



SOIL SCIENCE

HOSKIN

SCIENTIFIC

TOOLS & INSTRUMENTATION



hoskin.ca

Supplying Testing & Monitoring Instruments Since 1946

ABOUT HOSKIN

For over seventy years, Hoskin Scientific has been a supplier of testing and monitoring instrumentation to the Canadian market. With offices in Vancouver, Edmonton, Oakville and Montréal our customers are able to receive local sales and technical support in our three major departments.

Our Environmental Department provides solutions for monitoring and sampling biological and chemical parameters in the environment. Our team of environmental sales representatives and diverse product range guarantee that you will find the right products for your application. Specific areas include: water quality, water quantity, soil moisture, plant science, weather stations, indoor air quality, aquatic sampling, and oceanography.

Our Materials Testing Department offers testing equipment for soil, asphalt, petroleum, concrete and cement. Our qualified sales associates focus on providing a sophisticated range of testing equipment complying with the various test methods, ensuring that accurate and consistent test results are always obtained.

Our Instrumentation Department focuses on a wide range of products including optical camera systems, transducers and transmitters, data acquisitions and loggers, signal conditioners and indicators, automation sensors and measurement systems. We have technical sales associates that are trained in various areas and willing to help you with your instrumentation requirements.

RENTALS

We offer high quality, proven equipment that will provide the user with valuable data as well as numerous ways of retrieving, filtering and viewing that data. We carry a wide range of instrumentation, including: water quality, portable gas monitors, soil sampling instruments and more.

Rental Equipment:

- Single and multi-parameter instruments that can be setup for spot checks or extended deployment/data logging
- Water sampling instruments
- Water velocity and stream profiling instruments
- Soil sampling instruments
- Soil vapour sampling instruments
- Portable gas monitoring instruments

Customer satisfaction is our goal and we make an effort to ensure that all our customers are satisfied with their rental. All rental instruments are cleaned and calibrated before being sent to the user (please note that we also require equipment to be returned clean). If a rental instrument requires recalibration, please return the instrument to us and we will recalibrate at no charge. Any instrument not functioning properly can be exchanged at no cost.

Hoskin Scientific offers technical support over the phone and can also provide hands on demonstrations.

We are constantly expanding and looking for new equipment to add to the rental inventory and welcome all suggestions.

Check our website www.hoskin.ca for current offerings.

Daily, weekly and monthly rental rates available – please call for a quote.

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Aardvark Permeameter Kits



The Aardvark Permeameter is the very first automated Constant Head Borehole Permeameter. The Aardvark sets up in minutes and automatically records reading for water consumption rate. In minutes it will automatically determine Steady State, calculate Steady State Water Consumption Rate and then give you the Saturated Hydraulic Conductivity (K value).

Kits Available

- Aardvark Permeameter Kit in Case, Manual Reading
- Aardvark Permeameter Kit, plus Scale, for use with PC
- Aardvark Permeameter Kit, plus Regulator Unit, for Deep Measurements
- Aardvark Permeameter Kit, plus Scale, for use with PC, for Deep Measurements



Guelph Permeameter Kit

The Guelph Permeameter is an easy to use instrument to quickly and accurately measure in-situ hydraulic conductivity. Accurate evaluation of soil hydraulic conductivity, soil sorptivity, and matrix flux potential can be made in all types of soils. The equipment can be transported, assembled, and operated easily by one person.

The Guelph Permeameter is a complete kit consisting of the permeameter, field tripod, well auger, well preparation and cleanup tools, collapsible water container, and vacuum test hand pump, all packaged in a durable carrying case.



Soil-Air Permeameter

The soil pore system is dependent on the quantity, shape and continuity of pores. It can be described by the water and air permeability of the soil. Permeability to fluids is quantified by hydraulic conductivity or air permeability, respectively. Eijkelkamp Agrisearch Equipment supplies a comprehensive air permeameter set to measure air permeability, soil moisture tension and volume percentage soil moisture in the field and in the laboratory.

14.34 Air permeameter to measure and register the air permeability of soil and soil samples (in situ and in the laboratory).



Saturated Soil Permeability System

The water and air permeability of the soil to a large extent determines how efficient an irrigation- or drainage system functions. Determining the saturated water permeability (horizontal as well as vertical) can be executed in the field or in the laboratory with a soil water permeameter.

Designs for 5 up to 25 soil sample rings can be supplied. The permeameters are suitable for soil sample rings with an external diameter of 53 or 60 mm.

SATURO Automated Dual Head Infiltrometer



The DualHead infiltrometer measures soil saturated hydraulic conductivity, or Kfs. It is fully automated and requires no post-processing of data.

- Set it up and leave it to add water, maintain correct pressure heads, measure infiltration rates, and calculate Kfs by itself
- Sized for one person to easily carry and install
- Pound in the ring, connect the hoses, and set the parameters
- Designed and priced so you can account for spatial variability
- Measures infiltration at two different pressure heads to find (rather than estimating or guessing) the soil macroscopic capillary length factor (alpha)
- The DualHead uses air pressure to maintain the pressure heads. No need to adjust and measure water levels

HYPROP 2



The HYPROP 2 is a complex instrument, but it makes moisture release curves much simpler. While other methods require weeks of tedious drying and weighing, the HYPROP 2 can be set up to run automatically. Its software calculates values for dry range and saturation according to a selected model, and it even allows you to input data from other water potential instruments such as the WP4C to automatically fit the soil moisture release curves.

The HYPROP 2 uses two precision mini-tensiometers to measure water potential at different levels within a saturated soil sample while the sample rests on a laboratory balance.

Ceramic Type Pore Water Samplers (Suction Lysimeters)

SK20 Suction Cup

SK20 simple ceramic cup with removable shaft. For continuous and discontinuous extraction. Suitable for determination of nitrate and common organic and inorganic substances. Continuous and discontinuous extraction.

1900 Series Soil Water Samplers

The Model 1900 Soil Water Sampler is a large-volume sampler designed for near-surface installation at depths ranging from 6 inches (15 cm) to 6 feet (1.8 m). The unit consists of a 1.9" (4.8 cm) outside diameter PVC tube, a porous ceramic cup with a 2 bar (200 kPa) air-entry value, and a Santoprene stopper.

1905L Slim Tube Soil Water Sampler

The model 1905L "Slim Tube" soil water sampler is a small 7/8" (2.2cm) diameter sampler designed for taking discrete samples where installation space is limited. The slim tube sampler comes complete with a 1 bar (100 kPa) high-flow, screw in porous ceramic cup, screw on cap. The perfect sampler for container sampling. Extension tubes can be added to increase the depth of operation. 6"-60" lengths available.



1911 Remote Soil Water Sampler

The 1911 Soil Water Sampler is designed for continuous soil solution collection from remote sites where minimum disturbance to the soil surface is desired. The Sampler can be installed at depths ranging from 6 inches to 10 feet, with the collection vessel situated in a site adjacent to the study plot.



1922 Ultra Pure Sampler, 90ml Sample

The 1922 "Ultra" Soil Water Sampler is used where samples are collected to detect concentrations of organic or inorganic solutes or pesticides, with sensitivities in parts per billion. The 1922 is made entirely of 1 bar high-flow ceramic and uses a combination ceramic and glaze plug.

1923 Ultra Pure Sampler, 530ml Sample

The Large Capacity Ultra Soil Water Sampler is used where samples are collected to detect concentrations of organic or inorganic solutes or pesticides, with sensitivities in parts per billion. The Ultra Soil Water Sampler is made entirely of 1 bar high-flow ceramic and uses a combination ceramic and glaze plug.



1940 Deep Soil Water Sampler

The Model 1940 Soil Water Sampler is used for deep sampling down to 300 foot (100 m) depths, or where long lateral runs are required. The sampler consists of a 2 bar (200 kPa) ceramic cup, PVC body, and an end cap. High-pressure compression fittings allow connection of polyethylene vacuum and pressure tubing.

