

PowerCube Diffusion+

Diffusion system

SharpFlow ultrasonic technology for
precise results and maximum hygiene



The most advanced ultrasound technology – Only with the PowerCube®+ Series.

GANSORN PowerCube Diffusion+ was one of the first diffusion systems on the market using ultrasound technology. Its robust sensor technology is based on GANSORN innovation and requires no maintenance. In addition, the high-speed sensor allows the user to change the discard and sampling volume, allowing measurements to be taken on patients with 0.5 L VC. Precise analyzers enable the high-resolution display of wash-in curves for CO and helium. The PowerCube Diffusion+ demand valve is economical in sample gas consumption.



Highly accurate and precise ultrasound flow sensor



Versatile, fast and compatible LFX software platform



Lowest costs per measurement



Spare part free



Fast semi-automatic gas calibration



Maintenance free

Diffusion and ventilation inhomogeneity in one measurement

Thanks to our consistent system development, the device is fully compliant with the 2019 ERS/ATS DLCO guidelines. For reliable evaluation of diffusion capacity, PowerCube Diffusion+ determines DLCO and helium FRC in accordance with ERS/ATS standards. The exhaled concentrations of CO and helium are continuously displayed, allowing precise discrimination between dead space and the alveolar plateau. In addition, the use of our rapid gas analyzers (RGA) enables highly precise determination of lung volumes, such as VA. The “RGA method” calculates the total exhaled helium in real time, without the need for a small sample. RGA also allows calculation of dead space volumes, and the slope of the exhaled helium curve provides valuable information about potential ventilation inhomogeneity.





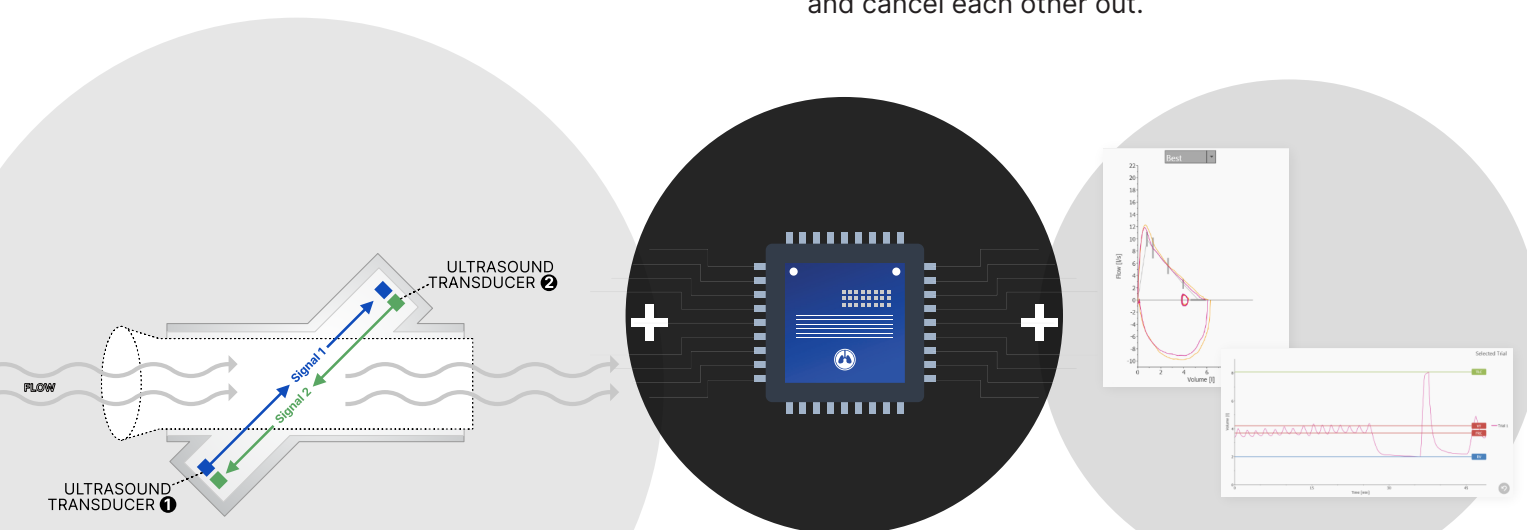
SharpFlow

The GANSHORN ultrasound technology

Two diagonally opposed ultrasonic transducers alternately transmit and receive ultrasonic waves. Without airflow in the breathing tube, the travel time of the ultrasonic waves is the same in both directions. An airflow in the tube accelerates the waves in one direction and slows them down in the other.

