

SYNC SERIES

Combining Laser Diffraction With Dynamic Image Analysis

ONE PLATFORM. THREE LEVELS OF PERFORMANCE.
FIND THE SYNC THAT FITS YOUR LAB

SYNC GO



**SIMPLE, FLEXIBLE,
COST-EFFECTIVE
PARTICLE SIZE
ANALYSIS**

| Dry range: 0.1 - 2000
µm

SYNC PLUS



**PARTICLE SIZE AND
SHAPE IN ONE
OPTICAL BENCH, WITH
AUTOMATION**

| Dry range: 0.1 - 4000
µm

SYNC PRO



**ADVANCED
PERFORMANCE WITH
SUB-MICRON
PRECISION**

| Dry range: 0.1 - 4000
µm

PARTICLE SIZE AND SHAPE ANALYZER SYNC SERIES
VERSIONS & ACCESSORIES

FLOWSYNC & FLOWSYNC MINI

SAMPLE DISPERSION UNIT FOR WET MEASUREMENTS

The FLOWSYNC systems automate wet sample handling to deliver highly consistent and repeatable particle size and imaging results. From filling to circulation and cleaning, every step is controlled to ensure reliable measurements across a wide range of applications.

Key Benefits



Automated workflows for filling, de-aerating, circulation, and cleaning

- | Consistent dispersion with in-line ultrasonic probe (FLOWSYNC)
- | Programmable SOPs for fully reproducible measurement routines
- | Integrated pumping system for easy solvent and water connection
- | Built-in turbulence eliminates need for external stirring
- | Broad solvent compatibility, including organic solvents
- | Self-cleaning design prevents cross-contamination
- | Flexible volumes: 200 ml (FLOWSYNC) / 40 ml (MINI)

FLOWSYNC GO

SAMPLE HANDLING MADE SIMPLE

The FLOWSYNC GO is a manual wet dispersion unit designed for simple, consistent particle size measurements. It combines user controlled sample handling with software-guided operation for reliable and repeatable results.

Key Benefits

- | Manual filling with software-controlled flow, speed, and drain
- | Consistent circulation for improved measurement repeatability
- | Adjustable SOP settings for optimized measurement conditions
- | Compatible with Dynamic Image Analysis and BLEND technology
- | Seamless integration with all SYNC platforms
- | Built-in turbulence for effective dispersion without stirring
- | Supports a wide range of solvents, including



SMALL VOLUME CELL FOR USE WITH FLOWSYNC

ANALYZE PRECIOUS OR LIMITED SAMPLES WITH CONFIDENCE

The Small Volume Cell (SVC) enables precise particle analysis when sample volume is limited, valuable, or hazardous. It is ideal for applications where minimizing material use is critical without compromising measurement quality.

Key Benefits

- | Minimal sample volume down to 8 ml
- | Safe handling of toxic or high-value materials
- | Integrated stirring for stable and accurate dispersion
- | 0.01 - 500 μm range (density dependent)
- | Chemical-resistant design (stainless steel, quartz, Teflon)
- | Easy integration with FLOWSYNC systems
- | SmartCell ID for automatic recognition and setup



TURBOSYNC

DISPERSION MODULE FOR DRY MEASUREMENTS

The TURBOSYNC module ensures reliable dry dispersion for consistent and repeatable particle size analysis. Powder samples are introduced via a moving tray, enabling controlled and reproducible measurements across a wide range of materials.

Key Benefits

- | Controlled dispersion with adjustable air pressure up to 50 psi (345 kPa)
- | Optimized for all materials, from agglomerated to fragile powders
- | Handles very small samples down to 0.1 cm³
- | Supports larger volumes with removable and combinable trays
- | Automated measurements via DIMENSIONS LS software
- | Fast analysis times typically 10 - 40 seconds
- | High repeatability across samples and instruments



MICROTRAC AUTOSAMPLER

LABORATORY AUTOMATION FOR PARTICLE ANALYSIS

The MICROTRAC Autosampler automates particle size analysis by integrating seamlessly with SYNC analyzers and automated FLOWSYNC systems. It enables high-throughput, consistent measurements with minimal user interaction.

Key Benefits

- | Automated sample handling for up to 64 vials per run
- | Full SOP control via Dimensions LS software
- | Flexible method setup (flow rate, run time, refractive index, rinse cycles)
- | Barcode identification for reliable sample tracking
- | Complete sample transfer with integrated vial wash-down
- | Safe operation using a programmable cobot arm with emergency stop
- | Fully unattended operation once the sequence is started
- | High reproducibility with consistent sample delivery





CHANGE BETWEEN DRY & WET MODULES

No other particle analyzer allows more rapid change from wet to dry and vice versa.