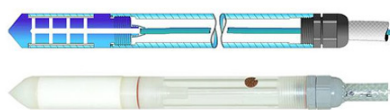
1942 Slim Tube Hi Pressure/Vacuum Soil Water Sampler

Hi pressure/vacuum soil water sampler. Slim Tube functions exactly like our 1940 Soil Water Sampler only slimmer in design. Slim Tube pressure/vacuum soil water sampler used for deep sampling down to 300 foot (100m) depths, or where long lateral runs are required. The sampler consists of a 2 bar (200 kPa) ceramic cup, PVC body, and an end cap.

SPE20 PE/Nylon Pore Water Sampler

Instead of a ceramic cup the SPE20 pore water sampler has a porous PE-nylon-membrane which is specially suitable for heavy metals and whenever ceramics are inappropriate.

Bubble point is 100 kPa, but the porous PE cover allows water to flow only up to 20 kPa



SIC20 Silicon Carbide Pore Water Sampler

The SIC20 had a removable shaft like the SK20, but with a SiC silicon carbide cup instead of the ceramic cup. A solid acrylic glass cylinder is inserted inside the cup. Thus, the dead volume is reduced and an installation of the sampler in any angle is possible.

SiC is sintered at 2500°C and is less absorbent/desorbent than ceramic or borosilicate. The bubble point 90 kPa



SIC40 Silicon Carbide Pore Water Sampler

A sampler made of silicon carbide with bubble point 10 kPa. SiC is sintered at 2500°C and is chemically much more passive than ceramic or borosilicate.

Only suitable for up to 10 kPa, i. e. only for leachate sampling



Stainless Steel Water Samplers (Suction Lysimeters)

Small Single Chamber Stainless Steel Lysimeter

The small single chamber lysimeter is recommended for sampling down to approximately 5 feet (1.5 m). It has a bubbling pressure of 700 mbar.

One of the two 1/8" OD stainless steel outlets can be connected with tubing to a vacuum source, with a collection bottle in between. Vacuum can be supplied with the battery powered vacuum pump.



Single Chamber Stainless Steel Suction Lysimeter

The single chamber lysimeter is recommended for sampling down to 10 ft (3 m).

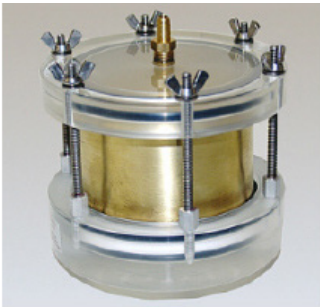
During sample collection, a constant vacuum is applied to the lysimeter through the vacuum/pressure line, while keeping the fluid return line closed. Sampling duration depends on the amount of sample required, the soil type, and the soil moisture content. Sampling times can vary from less than 1 hour in wet soil, to more than 1 day in drier soil.

Dual Chamber Stainless Steel Suction Lysimeter

The dual chamber lysimeter is recommended for sampling unsaturated or saturated materials at depths greater than 10 feet (3 m).

A stainless steel check valve prevents back flow of the fluid from the upper chamber into the lower chamber and the soil around the lysimeter. Sampling duration depends on the amount of sample required, the soil type, and the soil moisture content. Sampling times can vary from less than 1 hour in wet soil, to more than 1 day in drier soil.

1400 Series Tempe Pressure Cells



The Model 1400 Tempe Pressure Cell is used to determine the water-holding characteristics of a soil sample in the 0 to 1 bar pressure range. The cell accepts an undisturbed soil sample contained in a 2-1/4" (5.7 cm) diameter cylinder, such as that taken with the Model 0200 Soil Core Sampler. Smaller cores may be placed inside the 2-1/4" diameter brass cylinder if desired.

Rhizons

The standard Rhizon models have a diameter of 2.5 mm and a mean pore size of 0.15 μm . They can be used for sampling pore water in pots, vessels or cylinders filled with settled soil, or directly in undisturbed cores.

The Rhizons are available with a 5 or 10 cm porous part. Using Rhizons with a 10 cm porous part, the yield of water is approximately 4 ml/minute. Rhizons have either a male luer lock, suitable for creating a vacuum with needles + vacuum tubes, or a female luer lock, suitable for syringes. The article number of Rhizons with female luer lock always ends with a F.



- Rhizon SMS, for analyzing macro elements
- Rhizon MOM, for analyzing macro + micro elements
- Rhizon CSS, for analyzing macro + micro elements and direct sampling
- Rhizon Flex, for analyzing macro + micro elements in disturbed soils



RhizonBox

RhizonBoxes for a direct sampling of soil moisture in the rhizosphere during growth experiments or root research. In the front plate, there are 2183 holes with a lateral distance of 5 mm, which allow direct sampling near the roots with MicroRhizons.

The dimensions of the RhizonBox are: height 33 cm, width 22 cm, depth 4 cm. A Rhizon Irrigator for passive irrigation is included.



Extraction Kits

Accessories for Soil Water Samplers.

1900K - 1000ml capacity flask, associated tubing and stoppers

1900K2 - 50 ml for Soil Water Samplers Kit



Rhizon Soil Moisture Sampler

The Macro Rhizon soil moisture sampler is especially suited for use in the field. The sampler has a length of 9 cm and a diameter of 4.5 mm. For installation at greater depths a standard sampler with PVC extension pipe can be used.

The standard set can be extended with various accessories such as: short Rhizon soil moisture samplers (5 cm porous material), syringes (to be used instead of vacuum tubes) connectors for connecting the syringes (including spacers for blocking the syringes), (black) PE extension tube, silicone connecting tubing to connect the extension tubing to the soil moisture samplers.

VS Vacuum Systems



VS Vacuum System - Vacuum unit with one or two vacuum outputs, for constant or tension controlled vacuum.

VS-pro Vacuum System - Vacuum unit with one or two vacuum outputs, for constant or tension controlled vacuum. With keypad and display for basic status check and configuration.



VacuPorter Vacuum Case - Light-weight, portable, non regulated vacuum case with internal pump for creating vacuum from 0 to 85 kPa or pressure up to 4 bars. Internal rechargeable battery loaded by supplied mains charging device.

Clearly arranged front panel with on-off-switch, 2 quick-action tube couplings for vacuum and pressure, one pressure gauge for each vacuum and pressure and charging plug.



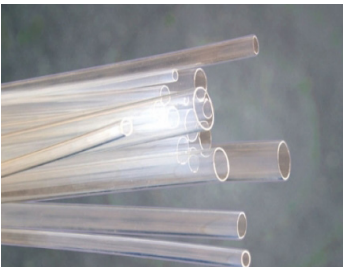
VPS-2 Vacuum Pump

Extremely rugged hand-operated vacuum floor pump with large swept volume for easy evacuation of sampling bottles in the field. Includes 2 meter polyethylene tube with quick-action tube coupling.



SF-Protect Overflow Protector

The overflow protector prevents that soil water solution is drawn out of the sampling bottle and into the vacuum unit. As soon as the sampling bottle is full and water enters the protector the protector closes. Thus, this bottle is cut off from the vacuum system while the other bottles still continue to work.



Tubing

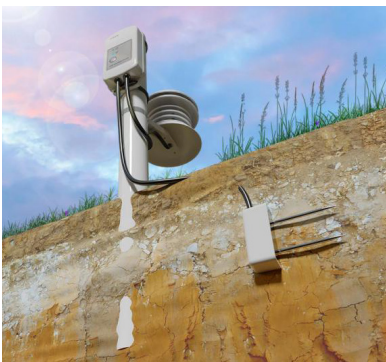
Polyethylene

- Black Polyethylene tubing - 100', 500' and 1000' rolls
- Green Polyethylene tubing - 100', 500' and 1000' rolls

Teflon

- 1/4" O.D.x.031" wall - available in 10', 25' and 50' rolls
- 1/8" I.D.x.030" wall - available in 10', 25' and 50' rolls

VOLUMETRIC WATER CONTENT SENSORS



HOBO MX Soil Moisture and Temperature Data Logger

HOBO MX Soil Moisture Data Loggers are the industry's only low-cost, fully integrated soil moisture loggers with Bluetooth wireless data offload. Available in two models – one that measures **soil moisture (HOBO MX2306)** and one that measures both **soil moisture and temperature (HOBO MX2307)** – these loggers are ideal for researchers and growers looking for the accurate data they need to save water, improve crop yields, reduce harmful runoff, and protect ecosystems.

