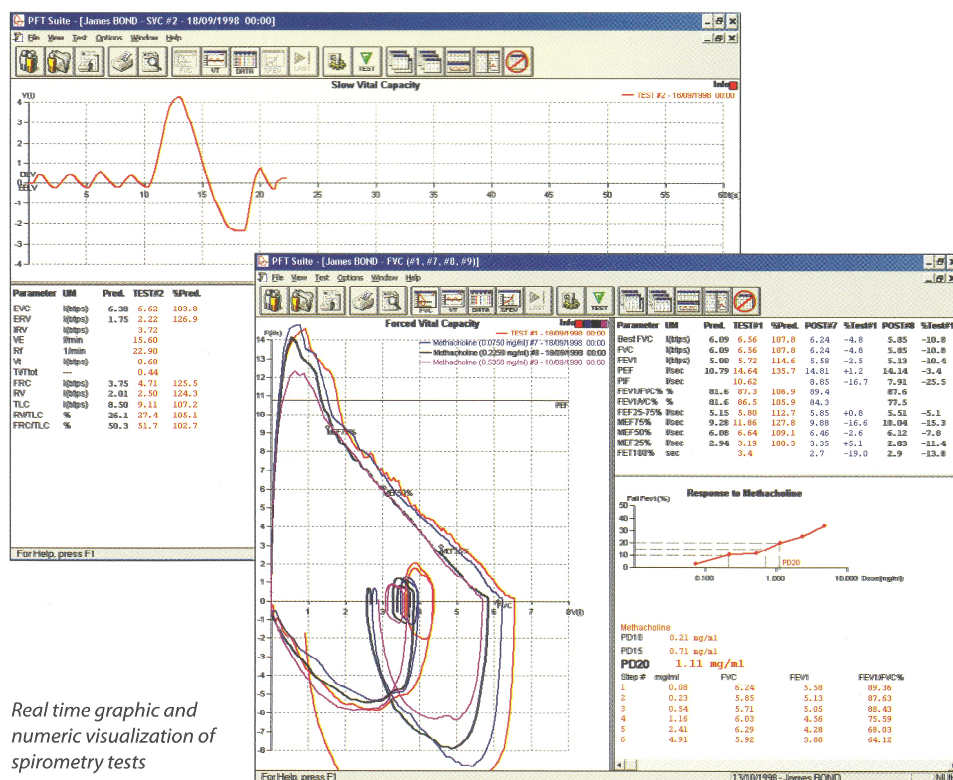


Direct connection to USB port



Software encouragement feature

- ▶ Best Test selection and results reproducibility according to ATS 1994 standards;
- ▶ Quality control messages according to the ATS guidelines for spirometry tests;
- ▶ Full compatibility of the database with Quark PFT product line.



Real time graphic and numeric visualization of spirometry tests

## Accessories and options

Digital turbine flowmeter

It does not require frequent calibrations. Extremely accurate and reliable in any conditions. It can be used with antibacterial filters (recommended) or cardboard mouthpieces.

Calibration syringe

A 3 liters certified syringe ensures easy and fast flowmeter calibration at any time.

Antibacterial filters

High filtration efficiency (99.9999%) to avoid cross-contamination.

RS232 connection

Available also a microQuark with a RS232 connection and power supply through PS2 port, if user PC has no USB port.



Antibacterial filter

**COSMED S.r.l.**  
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**Last Name:** BOND  
**First Name:** James  
**ID:** 000001  
**Date:** 18/09/1998  
**Predicted:** ERS 93

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**Last Name:** BOND  
**First Name:** James  
**ID:** 000001  
**Date:** 18/09/1998  
**Predicted:** ERS 93

**Date of Birth:** 04/03/1967  
**Sex:** Male  
**Ethnic Corr.:** Caucasian  
**Description:** Pulmonary Function Tests  
**Company:** COSMED