The modules can be removed from the analyzer with a single movement and reinstalled just as easily. All necessary cables and hoses are permanently connected to the back of the analyzer. This means that no changes to the measuring instrument or modules are required during the actual changeover.

Removal of measuring cells or tedious plugging and un-plugging of mechanical and electrical connections is no longer necessary. This makes the process a real plug-and-play operation.

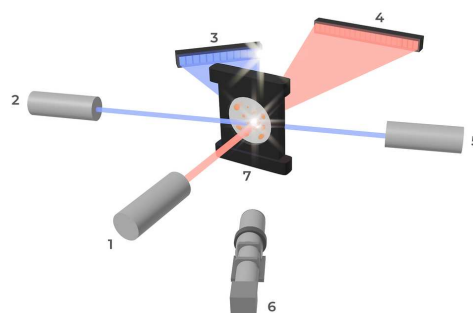
PARTICLE SIZE AND SHAPE ANALYZER SYNC SERIES

LASER DIFFRACTION ANALYZER WITH THE PATENTED TRI-LASER SYSTEM

Laser Diffraction (LD) is the established standard for particle size analysis in research and quality control. A dispersed sample is illuminated by a laser, and particle size distribution is calculated from the resulting scattering pattern.

MICROTRAC systems measure scattered light across a wide angular range (0–165°) using dual detectors and a tri-laser setup with red and optional blue lasers. Smaller particles scatter at larger angles, larger ones at smaller angles, with intensity captured continuously. Using a modified Mie theory, the system delivers accurate results for spherical and non-spherical particles, as well as transparent and absorbing materials.

1. Laser #1 (red) 2. Laser #2 (red or blue) 3. High-angle detector 4. Forward detector 5. Laser #3 (red or blue) 6. High-resolution camera 7. Sample cell

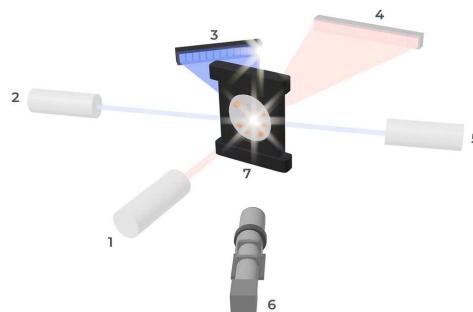


NEW OPPORTUNITIES

INTEGRATED DYNAMIC IMAGE ANALYSIS

Particle characterization is no longer limited to size alone. Dynamic Image Analysis (DIA) adds detailed insight into particle shape and morphology, revealing differences that may not appear in laser diffraction results but can significantly impact performance.

Particles in a flowing stream are illuminated by a stroboscopic light and captured by a high-speed camera, generating a continuous image dataset.



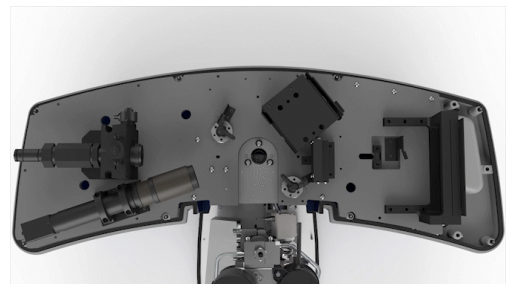
Over 30 size and shape parameters are calculated per particle, with powerful software tools enabling filtering, visualization, and evaluation of specific particle populations in formats such as scatter plots.

1. Laser #1 (red) **2.** Laser #2 (red or blue) **3.** High-angle detector **4.** Forward detector **5.** Laser #3 (red or blue) **6.** High-resolution camera **7.** Sample cell

THE BEST OF TWO WORLDS

COMBINING LASER DIFFRACTION WITH DYNAMIC IMAGE ANALYSIS

The MICROTRAC SYNC platform combines laser diffraction and dynamic image analysis in a single measurement, enabling simultaneous access to particle size and shape. Its Tri-Laser technology ensures accurate, repeatable results, while integrated imaging provides additional insight into morphology and dispersion quality in both wet and dry measurements.



As particles pass through the measurement cell, they are analyzed by lasers and imaged at the same time. This allows evaluation of both overall particle size distribution and individual particles from a large image dataset. With the patented BLEND feature, users can analyze or combine both data sets, supporting reliable QC and advanced material characterization.

PARTICLE SIZE AND SHAPE ANALYZER SYNC SERIES

OPTIMUM SOLUTIONS FOR EVERY INDUSTRY

Laser diffraction is a versatile method widely used in research and industry. MICROTRAC particle analyzers are designed for intuitive operation, robust performance, and minimal maintenance—making them well suited for continuous 24/7 use.

