

Bettersizer ST Laser Particle Size Analyzer

Bettersizer ST is a fully automated wet dispersion particle size analyzer with smart operation system. Using DLOS with automated analysis procedure, Bettersizer ST provides stable and reliable testing results with minimum user intervention. The compact footprint saves valuable work space for factories and laboratories.



Features/Benefits:

- Size range: 0.1-1000 μ m
- Accuracy: $\leq 1\%$ (GBRM D50)
- Repeatability: $\leq 1\%$ (GBRM D50)
- Detector: 86 pieces (forward, lateral, backward)
- Dual lenses optical system (DLOS)
- Standard Operation Procedure (SOP)

Applications/Materials:

- SChemicals, paints, inks and coatings
- Pharmaceutical development
- Mining and minerals, metal powders
- Fuel cell, electronics
- Oil and petrochemicals, coal industry
- Food and drink
- Cement, ceramic, soil science, agrochemical analysis, plastic and polymers



Bettersizer ST Laser Particle Size Analyzer

Intelligent Particle Sizing Performance

Bettersizer ST has outstanding accuracy and good reliability, good repeatability, easy operating, compact body and fast test speed.

Accuracy: $\leq 1\%$ (GBRM D50)

The accuracy of Bettersizer ST as verified by measurements of standard samples

a) Accuracy which approved by China National Accreditation: Satisfied.

Letter of Notice for Ability Verification Plan Results

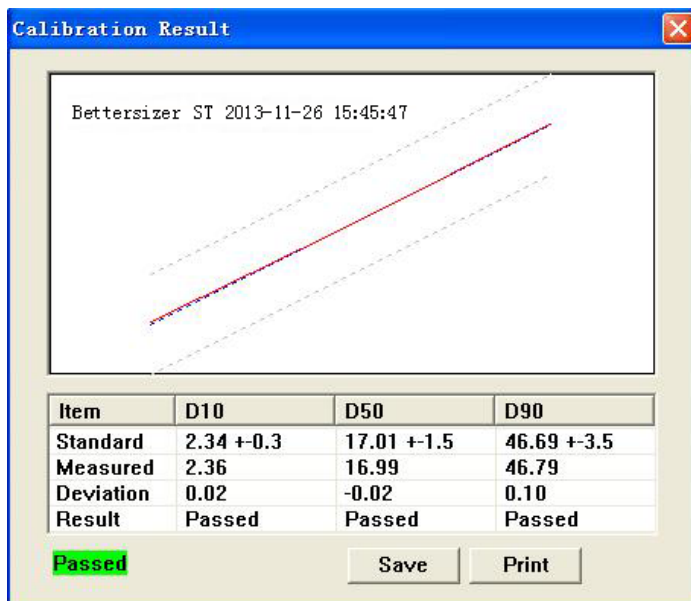
Lab Name: Dandong Bettersize Instruments Ltd.

Lab Code:118

Test Item	Sample	Lab Result (μm)	Designated Value(μm)	Deviation Percentage(%)	Result Evaluation
Mean Diameter D_{mean}	2012FT-A1	13.55	14.06	-3.6	Satisfied
	2012FT-A1	12.26	12.55	-2.3	Satisfied
Median Diameter D_{50}	2012FT-A1	13.49	14.04	-4.1	Satisfied
	2012FT-A1	12.27	12.54	-2.2	Satisfied

Note: if absolute value of deviation percentage is less than or equal to 10%, it is satisfied result; if absolute value is more than 10%, it is unsatisfied result.

b)Use standard sample to verify accuracy



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Repeatability: $\leq 1\%$ (GBRM D50)