With just a mobile phone, tablet, or Windows laptop running Onset's free HOBObconnect app, users get convenient wireless setup and data download via Bluetooth when within 100 feet of the logger – making it easy to retrieve data from hard-to-access field locations. And for indoor areas, such as greenhouses, users can add the MX Gateway for remote access to data in Onset's cloud-based HOBOLink software.

Soil Moisture: Volumetric Water Content (VWC) Measurement Range*
 0.00 to 0.64 m³/m³ in mineral soils
 0.00 to 0.70 m³/m³ in soilless media



Teros-06-Soil Temperature Profile Probe

The TEROS 06 measures soil temperature in six defined depths of 5 cm, 10 cm, 20 cm, 30 cm, 50 cm, and 100 cm. At every measuring depth, the sensor rod is equipped with a 1-cm high stainless steel ring, and the digital sensor is mounted at the inner surface of the stainless steel ring. The stainless steel rings have thermal contact to the soil and they transmit the soil temperature directly to the temperature sensor.



Teros-10-Simple Soil Moisture Sensing

The TEROS 10 is a ruggedized version of our basic, no-frills soil moisture sensor. Its 70-MHz frequency minimizes salinity and textural effects, making it accurate in most soil or soilless media. With a tough, epoxy body, the TEROS 10 is designed to withstand some of the harshest field conditions, which means problem-free measurements over the longevity of your research. In fact, we're so confident about the long life of our TEROS sensor line, we've increased our standard warranty from one to three years. The TEROS 10 sensor lets you characterize your site with sensors at multiple depths and locations, even on a tight budget.



Teros-11-Advanced Soil Moisture and Temperature

The culmination of our new TEROS water content line, the TEROS 11 makes your life easier with a large volume of influence, reduced sensor-to-sensor variability, and a near-bulletproof form factor—which lasts up to 10 years in the field. These innovations, along with our well-published capacitance technology, an accuracy verification standard, and a blazing fast installation tool have combined to generate our most accurate, easy-to-use, highly durable—yet still economical—soil moisture sensor. In fact, we're so confident about the long life of our TEROS sensor line, we've increased our standard warranty from one to three years.



Teros-12-Advanced Soil Moisture Sensing

The new TEROS 12 sensor is more than just a sensor. It's a complete soil moisture system that treats the whole accuracy problem, rather than just one part of it, by eliminating common problems that cause uncertainty in the data—things like sensor-to-sensor variability, air gaps, or preferential flow. No other soil moisture system on the market addresses these issues.

EC-5 Soil Moisture Sensor



The EC-5 Soil Moisture Sensor is your all-around ideal soil moisture sensor. The EC-5 obtains volumetric water content by measuring the dielectric constant of the media through the utilization of capacitance/frequency domain technology. In addition, the EC-5 sensors incorporate a high frequency oscillation, which allows the sensor to accurately measure soil moisture in any soil or soilless media with minimal salinity and textural effects.

MAS-1 4-20 Milliamp Volume Soil Moisture Sensor



The MAS-1 4-20 milliamp sensor is the first current-based sensor to use Decagon's trademark 70 MHz technology. This sensor offers a standard 4-20 milliamp output that is common with PLCs and irrigation controllers. With the 4-20 mA interface, cable lengths over 250 feet are possible.

The MAS-1 delivers research-grade accuracy at a price that makes large sensor networks economically practical. You can adequately characterize your site with sensors at multiple depths and locations.

RT-1 Soil Temperature Sensor



The rugged RT-1 soil temperature sensor is an easy-to-use sensor for measuring the temperature of soil or other materials.

This temperature sensor can be used with the Em5b and Em50 data logger series. To measure volumetric water content and temperature, we recommend using the 5TM, 5TE, or GS3 sensor.

ZL6 Advanced Cloud Data Logger



With the ZL6 data logger, there are no limits. That's because we've reinvented the entire METER data logging system so the ZL6 can be your ultimate research partner. Easier, more advanced, and more robust, the ZL6 introduces cloud-based data delivery, Bluetooth® configuration, GPS, firmware-over-the-air updates, and integrated metadata, all which simplify and speed up the process of data collection, management, and sharing. It does all the legwork for you, so you can spend more time being a data visionary.

ZSC Bluetooth Sensor Interface



With the ZL6 data logger, there are no limits. That's because we've reinvented the entire METER data logging system so the ZL6 can be your ultimate research partner. Easier, more advanced, and more robust, the ZL6 introduces cloud-based data delivery, Bluetooth® configuration, GPS, firmware-over-the-air updates, and integrated metadata, all which simplify and speed up the process of data collection, management, and sharing. It does all the legwork for you, so you can spend more time being a data visionary.

SM150T Soil Moisture and Temperature Sensor



The new SM150T measures soil moisture and temperature with research-grade accuracy. It offers stable, robust and reliable performance at a great price. The advanced patented electronics and tough build produce a highly dependable sensor with exceptional salinity and temperature stability.

ML3 ThetaProbe Soil Moisture Sensor



The new ML3 ThetaProbe has extra features, improved performance and a new look. With its 1% accuracy the ThetaProbe continues to set the standard for soil moisture measurement but now also measures soil temperature.

- New built-in temperature measurement (only when buried)
 - New extendable cable system
 - New white body - reduces radiative heating
 - Improved calibration for soil salinity
-

WET-2 Sensor



The WET Sensor has crucial applications in precision horticulture and soil science research and is usable in both soils and growing substrates. It is exceptional in its ability to measure pore water conductivity (EC_p), the EC of the water that is available to the plant.

- Measures Water content, EC and Temperature
- Measures directly within the root zone

MO750 Soil Moisture Meter



- Soil moisture content measurement from 0 to 50%
- Easy one-hand operation
- Min/Max records minimum and maximum moisture readings
- Data hold to freeze reading on display
- Water resistant

PR2 Profile Probe



The PR2 Profile Probe is built around patented sensing technology which provides unprecedented performance in all soil types, with minimal influence from either salinity or temperature. The PR2/4 model measures soil moisture at 4 depths down to 40cm or the PR2/6 measures at 6 depths down to 100cm.

TDR 150 Soil Moisture Meter with Case



Portable soil moisture meter allows you to obtain readings on the go at the press of a button. Variable rod length options provide soil moisture measurements at your ideal root zone. With new enhancements, the TDR 150 provides significant improvements in performance and measurement accuracy for optimal turf and soil environments.

- Increased accuracy of soil moisture (Volumetric Water Content)
- Measures EC (Electrical Conductivity)
- Measures Turf Surface Temperature
- Option to add on Bluetooth and GPS
- Data logger records approximately 50,000 measurements
- Industry exclusive backlit display
- Ergonomic handle
- Data collected with USB flash drive

TDR 350 Soil Moisture Meter with Case



The TDR 350 accurately measures soil moisture across the full range of soil conditions. Improved ergonomic design provides quick and easy measurements. Validate your cultural practices with hands free data collection integrated with Bluetooth and GPS.

- Increased accuracy of soil moisture (Volumetric Water Content)
- Measures EC (Electrical Conductivity)
- Measures Turf Surface Temperature
- Integrated Bluetooth and GPS
- Data logger records approximately 50,000 measurements



HandiTrase TDR Soil Moisture Meter w/FCT Probe

- Works with all of our standard waveguides: Buriable, Slammer and Standard Connector types.
- Accuracy +/- 2% or less of Full Scale 0-100% volumetric water content.
- 10 ps resolution minimum sampling rate.
- Measurement pulse: 1VPP, <130ps risetime (typical).
- Cable measurements up to 250 feet. (used to validate Probe assemblies & extended Probe cable runs)
- TOR graphic waveform analysis.
- Automatic GPS Location tagging (User enabled)

HH2 Moisture Meter - Readout Unit



The HH2 is a versatile readout unit for use with Delta-T Devices soil moisture sensors: the Profile Probe, ThetaProbe, SM200 and WET Sensor.

