EasyOne Pro

Advanced lung function testing with DLCO in a portable solution

new diagnostic design

Spirometry (FVC, FVL, SVC & MVV)
Single Breath CO Diffusion (DLCO)

The proven ultrasound technology
ndd TrueFlow
ndd MolMass

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

Automated user guidance throughout maneuvers 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 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, 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 of the patient's flow. ndd TrueFlow is a hygienic and resistance-free solution.

MolMass *the next step*

ndd'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, IEC 60601-1, 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, ± 10% 0.3% carbon monoxide, ± 10% 18 to 25% oxygen (normally 21%) balance nitrogen

Technical

Printing options	PCL standard, direct to printer or over network
Data management	EasyWare Pro (SQLite, MS SQL Server)
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
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 5 - 40 °C/41 - 104 °F Rel. Humidity 15 - 95 %, no condensation Atmosph. Pressure 700 - 1060 hPa
Power Consumption	50 VA

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Parameters	
FVC	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
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, tI, 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

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 2001
Latin America	Pereira 1992, Perreira 2006 & 2008, Pérez-Padilla (PLATINO) 2006, Pérez-Padilla (Mexico) 2001, Pérez-Padilla (Mexico, Pediatrics) 2003, Chile 2010, Chile (Pediatrics) 1997
Europe	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
Europe Scandinavia	Hedenström 1985 & 1986, Gulsvik (Norway) 1985, Berglund Birath (Sweden) 1963, Langhammer (Norway) 2001, Finnish 1982 (1998), Nystad 2002
Australia	Hibbert 1989, Gore Crockett 1995
Asia	Chhabra (India) 2014, Dejsomritrutai (Thailand) 2000, Indonesia 1992, IP (China, HongKong) 2000 & 2006, JRS 2001 & 2014
Africa	Ethiopia 1985

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

Flow/Volume Sensor	
Type	Ultrasonic transit time
Flow Range	± 16 l/s
Flow Resolution	4 ml/s
Flow Accuracy (except PEF)	± 2% or 0.02 l/s
Volume Resolution	1 ml
Volume Accuracy	± 2% or 0.050 l
PEF Accuracy	± 5% or 0.200 l/s
MVV Accuracy	± 5% or 5 l/min
Resistance	~ 0.3 cm H_2O/l/s at 16 l/s
Sample Rate	400 Hz

Gas Sensor	CO
Type	Non-dispersive infrared
Range	0 to 0.35%
Resolution	0.0001%
Accuracy	± 0.001%

Tracer Gas Sensor	Helium
Type	Ultrasonic transit time
Range	0 to 50%
Resolution	0.02%
Accuracy	0.05%