smart pft®

devices for smart pulmonary function testing

Medical Equipment Europe GmbH
www.meegmbh.com

smartSOFTmee

advanced graphical user interface
based on WIN7 / WIN8 / WIN10 operating systems

database server

The SQL database, a professional network server solution represents an international standard for data storage.

It guarantees maximum safety for testing and patient data.

Nearly all requirements of data sharing in large networks can be realized.

interfaces

ASCII, BDT / GDT

HL7 *

PDF (labeled) *

VPN networking*

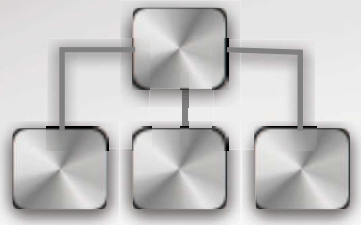
secure eMailing*

e-Doc printer *

Hard/Software for BGA devices*

(* options)

software architecture



Our modern graphical user interface makes working with the system simple and efficient.

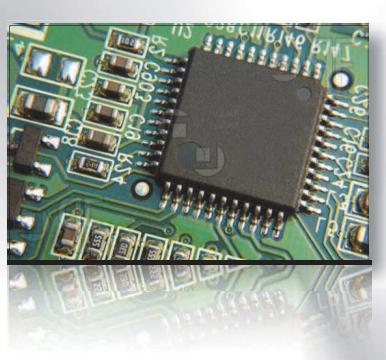
The workflow is user optimized.

Print templates and predicted value equations can be created and modified by very comfortable built-in editors.

smartVsensor®

electronics

special features



This pneumotachograph sensor type is used since more than 35 years for pulmonary function and pulmonary exercise testing because of excellent characteristics.

Low resistance, low dead space, high linearity and absolutely no sensitivity to humidity make this sensor an optimal choice.

The data processing unit is based on a new low-power µ-processor technology.

Digital pressure sensors reduce the risk electrical interferences.

The USB 2.0 PC interface guarantees long-term compatibility for PC system.

The standard software includes the newest GLI 2012 predicted value equations and smartZeroing®.

An online BTPS data sampling module can be added to the USB spirometer.

In all other systems BTPS sensors are integrated as a standard.

smartZeroing® means, the annoying zeroing happens discreetly and continuously in the background.

smart pft® USB

high precision PC based spirometer

PC Spirometer, USB powered

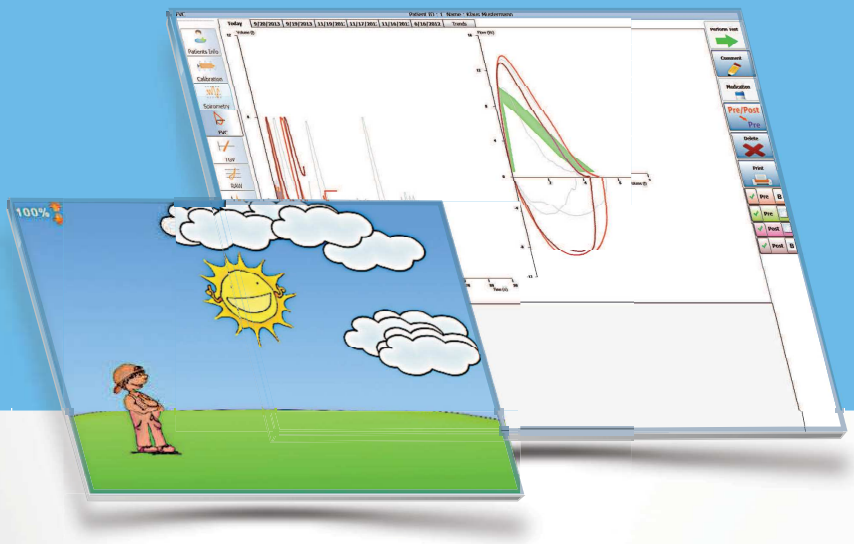
A powerful spirometer with high precision technology and the possibility for upgrading with a wide range of testing options.

