Anton Paar

Laser Diffraction Particle Analyzer

Litesizer DIF 500

Litesizer DIF 500: From First to Best

Fueled by a pioneering legacy in laser diffraction technology, Litesizer DIF 500 builds on nearly 60 years of expertise to deliver next-generation particle sizing, with a range from 10 nm to 3.5 mm. It's the start of a new era with a best-in-class optical setup featuring powerful 10 mW and 25 mW lasers and the widest range of detected diffraction angles from 0.01° to 170°.

The best software experience
The Kalliope software doesn't require training: Get your measurements going in just three clicks. Quality control mode makes measurements even easier to conduct and evaluate. And Kalliope provides full compliance with the US FDA's 21 CFR Part 11.

The best hardware handling
Switching between dispersion units with the Quick-Click system takes only one movement and eliminates connection mistakes. On top of that, monitoring the obscuration right on the dispersion unit simplifies sample addition.

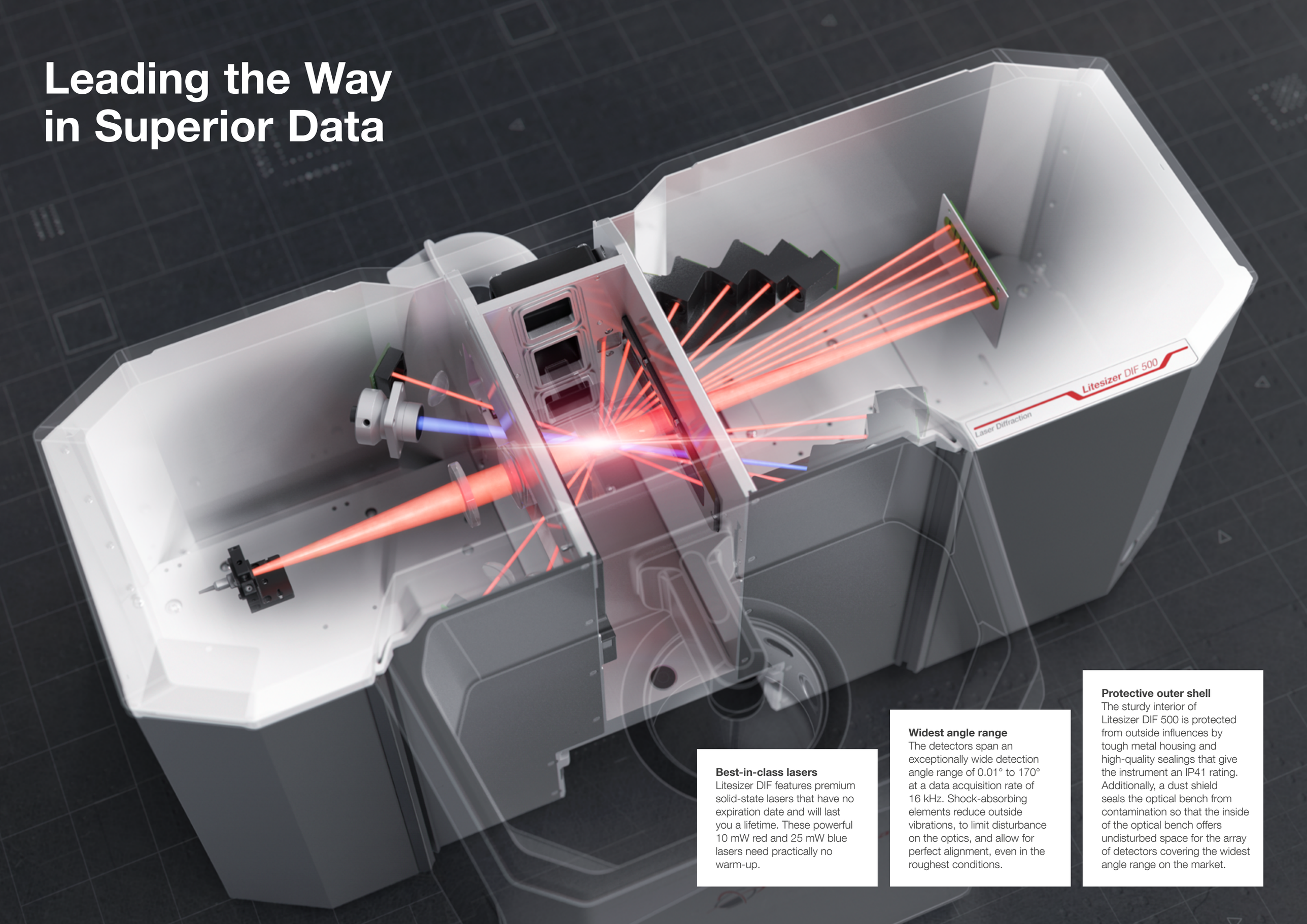
The best in robustness
The optical bench is protected by sturdy metal housing and isolated from environmental dust and direct vibrations. Not even harsh environments pose a problem for Litesizer DIF.