This unit offers impressive functionality in a compact, hand-held unit, designed for field use. Readings are displayed on the LCD and can be stored to memory for later download to a PC.

GP2 Data Logger and Controller



The GP2 is a powerful 12 channel data logger that is easy to use, versatile, rugged and reliable. It can log most sensor types and accepts voltage, resistance, current, potentiometer, bridge, counter, frequency, and digital state inputs. DeltaLINK software helps the user set up logging sequences and provides control over reading frequency, sensor type, thresholds, units and much more.

DL6 Data Logger



The DL6 is a dedicated data logger optimised for use with Delta-T soil moisture sensors. It can be used with combinations of ThetaProbes, SM150T Soil Moisture Sensors and Profile Probes, and also accepts rain gauge and soil temperature probe inputs. Up to 16000 readings can be stored in memory.

The DL6 can record data from:

- 6 soil moisture sensors (or other analog voltages)
- 1 temperature sensor
- 1 pulse counter (e.g. rainfall)



Complete Lab Systems - Setup for 1500F2 & 1600F1, 110 V Compressor

- Soil Water Retention
- Soil Physics
- Mining



TEROS 21- Second Gen Full-Range Calibrated Water Potential Sensor

The TEROS 21 Gen 2 boasts an improved circuit, a more robust microprocessor, and an improved measurement range. It now measures all the way from near saturation to air dry—finally making it a true full range water potential sensor. TEROS 21 Gen 2 is part of a complete system of sensors, loggers, and software designed to reduce your workload.

- Higher quality circuit with less temperature sensitivity
- -5 to $-100,000$ kPa makes it a true full range sensor
- Improved microprocessor means less possibility of firmware corruption



TEROS 31 Tensiometer

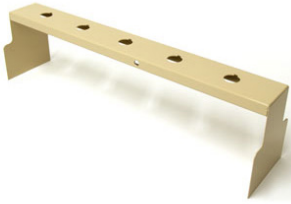
The TEROS 31 tensiometer combines our world-renowned precision technology with the power of ZENTRA Cloud, giving you easier, faster water potential data in near-real time.

If you need spot measurements of water potential in soil columns, soil cores, or sampling rings, there aren't a lot of options. Until now. With the TEROS 31, we put our 25 years of expertise to work in the smallest space possible: a ceramic tip with a surface area of only 0.5 cm². It's the only tensiometer in the world small enough and precise enough to perform excellent water potential spot measurements in even the tightest spaces. And now it's even better.



AQUALAB VSA (Vapor Sorption Analyzer)

The VSA is the only automatic isotherm generator that can generate isotherms using both the Dynamic Vapor Sorption (DVS) method, which generates equilibrium isotherms, and the Dynamic Dew Point Isotherm (DDI) method, which generates dynamic isotherms. By combining both methods in one instrument, the VSA makes it possible to investigate both dynamic matrix changes due to water sorption and the kinetics of those changes.



Filter Funnel Stand

The Model 1300 Filter Funnel Stand, the Model 1390 Funnels, and Model 1397 Sample Bottles provide a simple, efficient system for obtaining soil extracts.



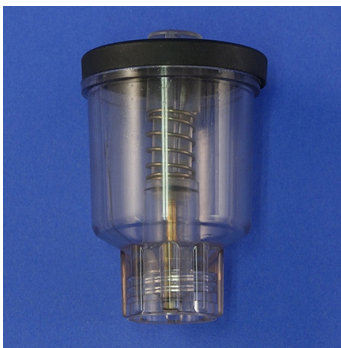
Vacuum Manifolds - 0725 Series

Vacuum Manifolds use with any the 1000, 1500F1 and 1600 Extractors. Allows low tension work with a high degree of pressure stability and accuracy, unattainable with pressure regulators. Vacuum pump sold separately.



Tensiometer with Gauge

The Model 2710AR-L Tensiometer is a simple, versatile, and inexpensive instrument which provides a direct measurement of soil water tension. The modular design allows easy replacement of the ceramic cup and dial gauge, and addition of extension tubes and the Service Cap. The tensiometer is available in a variety of lengths, ranging from 6 inches (15 cm) to 60 inches (1.5 m).



Jet Fill Tensiometers

The Model 2725AR Jet Fill Tensiometer features the patented Jet Fill reservoir for push-button convenience and minimization of soil disturbance when servicing is required. Unique modular construction allows for easy replacement of the porous ceramic cup and dial gauge and adaptation of extensions for flexibility and variety in use. Series 0240 Insertion Tools can be used to core a hole to accept these units.

Jet Fill Reservoir Cap

Includes Reservoir Body, Reservoir Cap, O-Ring Seal, Piston Stem Assembly & Cylinder Pump

WP4-C Dewpoint Potentiometer



Fast, Accurate Water Potential Measurements - Use the WP4 to measure water potential in 5 to 10 minutes. Range: 0 to -300 MPa with a resolution of 0.1 MPa. The WP4 is a bench-top instrument with a lexan sample drawer. To make a reading, set a cup in the chamber and close and latch the drawer.

Soil suction data can be stored internally or transferred to a computer or printer with the included serial RS232 interface cable.

Sample cups are 4 cm in diameter and 1 cm tall. They have a 15 ml capacity, but to protect the sensor from contamination we recommend that you fill them only half full.



TEROS 32 Field Water Potential Temperature

Tensiometers are, indisputably, the most accurate way to directly measure water potential in the wet range. But measuring with a tensiometer is complicated. Most tensiometers require sophisticated wiring and complex data logger programming skills to even get them up and running, not to mention the constant maintenance, checking, and refilling. Now there's a new way. Introducing the TEROS 32.



Quickdraw Tensiometer with Gauge

The Model 2900F1 Quick Draw Tensiometer is designed for portable field use. It responds quickly and equilibrates rapidly with the tension in the soil, providing measurements within a few minutes. The Soil Coring Tool is first used to core an access hole to the desired depth of measurement. The tensiometer is then inserted into the access hole and the ceramic sensing tip is placed in contact with the soil. The Null Knob can be used to reach equilibrium and provide a measurement more rapidly.



Monitor 5306PV/Differential 5306D 'Twist Lock' USB Transducers

It all arrives in a boxed assembly ready to use. You'll need to load the software on your Windows operating system first and make sure the Monitor software has loaded successfully.

Attach your USB cable between the Monitor Transducer and your Windows mobile or desktop device and you're ready to log or immediately read your new Monitor device. No power is required as this unit works off the voltage associated with your USB connection port on your Windows device.

EQ3 Equitensiometer



The EQ3 Equitensiometer uses class leading ThetaProbe technology to avoid the many problems of water-filled tensiometers. It measures water potential (matric potential) in the range 0 to -1000 kPa and provides an accurate loggable output. It is particularly well suited for use in dry soils.

- Convenient, accurate and reliable alternative to water-filled tensiometers
- Excellent range 0 to -1000 kPa
- Maintenance free: no refilling, degassing, or topping up
- Built in temperature sensor
- Buriable and frost resistant (IP68)

Extraction Plates



Pressure Plate Extractor - 5 Bar

The Model 1600 Pressure Plate Extractor allows analysis of the water-holding characteristics of soil samples in the 0 to 5 bar pressure range. The pressure vessel is 9" (22 cm) deep and has an inside diameter of 12" (30 cm). Up to 4 ceramic plates can be accommodated at one time, allowing approximately 48 each 2-1/4" (5.7 cm) diameter samples to be analyzed simultaneously.



Pressure Plate Extractor - 15 Bar

The Model 1500 15 Bar Pressure Plate Extractor is used to analyze the water-holding characteristics of soil samples throughout the pressure range of interest in most agricultural applications. The pressure vessel is 4" (10 cm) deep and has an inside diameter of 12" (30 cm). Up to 4 ceramic plates can be accommodated at one time, allowing approximately 36 2-1/4" samples to be analyzed simultaneously.

Large Surface Extraction Plate - 22" Diameter

large scale (22-inch diameter) vacuum plate provides a tremendous amount of surface space to control suction or sampling on a big scale. You can place your samples or growing plants on one of these large plates and induce the matric suction required up to 1 bar of suction. Forget the mess of sand tables and other crude devices, this is a complete, "system level" vacuum plate assembly, which is also extremely easy to use, and install.