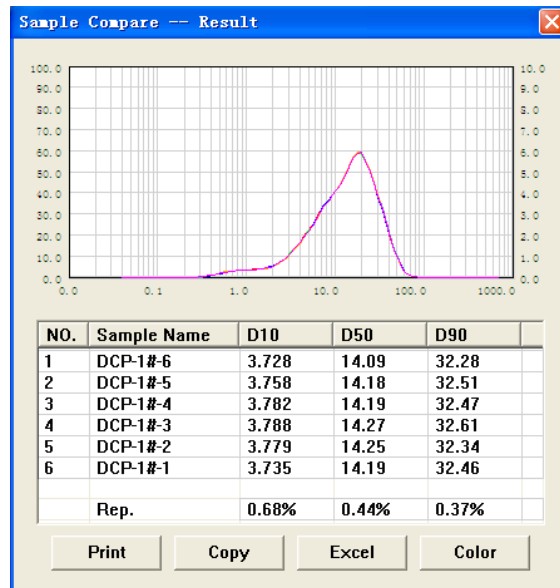
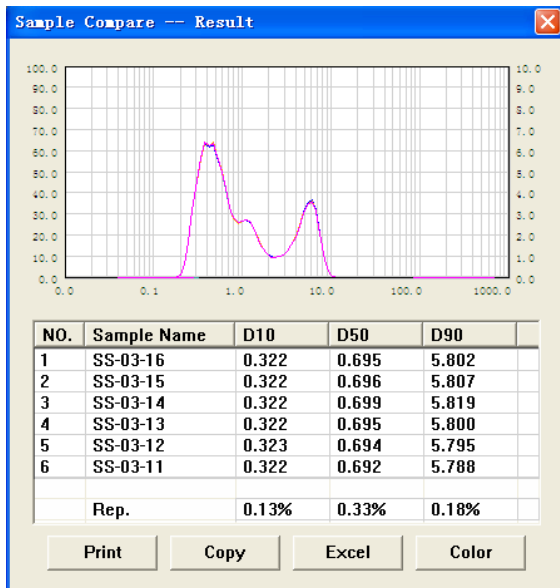
Bettersizer ST measures samples with a distribution range of 0.1-1000 μ m. The results under same analysis conditions yield good repeatability as shown in the following graph.

a) Repeatability of a serial test of same sample

Sample Name	D3 (um)	D10 (um)	D25 (um)	D50 (um)	D75 (um)	D90 (um)	D97 (um)
SS-03-16	0.266	0.322	0.421	0.695	2.624	5.802	7.270
SS-03-15	0.266	0.322	0.421	0.696	2.635	5.807	7.274
SS-03-14	0.266	0.322	0.422	0.699	2.667	5.819	7.281
SS-03-13	0.266	0.322	0.421	0.695	2.621	5.800	7.270
SS-03-12	0.266	0.323	0.422	0.694	2.618	5.795	7.270
SS-03-11	0.266	0.322	0.421	0.692	2.579	5.788	7.266
Aver	0.266	0.322	0.421	0.695	2.624	5.802	7.270
Rep.		0.13%		0.33%		0.18%	

Sample Name	D3 (um)	D10 (um)	D25 (um)	D50 (um)	D75 (um)	D90 (um)	D97 (um)
DCP-1#-a-6	1.336	3.999	7.763	14.75	22.90	32.57	42.96
DCP-1#-a-5	1.332	3.981	7.740	14.73	22.90	32.52	42.73
DCP-1#-a-4	1.323	4.015	7.795	14.78	22.89	32.51	42.96
DCP-1#-a-3	1.332	4.079	7.907	14.86	23.07	32.96	43.27
DCP-1#-a-2	1.267	3.994	7.800	14.79	22.95	32.70	42.95
DCP-1#-a-1	1.259	3.981	7.788	14.78	22.95	32.66	42.95
Aver	1.348	4.032	7.817	14.80	22.95	32.67	42.96
Rep.		0.92%		0.35%		0.52%	

