Technical Data Sheet

Body Plethysmography

vyaire™

MEDICAL

Vyntus™ BODY

Measurement

(Specific) airway resistance:	sReff, sRtot, sR0.5, sRmid as well as Reff, Rtot, R0.5, Rmid and others
Static lung volumes:	Absolute lung volumes: TLC, FRCpleth, RV, RV/TLC and others; Static lung volumes: VC MAX, IC, ERV and others
Dynamic lung volumes:	FVC, FEV1, FEV1/FVC, MFEF 25-75, FEF 75, PEF and others
Options:	• CO-Diffusion RT and IB • MIP/MEP • P0.1 • SNIP (Sniff Nasal Inspiratory Pressure) • Rocc • Rhinomanometry • Compliance (dynamic/static) • APS – Aerosol Provocation System
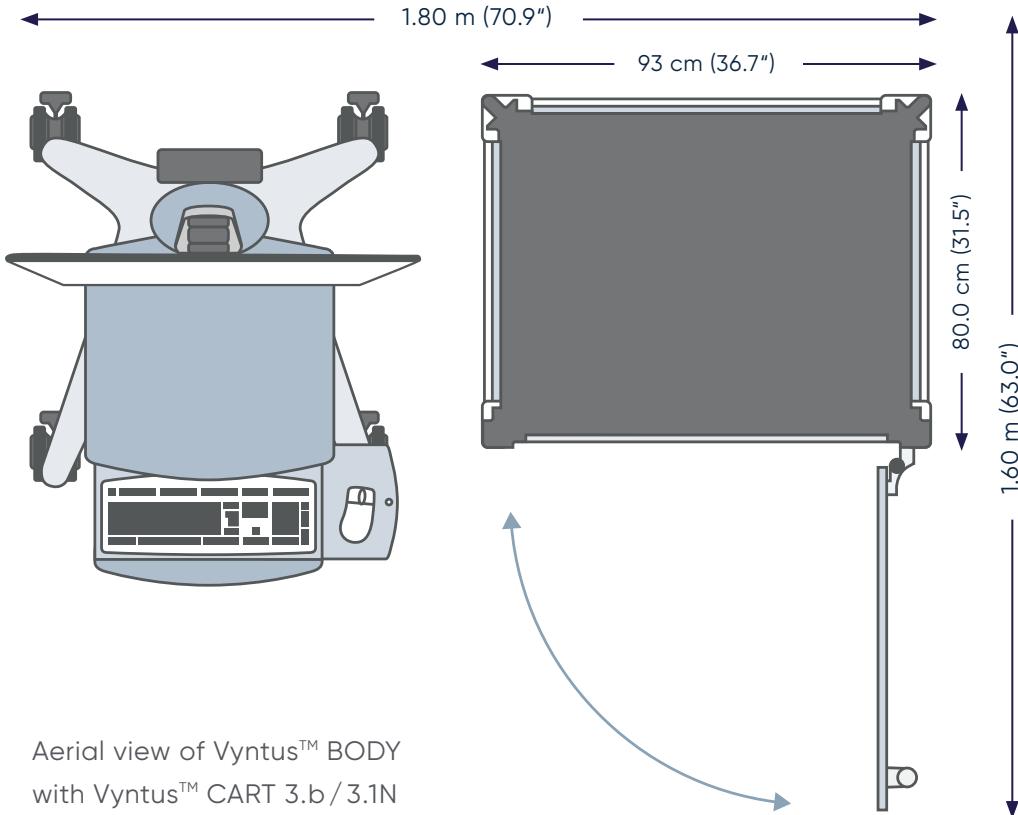
Components

• Airtight box with panorama glazing, integrated control units and new digital ambient pressure compensation circuit.

• Calibration-free and waterproof ultrasonic flow sensor.

• PC with hygiene keyboard / mouse, inkjet printer and 24" LCD flatscreen monitor on an ergonomic, smooth-running trolley.

• Set of accessories.

• Complete software package for measurement and report generation plus extended infrastructure for data management.

Required space

1.80 m (70.9")

93 cm (36.7")

80.0 cm (31.5")

1.60 m (63.0")

Space requirements:
180 × 160 cm (70.9" x 63.0")

To test outside the cabin, more space is required.

The guidelines for the patient area must be followed.