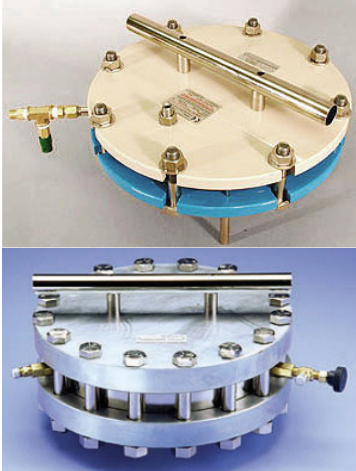


Volumetric Pressure Plate Extractor

The Model 1250 volumetric Pressure Plate Extractor is precision extractor designed so that the outflow section of the instrument is stable dimensionally. When the extractor is used in conjunction with the Hysteresis Attachments, the volume of water removed from the sample at each increasing pressure step can be accurately measured and retained. When pressure values are subsequently reduced, the volume of water that returns to the soil can then also be accurately measured.



Membrane Extractors



Pressure Membrane Extractor for Shrink/Swell Soils - 15 Bar

The Model 1000 Pressure Membrane Extractor incorporates disposable cellulose membranes in the extraction of water from soil samples over a pressure range of 0 to 15 bars. A compression diaphragm in the lid holds the samples in firm contact with the membrane, ensuring proper hydraulic contact needed for the extraction process.

Pressure Membrane Extractor for Extremely Dry Soils - 100 Bar

The Model 1020 100 Bar Pressure Membrane Extractor is used to analyze the water-holding characteristics of soil samples at extremely high pressures. The Pressure Membrane Extractor uses a cellulose membrane supported on a screen drain plate. The cylinder is 2" (5 cm) high, with an inside diameter of 10" (25 cm).

SOIL CLASSIFICATION

Automatic Mill and Sieve for Soil



- Crushing and sieving of soil at $\phi 2\text{mm}$ or less can be done at the same time
- All the processes can be done without putting out dust
- There is no soil dust generated by the equipment, so the dust collector is unnecessary
- Since this equipment is compact design, it is possible to set up in a laboratory
- Because all the processes are done in an airtight container, the cleaning time is greatly reduced

Digital Actual Volumometer



- Actual volumenometer measures the actual volume (solid and liquid phases) of the soil
- Under constant temperature, the volume of gas is in inverse proportion to its pressure (Boyle's law)
- The principle of the measurement depends on the law
- Automatic calibration
- Data storage
- Data communication and clean up

Torvane Shear Device



The Torvane Shear Device enables the operator to rapidly determine the shear strengths of cohesive soils, in the laboratory or in the field.

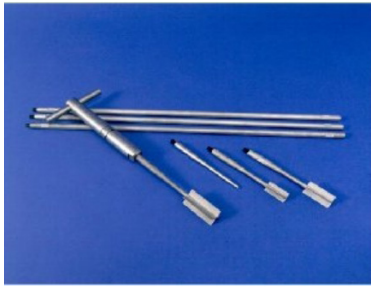
Simple to use and needs no extensive specimen preparation. All that is required is a flat sample area of at least 2" (50 mm) in diameter.

The Torvane is supplied complete with three interchangeable vanes for testing various types of soils.



H-10 Field Vane Shear Apparatus

- Detailed field investigation of undrained shear strength and sensitivity of soft and medium stiff clays
- From 0-30 meters by hand jack, even through hard layers of clay, sand or silt
- Two vane sizes: Measurements from 0-60 kPa & 0-100 kPa
- Top-level accuracy, results can be used for the design of earth fill foundations and embankments



H-60 Handheld Vane Tester

- Preliminary field investigation of undrained shear strength of soft to stiff clays
- Quick and easy to use, low weight
- Direct manual boring down to 3 meters
- Three vane sizes: Measurements from 0-200 kPa



H-70 Field Inspection Vane Tester

- Preliminary field investigation of undrained shear strength of soft to medium stiff clays
- Geonor 180 degree slip-coupling system gives a better evaluation of rod-soil friction
- Direct penetration to 10 meters without need for pre-boring
- Two vane sizes: Measurement range from 0 to 80 kPa & 0-60 kPa



Hand Vane Tester

The Hand Vane Tester is an accurate and portable instrument used for the determination of in-situ shear strength of cohesive soils, either on-site or on undisturbed or remolded samples in the laboratory.

The instrument consists of a torque head with a direct-reading scale which is turned by hand. A non-return type pointer retains the test reading. A 19 mm (0.75") diameter vane and 300 mm (11.8") extension rod is supplied as standard.

Munsell Soil Colour Classification Charts

Developed in cooperation with the U.S. Soil Conservation Service guidelines for classifying colours of various soils, rocks, archaeological specimens, animal pelage and other natural products in this colour range.

Matte colour chips (1/2" x 5/8") are mounted on 9 washable tabbed charts: 10R, 2.5YR, 5YR, 7.5YR, 10YR, 2.5Y, and 5Y plus two Gley (blue and green colors, and gray scale for submerged soils.) Includes two washable masks (black/gray).





PARIO PLUS: Automated Particle Size Analysis

Conventional particle-size analysis operation takes a lot of time and energy. Readings or samplings have to be done by hand, at regular intervals and for up to 24 hours. Because the procedure is manual, it's prone to errors – which can easily lead to wasted time and effort.

PARIO Plus lowers the estimated error from +/- 3% to an incredible +/- 0.5%. And we've decreased the measurement time from 8 h to 2.5 h, so you can make even more measurements in less time.



VARIOS Automated Thermal Dryout Curves

VARIOS generates thermal dryout curves automatically, so you can focus on other tasks. No manual process of getting the soil in and out of the oven. No repeated manual weighing of the sample. It's all taken care of for you, including data acquisition and analysis.

- Low cost, flexible, robust, and easy to use
- Automated measurement saves time and effort
- Continuous and precise weight measurements make it possible for a direct correlation between thermal conductivity and water content
- Ability to define relevant parameters for your specific application
- Two measurement methods: continuous and point by point



FOGL Bench-top Soil Calcimeter™

The FOGL Bench-top Soil Calcimeter with automatic temperature compensation (patented) offers dramatically improved levels of performance, productivity, reliability, ease of use and flexibility. FOGL bench-top calcimeter provide best accuracy total carbonate content measurements. High quality, easy handling and featuring data export capabilities.



FOGL II Digital Soil Calcimeter™

The FOGL II Digital Soil Calcimeter™ with automatic temperature compensation (patented) offers dramatically improved levels of performance, productivity, reliability, ease of use and flexibility.

The FOGL II Digital Soil Calcimeter™ is the ideal tool for agriculture scientists and farmers. Testing soil every two years and applying frequent small amounts of lime can help farmers avoid top soil acidification. Calcium carbonate is an important parameter for Soil Science and Precision Agriculture (PA) or Site Specific



Calcimeter

The calcimeter by Eijkelkamp is suitable for the simultaneous determination of the carbonate content in 5 samples. Because hydrochloric acid is used, a stable and ergonomic design was chosen. Per reaction approximately one hour is required.

The quantity of sample needed is determined beforehand by treating a part of the sample with hydrochloric acid on a watch glass. The carbonate content is estimated on the basis of the extend and the period of bubbling. Based on this estimate the quantity of sample for the analysis is determined.



Air Pycnometer

The pycnometer is applied where there is an interest in knowing the specific weight.

- Soil research, for instance the determination of the porosity of soil samples. It is recommended to use soil sampling rings with a 100 cc contents when taking undisturbed soil samples
- Measuring the pore volume of tarmac (road construction) or clay and bricks (brickworks)
- Volume determinations of seeds, coffee beans, legumes, etc. in the food industry



Aggregate Stability - Wet Sieving Apparatus

The wet aggregate stability is determined on the principle that unstable aggregates will break down more easily than stable aggregates when immersed into water. Unstable aggregates will fall apart and pass through the sieve and are collected in the water-filled can underneath the sieve. The testing procedure results in an index for aggregate stability.