The best in safety
For dry samples, the built-in cover prevents the spread of dust and the sealed sample channel stops the escape of particles and diminishes user exposure to them. For liquid samples, the lid cover prevents possible vapor spread. The software checks the liquid presence before starting sonication.

FIND OUT MORE

www.anton-paar.com/apb-litesizer-dif

Leading the Way in Superior Data



Best-in-class lasers
Litesizer DIF features premium solid-state lasers that have no expiration date and will last you a lifetime. These powerful 10 mW red and 25 mW blue lasers need practically no warm-up.

Widest angle range
The detectors span an exceptionally wide detection angle range of 0.01° to 170° at a data acquisition rate of 16 kHz. Shock-absorbing elements reduce outside vibrations, to limit disturbance on the optics, and allow for perfect alignment, even in the roughest conditions.

Protective outer shell
The sturdy interior of Litesizer DIF 500 is protected from outside influences by tough metal housing and high-quality sealings that give the instrument an IP41 rating. Additionally, a dust shield seals the optical bench from contamination so that the inside of the optical bench offers undisturbed space for the array of detectors covering the widest angle range on the market.

Liquid Flow
Dispersion Unit

Characterize all of your emulsions, suspensions, and solid-state particles with one dispersion unit: Liquid Flow.

	Liquid Flow Dispersion Unit ↓
Description	Liquid-based dispersion unit recirculating the carrier liquid within a closed circuit
Dispersion means	Stirring and pumping (centrifugal pump, max. 2,400 RPM), sonication (max. 50 W)
Measurement range	up to 2,500 µm
Liquid volume	150 mL to 600 mL
Automation	Auto-filling, auto-draining, auto-rinsing
Features	Obscuration indicator light, tank illumination, Quick Click connection (power supply and water provided via the main instrument)
Safety features	Lid cover prevents possible vapor spread, compatible with flammable liquids, liquid presence check before starting sonication
Weight	16.5 kg (36 lb)

Dry Jet
Dispersion Unit

Break apart even the most stubborn dry agglomerates.

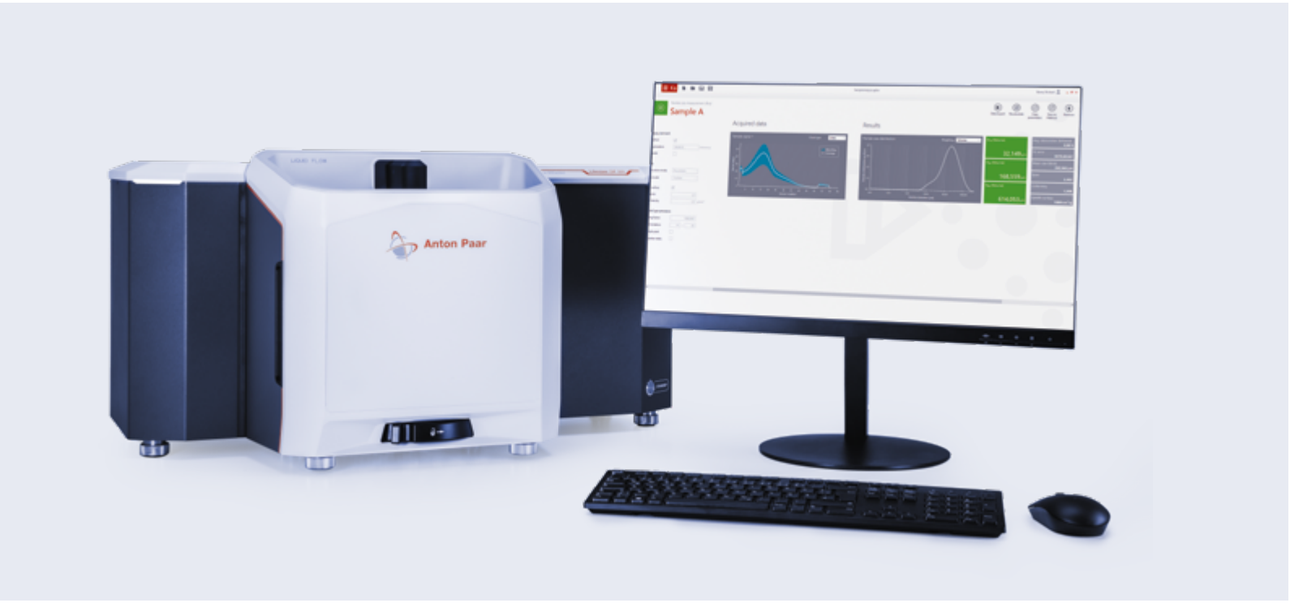
	Dry Jet Dispersion Unit ↓
Description	Dispersion unit for deagglomerating dry materials
Dispersion means	Vibration and compressed air (pressure from 0.05 bar to 4.6 bar)
Measurement range	up to 3,500 µm
Funnel volume	150 mL to 600 mL
Automation	Automatic feeding rate adjustment, automatic funnel emptying, automatic measurement, window cleaning
Features	Quick Click connection (power supply, compressed gas, and sample collection provided via the main instrument)
Safety features	Built-in cover preventing spread of dust, sealed design of sample channel preventing escape of particles and diminishes user exposure to particle
Weight	21.3 kg (47 lb)

Kalliope Software: **Straightforward Particle Analysis**

FIND OUT MORE

www.anton-paar.com/apb-kalliope

The Kalliope workflow seamlessly guides you through a measurement even without any pre-knowledge. Input parameters, real-time monitoring, and measurement results are all viewable in one page.