Aerial view of Vyntus™ BODY
with Vyntus™ CART 3.b / 3.1N

Technical data

Flow measurement

Type	Ultrasound
Methodological peculiarities	Simultaneous measurement of ultrasound transit time in and against flow direction
Sample rate	True 1000 Hz for flow, achieved by 2000 ultrasound transit time measurements (double shot technology)
Range	0 to 18 L / s bidirectional
Accuracy	Exhalation 0 to 14 L / s: 1.5 % or 0.05 L / s (whichever is greater) Inhalation 0 to 14 L/s: 2.0 % or 0.05 L/s (whichever is greater)
Precision	1% or 0.1 L / s *(whichever is greater)*
Resolution	1 mL / s
Total resistance (MicroGard™ II filter + USS Module + FPV block)	<0.150 kPa*s/L at 14 L / s <1.53 cmH20*s/L
Dead space USS Module	66 mL

Calibration-free and waterproof ultrasonic sensor

Volume integration

Principle	Software volume integration of flow signal
Range	30 L *(software limited)*
Accuracy	Exhalation and inhalation 0.5 to 14 L/s: 2.5% or 0.075 L (75 mL)
Precision	1% or 0.05 L *(whichever is greater)*
Resolution	1 mL

Mouth pressure measurement

Type	Piezo resistive
Range	± 20 kPa (± 150 mmHg)
Accuracy	±1% or 0.01 kPa (0.075 mmHg) *(whichever is greater)*
Resolution	0.003 kPa (0.0225 mmHg)

Box signal

Transducer type	Piezo resistive, calibrated in terms of shift volume
Transducer range	0 to ± 2500 mL at 1000 hPa ambient pressure
Accuracy	± 2 % at 0.25 Hz / 0.5 Hz
Resolution	0.1 mL
Compensation of ambient pressure variations	Digital ambient pressure compensation

Barrier free spacious cabin for safe and easy entry

Box

Material	Aluminium / glass construction
Principle	Volume-constant
Volume	1110 L
Height step-in	70 mm (2.8")
Weight	175 kg (385 lbs), 150 kg (330 lbs) without door
Door-lock	Electromagnetic via 8 magnets
Size outside	932 × 800 × 1850 mm (incl. door handle) (36.7" x 31.5" x 72.8")
Space inside	882 × 705 × 1739 mm (34.7" x 27.8" x 68.5")
Interface to PC	USB

Box calibration syringe

Calibration volume	50 mL, motor-driven calibration pump
Calibration frequency	0.25 Hz, 0.5 Hz and 1 Hz

Chair

Maximal load chair	150 kg (330 lbs)
Sitting height	Adjustable from 40 to 60 cm (15.7" x 23.6")
Turnable	Yes
Material seatshell	Polypropylene
Kind of disinfection	Wipe disinfection

Bench

Maximal load bench	250 kg (551 lbs)
Sitting height	47.6 cm (18.7")
Sitting area	50.6 cm W × 33.0 cm D (19.9" × 13.0")
Material bench	POM (Polyoxymethylene)
Kind of disinfection	Wipe disinfection

Flexible 3D arm

Max. length outside cabin	63 cm (24.8")
Adjustable height inside cabin	98.3 cm to 141.5 cm (38.7" to 55.7")

Keyboard / Mouse

Hygiene keyboard	Kind of disinfection	Wipe disinfection
	Material	Silicone key membrane / sealed key field
Hygiene mouse	Kind of disinfection	Wipe disinfection
	Protection class	IP68 fully sealed

Option bench for patients up to 250 kg

Flexible 3D arm - can be extended outside of the cabin up to an impressive reach of 63 cm (24.8").

Hygiene keyboard and mouse

Dimensions / weight Vyntus™ CART 3.b

Dimensions total	61 cm W × 62 cm D × 120 cm H (24" × 24.4" × 47.3")	
Weight total	45 kg (99.2 lbs) inclusive PC, printer and 24" LCD monitor	
Castors	4 twin swivel castors Ø 10 cm (3.9"), lockable	
Shelves	Number	1
	Platform area	45 cm W × 36 cm D (17.7" × 14.2")
	Load capacity	20 kg (44 lbs) distributed load
Keyboard drawer with mousepad (left / right)	Keyboard platform area	40 cm W × 20 cm D (15.7" × 7.9")
	Load capacity	3 kg (6.6 lbs) distributed load
Drawer	Interior area	34 cm W × 24 cm D × 8 cm H (13.4" × 9.4" × 3.1")
	Platform area	45 cm W × 36 cm D (17.7" × 14.2")
	Load capacity shelf	15 kg (33 lbs) distributed load
	Load capacity drawer	3 kg (6.6 lbs) distributed load
Monitor mount	Load capacity	14 kg (30.9 lbs)