FIELD SOIL SAMPLING AND TESTING



AGRETO Soil Compaction Tester

The AGRETO soil compaction tester is an instrument to determine soil compaction in different soil horizons. Provides important information on soil cultivation so far and future soil improvement. Provides an objective measured value from single soil horizons.

- Measurement of the mechanical resistance in the ground
- Analogue display shows soil compaction during insertion
- The measurement scale on the soil compaction tester shows the depth of the compacted soil layer
- Measurement range from 0 to 70



Soil Compaction Tester

By simply pushing the tester into the ground at different locations, this convenient, practical tool will help you find problem areas that can inhibit root growth and reduce yields. Just check the gauge to find readings of the pressure required to penetrate your soil.



C.O.E. Cone Penetrometer

The C.O.E. Cone Penetrometer is the principal instrument used in evaluating soil trafficability. It consists of a 30 degree cone with a 1/2 sq. in. base area, proving ring, dial indicator, extension rod and a handle.



Digital Hand Penetrometer (Digital Soil Hardness Meter)

This device measures a resistance of soil easily by pushing a cone vertically into the profile scrapped evenly.

- 0 - 40mm (0kPa - ∞, (Max 39.5mm, 1948574 kPa)
- Cone Angle - 25 ° 20'



Pocket Penetrometer

The Pocket Penetrometer was originally developed for use by field personnel in checking visual classification of soils. Data was compiled on several thousand unconfined compressive strength tests of silty clays and clayey soils against the penetrometer readings to develop the scale. A close relationship exists between the penetrometer's scale reading and soil type.

- Direct-reading scale in tons/sq ft. and kg/sq cm.
- Ground and polished stainless steel loading piston
- Calibrated spring and penetrometer body plated for rust resistance and long life



Dual Mass Dynamic Cone Penetrometer

The DCP Kits measure the shear strength of soil. The kits are designed to meet ASTM and military testing requirements. The stainless steel dual mass hammer and crushproof Pelican carrying case with transport wheels are included.



Proving Ring Penetrometer

The Proving Ring Penetrometer is a 30 degree cone penetrometer used to determine the bearing capacity of subgrades or to measure soil compaction. The penetrometer also serves as a rapid means of determining the penetration resistance of soil in shallow exploration work.

Hand Penetrometer Set A



The set with the hand penetrometer from Eijkelkamp can be used for probing to a depth of 1 meter. The set contains various cones, probing- and extension rods, a measuring instrument with a pressure gauge, tool set, a cone check, a calibration certificate and an instruction manual. The set is packed in a compact aluminium carrying case.

The measuring range of the pressure gauge is 10000 kN/m² (=10000 kPa). The scale range runs from 0 up to 1.0 kPa. The accuracy is +/- 8% in the advised measuring range.

Hand Penetrometer Set B



The set with the hand penetrometer from Eijkelkamp can be used for probing to a depth of 3 meters. The set contains various cones, probing- and extension rods, a measuring instrument with a pressure gauge, tool set, a cone check, a calibration certificate and an instruction manual. The set is packed in a compact aluminium carrying case.

The measuring range of the pressure gauge is 10000 kN/m² (=10000 kPa). The scale range runs from 0 up to 1.0 kPa. The accuracy is +/- 8% in the advised measuring range.

Portable Dynamic Cone Penetrometer/Auger Set



Consists of sliding drive hammer assembly, cone penetrometer point attached to a 12" (305 mm) rod, four 30" (762 mm) "E" drill rod extensions, Tee Handle, auger head and 4 auger extensions.

Penetrologger Set A



The penetrologger can be applied in both the agricultural and the civil engineering sectors:

- General soil science research;
- Foundation technology;
- Checking whether or not the soil is suitable for agricultural;
- Research into (expected) growing conditions for plants;
- The detection of compacted (possibly impermeable) sub-soil layers;
- Research into poor growing conditions of for instance trees in the city or in parks;

Soil Sampling Probes



soil sampling probes are commonly used to extract a small diameter sample of a soil core from the ground for analysis. Soil sampling is key to determining what a soil needs to be healthy and productive. The most critical step in a soil test is collecting a representative sample. That's why it's important to use high quality, professional soil samplers that Oakfield Apparatus can provide. We offer a wide range of soil probes including take-apart kits, one-piece probes, closed-tube probes, and a variety of tips to go along with them.



2" X 12" Stainless Steel Soil Core Sampler Complete, 5/8" Thread

Soil Core Samplers are used to collect virtually undisturbed soil samples for soil profiling and environmental investigations. Core samples may be collected at the surface or from the bottom of a pre-augered borehole. Samples may be collected into Plastic, Stainless Steel, Aluminum, and Brass Liners, or directly into the body of a Soil Core Sampler for immediate examination of the sample.

CI-600 In-Situ Root Imager



In-Situ Root Imager makes high-resolution observation of root growth and behavior simple. Tracking changes to root systems is vital to understanding overall plant health, and with the In-Situ Root Imager, this data can be gathered consistently & non-destructively.

- Included tablet computer
- One instrument, unlimited locations
- Live-updating, 360° scans

CI-602 Narrow Gauge Root Imager



Miniaturized, non-destructive root imaging for plant and crop research. With the Narrow Gauge Root Imager, vital root research can be carried out non-destructively in virtually any 2" diameter root tube installation.

- Lightweight and portable
- Double the resolution
- Scan 5x faster



Probe Rod

Designed for on-site conditions, the Probe Rod meets the need for a simple device to locate soft zones of soil in and under compacted areas in sub-grades or footing excavations.

The T-shaped design and conical tip make this hand tool easy to use. It is lightweight for convenient transport and plated for durability.



Grass Plot Samplers

These stainless steel gouge augers with different dimensions consist of a steel auger pipe, a collecting bucket and a stick with a steel handle. The auger pipe is filled by pressing the collecting bucket with your foot. Because of the conical shape of this pipe the sample is easily pushed toward the collecting trough when the next sample is taken. It is possible to take samples of the top 5 cm (resp. 10 cm) of grass covered areas, for root- and/or fertilization research, quickly with these types of augers.

The grass plot sampler is particularly suitable for research in grassland farming but also in horticulture and for the Parks and Public Gardens Department.



Peat Profile Sampler

The peat profile sampler, type Wardenaar, is an apparatus for sampling intact, undisturbed peat profiles in peat lands up to a depth of 1 meter. The peat profile sampler consists of a rectangular stainless steel box casing, divided lengthwise into two halves, with very sharp specially shaped cutting edges at the base.



Piston Sampler Set

The set is very suitable for sampling less cohesive soil layers below the (ground) water table to a depth up to 5 metres. The samples show little disturbance and therefore are suitable for very accurate profile description.



Soil Profile and Column Samplers

The soil column cylinder auger has been developed to take undisturbed soil samples. This allows for a fast insight in the built-up of the soil profile, the possibilities for a root system, etc. The more insight in these matters, the more effective fertilization and treatment of the soil can be done.

Auger Heads, Handles and Extensions



For soils with a large gravel content. The auger body for stony soils consists of a heavy steel strip, vaulted all along, which is bent double by forging. The pointed cutting bits of the strip are bent outward, thus creating a hole some-what wider than the average body diameter. The stony soil auger is used when the Riverside auger is not yielding adequate results in coarse gravel soils.

Please contact us for a complete listing of Augers and Accessories.

Prospecting Kit for Geological Surveys



The kit can be used for augerings in heterogeneous soils (agricultural and environmental soil research), to improve the mobility it comprises less different auger types. In this way it can be transported in a carrying bag. All augers, handles and extension rods are packed in a backpack. With this standard kit it is possible to execute manual augerings to a depth of 7 metres, without great physical effort.

The set is also used to drill shotholes by hand in areas with difficult access. Each seismic field crew should have a set available for scouting and drilling purposes. The backpack ensures quick mobilization and quicker tracking in the bush.