Expert measurements for all

Even with little or no experience you can conduct expert-level measurements thanks to Kalliope's workflow-orientated interface. Once you have completed the initial measurement, you can recalculate the results using different input parameters.

Application-specific & QC modes

Quality control mode allows you to secure measurement conditions and gives you automatic pass-fail feedback according to your criteria. Further application-specific measurement modes, such as particle separation efficiency evaluations or soil classifications, give you the result you need in the application-specific form.

Pharma mode – US FDA 21 CFR Part 11

A pharma option, with its built-in data security functions, user management, and audit trails, makes Kalliope compliant with the US FDA's 21 CFR Part 11. Comprehensive Analytical Instrument and System Qualification (AISQ) documentation is also available.

Software for a range of instruments

Kalliope is compatible with all Anton Paar's particle sizing instruments. This means you can perform not only laser diffraction, but also Dynamic Image Analysis, DLS and ELS measurements – all with the same software. With users' requirements in mind, we frequently add new functions and features in free of charge updates.

1. Cement and minerals

Back in the 1960s, the first laser diffraction instrument ever (a predecessor of Litesizer DIF) was developed for the cement industry. To date, laser diffraction is still a part of standard quality control in mineral comminution, and Anton Paar continues to satisfy this field's need for a quick and robust instrument. This is of paramount importance at remote locations, especially in industries with high hourly tonnages.

2. Pharmaceutical industry

Accurate, repeatable, and traceable measurements are crucial for high-tech pharmaceutical laboratories. To ensure accuracy (better than ±0.6 % variation), Litesizer DIF is calibrated according to the ISO 13320 and USP <429> standards. The software complies with 21 CFR Part 11 for complete traceability of results. Litesizer DIF's wide measurement range from 0.01 µm to 3,500 µm lets you analyze almost any particles from raw materials to final formulations.

3. Food and beverages

Litesizer DIF determines particle size, which affects the characteristics of food products, e.g. taste. It also provides important information for inspection of raw materials, product and process optimization, and further quality control. Predefined methods and integrated quality control features of the software ensure that anyone can perform a reliable measurement.

4. Chemical industry

The chemical sector handles a wide range of materials. For example, in the battery industry particle size distribution has a direct effect on energy and power density. In the case of pigments and paints, the particle size affects both the performance and appearance of the final product. No matter the application, the Litesizer DIF is build to last and provide accurate results.

Extensive Application Support

If you are unsure of your measurement or data, Anton Paar's team of particle specialists will provide you application support until you are confident with your instrument.

Reliable. Compliant. **Qualified.**

Our well-trained and certified technicians are ready to keep your instrument running smoothly.

FIND OUT MORE

www.anton-paar.com/service

Maximum uptime

Warranty program

Short response times

A global service network

	Litesizer DIF 500
	↓
Measurement principle	Laser Diffraction (Mie and Fraunhofer scattering)
Measurement range	0.01 µm – 3,500 µm
Size classes	144 (user adjustable)
Accuracy*	better than ± 0.5 % variation+
Repeatability	better than ± 0.5 % variation+
Reproducibility**	better than ± 1 % variation+
Possible measurement duration	<10 sec
Data acquisition rate	16 kHz
LIGHT SOURCE 1	
Type	Fiber coupled laser diode
Optical arrangement	Reverse Fourier
Wave length	830 nm, infrared
Power	10 mW
Laser class	Class 1 (IEC60825-1)
LIGHT SOURCE 2	
Type	Laser diode
Optical arrangement	Tilted relative to IR laser
Wave length	450 nm, blue
Power	25 mW
Laser class	Class 1 (IEC60825-1)
DETECTORS	
Type	Log-spaced photo diode array and single diodes for side and back-scattering
Angular range	0.01° to 170°
Focal length	300 mm
Alignment	automatic
INSTRUMENT SIZE	
Dimensions***	400 mm x 790 mm x 290 mm (H x W x D)
Weight***	42.3 kg (93.2 lb)
Power supply	100 V to 240 V ±10 %, 50/60 Hz
OPERATING CONDITIONS	
Temperature	10 °C to 30 °C
Humidity	35 % to 80 % non-condensing
IP rating	IP 41
COMPLIANT WITH	
	ISO 13320:2020, USP 429, ASTM B822 – 20, ASTM D4464 - 15(2020) ASTM E2316 - 14(2019

+ Sample and preparation dependent. Defined for liquid dispersion measurements.
* Defined for a monomodal latex standard and accounting for manufacturer's uncertainty of standard size.
** Defined for D50 of a polydisperse standard.
*** without PC and dispersion units

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