The flow rate can be calculated from the

difference in the travel times of the ultrasonic waves. The measured travel times are used to calculate flow rate and gas density, allowing changes in the concentration of exhaled gases to be determined directly and simultaneously with the breathing volume. All other factors, such as gas properties, humidity, and temperature, are the same in both directions and cancel each other out.



1 Double ultrasound signal capturing

The ultrasound measuring system captures the signal with two sensors, in both directions simultaneously, for spatially precise recording

2 Measurement hardware acceleration

Devices based on SharpFlow measurement technology use sophisticated and proven hardware.

3 High-resolution diagram rendering

Based on the multi-layered recorded values, the measurement software Ganshorn.LFX is able to render particularly precise and sharp graphics.

Precision + Resolution

The right sampling resolution, which corresponds to the interpretation, is a prerequisite for reliable flow determination.

No detours

No substitute parameters for flow necessary (e.g. Differential pressure)
Direct flow measurement based on digital measurement technology

Room climate-independent

Not affected by changing ambient conditions like temperature or humidity of breathing air

Single breath diffusion

Precise analyzers enable the high-resolution display of wash-in curves for CO and helium. The PowerCube Diffusion+ demand valve is economical in sample gas consumption. The long life multigas sensor delivers highly accurate and fast CO results which ease the determination of both single breath and online diffusion procedures. The PowerCube Diffusion+ is available as stand alone device or integrated in PowerCube Body+.



Single breath diffusion is a non-invasive method to determine:

- Diffusion capacity [DLCO in mmol/min/kPa]
- Alveolar volume [VA in l]
- Total lung capacity HE [TLC HE in l]

Diffusion & Post-Covid-Syndrome

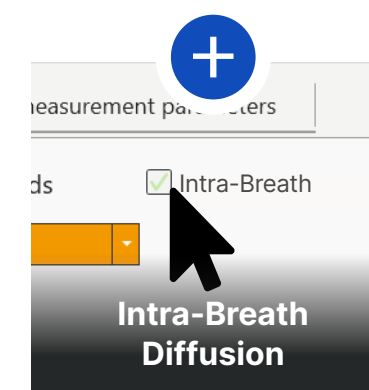
A COVID-19 disease primarily happens in the alveoli, where the virus attacks the type II pneumocytes, which may lead to an abnormal alveolocapillary membrane and the Post-COVID syndrome. A diffusion test is the main measurement technique, which can detect this pathophysiology. Patients suffering from the Post-COVID syndrome complain about symptom

like shortness of breath and exhaustion, but will mostly have a normal spirometry reading. In those cases, a diffusion test is the method of choice to confirm the Post-COVID syndrome diagnosis, which is psychologically important for the patients and will be an important measure in order to observe COVID-19 rehabilitation.



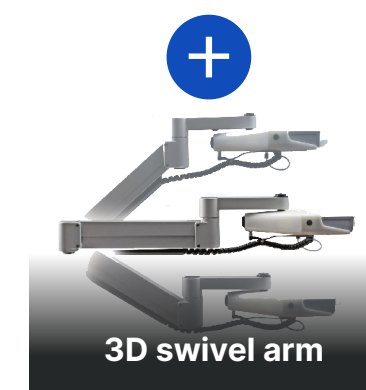
Intelligent Demand Valve (IDV)

Secures the patient, lowers the cost per test and optimizes gas usage.



Intra-Breath Diffusion

For patients that are unable to hold their breath for a prolonged period. Measurement is carried out without breath hold.