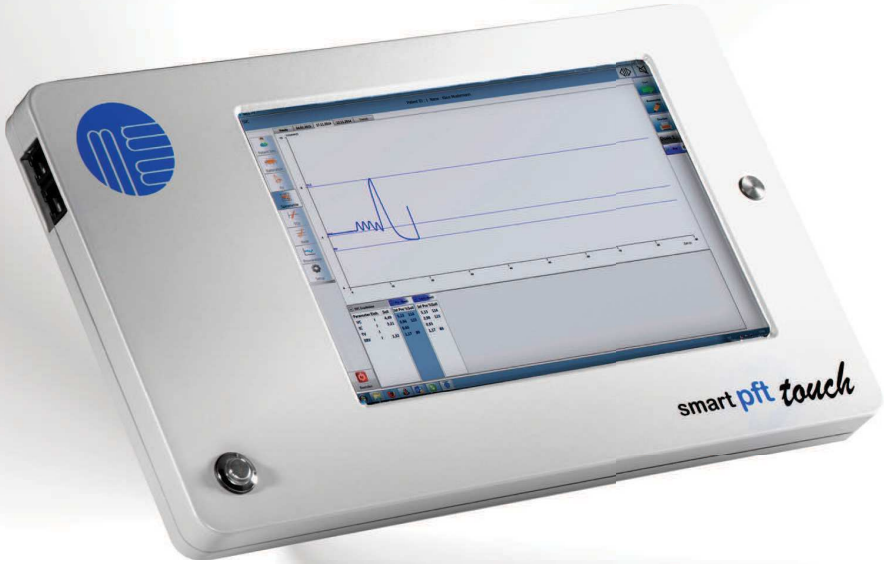
The system requires only one USB cable to connect to a Microsoft® WIN7, WIN8 or WIN10 based computer.

This spirometer has all connectivity options of an advanced pulmonary function system like ASCII, HL7 and networking.

Standard features are

Slow vital capacity test
Flow / Volume test
PRE/POST comparison
Trend reporting
Programmable challenge testing protocols
smartZeroing®
Incentive graph for kids
GLI 2012 predicted values
SQL data base





Touch-PC for outdoor applications

This tablet computer device is designed for safe in- and outdoor use.

A massive aluminum housing protects the built in touch computer and other electronic components safely.

This device runs with full testing functionality on batteries even in combination with a shutter system for Rocc and respiratory drive measurements.

All BTPS-sensors are built in.

Options available for all system

MIP, MEP, P0.1 and Rocc
(run without additional power supply)

Rhinomanometry

Compliance test

Table stand

A4 printer

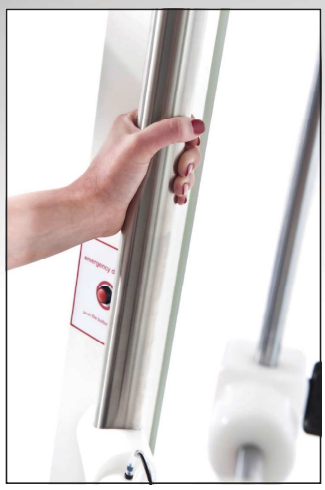
Thermo printer

ASCII-, PDF- and HL7-Interface.

BGA serial and USB interface

smartpft® body

massive aluminum & glass fibre construction
combined with
modern design & functionality



Panorama view box

The aim was to create a device that fully meets the requirements of patients.

What makes more sense than constructing an oval shaped box with round glazing so the patient never feels captured.

Very modern and long-term stable materials make it a very useful and unique device.