b) Repeatability of re-sampling tests

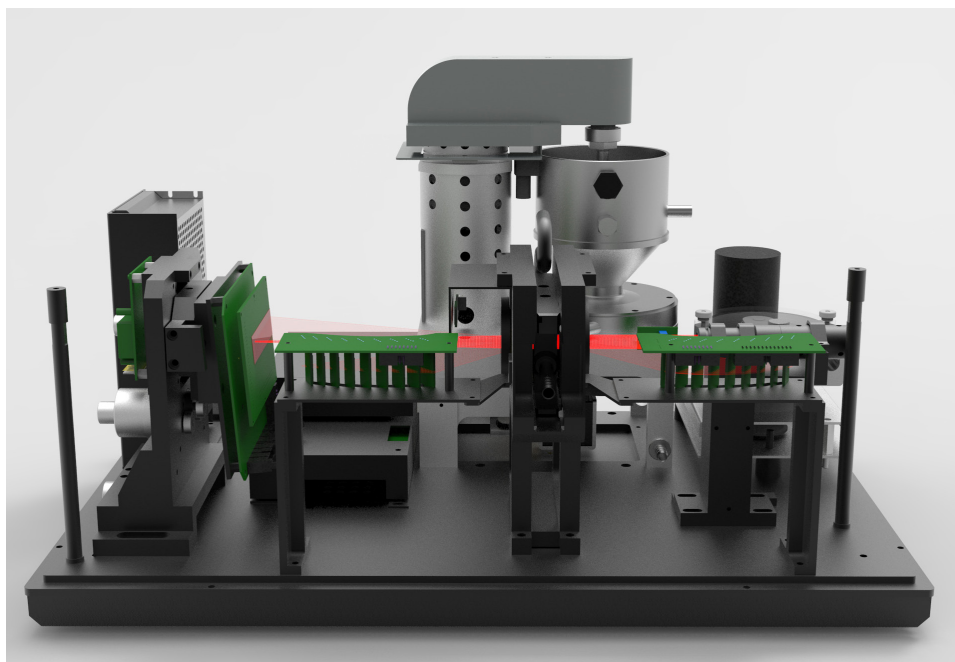
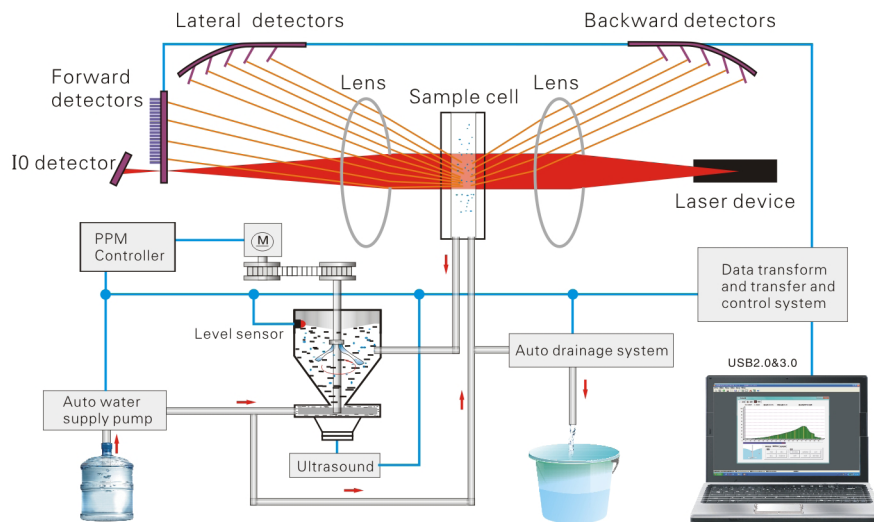


Bettersizer ST Laser Particle Size Analyzer

Technology for Reliable Measurement

1. Dual Lenses Optical System (DLOS)

DLOS is a patented technology of Bettersize. It integrates forward, sideway and backward scattering to double the detection of scattering lights. Compared with single lens system, DLOS improves resolution and measuring accuracy; compared with dual beam system, DLOS provides more reliable results through a consistent wavelength and continuity of a single laser source.



