Bettersize

BETTER PARTICLE SIZE SOLUTIONS

PARTICLE SIZE

CONCENTRATION

DeepSizer 300

Your Essential Tool for Sediment Insight

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The DeepSizer 300 is a submersible particle size analyzer for real-time sediment monitoring in rivers, lakes, estuaries, and coastal waters. It measures concentrations from 0.001 to 100 g/L and particle sizes from 0.1 to 2000 μm with high accuracy.

Powered by six advanced technologies—including two patented innovations, Differential Path and Adaptive Path Technologies—DeepSizer 300 intelligently adapts to diverse conditions, delivering reliable performance even in the most extreme environments.

DeepSizer 300 eliminates the risks, delays, inaccuracies, and maintenance hassles of traditional sediment analysis. It delivers trusted insights for sediment studies, ecological monitoring, water-quality assessments, and hydraulic engineering—supporting resilient and sustainable water systems.

Safer In-situ Measurement

Challenge: Traditional sampling is labor-intensive, time-consuming, and exposes personnel to potential health and safety risks.

Solution: DeepSizer 300 enables direct in-situ measurement, reducing sampling risks and providing reliable, continuous data for ecosystems, pollutant tracking, and water safety.

Real-time Sediment Monitoring

Challenge: Conventional methods are too slow to track short-lived sediment spikes during floods and typhoons.

Solution: DeepSizer 300 provides real-time measurements of concentration and PSD, capturing critical flood events to support early warnings to protect communities.

Accuracy Even with High Turbidity

Challenge: Common optical and acoustic methods lose accuracy in highly turbid waters, limiting their reliability for sediment management.

Solution: DeepSizer 300 combines adaptive sediment concentration measurement with advanced multiple-scattering correction, ensuring accurate results even under extreme sediment loads.

Reliable Long-term Field Deployment

Challenge: Extended field campaigns frequently suffer from window fouling, biofilm buildup, and sediment deposits, leading to poor data quality and increased maintenance costs.

Solution: DeepSizer 300 features automatic window cleaning and intelligent background correction, enabling long-term unattended operation with high-quality data.

Transboundary River Monitoring for Flood Risk and Sediment Dynamics

Successfully deployed at the Dandong Huanggou Hydrological Station in 2025, the DeepSizer 300 is a key instrument for monitoring on the Yalu River. Its measurements consistently matched traditional gravimetric method results, boosting the station's data reliability and operational efficiency. In August, its real-time monitoring capabilities provided vital data during heavy rainfall that enabled local authorities to respond swiftly and mitigate potential flood risks.

Tidal River Mouth Monitoring for Marine Sediment Characterization

In 2025, the DeepSizer 300 was deployed at the Chongming Marine Station platform to monitor suspended sediment concentrations and particle size distribution in tidal river sections. During comparison tests in March, hourly water samples were collected and analyzed. The concentration readings from the DeepSizer 300 closely matched traditional manual gravimetric results, confirming its accuracy and reliability. Furthermore, its ability to provide detailed particle size distribution data, including D10, D50, and D90 values, has become a vital tool for marine monitoring tidal movement forecasting, offering key insights into coastal and riverine water conditions.

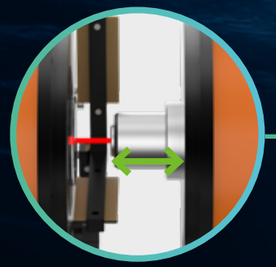
Core Technologies for Trusted Insights

Particle Size Distribution Measurement

The DeepSizer 300 employs an array of 80 photoelectric detectors to capture the scattering pattern produced as laser light interacts with particles. The detected signals are converted into electrical outputs and processed by advanced software. By applying Mie scattering theory with robust mathematical inversion, the system delivers precise and comprehensive particle size distributions in real time.

Concentration Measurement

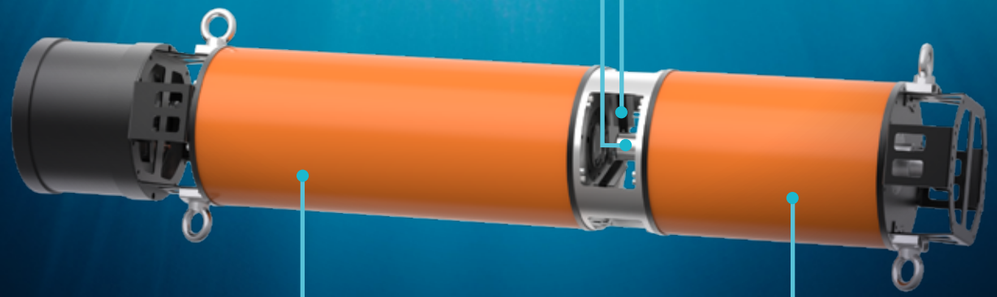
Concentration is determined based on the extinction principle: light attenuation is directly proportional to concentration and inversely related to particle size. By analyzing this attenuation, the instrument calculates volumetric and mass concentrations, delivering reliable results in real time.