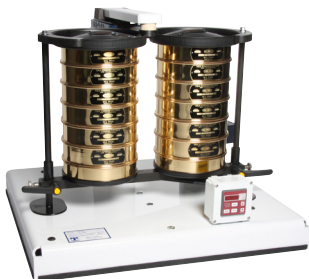
SIEVES, SIEVE SHAKERS AND ACCESSORIES

Ro-Tap® Test Sieve Shakers



The RX-29 for 8" test sieves, RX-30 for 12" sieves, RX-94 Duo Shaker for two 8" sieve stacks, and RX-812 Coarse Sieve Shaker.

The Ro-Tap® Sieve Shaker series are available in 110v or 220v power options. The Ro-Tap® E units are CE Approved. All sieve shakers are supplied with an operations manual, including unit diagrams that feature parts schematics. The units are well built, durable, and require little, if any, maintenance.



Ro-Tap® RX-94 Test Sieve Shaker utilizes the same traditional design as the RX-29 and RX-30 models. In addition, the unit features a cavity that allows for two 'stacks' of 8" diameter test sieves. This allows for twice the processing capacity in nominally the same time required to complete one test.

The affordable TX-812 Coarse Sieve Shaker has the unique capability of using both 8" diameter and 12" diameter test sieves, simply by using the quick-change adapters provided.



Motorized, Economy Sieve Shakers

The Large Economy Sieve Shaker, which complies with ASTM C136 Standards, the Humboldt Motorized Sieve Shaker can be used with 8", 10" and 12" sieves. 1/4 HP motor handles up to (11) 8" sieves, (7) 10" sieves and (7) 12" full-height sieves; and, (19) half-height 8" sieves, (13) half-height 12" sieves.

The Humboldt Motorized Sieve Shaker can be used with 3", 5" and 8" sieves. Both models feature a 1/4 HP motor, 115V, 60Hz with 30 minute timer. Mounting is required.

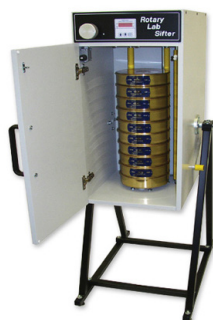
Hosokawa Alpine Air Jet Sieve



The Hosokawa Alpine Air Jet Sieve e200 LS has an attractive ergonomic design and fits nicely on a work bench. A high resolution 6.4" TFT touch screen allows intuitive operation with its easy-to-follow user interface.

The integrated analysis guide leads you through comparison analysis, trend analyses for statistics, language switch-over, and setting of country-specific measurement units. Data evaluation is given in tabular form (graphic form with eControl Professional and eControl Ultimate).

Three software options to select from; eControl Basic, eControl Professional, eControl Ultimate



Rotary Lab Sifter

The Rotary Lab Sifter quickly and efficiently processes samples in either 8" (203mm) or 12" (305mm) sieves. Simple conversion between the two sieve sizes takes less than a minute and requires no tools. Sieve stacks require no clamping and the mechanism is completely enclosed. The sieve stack is continuously rotated at an angle. UHMW polyethylene faced hammers apply additional agitation for effective separations.

Mary-Ann® Sifter



The Mary Ann® Sifter is a totally enclosed cabinet that insures a safe, quiet operation and the door has the option where it can be mounted to open from either the right or left. The SS-25 allows fast and easy conversion to accommodate either 8in (203mm) or 12in (305mm) diameter testing sieves.

Testing cycles are controlled to a ± 1 second with a 99 minute digital timer. Sieve stack angled at 45 degrees and allows rotation of sieves. This rotation, aided by tapping from hardwood faced aluminum hammers, promotes many orientations of particle to mesh. The support stand also doubles as a sieve storage rack.

Test Sieves



Hoskin Scientific carries a wide variety of sieve models and sizes, you are completely covered for any application.

- Full, half and intermediate heights
- Diameters include 3", 8", 12", 200mm, 300mm
- Sieve covers and bottom pans
- Wet Wash/Deep frame and Air Jet styles available

We also carry a variety of sieving accessories and Ultrasonic Sieve cleaners. Please ask your sales representative for more details.



Material Handling Basics

Brushes, Pans and bowls, Sample bags, pans and tins, Scoops, spatulas, spoons and ladles. Please visit www.hoskin.ca or contact your sales representative for a complete listing.



SOIL GAS

GMP343 Carbon Dioxide Probe for Demanding Measurements



The CARBOCAP® Carbon Dioxide Probe GMP343 is an accurate and rugged probe-type instrument for ecological measurements. Typical applications include CO₂ soil respiration, ambient CO₂ monitoring, plant growth chambers, and OEM applications.

- Excellent accuracy and stability
- Diffusion and flow-through models
- Wide operating temperature and humidity ranges
- Compensation options for temperature, pressure, humidity and oxygen
- Low power consumption and heat emission
- Short warm-up time
- Compact and light

ACE Automated Soil CO₂ Exchange System

Understanding soil flux and its relationship with other sources and sinks within the carbon cycle are currently subject to increasing scientific scrutiny.

The new ADC BioScientific ACE system (Automated soil CO₂ Exchange system) is designed for the long-term, unattended monitoring of soil flux. The automated design allows the soil area to be exposed to ambient conditions between analysis cycles. The soil chamber then automatically closes prior to soil flux measurements being made.



OxiTop® Control B6/B6M - Determination of Soil Respiration



Laboratory method for determining the microbial soil respiration according to DIN ISO 16072.

These measurements are made accurate and simple with the OxiTop® Control System. A cost effective alternative compared to conventional methods.

ViviSens Visualizing Oxygen, pH, and CO₂ in Sediments



Measure and Visualize Oxygen, pH or Carbon Dioxide Distributions in 2D for Biological Research. With VisiSens™ spatial and temporal changes of oxygen, carbon dioxide concentration or pH can be monitored.

- Non-invasive mapping of metabolic activities
- Imaging of living samples
- Free choice of measurement conditions
- One device instead of thousands of individual sensors

Apogee Soil Oxygen Sensors



Apogee oxygen sensors are designed to measure 0–100% oxygen and come with tinned leads to connect to a datalogger.

Select a diffusion or flow-through head if needed depending on your application. The sensor is calibrated to ambient air making it very easy to calibrate. An aluminum housing that is filled with epoxy allows the sensor to withstand harsh conditions.

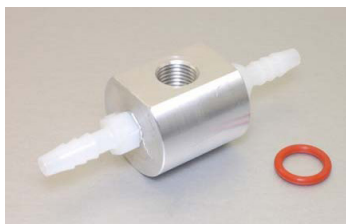


Oxygen Sensor with Handheld Meter - MO-200 - is designed to measure 0 – 100% oxygen while the handheld meter displays and stores measurements. The wide measurement range allows it to be used for applications either in the soil or in the lab with the available diffusion or flow-through heads. The sensor is calibrated to ambient air making it very easy to calibrate. An aluminum housing that is filled with epoxy allows the sensor to withstand harsh conditions.

Fast Response - SO-210 is designed for use in lab applications with a faster response. It comes with a thermistor temperature sensor to correct for temperature changes.

Soil Response - SO-110 is designed for use in soil applications with a larger signal, slower response and longer life. It comes with a thermistor temperature sensor to correct for temperature changes.

GalvanicCell Type - O2S-F/O2S-D Both sensors have a lead anode, a gold cathode, an acid electrolyte and a Teflon membrane. The current flow between the electrodes is proportional to the oxygen concentration being measured. An internal bridge resistor is used to provide a mV output.



Oxygen Meter/Sensor Flow Through Head

The flow through head is designed for laboratory applications with an oxygen sensor. The head comes with 1/4" barbed nylon fittings for connecting to a hose, through which the air to be measured passes.



Oxygen Diffusion Meter

The oxygen diffusion meter measures the mobility of oxygen in the soil. A mobility that is important for the availability of oxygen for plants. The method: measuring the electric current required for the reduction of all oxygen present at the surface of a cylindrical Pt-electrode in the soil. The flow of oxygen through the air-filled pores and the water film on the electrode is measured until the steady state is reached.

SOIL TEST KITS



Soil Texture Test

The overall texture of a soil affects growth in the root zone, which determines the above-ground growth production, and is determined by the fractions of sand, silt, and clay present.