Technical standard features

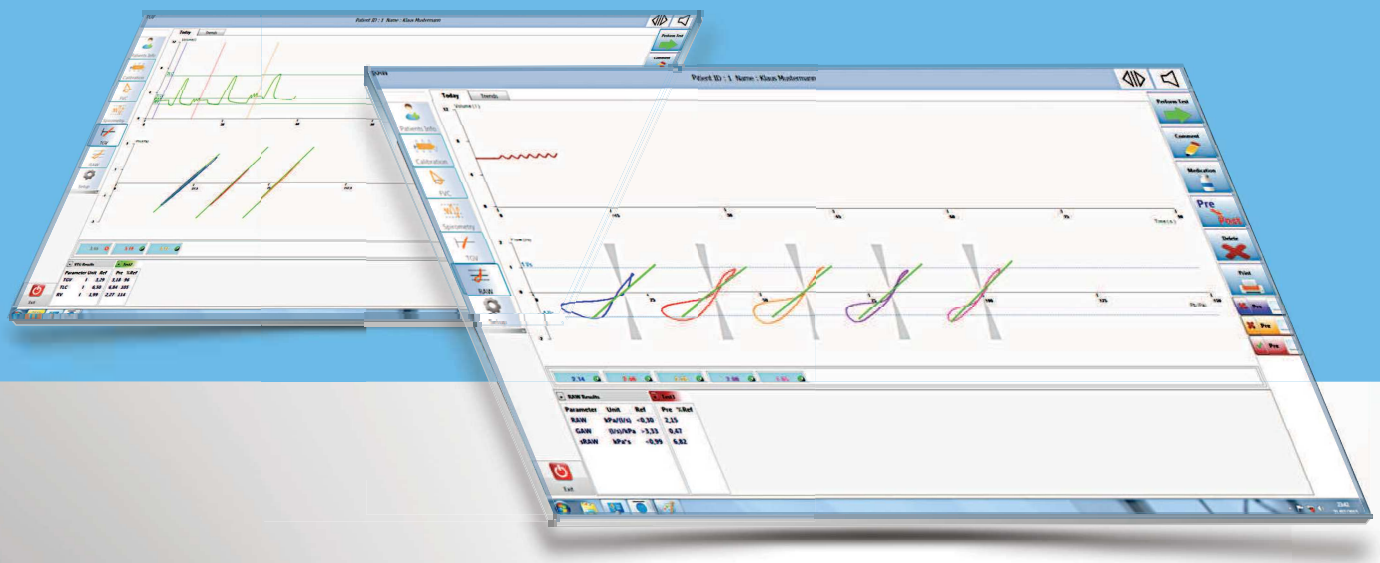
Height adjustable, comfortable chair.

3D adjustable device stand. (optionally, e-motor driven)

Ambient pressure, temperature and humidity sensors allow continuous BTPS data sampling and calculation.

The electromagnetic door locking is maintenance free and secure for patients.

The box has a very efficient ambient pressure movement compensation unit.



Designed for patients with poor mobility

The two doors opening concept and a less than 10 cm door step height in combination with handrails facilitate entering this bodyplethysmograph.

Optionally, a special chair mounted on a telescope arm can be added to move wheelchair patients safely into the box.

Also optionally, a 180 kg chair spring is available.

We use only materials with long-term stability

The door rubber is protected by a steel frame.

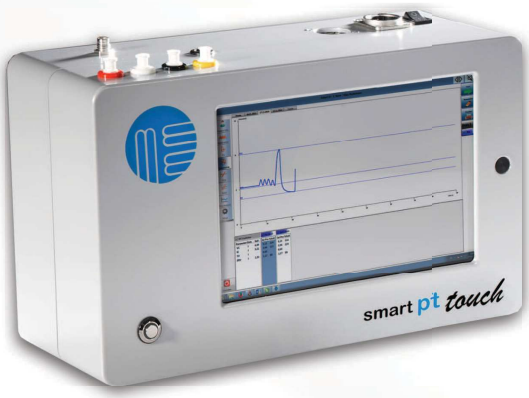
Box and door frames are made from powder coated aluminum.

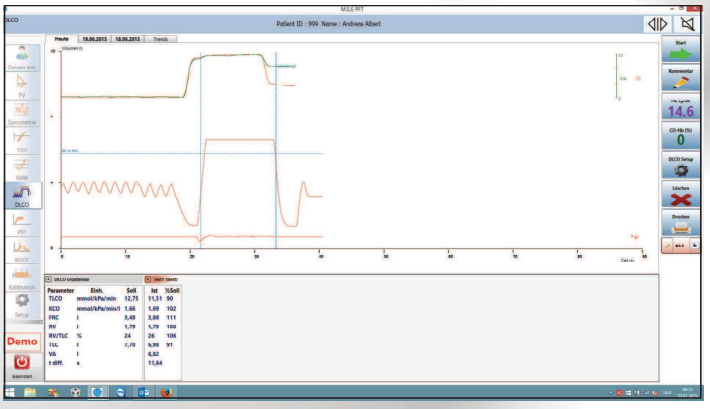
Botton and top plates are made from glass-fiber.

For simple service access, nearly all electronic components are placed on the top and protected by a hood.

smartpft® CO-transfer

designed for simplified CO transfer capacity screening





CO transfer capacity test

This device is designed for quick screening of CO-diffusion capacity.

The online gas sampling method allows testing of patients with very low vital capacity starting from approximately 0.7 liters.

The test runs fully automatic and gives online all necessary advices how the patient must cooperate.

The system registers and displays real-time all important test signal data like gas concentrations, volume and mouth pressure.