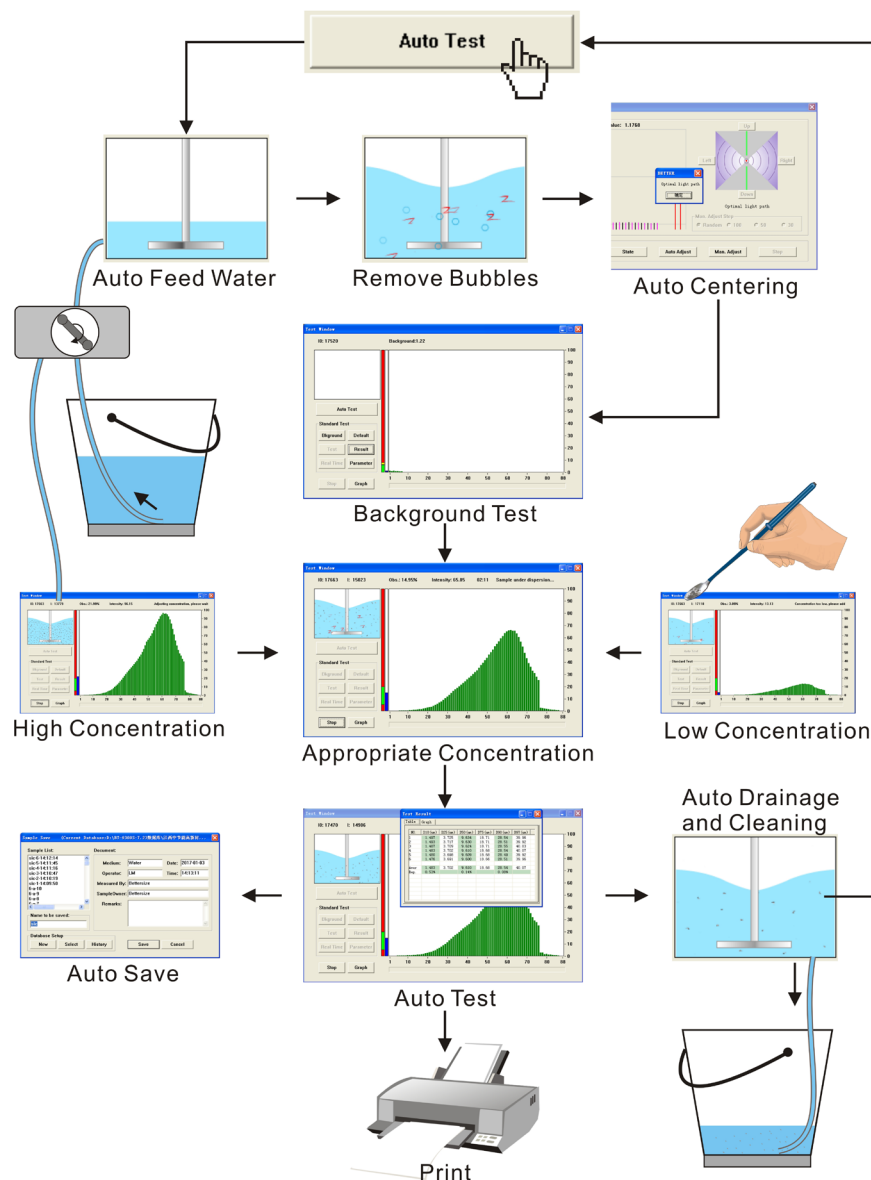
Bettersizer ST Laser Particle Size Analyzer

2. Standard Operation Procedure (SOP)

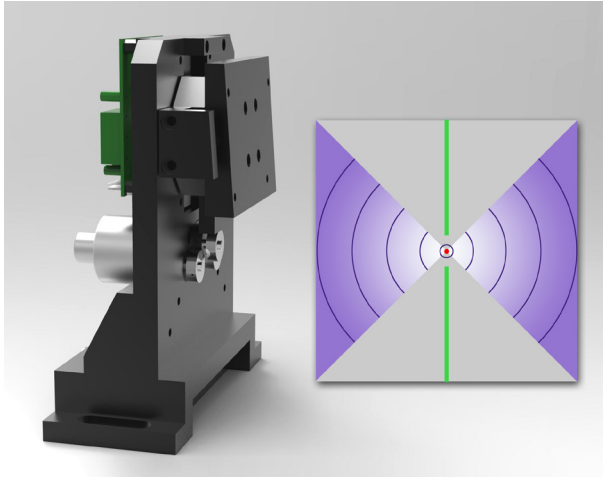
Analysis by one mouse click:

SOP of Bettersizer ST provides an intuitive solution for standardized and automatic testing. Click once on the auto test button, the testing procedure will run by itself, including water intake, bubble removal, background and obscuration measurement, testing, rinsing, and result save and print. Just add sample and the automatic analysis procedure is just one mouse click away.

SOP not only provides a simplified procedure but also avoids human operation error; therefore, it ensures the repeatability and accuracy of testing results.