Dimensions / weight Vyntus CART 3.0N/3.1N

Dimensions total	145 cm W × 118 cm D × 175 cm H (57.1" × 46.5" × 68.9")	
Weight total	71 kg (156.5 lbs) including 24" monitor	
Castors	4 twin swivel castors Ø 10 cm (3.9"), lockable, non marking grey polyurethane tyred	
Shelves	Number	2
	Platform area	45 cm W × 36 cm D (17.7" × 14.2")
	Load capacity	20 kg (44 lbs) distributed load
Keyboard drawer with mousepad (left / right)	Keyboard platform area	40 cm W × 20 cm D (15.7" × 7.9")
	Load capacity	3 kg (6.6 lbs) distributed load
Mechanical height adjustment for keyboard/mouse and monitor (CART 3.1N only)	Type	Gas spring
	Range	30 cm (11.81")
	Load capacity during height adjustment	10 – 16 kg (22 – 35.2 lbs)

Multigas analyzer (CO / CH4) – Diffusion measurement

Type	Infrared
Range	0 to 0.33 vol %
Accuracy	± 0.003 vol % or ± 2 % relative *(whichever is greater)*
Resolution	0.0005 vol %
Maximum nonlinearity	±1 % of full scale
Response time	≤ 145 ms

Pressure reducer (Diffusion pressure reducer for demand valve)

Inlet pressure	200 bar
Outlet pressure	7 bar (fixed)
Flow rate	At least 500 L / min
Flow rate	At most 700 L / min
2 outlets	G 1 / 4 internal screw thread

Vyntus™ BODY with bench and height-adjustable Vyntus™ CART 3.1N for sitting and standing position

Vyntus™ APS

Compressor	Flow	8 L / min ± 1.5 L / min
	Pressure	1.4 bar ± 0.3 bar
Nebulizer	Name	Philips Respironics Sidestream®
	Type	Compressed air nebulizer
	Mean mass diameter	3.2 µm
	Output power	240 mg / min

Ambient measurement	Measurement range	Accuracy
Temperature sensor	− 10 to 50 °C (14 to 122 °F)	± 0.5 °C at 20 °C (68 °F) ± 1 °C at 10 to 34 °C (50 to 93.2 °F)
Humidity sensor	0 to 100 % relative humidity	4 % relative humidity at 20 − 80 % relative humidity
Air pressure sensor	500 to 1100 hPa (375 to 825 mmHg)	± 2.5 hPa (1.88 mmHg) at 700 to 1060 hPa (525 to 795 mmHg)

Ambient conditions

Temperature	+ 10 °C to + 34 °C (+ 50 °F to 93.2 °F)
Relative humidity	20 to 80 % RH, non-condensing
Ambient pressure	700 to 1060 hPa (525 to 795 mmHg)
Altitude	≤ 3000 m (9842 ft)

Vyntus BODY – Transport and storage conditions

Temperature	− 20 °C to + 50 °C (− 4 °F to 122 °F)
Relative humidity	15 to 95 % RH, non-condensing
Ambient pressure	600 to 1200 hPa (450 to 900 mmHg)

Vyntus BODY (cabin) – Power supply

Mains voltage	100 to 240 V, AC 50 to 60 Hz
Power input	Max. 80 VA
Electrical safety	Protection class I
Mains plug	Used for isolating all poles simultaneously from supply mains

Vyntus CART 3.b with PC / Monitor / Printer – Power supply

Mains input voltage	100 to 240 V, AC 50 to 60 Hz, max. 1.5 A
Power input	Max. 1.5 A (depending on PC)
Electrical safety	Protection class I

Vyntus™ APS Aerosol Provocation System integrated inside the cabin for automated, software controlled, safe and accurate bronchial challenge testing

Vyntus CART 3.1N with PC / Monitor / Printer - Power supply

Mains voltage	100 - 120 V AC, 50 / 60 Hz 220 - 240 V AC, 50 / 60 Hz
Power input	630 VA
Electrical safety	Protection class I
Mains plug	Used for isolating all poles simultaneously from supply mains
Primary Fuse	220 - 240 V: 2 × T3.15 A L / 250 VAC
	100 - 120 V: 2 × T6.3 A L / 250 VAC