Standard features are

Selective and fast infrared gas analyzer measuring transfer and inert gas (CO & CH4).

Particular and precise gas supply by a demand valve.

Input mask for Hb values and correlating recalculation of test results.

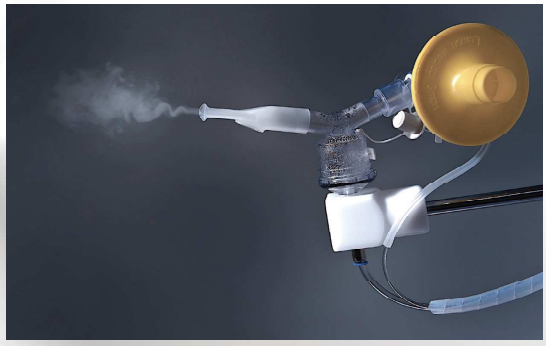
Automatic altitude corrections by built in ambient pressure sensor.

Online display of mouth pressure during breath holding.

Gas analyzer works without absorber products.

smartpft® nebulizer

standardized dosimeter unit for challenge testing



Compressor unit

A comfortable, safe and very robust device to support challenge testing.

No need for an external source of compressed air, a low noise compressor is built in.

The compressor runs fully automatic.

A built in panel computer with LCD-display guarantees a very simple control handling.

Optionally a USB interface allows connection to the PC system.

DeVilbiss 646 nebulizer

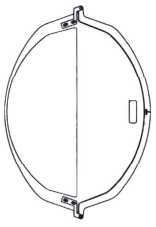
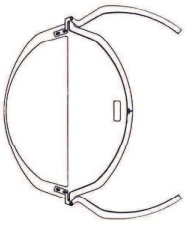
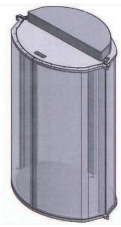
Standardized nebulizer type for challenge testing used in many studies.

Using the Rosenthal Chai protocol nebulization method .

This nebulizer and nebulization method fulfill strictly the recommendations of ATS and ERS.

A flow based trigger sensor synchronizes the start of nebulization with beginning of inhalation.

technical data I

smartVsensor	materials	housing	PVC	color	white & blue
	sensor type	pneumotachograph	screen	variable orifice	hostaphan
	flow range	0,02l/sec - 20 l/s	volume range	0,02 L to 20 L	numeric integration
	dimensions	length = 80 mm	width = 37 mm	height = 25 mm	
	backpressure	< 0,055 kPa/l*s @ 15 l/s	linearity error	< 3% absolute	
	disinfection:	cold gas & cold liquid			
pressure transducers	flow	interface I²C bus	ADC 14 bit	temp-compensated	linearity error < 0,1 %FSS
		type	piezoresistive	differential	
		range	12,7	mbar	
	mouth pressure	interface I²C bus	ADC 14 bit	temp-compensated	linearity error < 0,1 %FSS
		type	piezoresistive	differential	
		range	200	mbar	
	box pressure	interface I²C bus	ADC 14 bit	temp-compensated	linearity error < 0,1 %FSS
		type	piezoresistive	differential	
		range	2,5	mbar	
	ambient pressure	interface I²C bus	ADC 8 bit	temp-compensated	linearity error ± 10 mbar
		type	piezoresistive	absolute	
		range	500 - 1150	mbar	
	temperature sensor	interface I²C bus	ADC 8 bit	temp-compensated	linearity error < 1%FSS
		type	PTA internal	range	-40 to + 125 °C
	humidity sensor	interface I²C bus	ADC 8 bit	temp-compensated	linearity error ± 1 %rF
		type	capacitive Polymer	range	0 - 100 % rF
shutter	materials	housing	PVC	color	white & red
	type	electromagnetic			
	effective dead space	< 20 ml	occlusion time	< 60 ms	
	dimensions	length = 145 mm	width = 85 mm	height = 85 mm	weight = 450 g
	backpressure	< 0,03 kPa/l*s			
	disinfection:	cold gas & cold liquid			
smartpft USB	dimensions	length = 163 mm	width = 65 mm	height = 40 mm	weight = 151 gr.
		material	PVC	color	white
		disinfection:	cold gas & cold liquid		
smartpft body	weight	139 kg with acryl			
	power supply	230 VAC	max 350 VA	optional 1000 VA	
	materials	door & box frame	aluminum	powder coated	color = white
		base & cover plate	glass fibre		color = white
		windows	glass / acryl	floor	PVC antrazit
	volume	860 liter			
	dimensions	with closed doors	length = 115 cm		
			width = 83 cm		
			height = 185 cm		
		with opened doors	length = 120 cm		
			width = 111 cm		
	minimum door dimensions for transport		height = 190 cm	width = 78 cm	
	box & mouth pressure calibration syringe				
		volume	50 ml		
		type	sinus electrical		
		calibrates	box pressure	mouth pressure	
		voltage	12 V		
		current	700 mA		
	box ventilation valve				
		type	electromagnetic		
		voltage	12 V		
		maximum current	1,1 A		
	loudspeaker	inside body box			
	chair	fixed, hight adjustable			
		maximum weight	120 kg	optional	180 kg
		color	black	material	soft plastic