Bettersizer ST Laser Particle Size Analyzer



3. Automatic Centering

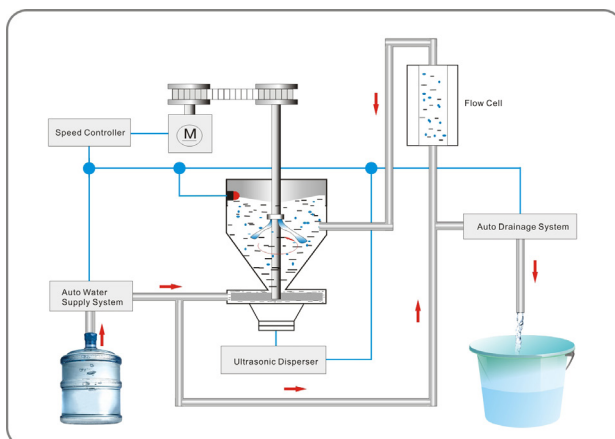
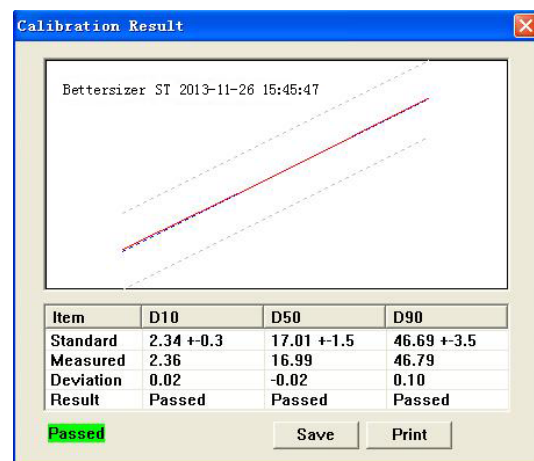
Guarantee the perfect condition of optical system:

By moving the laser detector center point to the focus point of lens before each test, automatic centering function guarantees the perfect condition of optical system, therefore, provides accurate and repeatable testing results.

4. Accuracy Calibration

Maintain accurate datum lifetime

This function makes operate parameters maintained at consistent conditions, producing consistent and reproducible measurement across the board for all old and new instruments alike.



5. Automatic Circulation and Dispersion System:

Revealing the true form of every particle through the laser

The circulation and dispersion system ensures a complete sample dispersion hence make sure that each particle would be accounted for through the laser system.

