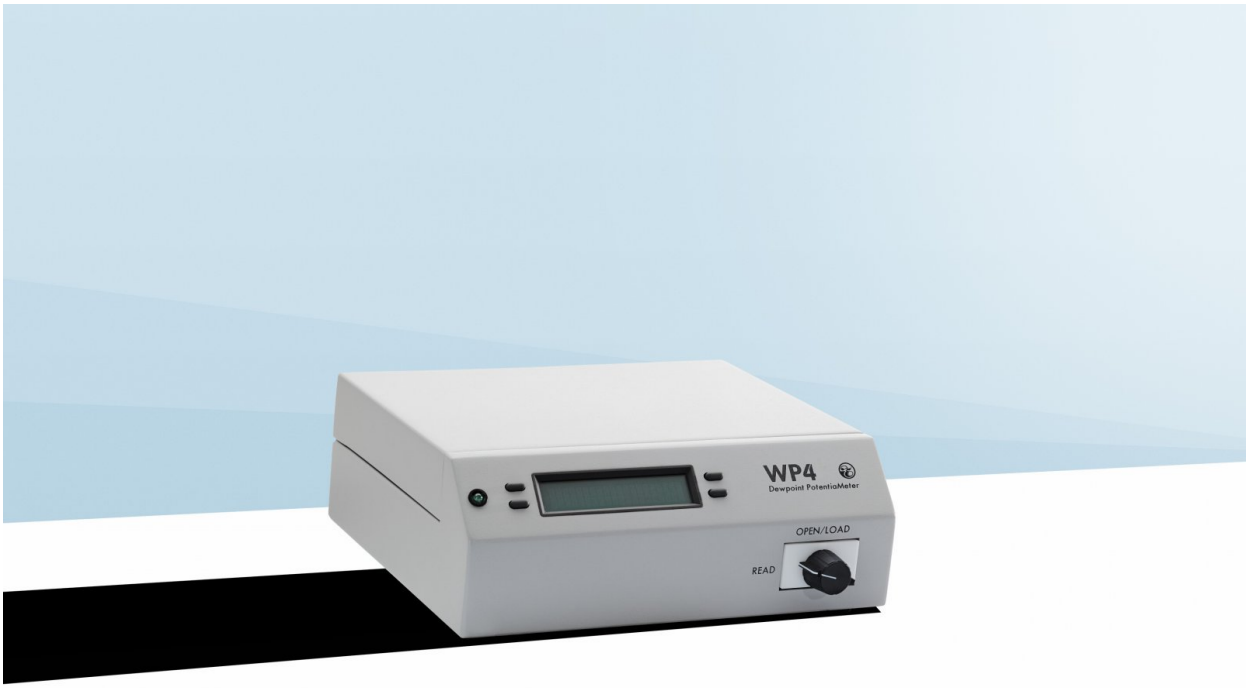
Soil water potential lab instrumentation

metergroup.com/environment/products/wp4c/



Precise measurements have never been easier. Or faster.

WP4C

The potential for error when measuring soil water potential

Measuring soil water potential is never easy. Instruments require constant calibration and don't measure the dry range. Other sensors are highly inaccurate. That's why we invented the WP4C.

Simply accurate. Simply fast. Simple to use.

As world experts in water potential and soil suction, it wasn't enough to engineer an instrument that delivered consistent accuracy. We also designed it to be easy to use and take only minutes to register measurements, even in dry soils.

How a chilled mirror results in stone cold precision

When it comes to soil water, accuracy doesn't get any more granular. That's because the WP4C is the only instrument that measures all four components of water potential using fundamental thermodynamics and a finely-tuned calibration. Not only is this a first principles method that every other method gets calibrated off, but it's also been published extensively.

The WP4C measures water potential by determining the relative humidity of the air above a sample in a sealed chamber (conforms to ASTM 6836). Once the sample comes into

equilibrium with the vapor, relative humidity is determined using the chilled mirror method. This involves chilling a tiny mirror until dew starts to form. At the dew point, the WP4C measures both mirror and sample temperature within 0.001 °C. This allows for unparalleled accuracy in the -0.1 MPa to -300 MPa range so you can have full confidence in sample readings.

Measuring soil water potential has never been simple. Until now.

The WP4C is a complex instrument due to its versatility, but extremely easy to use with sample sizes up to 15 ml. Simply fill the cup with soil, leaves or seeds, and then equilibrate the sample. There's absolutely no change in the measurement for whatever you're analyzing.