Adaptive Path Technology

Patented technology automatically adjusts the optical path length to match sediment concentration levels, ensuring precise, reliable measurements across varying conditions.

- **Wide adaptability** – delivers accurate results across the full concentration range (0.001–100 g/L)
- **Consistent precision** – maintains optimal particle count accuracy under changing conditions



Automatic Optical Window Cleaning

With its integrated cleaning system, removes deposits and contaminants from the optical windows, keeping the instrument in optimal condition.

- **Reliable results** – prevents fouling to ensure consistent, high-quality results
- **Minimal maintenance** – reduces manual cleaning, saving time and labor

Flexible Transmission Modes

Supports three transmission modes—wired, wireless, and offline—for flexible deployment scenarios.

- **Reliable delivery** – ensures data integrity in both real-time and post-test workflows
- **Easy integration** – simplifies integration with hydrological stations, research networks, and monitoring centers

Multiple Scattering Correction

Advanced correction algorithms minimize multiple scattering effects, ensuring accuracy even at high concentrations.

- **Accurate results** – corrects signal distortion caused by multiple scattering
- **High reliability** – delivers trustworthy particle size and concentration data under high turbidity

Differential Path Technology

Applying patented technology, DeepSizer 300 subtracts short-path signals from long-path signals to isolate sediment scattering, eliminating noise and contamination effects.

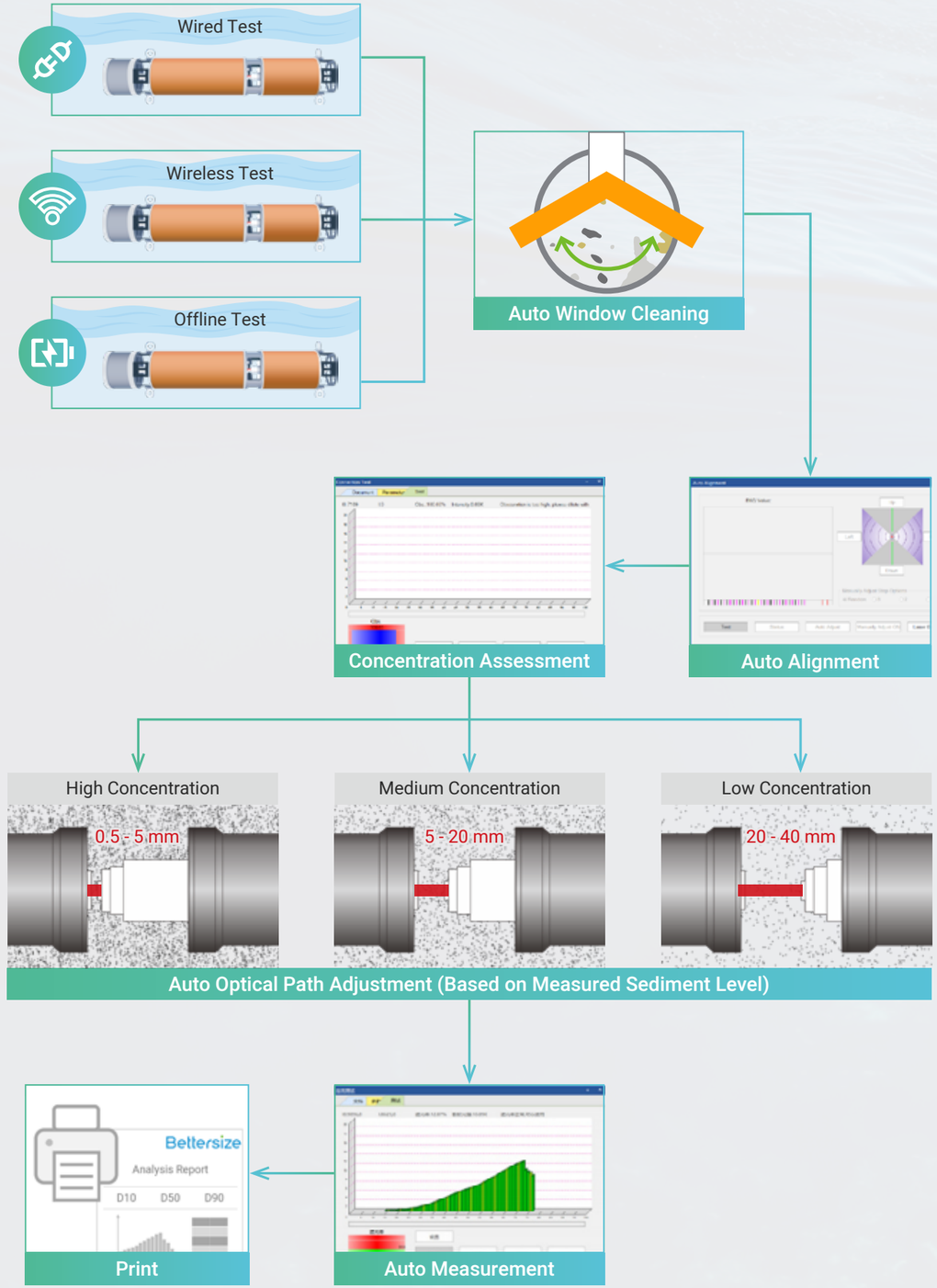
- **Trusted accuracy** – precise particle size and concentration data without background interference