Bettersizer ST Laser Particle Size Analyzer

Example of Report

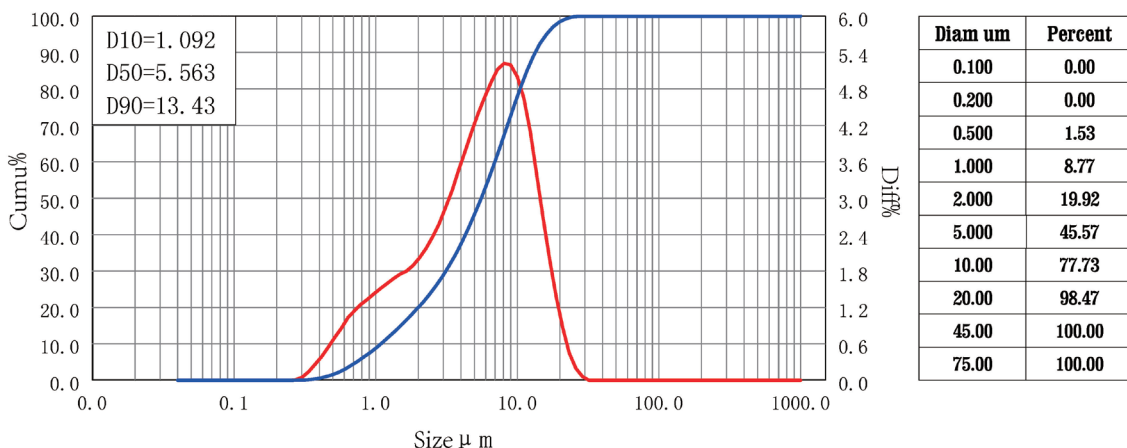
Bettersizer ST laser particle size

Bettersize™ analyzer Particle size analysis report

Range : 0.1um - 1000um

Sample : Sample 1#		Sample Owner : Bettersize	
Medium : Water		Measured By : Bettersize	
Particle RI : 1.596+0.100i	Optical : Mie	Operator : LM	
Medium RI : 1.333	Mode : 7.23 - 1	Date : 2017-01-18	Time : 13:44:47
Remark : (1:3.00)0-(0:3)		Distribution : Volume	
D 50 : 5.563 um	D [4,3] : 6.542 um	D [3,2] : 2.791 um	OBS. : 12.37 %
SPAN : 2.218	D [2,1] : 1.095 um	SSA : 0.795 m ² /g	Residual : 0.418 %
D03 = 0.606 um	D06 = 0.804 um	D10 = 1.092 um	D16 = 1.602 um
D50 = 5.563 um	D75 = 9.430 um	D84 = 11.48 um	D90 = 13.43 um

Diam um	Diff%	Cumu%	Diam um	Diff%	Cumu%	Diam um	Diff%	Cumu%	Diam um	Diff%	Cumu%
0.000 - 0.100	0.00	0.00	0.923 - 1.026	1.42	9.13	9.484 - 10.54	5.00	80.29	97.38 - 108.2	0.00	100.00
0.100 - 0.111	0.00	0.00	1.026 - 1.141	1.51	10.64	10.54 - 11.72	4.65	84.94	108.2 - 120.3	0.00	100.00
0.111 - 0.123	0.00	0.00	1.141 - 1.268	1.59	12.23	11.72 - 13.02	4.10	89.04	120.3 - 133.7	0.00	100.00
0.123 - 0.137	0.00	0.00	1.268 - 1.410	1.67	13.90	13.02 - 14.48	3.38	92.42	133.7 - 148.7	0.00	100.00
0.137 - 0.152	0.00	0.00	1.410 - 1.568	1.75	15.65	14.48 - 16.10	2.66	95.08	148.7 - 165.3	0.00	100.00
0.152 - 0.169	0.00	0.00	1.568 - 1.743	1.80	17.45	16.10 - 17.90	1.98	97.06	165.3 - 183.8	0.00	100.00
0.169 - 0.188	0.00	0.00	1.743 - 1.938	1.89	19.34	17.90 - 19.89	1.37	98.43	183.8 - 204.3	0.00	100.00
0.188 - 0.209	0.00	0.00	1.938 - 2.154	2.02	21.36	19.89 - 22.12	0.87	99.30	204.3 - 227.1	0.00	100.00
0.209 - 0.233	0.00	0.00	2.154 - 2.395	2.17	23.53	22.12 - 24.59	0.45	99.75	227.1 - 252.5	0.00	100.00
0.233 - 0.259	0.00	0.00	2.395 - 2.662	2.36	25.89	24.59 - 27.33	0.19	99.94	252.5 - 280.7	0.00	100.00
0.259 - 0.288	0.01	0.01	2.662 - 2.959	2.57	28.46	27.33 - 30.39	0.06	100.00	280.7 - 312.0	0.00	100.00
0.288 - 0.320	0.05	0.06	2.959 - 3.290	2.84	31.30	30.39 - 33.78	0.00	100.00	312.0 - 346.9	0.00	100.00
0.320 - 0.356	0.14	0.20	3.290 - 3.657	3.13	34.43	33.78 - 37.55	0.00	100.00	346.9 - 385.6	0.00	100.00
0.356 - 0.396	0.26	0.46	3.657 - 4.066	3.47	37.90	37.55 - 41.75	0.00	100.00	385.6 - 428.7	0.00	100.00
0.396 - 0.440	0.39	0.85	4.066 - 4.520	3.78	41.68	41.75 - 46.41	0.00	100.00	428.7 - 476.6	0.00	100.00
0.440 - 0.489	0.54	1.39	4.520 - 5.025	4.10	45.78	46.41 - 51.59	0.00	100.00	476.6 - 529.8	0.00	100.00
0.489 - 0.544	0.71	2.10	5.025 - 5.586	4.40	50.18	51.59 - 57.36	0.00	100.00	529.8 - 588.9	0.00	100.00
0.544 - 0.604	0.86	2.96	5.586 - 6.210	4.66	54.84	57.36 - 63.76	0.00	100.00	588.9 - 654.7	0.00	100.00
0.604 - 0.672	1.03	3.99	6.210 - 6.903	4.91	59.75	63.76 - 70.88	0.00	100.00	654.7 - 727.8	0.00	100.00
0.672 - 0.747	1.14	5.13	6.903 - 7.674	5.12	64.87	70.88 - 78.80	0.00	100.00	727.8 - 809.1	0.00	100.00
0.747 - 0.830	1.25	6.38	7.674 - 8.531	5.22	70.09	78.80 - 87.60	0.00	100.00	809.1 - 899.5	0.00	100.00
0.830 - 0.923	1.33	7.71	8.531 - 9.484	5.20	75.29	87.60 - 97.38	0.00	100.00	899.5 - 1000	0.00	100.00