You can even plug WP4C data into HYPROP Data Evaluation Software in order to make a Moisture Release Curve or Soil Water Characteristic Curve.

From 0 to 100% accurate in only 5-7 minutes

The D.I.Y. design of the WP4C is incredibly efficient in a number of of ways. To start, you don't have to spend time teaching your technicians. Just watch a simple video before you begin making measurements. Similarly, it allows for fast equilibration because of sophisticated temperature control. And a final feature that makes for a total time saver: it makes measurements on its own, so you're free to attend to other things.

Top marks in soil measurement

Unparalleled accuracy. Simplicity of use. Fast speeds. The WP4C meets the highest of instrumentation standards and more. As a result, it instills complete trust and eliminates confusion, which combine to add up to considerable time savings.

Get pricing
Features Specifications Accessories Support / Downloads

Features

- Precise mode
- Chilled mirror dew point technique
- Fast equilibration
- Unparalleled accuracy in the -0.1 MPa to -300 MPa range
- Durable and easy to clean
- Easy to calibrate with saturated salt solutions
- Conforms to ASTM 6836
- Use with HYPROP to create a full soil moisture release curve

Specifications

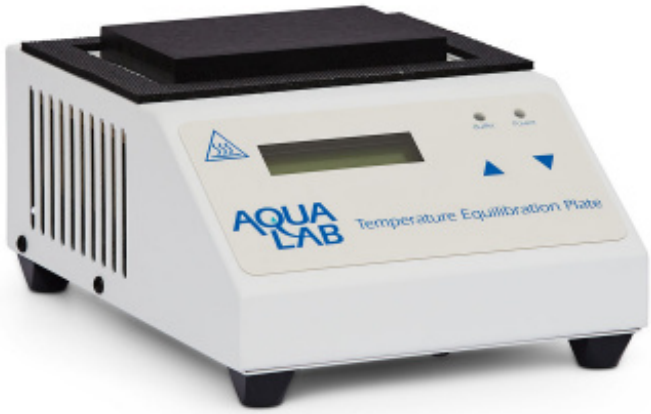
Accuracy	±0.05 MPa* from 0 to -5 MPa; 1% from -5 to -300 MPa

Range	-0.1 to -300 MPa*
Measurement time	In precise mode: 10-15 minutes for most soil samples 20 minutes for plant tissue samples In fast mode: <5 minutes (reduced accuracy)
Temperature control	15 to 40 °C (± 0.2 °C)
Sensor type	1) Chilled-mirror dew point sensor 2) Infrared temperature sensor
Operating environment	5 to 40 °C (41 to 104 °F)
Warranty	1 year, parts and labor
Sample cup capacity	7 mL recommended (15 mL full)
Weight	3.2 kg (5.2 kg shipping weight)
Dimensions	24.1 x 22.9 x 8.9 cm (9.5 x 9.0 x 3.5 in)
Case material	Powder-painted aluminum
Data communication	RS232A compatible 8-data bit ASCII code 9600 baud no parity 1 stop bit
Power	110 V to 220 V AC 50/60Hz
Display	20 x 2 alphanumeric dot-matrix LCD with backlighting
Interface cable	Standard RS232 serial cable (included)
Note*	Samples wetter than -0.5 MPa will have increasing percentages of error. Some users may be able to make useful measurements to -0.1 MPa using techniques outlined in the user manual.

Accessories

Travel Case

Verification Standards (50 Vials)



Thermal Equilibration Plate

Stainless Steel Sample Cups/Lids

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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Downloads

HYPROP Fit Software Download EXE / 60.48 MB

Safety Data Sheet 0.50 mol/kg Potassium chloride (KCl) (0.984aw) PDF / 76.63 KB

WP4C Firmware Updater EXE / 1.28 MB

WP4C Manual PDF / 902.38 KB

WP4C Quick Start PDF / 178.75 KB

Related Products

HYPROP 2*

The improved version of the evaporation method in the lab to determine the pF curve and the unsaturated conductivity of soils sets a new benchmark. HYPROP makes highly precise, simultaneous measurements of hydraulic characteristics during the natural desiccation of the soil. Thus, HYPROP delivers data with high resolution in a minimal period of time under natural conditions.

Learn more
Get pricing

PARIO

The PARIO is the new method for automated and continous analysis of the particle-size distribution of soils.

Learn more
Get pricing