Soil pH Test Kits

The overall texture of a soil affects growth in the root zone, which determines the above-ground growth production, and is determined by the fractions of sand, silt, and clay present. Range sensitivity - pH 3.8-8.4 in 0.2 increments (not for heavy clays)



Model EL Garden Kit

A simple test kit for soil science education or garden analysis. Rapid test procedures, diagrammed instructions, and laminated color charts are used to measure concentrations of nitrogen, phosphorus, potassium (15 tests each), and soil pH (30 tests). The Garden Guide manual and LaMotte Soil Handbook are included to interpret test results and give lime and fertilizer recommendations.



Combination Soil Testing Outfits

Since the original introduction of the STH series, based on Morgan soil test methods, reagent systems have been updated constantly with new advancements in modern chemistry. A series of rapid, accurate chemical tests use standardized reagents to produce color reactions measured against laminated color charts.

All STH outfits are furnished in lightweight carrying cases with components securely mounted in removable foam trays. This format provides flexibility for the in-house specialist who also wants to make quick problem determinations in the field.

Plant Tissue Kits



Plant tissue testing provides essential information concerning plant use of nutrients vital to their growth. These simplified field tests for green plant tissue indicate whether growing plants are receiving adequate amounts of available nutrients from the soil. All tests give qualitative results for the specific nutrients. By comparing test results from healthy and problem plants, it is possible to pinpoint deficiencies or excessive nutrient conditions. Includes tests for ferrous and ferric iron, zinc, copper, manganese, and boron.

Macronutrient Plant Tissue Test Kit - E-205-5026-01

Micronutrient Plant Tissue Test Kit - E-205-5261-01

Humus Screening Test



The importance of the organic fraction of the soil in affecting its physical and chemical characteristics and overall productivity is a well established fact. The LaMotte Humus Screening Test provides a quick and reliable means of evaluating the Humus or organic status of a soil and should provide valuable information, when used in conjunction with the tests for mineral elements.

SOIL SALINITY



TEROS-12-Advanced Soil Moisture Sensor

The new TEROS 12 sensor is more than just a sensor. It's a complete soil moisture system that treats the whole accuracy problem, rather than just one part of it, by eliminating common problems that cause uncertainty in the data—things like sensor-to-sensor variability, air gaps, or preferential flow. No other soil moisture system on the market addresses these issues.

Direct Measure EC Probe



EC-probe for salinity measurements, standard set for reading to a depth of 1 m.

The EC-probe consists of a stainless steel bar, provided with a detachable handle. The bar is provided with a 10 cm graduation. Inside the actual probe, at the bottom of the bar, there are four electrodes, separated by a sealing ring and an insulation ring. To facilitate measurements with the EC-probe, proper contact (= low contact resistance) with the surrounding soil is necessary. To establish proper contact, first the gouge auger is used to make a pilot hole to the desired depth. The drilled out soil can be used as a reference sample to determine the calibration curve.

HI 993310 EC Meter for Direct Measurement in Soil



HI 993310 is an instrument that has been specifically designed to address the question of correct and rapid measurement of conductivity in soil and liquids. It is supplied complete with two probes, HI 76305 with a stainless steel, conic tip for direct soil measurement, and HI 76304 for fertilizer enriched solutions.



Field Scout Direct Soil EC Probe

The Field Scout soil (water) EC probe permits direct measurement of salts in soil media as well as water or nutrient solutions. Use this portable EC meter and probe to measure soil salinity in greenhouse soil media right on the spot without conducting tedious soil sampling and soil preparation techniques.

THERMAL PROPERTIES OF SOIL



TEMPOS Thermal Properties Analyzer

The new TEMPOS is different. Reinvented it from the ground up to give you higher accuracy in much less time, at a price you can afford. Not only that, improved proprietary algorithms enable the TEMPOS to make these measurements with an incredible one-minute read time (versus the usual 10-15 min.).

The ASTM 5334- and IEEE 442-compliant TEMPOS is engineered using ISO 2008 standards. It takes accurate readings of thermal conductivity, thermal resistivity, thermal diffusivity, and specific heat in many material types across multiple disciplines, from soil and concrete to food, plastics, lubricating oil, and even human tissue.



Hukseflux Heat Flux Plates

The **HFP01 heat flux plate** (also called heat flux sensor) offers a solution for measuring heat fluxes. HFP01 is the world's most popular sensor for heat flux measurement in the soil as well as through walls and building envelopes. By using a ceramics-plastic composite body the total thermal resistance is kept small.

The **HFP01SC self-calibrating heat flux sensor™** is a sensor intended for high accuracy measurement of soil heat flux. Also it offers improved quality assurance of the measurement. The on-line calibration (the Van den Bos-Hoeksema method) automatically corrects for various common errors, in particular those due to the non-perfect matching of the thermal conductivity of sensor and soil, and due to variations of the thermal conductivity of the soil caused by varying moisture content.



HFP03 is an ultra sensitive sensor for heatflux measurement of small heat fluxes through soil, walls and building envelopes. By using a ceramics-plastic composite body the total thermal resistance is kept small.

Temperature Measuring Probe

Monitor the temperature in your stores with the AGRETO temperature probe. This allows timely intervention and prevents storage losses because of insects and fungi. The temperature probe can be used for checking temperatures in hay, straw, grains, wood chips, compost and many other bulk materials.

The lance and handle are made from stainless steel, the temperature sensor and cabling are situated in the stainless steel tube. Flexible use up to 110 °C

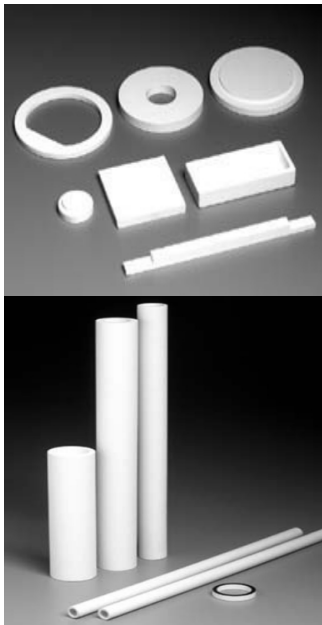




STP01 Soil Temperature Sensor

The STP01 is a sensor for very accurate measurement of temperature versus depth (also called “temperature gradient”) in the soil. A heating wire offers the possibility of self-testing, increasing the level of quality assurance. An experimental option is to determine soil thermal conductivity as a function of depth.

CERAMICS



Ceramics and accessories

Hoskin Scientific offers a wide variety of Ceramic products that can be used in a variety of applications. The natural wetting abilities of a porous ceramic, the uniform pore sizing, and inert raw materials provide an excellent finished product for research or industrial applications. Combine these attractive features with the strength and durability capabilities of a variety of ceramic shapes and you have a limitless number of excellent possibilities.

Listed below are our most popular;

- Ceramic cylinders, plates and rods
- Epoxy kits
- Flat bottom, straight wall cups
- Round bottom, straight wall cups
- Pressure plate cells
- Extraction plate
- Porous cup assemblies
- Custom shape ceramics - Diameters can be machined to provide shoulders or special dimensions. We can also make up special cylinders and provide special rods to meet specific requirements.

DATA ACQUISITION, LOGGERS AND SOFTWARE



Onset HOBO® Data Loggers & Weather Stations for Field Research

Hoskin Scientific carries a wide variety of Onset Data Loggers which can be purchased online at <https://shoponset.hoskin.ca/>

Field researchers rely on Onset data loggers and weather stations to monitor environmental conditions over time. Our research-grade HOBO data loggers are unmatched in providing reliable, accurate performance in the world’s harshest outdoor environments.

- Monitor temperature, rainfall, soil moisture, and barometric pressure to study their effect on agriculture, insects, wildlife, and forests
- Measure wind speed and direction for site assessments
- Track the effects of climate change on glacial activity

Hoskin Scientific Limited has been supplying testing and monitoring instruments since 1946. Although our range is broad, we focus on three major markets including:

Geotechnical & Materials Testing
Environmental Monitoring
Test & Measurement Instrumentation

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