

# EasyOne Pro LAB

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



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



The proven ultrasound technology  
**n dd TrueFlow**  
**n dd MolMass**

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

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

Z-score, LLN and %predicted for fast interpretation of results

Reproducible results ensure comparability in multicenter studies

Real-time curves and paediatric 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. n dd TrueFlow is a hygienic and resistance-free solution.

**MolMass**  
the next step

n dd'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.

### 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, Dutch, French, German, Italian, Portuguese, Brazilian Portuguese, Russian, Spanish, Swedish, Turkish, Vietnamese

### 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 (SQLite, MS SQL Server)

**Export/EMR** HL7, XML, GDT, via USB, LAN Network

**Hardware Interface** 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** 50 VA

## Parameters

<b>FVC</b>	ATI, BEV, EOTV, FEF10, FEF25, FEF 2575, 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
<b>FVL</b>	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
<b>SVC</b>	ERV, IC, IRV, Rf, VC, VCex, VCext, VCin, VCmax, VT
<b>MVV</b>	MVV, MVV6, MVVtime, VT
<b>DLCO</b>	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
<b>MBW</b>	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, Sccond, Sacin

## Predicted normal values Spirometry

<b>GLI</b>	Stanojevic 2009, Quanjer 2012
<b>North America</b>	NHANES III (Hankinson) 1999, Knudson 1983, Knudson 1976, Crapo 1981, Morris 1971 & 1976, Hsu 1979, Dockery (Harvard) 1993, Polgar 1971, Gutierrez (Canada) 2004, Eigen 2001
<b>Latin America</b>	Pereira 1992, Perreira 2006 & 2008, Pérez-Padilla (PLATINO) 2006, Pérez-Padilla (Mexico) 2001, Pérez-Padilla (Mexico, Pediatrics) 2003, Chile 2010, Chile (Pediatrics) 1997
<b>Europe</b>	ERS (ECCS, EGKS, Quanjer) 1993, Zapletal 1977, Zapletal 2003, Rosenthal 1993, Austria 1988, Austria 1994, Sapaldia (Switzerland) 1996, Roca (Spain, SEPAR) 1982, Garcia-Rio (SEPAR) 2013, Vilozni 2005, Falaschetti 2004, Klement (Russia) 1986
<b>Europe Scandinavia</b>	Hedenström 1985 & 1986, Gulsvik (Norway) 1985, Berglund Birath (Sweden) 1963, Langhammer (Norway) 2001, Finnish 1982 (1998), Nystad 2002
<b>Australia</b>	Hibbert 1989, Gore Crockett 1995
<b>Asia</b>	Chhabra (India) 2014, Dejsomritrutai (Thailand) 2000, Indonesia 1992, IP (China, HongKong) 2000 & 2006, JRS 2001 & 2014
<b>Africa</b>	Ethiopia 1985

## Predicted normal values DLCO

<b>North America</b>	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
<b>Latin America</b>	Vazquez Garcia (ALAT) 2016
<b>Europe</b>	ERS (Quanjer) 1993, Zapletal 1977, Roca 1990 & 1998, Hedenström 1985 & 1986, Gulsvik 1992, Klement (Russia) 1986
<b>Other</b>	Pereira 2008, Thompson 2008, Kim 2012, Chhabra (India) 2015), Ip (China, HongKong) 2007, JRS (Japan) 2001

## Predicted normal values MBW

<b>Europe</b>	Verbanck 2012
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## Flow/Volume Sensor

<b>Type</b>	Ultrasonic transit time
<b>Flow Range</b>	± 16 l/s
<b>Flow Resolution</b>	4 ml/s
<b>Flow Accuracy (except PEF)</b>	±2% or 0.02 l/s
<b>Volume Resolution</b>	1 ml
<b>Volume Accuracy</b>	±2% or 0.050 l
<b>PEF Accuracy</b>	± 5% or 0.200 l/s
<b>MVV Accuracy</b>	± 5% or 5 l/min
<b>Resistance</b>	~ 0.3 cm H <sub>2</sub> O/l/s at 16 l/s
<b>Sample Rate</b>	400 Hz

## Gas-Sensor

	CO	CO <sub>2</sub>
<b>Type</b>	Non-dispersive infrared	
<b>Range</b>	0 to 0.35%	0 to 15%
<b>Resolution</b>	0.0001%	0.005 %
<b>Accuracy</b>	± 0.001%	0 to 5%: ± 0.05%

## Tracer Gas Sensor

	Helium	N <sub>2</sub>
<b>Type</b>	Ultrasonic transit time	
<b>Range</b>	0 to 50%	0 to 100%
<b>Resolution</b>	0.02%	0.1%
<b>Accuracy</b>	0.05%	0.2%