3D swivel arm

Extra flexible, height-adjustable interface

The PowerCube®+ Series at a Glance

	PowerCube Spiro+	PowerCube Diffusion+	PowerCube Body+
Complete Spirometry (FVC, SVC, MVV) Pre/Post Bronchodilator	✓	✓	✓
Airway Resistance, Resistance Volume Loops			✓
Bronchial Challenge Testing	✓ with Provo.X	✓ with Provo.X	✓ with Provo.X
Lung Volumes by N2 Washout		✓	✓
SB Diffusion Capacity		✓	✓
Diffusion Capacity, Intrabreath		✓	✓
Airwave Oscillometry	✓ with Tremoflo	✓ with Tremoflo	✓ with Tremoflo
MIP/MEP, P.01	✓	✓	✓
Rhinomanometry	✓	✓	✓
SNIP	✓	✓	✓
Rocc	✓	✓	✓
Lung Volumes, FRC by Body Plethysmography			✓

✓ Standard ✓ Optional

Seated workplace



Optional medical grade ergonomic height adjustable trolley

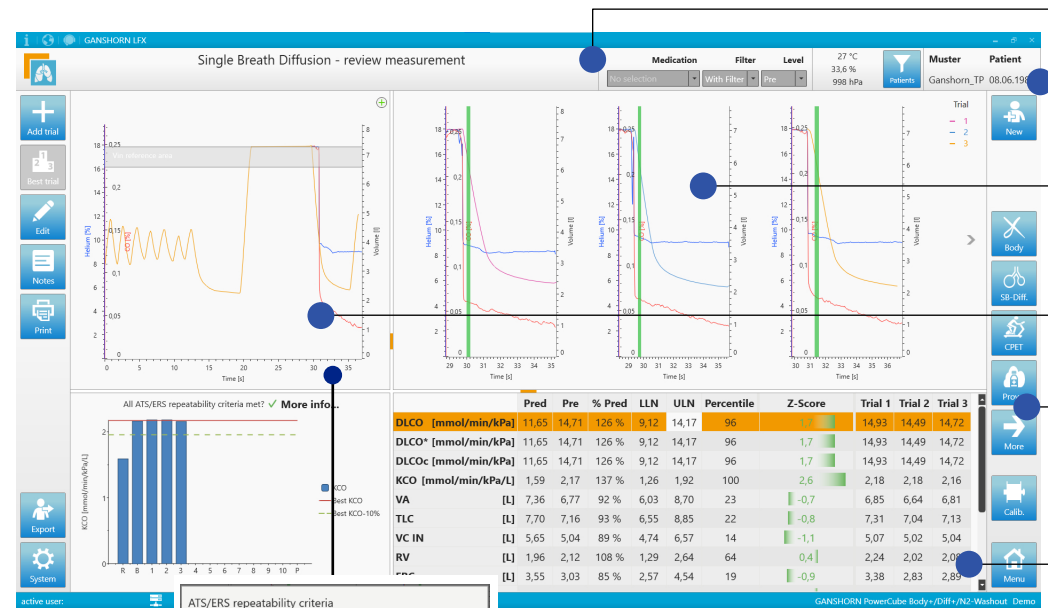


- Height adjustable
- Medical All-in-One-PC with touch function
- optional with isolating transformer and external printer

For use in body box (optional)



