

EasyOne Pro LAB

The portable solution that offers the broadest spectrum of lung function testing in the GP's office, clinic and hospital

Spirometry Single Breath CO Diffusion Multiple Breath Nitrogen Washout for Lung Volumes and Ventilation Inhomogeneity

The proven ultrasound technology
nnd TrueFlow
nnd MolMass

no calibration, no warm-up
time, no moving parts

Automated user guidance throughout maneuvers based on current ATS/ERS standards

Reproducible results ensure comparability in multicenter studies

Real-time curves and pediatric incentives

Immediate test quality feedback in accordance with ATS/ERS criteria

Export of pdf files and raw data

Flexible HL7 and XML interface for easy EMR integration

Only 1 gas for DLCO and 1 gas for MBW testing, no calibration gas required

Absolute hygienic solution with Spirette and Barriette consumables eliminates the risk of cross-contamination

Compact device with smooth surfaces for easy and thorough cleaning

TrueFlow
makes the difference

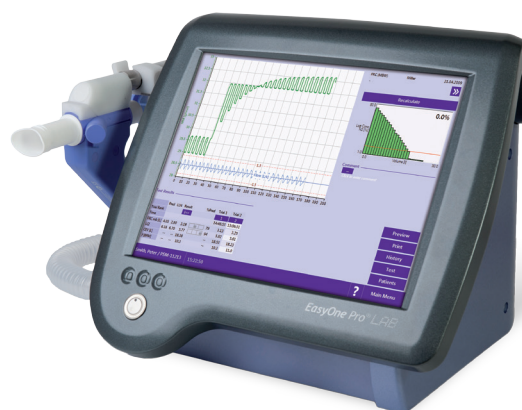
The original ultrasonic flow measurement is highly accurate in all flow ranges, independent of gas composition, pressure, temperature and humidity and does not require calibration during its life-time. The sensor is never in direct contact with the patient's flow. nnd TrueFlow is a hygienic and resistance-free solution.

MolMass
the next step

nnd's molar mass measurement facilitates accurate gas analysis simultaneous with the precise ultrasonic flow measurement. This unique feature allows for a number of applications with new diagnostic possibilities.

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n d d
new diagnostic design



Standards & Recommendations

Quality, Medical Devices & Electrical EN ISO 9001, EN ISO 13485, EN ISO 14971, EN 62366, EN 62304, EN ISO 26782, EN ISO 23747, EN IEC 60601-1, EN IEC 60601-1-2

FDA 510(k) market clearance

MDD 93/42/EEC CE marked

Associations & Institutes ATS/ERS 2005, NIOSH/ OSHA, SSA Disability

Languages

English, French, German, Spanish, Italian, Brazilian-portuguese, Dutch, Russian, Vietnamese, Turkish

Gas specification

DLCO 10% helium, $\pm 10\%$
0.3% carbon monoxide, $\pm 10\%$
18 to 25% oxygen (normally 21%)
balance nitrogen

MBW Oxygen for hospital use

Technical

Printing options PCL standard, direct to printer or over network

Data management EasyWare Pro

Export HL7, XML, GDT, via USB, LAN Network

Data links Ethernet port, USB, possibility to upgrade to WLAN

No. of tests > 10'000 tests

Age range Spirometry > 4 years, DLCO > 6 years, MBW > 4 years or > 18 kg

Dimensions 27 x 33.5 x 27 cm³ (H x W x D), 8 kg

Device classification Protection class I
Type BF applied part

Operating conditions Temp 10-40 °C / 50-104 °F
Rel. humidity 30-75%,
no condensation
Atmosph. pressure 700 - 1060 hPa