Its high sample throughput and broad measurement range, from nanometers to millimeters, explain its widespread use. However, limitations include reduced resolution for large particles, limited sensitivity to oversize fractions, and no direct shape analysis. By combining laser diffraction with image analysis, the SYNC particle analyzer overcomes these gaps, delivering more complete data and improved overall measurement accuracy.



pigments



pharmaceuticals



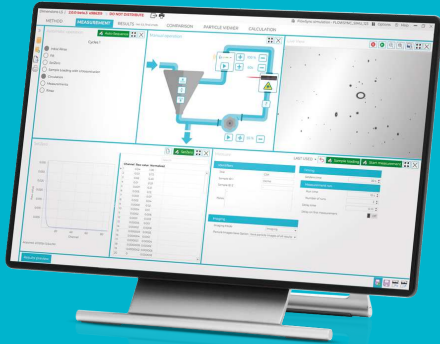
metal powder

- | paints / pigments
- | ceramics
- | chemicals
- | industrial minerals
- | metal powders
- | construction materials
- | cosmetics

- | pharmaceuticals
- | glass / glass beads
- | coatings
- | food
- | 3D printing
- | foodstuffs

- | emulsions
 - | polymers
 - | battery materials
- ... and many more!

To find the best solution for your particle characterization needs, visit our application database



INTUITIVE USE WITH JUST A FEW CLICKS

DIMENSIONS LS FOR SYNC

The DIMENSIONS LS software comprises six clearly structured Workspaces for method development, operation of the SYNC instrument, result presentation and evaluation of several analyses. The Workspaces for result evaluation remain accessible during analysis.

- | Simple method development
- | Clearly structured result presentation
- | Various evaluation options
- | Intuitive workflow
- | Simple data export
- | Multi-user capability
- | Software with AI-supported analysis

PARTICLE SIZE AND SHAPE ANALYZER SYNC

TECHNICAL DATA

Measuring ranges

GO: 0.1 - 2000 μm (dry & wet)
 PLUS: 0.1 - 4000 μm (dry), 0.02 - 2800 μm (wet)
 PRO: 0.1 - 4000 μm (dry), 0.01 - 2800 μm (wet)

Measuring principle

Laser Diffraction (ISO 13320)
 Dynamic Image Analysis (ISO 13322-2)

Precision*

Spherical glass beads D50 = 642 microns, precision as CV = 0.7%
 Spherical glass beads D50 = 57 microns, precision as CV = 1.0%
 Spherical latex beads D50 = 0.4 microns, precision as CV = 0.6%

Laser class

Red 780 nm, blue 405 nm
 Class 1 laser product per CFR 1040.10 & IEC60825-1

Laser power	Red laser 0.35 to 2 mW nominal Blue laser 4-8 mW nominal
Detection system	Two fixed photo-electric detectors with logarithmically spaced segments are placed at correct angles for optimal scattered light detection from 0 to 165 degrees using 151 detector segments.
Data	Volume, number and area distributions as well as percentile and other summary data
Data format	Stored in ODBC format in encrypted Microsoft Access Databases to ensure compatibility with external statistical software applications.
Data integrity	Data integrity may be ensured using FDA 21 CFR Part 11 compliant security features including password protection, electronic signatures and assignable permissions
Type of analysis	dry and wet analysis
Measuring time	~ 10 to 30 seconds
Power requirements	AC input: 90 - 264 VAC, 47 - 63 Hz, single phase
Power consumption	25 W nominal, 50 W max., depending on options installed
Environmental conditions	Temperature: 5° to 40° Celsius (50° to 95° Fahrenheit) Humidity: 90% RH, non-condensing maximum Storage Temperature: -10° to 50° Celsius (14° to 122° Fahrenheit) (dry only) Pollution: Degree 2
Standards	Laser Diffraction (ISO 13320) Dynamic Image Analysis (ISO 13322-2) Representation of results of particle size analysis (ISO 9276-6)
Image analysis	5.2 megapixel (2560 x 2048), 60 fps at max resolution
Wet operation	Volume: 200 ml nominal Flow rate: 0 to 65 ml/sec with water Inlet pressure: 50 psig (345 kPa) maximum
Dry operation	100 psi (689 kPa) maximum pressure 5 CFM (8.5 m3/h) at 50 psi (345 kPa) minimum flow rate Free of dry contaminants, moisture and oil
Vacuum	Vacuum must meet or exceed 50 CFM (85 m3/h)
Physical specifications	Case Material: Impact resistant plastic Exterior surfaces are finished with corrosion resistant paint or plating Chemical Compatibility: Class I
Dimensions (W x H x D)	~ 820 x 460 x 500 mm (32.3 x 18.1 x 19.7 in)

Weight (Measuring unit)

FlowSync: 19.5kg (43lbs)
TurboSync: 13.6kg (30lbs)
Sync: 23.6kg (50.8lbs)

*Depending on sample material and sample preparation

www.microtrac.com/sync