Betersizer ST Laser Particle Size Analyzer

Specification

Testing parameter	Material
Particle size distribution	Suspension, emulsion, dry powder
General	Betersizer ST
Theory	Laser diffraction
Analysis theory	Mie and Fraunhofer
Testing speed	3kHz
Typical measurement time	≤10second
Size	
Size range	0.1-1000μm
Number of size classes	More than 100 customized grades
Accuracy	≤1% (GBRM D50)
Repeatability	≤1% (GBRM D50)
Resolution ratio	Single peak, double peak, multi-peak
Optics	
Red light source	Max. 3mW, Semiconductor optical fiber laser, 635nm
Lens arrangement	Single lens
Lens design	F-Theta Lenses
Effective focal length	223mm
Detector	
Arrangement	Log-spaced array
Quantity	86 pieces (forward, lateral, backward)
Light path adjustment	Intelligent automatic alignment
Sample dispersion system	
Dispersion type	Wet
Dispersion system	Ultrasound 50W, 38KHz dry-burn protection system
Water circulation	Centrifugal pump, 3000 -8000ml/min, auto water intake and rinsing
Water capacity	600ml
Software	
21 CFR Part 11	Enable
SOP Designer	Enable
Report	More than14 formats report
Auto test	Enable
Data export	EXCEL, PDF,WORD, JPG and etc.
System compliance	
Laser class	Class I laser product
System	
Supply voltage	220VAC
Dimension	640mm x 420mm x320mm (L x W x H)
Weight	38kg
Computer specification	
Computer interface	At least a USB2.0 port required
Operation system	Windows XP, Windows 7,8 or 10
Hardware specification	Intel Core I5, 4GB RAM, 250GB HD

Bettersizer ST Laser Particle Size Analyzer

Technical Service and Support

Our goal is to guarantee the lifecycle accuracy and reliability of Bettersize instruments, and to improve your productivity through a series of support, service, and information.



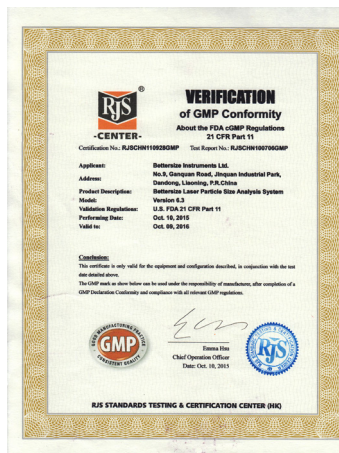
We provide:

- World-wide collaboration with local distributors.
- Efficient technical supports from Bettersize by email, telephone or skype.
- Professional maintenance contract and repair services
- On-site training courses
- Online tutorial videos
- Instrument upgrade support
- Sample preparation and application consulting services

International Qualification

All series of Bettersize instruments have passed ISO9001 international quality management system certification and the European CE certification. Laser particle analyzers obtained the approval of 21 CFR Chapter I Subchapter J, Part 1040.10 and 1040.11.

The software complies with the FDA 21 CFR Part 11 regulation, which ensures the validity and reliability of the results and comply with regulatory requirements.



Bettersizer ST Laser Particle Size Analyzer

About Bettersize

With over 22 years developing and manufacturing particle characterization instruments, Bettersize provides particle size, particle shape, and powder characteristics analysis and solutions for laboratories and companies worldwide, helping scientists and engineers to understand material properties, facilitate research and improve production efficiency.



Headquarters in China

Go to www.bettersize.com for the best particle characterization solutions.

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