Water Pressure Compensation

Employs sealed metal tubes and telescopic structures at both ends to automatically balance hydrostatic pressure, ensuring stable operation down to 200 meters.

- **Stable operation** – reliable performance even under high-pressure conditions
- **Extended usability** – smooth optical path length adjustment, suitable for deeper waters and long-term deployments

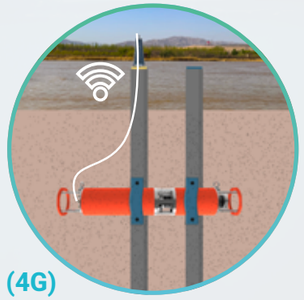
Intelligent Software and Workflow



Transmission Modes

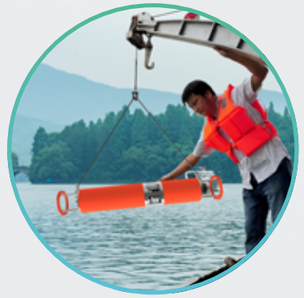
Wired

Real-time data transmission and control via RS485 cable connection. Ideal for stations with stable power supply and convenient indoor access.



Wireless (4G)

Remote control and data transfer through 4G - suitable for sites with reliable coverage and external power availability.



Offline

Autonomous measurements with onboard storage. Designed for mobile deployments without stable power or network - battery-powered, easy to deploy and retrieve.

Applications

Hydrology & Hydraulic Engineering

Floods can trigger sudden sediment surges that threaten communities, while long-term siltation reduces reservoir capacity and hydropower efficiency.

The DeepSizer 300 delivers real-time, in-situ sediment data, empowering accurate flood forecasting, effective reservoir management, and optimized hydraulic operations.

Environmental & Ecological Monitoring

Suspended sediments often carry pollutants and microplastics that threaten water quality and ecosystem health.

The DeepSizer 300 enables continuous, in-situ monitoring, providing reliable data to safeguard drinking-water, track contaminant pathways, and support effective environmental management.

Scientific Research

Sediment transport and deposition are central to hydrodynamics and environmental science, yet manual sampling cannot deliver the detail or continuity researchers need.

The DeepSizer 300 provides high-resolution, real-time datasets on sediment concentration and particle size, empowering you to reveal sediment dynamics, validate models, and advance scientific discovery.

Parameters Measured	
Particle size distribution, total mass concentration, depth, temperature, conductivity	
Measurement Performance	
Concentration range	0.001 - 100 g/L (kg/m³)
Particle size range	0.1 - 2000 μm *
Particle size accuracy	≤ 2% *
Particle size repeatability	≤ 2% *
Depth sensor	0 - 200 m
Temperature sensor	-20 - 85°C
Main Unit	
Laser source	10 mW, 635 nm
Detector	80 detectors
Measuring angle range	0.0163 - 42°
Optical path length range	0.5 - 40 mm
Depth rating	200 m
Protection level	IP 68
Optical window cleaning	Automatic, software-programmable
System	
Transmission modes	Wired / Wireless (4G) / Offline
Battery runtime	24 hours
Memory capacity	16 GB
Operating temperature	0 - 55°C
Instrument dimensions (L x W x H)	970 x 189 x 189 mm
Weight	20 kg
Computer Configuration (Recommended)	
Computer interface	At least one high-speed USB 2.0 or USB 3.0 port required
Operating system	Windows 10/11
Hardware specification	Intel Core i5 Processor, 8GB RAM, 512 GB SSD, 1920 x 1080 (Full HD)

*Sample dependent

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