

# Automated Particle Size Analysis

[metergroup.com/environment/products/pario](https://metergroup.com/environment/products/pario)



Complete curves. Not one particle of wasted time.

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## PARIO

### The times are changing

Conventional soil particle size analysis takes a lot of time and energy. Readings have to be performed manually at inconvenient intervals for up to 24 hours—making the process prone to error—which can easily lead to wasted time and effort.

Our goal at METER is to give you the tools and services that allow you to get precise results and focus on your research. That's why we developed a revolutionary new way to reduce the time and effort needed for soil particle size analysis.

### Particle size analysis, automated

PARIO calculates the particle size distribution by Stokes' law, with a range spanning from 63  $\mu\text{m}$  to 1  $\mu\text{m}$ , finally making it easy to obtain a complete particle size distribution curve, instead of just a few measurements at discrete time points.

It allows for unattended, automated operation, with no interference by lab personnel. Just set it up and come back 8 hours later to a finished measurement with all the data you need.

**Measure more. Worry less.**

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PARIO adopts the same sample prep your lab already uses, so it fits perfectly into your existing workflow. It reduces errors by replacing and automating the lengthy “hydrometer” portion of the process using the new, more accurate [ISP method](#). This method does not require the insertion of a hydrometer or sampling of suspension volume with a pipette, which disturbs the sedimentation process. Being automatic, it also avoids manual reading or calculation errors. This results in an overall error rate of just 3%—lower than any conventional particle size analysis method.

PARIO automatically measures at an interval of ten seconds and continuously records the change of suspension pressure as well as the temperature. This results in highly accurate and continuous particle size distribution curves. The data are automatically evaluated by our new data processing algorithm called “[Integral Suspension Pressure Method](#)” (ISP).

The PARIO measuring method is based on Stokes’ law. That means there is no need for soil-specific corrections with transfer functions as required for almost any other automated measurement method, such as laser diffraction or image analysis.

## **Complete convenience**

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To save you even more time, PARIO comes with an easy-to-use, all-in-one software solution for automated data inquiry, visualization, evaluation and export. Plus, PARIO, as part of the [LABROS](#) system, can be combined with the [HYPROP](#), [KSAT](#), or [WP4C](#) to completely characterize the physical and hydraulic properties in soil.

All of this serves one goal—to reduce the operating time you spend for particle size analysis, while at the same time improving accuracy. Skip hours of tedious manual measurements, and focus on your research.

The new PARIO soil texture analyzer. Complete particle size distribution curves. Not one particle of wasted time.

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## Features

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- Get complete particle size distribution curves
- Calculation of particle size distribution by Stokes’s law
- Autonomous operation after measurement start
- Quasi-continuous resolution of particle size distribution
- No physical disturbance of suspension during measurement
- Avoidance of manual reading errors
- Avoidance of manual calculation errors
- Temperature dependence automatically integrated calculation of particle size distribution

## Specifications

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|--|--|
| Range of particle sizes                              | 63 $\mu\text{m}$ to 1 $\mu\text{m}^*$ (eff. hydrodynamic diameter) |
| Approximate error in mass fraction detection         | $\pm 3 \%$   |
| Typical particle mass                                | 25 to 40 g/L suspension  |
| Typical duration of measurement                      | 8 hours*   |
| Measuring interval                                   | 10 s   |
| Operating temperature range                          | 15 $^{\circ}\text{C}$ to 35 $^{\circ}\text{C}$                     |
| Max. tolerable temperature change during measurement | 3 $^{\circ}\text{C}$   |
| Warranty   | 12 months  |

Note\*  
63  $\mu\text{m}$  to 1  $\mu\text{m}$  with 24 hours measuring period  
63  $\mu\text{m}$  to 2  $\mu\text{m}$  with 8 hours measuring period  
For particle size distribution analysis, manual sieving and recording the sand fraction is required

## Support

Have a question or problem? Our support team can help.

We manufacture, test, calibrate, and repair every instrument in-house. Our scientists and technicians use the instruments every day in our product testing lab. No matter what your question is, we have someone who can help you answer it.

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