

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

粒子径分布・粒子形状分析装置 SYNC SERIES
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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

乾式試料供給機

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.

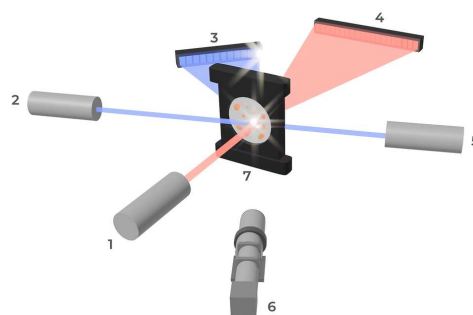
粒子径分布・粒子形状分析装置 SYNC SERIES

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

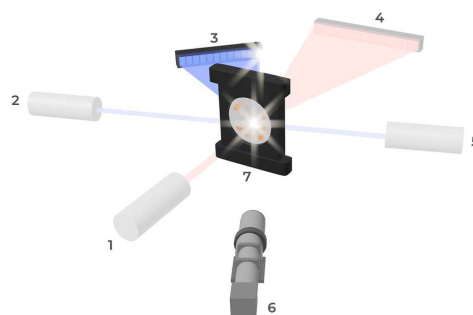


NEW OPPORTUNITIES

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.



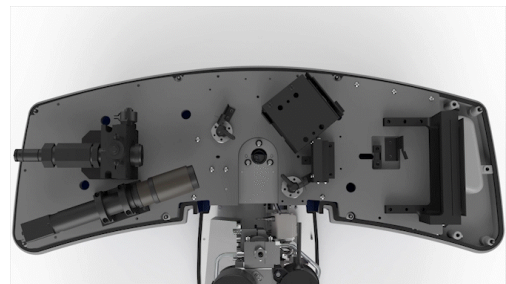
Over 30 size and shape parameters are calculated per particle, with powerful software tools enabling filtering, visualization, and evaluation of specific particle populations in formats such as scatter plots.

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.

粒子径分布・粒子形状分析装置 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.



色素



医薬品



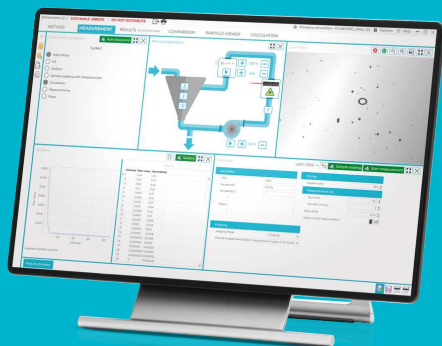
金属粉

- | ラッカー / 色素
- | セラミックス
- | 化学物質
- | 工業用鉱物
- | 鉄粉
- | 建設材料
- | 化粧品

- | 医薬品
- | ガラス / ガラスビーズ
- | コーティング
- | 食品
- | 3D プリンタ
- | 食材

- | エマルジョン
- | ポリマー
- | 電池材料
-
- | その他

アプリケーションデータベースに各種資料を掲載しております。



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

粒子径分布・粒子形状分析装置 SYNC

製品仕様

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)

測定原理

レーザ回折・散乱法
 動的画像解析法

精度*

球形ガラスビーズ D50=642ミクロン、CV=0.7%
 球形ガラスビーズ D50=57ミクロン、CV=1.0%
 球形ラテックス D50=0.4ミクロン、CV=0.6%

レーザクラス

赤色780nm-21CFR1040.10およびIEC60825-1に準拠したクラス1レーザ製品

レーザ出力

赤色レーザ、2mW

散乱光検出機構

シリコンフォトディテクタ（有効素子数150）

データ

体積・個数・面積分布、パーセントなどの要約データ

データ形式	暗号化されたデータベース（拡張子：.dms, .dms2）
データ出力	粒子径分布：累積パーセント径（任意設定可）、体積平均径、面積平均径、個数平均径 （※）HRA、MT3000シリーズとのデータ互換モードを標準搭載 円相当径、最大/最小フェレー径、楕円長径/短径、周囲長径 粒子形状：円形度、アスペクト比、凹凸度など
測定タイプ	乾式、および湿式分析
測定時間	10秒～
電源	AC入力:90～264VAC、50/60Hz、単相
消費電力	25 W、最大50 W(オプションによる)
設置環境	温度:5°C～40°C 湿度:90%RH、結露なし最大 保管温度:-10°C～50°C (乾燥のみ) 汚染度2
関連規格	レーザ回折・散乱法（JIS 8825、ISO 13320） 動的画像解析法（JIS 8827、ISO 13322-2） 粒子径測定結果の表現（JIS 8819、ISO 9276-6）
画像解析	520 万画素 (2560 x 2048), 最大解像度で60フレーム/秒
湿式測定	FLOWSYNC：容量160mL、最大流量65mL/s FLOWSYNC MINI：容量45mL、最大流量30mL/s ※給水口の許容圧力: 34.5 kPa
乾式測定	50psi(345kPa)最大圧力 3 CFM(0.0014m³/h)at50psi(345kPa)最小流量 乾燥汚染物、水分、油分がないこと
バキューム圧	真空度で80CFM(38L/s)以上
本体仕様	ケース材質：耐衝撃性プラスチック 外面は耐食性塗料またはメッキ仕上げ 化学的適合性：クラスI
外形寸法 (W x H x D)	820 x 460 x 500 mm
質量 (測定部)	SYNC本体：23.6kg FLOWSYNC(湿式ユニット)：19.5kg TURBOSYNC(乾式ユニット)：13.6kg

*サンプルとサンプルの前処理によって異なります

www.microtrac.com/sync