LFX Software platform



Preliminary patient overview

Quick patient access

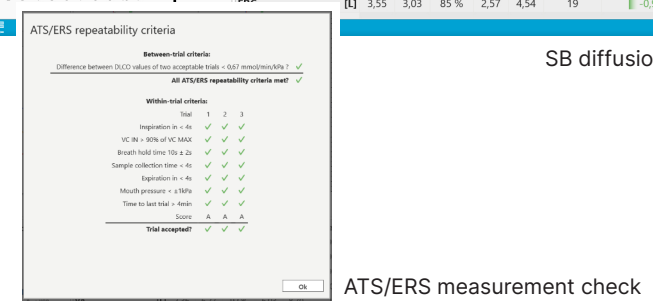
Big zoomable trial chart area

Alternate chart view

Quick measurement access

Customizable parameter list

SB diffusion measurement review

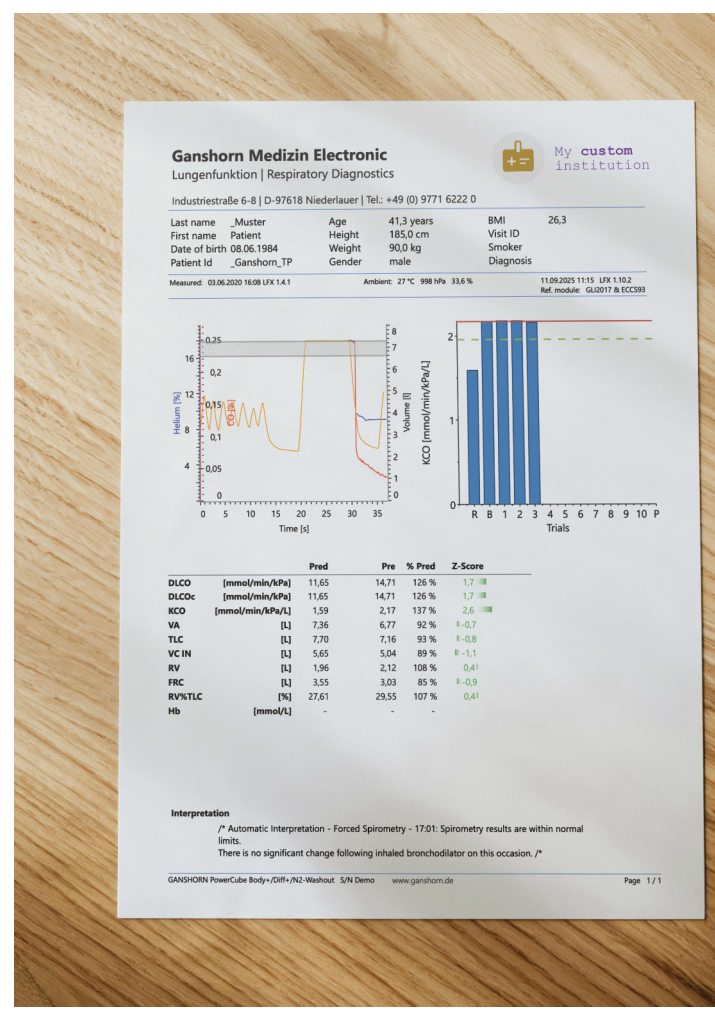


ATS/ERS measurement check

One software system

Diagrams with flexible, large display sizes and various customization options enable quick and accurate evaluation of measurements and breathing maneuvers at a glance. The use of modern Windows tools such as .NET enables platform- and language-independent communication. A modern database concept that leverages both Microsoft SQL and MySQL offers the perfect approach – both for private physicians and large hospital networks. This enables optimal integration and performance.

- ✓ HIS/EMR integration
- ✓ DICOM/HL7 compatibility
- ✓ GDT communication
- ✓ Full network compatibility
- ✓ SQL Database system
- ✓ Export of PDF and raw data files
- ✓ Running on Microsoft® Windows®



Fully customizable report with automatic comments

WHY GANSHORN?

For 40 years GANSHORN has been manufacturing a complete state-of-the-art portfolio of pulmonary function testing systems for spirometry, body plethysmography, diffusion, bronchial provocation and cardiopulmonary stress testing. Since 1982, with its technological innovations, the company has been a leader in the diagnostics market. Many of these are now perceived as gold standards.

In order to meet our high quality standards, it is important to us that all key components are made in Germany. Our devices are created in modern processes in Bavaria, from the initial idea to distribution. In the meantime GANSHORN is represented worldwide, with strong markets in Europe, Asia, North and South America.



PowerCube® Body+

Body Plethysmography



Vivatmo pro

FeNO monitoring



SpiroScout

Spirometry



tremoflo®

Airwave oscillometry



PowerCube® Diffusion+

Diffusion measurement



EucapSys

EVH provocation



Provo.X

Provocation testing



AltiTrainer

Hypoxic challenge testing,
hypoxia training



PowerCube® Ergo

Cardiopulmonary
exercise testing (CPET)



EDAN

Blood gas analysis

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The model shown may also include optional equipment which is not within the standard scope of supply. Design, equipment, and contents are subject to change without notice, as are misprints and errors.