**Age:** 31  
**Weight (Kg):** 90.0  
**Height (cm):** 195.0  
**BSA (m²):** 2.2  
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Forced Vital Capacity						
Parameter	UM	Description	Pred.	PRE#1	%Pred.	POST#7
Best FVC	l(btps)	Best Forced Vital Capacity	6.09	6.56	107.8	6.24
FVC	l(btps)	Forced Vital Capacity	6.09	6.56	107.8	6.24
FEV1	l(btps)	Forced Exp Volume in 1 sec	5.00	5.72	114.6	5.58
PEF	l/sec	Peak Expiratory Flow	10.79	14.64	135.7	14.81
PIF	l/sec	Peak Inspiratory Flow		10.62		8.85
FEV1/FVC%	%	FEV1 as % of FVC	81.6	87.3	106.9	89.4
FEV1/VC%	%	FEV1 as % of VC	81.6	86.5	105.9	84.3
FEF25-75%	l/sec	Forced mid-expiratory flow	5.15	5.80	112.7	5.85
MEF75%	l/sec	Max Exp Flow @ 25% FVC	9.28	11.86	127.8	9.88
MEF50%	l/sec	Max Exp Flow @ 50% FVC	6.08	6.64	109.1	6.46
MEF25%	l/sec	Max Exp Flow @ 75% FVC	2.94	3.19	108.3	3.35
FET100%	sec	Forced Expiratory Time		3.4		2.7

Lung volumes and Respiratory pattern						
Parameter	UM	Description	Pred.	PRE#2	%Pred.	
EVC	l(btps)	Expiratory Vital Capacity	6.38	6.62	103.8	
ERV	l(btps)	Expiratory Reserve Volume	1.75	2.22	126.9	
IRV	l(btps)	Inspiratory Reserve Volume		3.72		
VE	l/min	Expiratory Minute Ventilation		15.60		
Rf	1/min	Respiratory Frequency		22.90		
Vt	l(btps)	Tidal Volume		0.68		
Ti/Tot	—	Ti/Tot ratio		0.44		

Maximum Voluntary Ventilation			
Parameter	UM	Description	Pred.
MVV	l/min	Maximum Voluntary Ventilation	168.8
MVt	l(btps)	Tidal volume during MVV	3.17

**Diagnosis:**  
Normal Spirometry  
Printed 04/07/2007  
PFT Suite 8.0b

**Diagnosis:**  
Normal Spirometry  
Printed 28/10/2004  
PFT Suite 7.6a

Printout reports according to ATS/ERS guidelines

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# Technical Specification

## Product Features

Flowmeter	Digital Turbine Ø 28 mm"
Type	Bi-directional
Flow Range	0.08-20l/s
Volume range	12 litres
Accuracy of reading	±2%
Resistance	<0.6 cmH <sub>2</sub> O/l/s @ 14 l/s
Temperature sensor	0-50° C

## Measured parameter

FVC • IVC • VC • MVV • VT • FEV1 • FEV6 • FEV1/FEV6 • FEV6/FVC • PEF • PIF • FEV1/FVC • FEF 25-75 • FEV1/VC% • %FFV1 • MFF25% • MEF50% • MEF75% • FET 100% • ERV • IRV • VE • Rf • ti • te • ti/t.tot • VT/ti • Best FVC • Best FEV1 • IC

## Predicted values

ERS 1993 (ECCS 1983), NHANES III, Knudson 83, ECCS 1971, ITS, Zapletal, LAM, Pneumobil, Gutierrez (Chile), Multicentrico Barcelona, Thai 2000, user defined predicted calculation.

## Hardware

Interfaces	Digital USB -(RS232 option)
Dimensions (mm, inc)	150 x 45 x 53 (38,1 x 11,43 x 13,4)
Weight (g, lbs)	77 (0,17)

## Standard Packaging Includes

PC software and user manual, Turbine flowmeter, 2 Nose clips, Serial communication, cable, Carrying case, Adapter for pediatric mouthpieces, PS2 Keyboard/Mouse, adapter, 20 Adult mouthpieces, 20 Pediatric mouthpieces).

## Available languages

English, Italian, French, German, Spanish, Portuguese, Turkish, Chinese (Mandarin), Korean

## PC configuration required

Pentium or faster, Windows XP, 2000, 98/95 or NT, 64 Mb RAM or more, USB port available, CD reader, 20 Mb on HD space available, Monitor VGA, SVGA, XGA, any mouse and printer compatible with the MS Windows™ operative system

## Electrical requirements

Power supply via USB

## Safety & Quality Standards

Equipment complies with MDD (93/42 EEC);  
FDA 510(k) cleared (federal law restricts this device to sale by or on the order of a physician). EN 60601-1 (safety) / EN 60601-1-2 (EMC).



Distributed by:

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