technical data II

smartpft CO transfer	non dispersive infrared absorption (NDIR)	gas channels	CH4 & CO		
gas analyzer	CH4 & CO channel	range	0 ppm - 3000 ppm		
		accuracy	< ± 1% FSS	resolution	< 0,5% FSS
		resolution	< 0,5% FSS	linearity	< 1% FSS
		warm up time	max. 5 min	zero drift	< 1% FSS / 24h
tablet touch PC	dimensions	length = 290 mm	width = 171 mm	height = 20 mm	weight = 1350 g
		materials	aluminum	color	RAL 9006
	power supply	voltage	12 V=	maximum current	2 A
	PC system	processor	Intel® Atom™ Z2760	screen	8“ WXGA multi-touch LCD
		memory	2GB	storage	eMMC 32 GB
		interfaces	WiFi	USB	
		operating system	windows 8	32 bit	
smartpft nebulizer	power supply		230V AC / 50 Hz		
	dimensions	length = 250 mm	width = 250 mm	height = 145 mm	weight = 2900 g
	reservoir	max. pressure	7 bars	min. pressure	3 bars
	nebulizer pressure	2 bars	nebulization time	600ms	
	dose per nebulization	10 ± 1 µL	with closed vent	14 ± 1 µL	with open vent

list of parameters

Spirometry	VC, IVC, IC, ERV, IRV, TV
Flow / Volume	FVC (ex), FEV 6, FEV 3, FEV 1, FEV 0.75, FEV 0.7, FEV 0.5, FEV1/FVC, FEV1/IVC, FEV1/VC, FEV0,5/FVC, FEV0,5/IVC, FEV1*30, PEF, MEF 25, MEF 50, MEF 75, MEF 25-MEF75, AEX, t ex, EV, FVC (in), FIV1, FIV1/VC, PIF, MIF 25, MIF 50, MIF 75, MEF50/MIF50
MVV	MVV, FMVV
Resistance by interruption	R int
BGA values entered manually	pH, pCO2, pO2, BE, HCO3, Hb, SO2, Na+,K+, Ca++
In case of online data transfer from analyzer	list of parameters depending on type and brand of blood gas analyzer
External parameters	up to 14 additional parameters, this parameter can be user defined
Rhinomanometry	R75, R150, R300, L75, L150, L300, RES-L75, RES-L150, RES-L300, RES-R75, RES-R150, RES-R300
Respiratory drive	P0,1, PI max, PE max, P0,1 max, VE, P0,1 / VE, P0,1 / PI max, VT, BF, VT/Ti, Ti/Ttot, P0,1/VT/Ti, PI max 1.0, PE max 1.0
Compliance	C static, C dynamic
Resistance measured by bodyplethysmography	RAW (eff), sRAW, GAW, sGAW
Volumes measured by bodyplethysmography	TGV, RV, TLC, TGV/TLC, RV/TLC, IC, VC, IC/TLC, VC/TLC, IC/TGV, VC/TGV, IC/RV, VC/RV
CO diffusion	TLco, Kco, TLC, RV, FRC, VA , t diff, Hb, VIN (ch4)

legal notice

About us

Medical Equipment Europe GmbH is specialized in development, manufacturing and distribution of measuring systems for cardiopulmonary function diagnostics.

Very precise and easy to use measuring technology combined with patient acceptance are main targets of our development.

We design and produce all our devices within one production place on a surface of more than 3.500 m^2. We dispose a high vertical range of manufacturing.

We concern to produce our products with a minimum of environmental pollution. Transport of semifinished products we keep at a minimum.

medical
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our distribution partner