Power Consumption 50W

Parameters

FVC	ATI, BEV, EOTV, FEF10, FEF25, FEF2575, FEF2575_6, FEF40, FEF50, FEF50/FVC, FEF50/VCmax, FEF60, FEF75, FEF75-85, FEF80, FET, FET25-75, FEV.25, FEV.5, FEV.5/FVC, FEV.75, FEV.75/FEV6, FEV.75/FVC, FEV.75/VCmax, FEV1, FEV1/FEV6, FEV1/FVC, FEV1/FVC6, FEV1/VCmax, FEV1/VCext, FEV3/FVC, FEV3/VCmax, FEV3, FEV6, FVC, FVC6, MEF20, MEF25, MEF40, MEF50, MEF60, MEF75, MEF90, MMEF, MTC1, MTC2, MTC3, MTCR, PEF, PEFT, to, VCext, VCmax
FVL	ATI, BEV, CVI, E50/150, EOTV, FEF10, FEF25, FEF2575, FEF2575_6, FEF40, FEF50, FEF50/FVC, FEF50/VCmax, FEF60, FEF75, FEF75-85, FEF80, FET, FET25-75, FEV.25, FEV.5, FEV.5/FVC, FEV.75, FEV.75/FEV6, FEV.75/FVC, FEV.75/VCmax, FEV1, FEV1/FEV6, FEV1/FIV1, FEV1/FVC, FEV1/VCmax, FEV1/VCext, FEV3/FVC, FEV3/VCmax, FEV3, FEV6, FIF25, FIF50, FIF50/FEF50, FIF75, FIV.25, FIV.5, FIV1, FIVC, FVC, MEF20, MEF25, MEF40, MEF50, MEF60, MEF75, MEF90, MIF25, MIF50, MIF75, MMEF, MTC1, MTC2, MTC3, MTCR, PEF, PEFT, PIF, to, VCext, VCmax
SVC	ERV, IC, IRV, Rf, VC, VCex, VCext, VCin, VCmax, VT
MVV	MVV, MVV6, MVVtime, VT
DLCO	BHT, COHb, ColBarVol, CO Conc, HE Conc, O2 Conc, Anatomic Dead Space, System Dead Space, Discard Volume, DLadj, DLadj/VA, DLCO, DLCO/VA (KCO), FA CO, FA HE, FE CO, FEV1/FVC, FI CO, FI HE, FRC sb, FRC Cor, Hb, tl, Kroghs K, PAO2, RV sb, RV Cor, RV/TLC, RV/TLC Cor, TLC sb, TLC Cor, TLCO, VA sb, VA Cor, VCext, VCmax, Vd, VI
MBW	CEV, CEV5, Anatomic Dead Space, Syst Dead Space, ERV, FRC base, FRC extrapol, FRC mb, IRV, LCI, LCI5, MO, MR1, MR2, RV mb, RV/TLC mb, TLC mb, VA mb, VC, VCex, VCin, Vd, VT, VT/FRC mb, VT/kg, Scond, Sacin

Predicted normal values Spirometry

GLI	Stanojevic 2009, Quanjer 2012
North America	NHANES III (Hankinson) 1999, Knudson 1983, Knudson 1976, Crapo 1981, Morris 1971 & 1976, Hsu 1979, Dockery (Harvard) 1993, Polgar 1971, Gutierrez (Canada) 2004, Eigen 2005
Latin America	Pereira 1992, Perreira 2006 & 2008, Pérez-Padilla (PLATINO) 2006, Pérez-Padilla (Mexico) 2001, Pérez-Padilla (Mexico, Pediatrics) 2003, Chile 2010, Chile (Pediatrics) 2001
Europe	ERS (ECCS, EGKS, Quanjer) 1993, Zapletal 1977, Zapletal 2003, Rosenthal 1993, Austria 1988, Austria 1994, Sapaldia 1996, Roca (Spain, SEPAR) 1982, Garcia-Rio (SEPAR) 2013, Vilozni 2005, Falaschetti 2004, Klement (Russia) 1990
Europe Scandinavia	Hedenström 1985 & 1986, Gulsvik (Norway) 1985, Berglund Birath (Sweden) 1963, Langhammer (Norway) 2001, Finnish 1982 (1998), Nystad 2006
Australia	Hibbert 1989, Gore Crockett 1999
Africa, Asia	Ethiopia 1985, JRS 2001

Predicted normal values DLCO

North America	Ayers 1975, Burrows 1961, Crapo 1981 & 1982, Goldman Becklake 1958, Knudson 1987, McGrath Thompson 1959, Miller 1980, Gutierrez (Canada) 2004, NHANES (Neas) 1996, Polgar 1971
Europe	ERS (Quanjer) 1993, Zapletal 1977, Roca 1990 & 1998, Hedenström 1985 & 1986, Gulsvik 1992, Klement (Russia) 1986
Other	Pereira 2008, Thompson 2008

Predicted normal values MBW

Europe	Verbanck 2012
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Flow/Volume Sensor

Type	Ultrasonic transit time
Range	± 16 l/s
Resolution	4 ml/s
Accuracy	± 2% or 0.02 l/s
Volume	± 2% or 0.050 l
Flow	± 2% or 0.020 l/s
PEF	± 5% or 5 l/min
MVV	± 2% or 0.050 l
Resistance	~ 0.3 cm H ₂ O/l/s
Sample rate	400 Hz

Gas Sensor

CO

CO₂

Type	Non-dispersive infrared	
Range	0 to 0.35%	0 to 15%
Resolution	0.0001%	0.005%
Accuracy	< 0.001%	± 0.05% (from 0 to 5%)

Tracer Gas Sensor

Helium

N₂

Type	Ultrasonic transit time	
Range	0 to 50%	0 to 100%
Resolution	0.02%	0.1%
Accuracy	0.05%	0.2%