Vyntus APS – Power supply

Type	Magic Power MPM-X125
Mains input voltage	100 to 240 V, AC 47 to 63 Hz
Power consumption	1.5 to 1 A
Output voltage	24 V DC
Output	120 VA / 5 A
Electrical safety	Protection class I
Mains plug	Used for isolating all poles simultaneously from supply mains

Moisture protection

Vyntus BODY	IP 20
Vyntus CART	3.b / 3.1N No IP protection
Vyntus APS	IP 20

Classification of applied parts

Vyntus BODY	Type applied part	B
Vyntus APS	Type applied part	B

Category according to MDD 93/42/EEC (2007)

Complete system	Active class IIa medical product

Operating mode

Complete system	Continuous operation

Vyntus™ CART 3.b with spacious drawer

Standards, directives

Standards	EN 60601-1, EN 60601-1-2 (4th edition), EN 62304, EN 62366, EN ISO 14971, EN ISO 10993-1
Directives	93/42/EEC amended by 2007/47/EC, RoHS 2011 / 65 / EU compliant
Market clearances	CE, FDA 510(k) clearance, Brazil-ANVISA, Australia-TGA, Health Canada, South Korea-MFDS
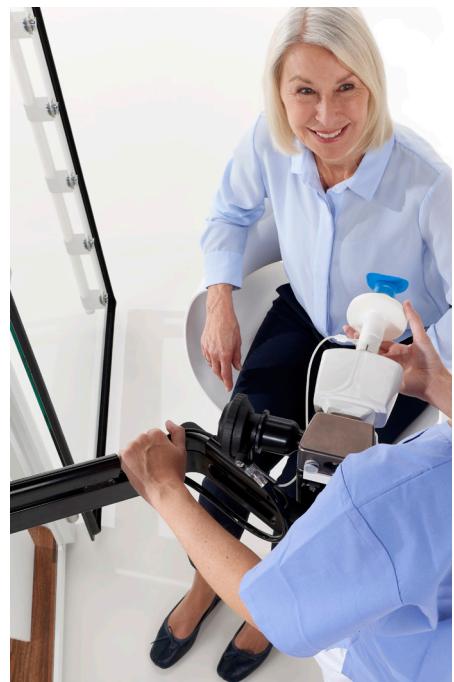
Easy and fast adjustment to fit your patients

Software

Measurement programs	✓ Standard ○ Option
Body plethysmography	✓
Forced spirometry (FVC) / Slow spirometry (SVC) / MVV	✓
Spirometry animation programs	✓
Single-breath CO-diffusion realtime and intrabreath	○
Airway resistance by R occlusion	○
P 0.1	○
MIP/MEP	○
SNIP (Sniff Nasal Inspiratory Pressure)	○
Rhinomanometry	○
Compliance (dynamic/static)	○
Bronchial challenge with Vyntus APS	○

Calibration programs	✓ Standard ○ Option
Volume calibration for the Vyntus APS / verification for the USS module	✓
Gas calibration	○
Body box calibration	✓

Organization programs	✓ Standard ○ Option
SentrySuite™ home page	✓
SentrySuite review	✓
SentrySuite mobile review web application	○
Patient data	✓
Report output inclusive multiformat output (PDF, JPG, TIFF, RTF and others)	✓
Auto interpretation	✓
ATS / ERS quality check	✓
Comments / Physician interpretation	✓
Report designer for generating customized reports	✓
Predicted values / Reference sets design / editor	✓
Offline data input	✓
SentrySuite (SeS) quality management	✓
Backup / Restore	✓
Data export / import	✓
User parameter editor for customized parameters	○

Flexible 3D arm extends to accomodate mobility impaired patients

All around glazing for full patient control

Organization programs	✓ Standard ○ Option
Patient data management for advanced corrective actions	○
Questionnaire designer for customized questionnaires	○
SeS Q remote tablet questionnaire	○
Security and user administration	○
Networking	○
SentryConnect for HIS integration via HL7	○
GDT connection (German standard)	✓
Spirometer data transfer (MicroLoop, MicroLab, FlowScreen, SpiroPro)	✓
InterConnectivity Manager for interface with JLAB / Vmax / SPCS platforms	✓
SeS SQL database interface query / DataCube	○

Stable hand grip for easy entry and exit with integrated emergency button to open the door from inside

Vyntus™ BODY – designed for you and your patients

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