



METER



METER PRODUCTS

# Get Ready for Field Season

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**METER delivers revolutionary products and services.** We do this by connecting science, engineering and design to deliver precisely what our customers need.

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NEW RELEASE

# TEROS 22

SOIL WATER POTENTIAL SENSOR

**The newest generation of matric water potential sensor is now the quickest water potential sensor to install and remove, with the same high accuracy and low maintenance you've come to expect and trust from METER.** Over 40 years of experience has brought us to the next evolution of simple and precise water potential measurements — Introducing the TEROs 22.



Scan the QR code or visit [meter.ly/teros22](https://meter.ly/teros22)



#### **CONTINUOUS MONITORING WITH SEASONAL FLEXIBILITY**

Choose an instrument that conforms to your installation needs instead of compromising your research. While trenching at installation and removal works for some, it is limiting for research areas such as agricultural environments and geotechnical engineering projects. That's why the TEROS 22 is designed with the flexibility to be installed with a drill-mounted masonry bit or the traditional trenching method, making water potential measurements available to just about any application. Keep the sensor in place for years at a time for continuous monitoring or remove seasonally, giving you the flexibility to adapt to changing plans and work around seasonal agricultural schedules.

#### **A TRUE FULL-RANGE WATER POTENTIAL SENSOR THAT'S LOW MAINTENANCE & LOW COST**

The TEROS 22 water potential sensor is incredibly easy to use. It requires no maintenance, and it's accurate enough for most applications. In fact, the TEROS 22 provides an even more accurate soil moisture picture than measuring water content alone. Plus, unlike water content, matric potential isn't dependent on soil type, so you can compare moisture between different sites. Just like the TEROS 21, the TEROS 22 is surprisingly affordable and measures all the way from near saturation to air dry (0 to  $-100,000$  kPa) making them both true full range water potential sensors.

# ZENTRA CLOUD

YOUR RESEARCH ASSISTANT

**Increased data is more of a burden than help if it drains your limited resources to obtain, store, and process it.** ZENTRA Cloud works with the ZL6 data logger to start your analysis by automating processes and common calculations. It aggregates all your data in one easy place and automatically graphs it in near-real time.



Scan the QR code or visit [meter.ly/zentra](https://meter.ly/zentra)

# TIE THE WHOLE SYSTEM TOGETHER USING THE ZL6 AND ZENTRA CLOUD



**Choose from our system of research-grade sensors, software, and lab instrumentation, and enter the world of research made simple.**

- + **WEATHER MONITORING** | ATMOS 41W, ATMOS 22, ATMOS 14
- + **SOIL SCIENCE** | TEROS 32, TEROS 12, TEROS 21, TEROS 22
- + **HYDROLOGY** | HYPROP, SATURO, KSAT
- + **LABORATORY INSTRUMENTS** | HYPROP, PARIO, KSAT, WP4C, VARIOS
- + **THERMAL PROPERTIES** | TEMPOS, VARIOS
- + **PLANT SCIENCE** | SC-1, ACCUPAR LP-80, NDVI/PRI

# Products

## Data loggers / telemetry



### ZL6/ZL6 Pro

Easier, more advanced, and more robust, the ZL6 introduces cloud-based data delivery, Bluetooth® configuration, firmware-over-the-air updates, and integrated metadata.

[go.meter.ly/zl6](https://go.meter.ly/zl6)



### ZL6 Basic

If you need an ultra-robust, entry-level data logger that is easy to set up and practically maintenance free, you'll love the ZL6 Basic.

[go.meter.ly/basic](https://go.meter.ly/basic)



### ZSC BLUETOOTH

During sensor installations, the ZSC lets you monitor a sensor reading as it is installed. Get real-time, wireless readings via Bluetooth on your smartphone with the push of a single button.

[go.meter.ly/ZSC](https://go.meter.ly/ZSC)





## Weather



### ATMOS 41

The world's best all-in-one weather station for atmospheric measurements that doesn't limit you with other sensors.

**Measures 12 Weather Variables**

[go.meter.ly/ATMOS-41](https://go.meter.ly/ATMOS-41)



### ATMOS 41W Wireless Remote Weather Station

We think getting your data shouldn't be complicated or costly. And we think wireless should actually be wireless. That's why we made the ATMOS 41W.

**Measures 10 Weather Variables**

[go.meter.ly/41W](https://go.meter.ly/41W)



### ATMOS 22

Accuracy. Dependability. Affordability. You get all three with the ATMOS 22 ultrasonic wind anemometer.

**Wind Speed & Direction**

[go.meter.ly/ATMOS22](https://go.meter.ly/ATMOS22)



### ATMOS 14

The ATMOS 14 will rapidly and reliably measure air temperature, relative humidity, barometric pressure, and vapor pressure, making benchmarking quick and hassle free.

**Measures 4 Weather Variables**

[go.meter.ly/ATMOS14](https://go.meter.ly/ATMOS14)





## Soil water content / soil temperature



### TEROS 10

The new, ultra-robust TEROS 10 soil moisture sensor delivers scientific accuracy and reliability at a price that makes large sensor networks economically practical.

**Water Content**

[meter.ly/teros10](https://meter.ly/teros10)



### TEROS 11

The TEROS 11 delivers 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.

**Water Content & Soil Temp**

[meter.ly/teros11](https://meter.ly/teros11)



### TEROS 12

The all-new TEROS 12 soil moisture sensor delivers an excellent price-to-performance ratio in a device that is easy to use and includes electrical conductivity.

**Water Content, Temp, & EC**

[meter.ly/teros12](https://meter.ly/teros12)



### ECH20 EC-5

The ECH20 EC-5 soil moisture sensor delivers research-grade accuracy at a price that makes large sensor networks economically practical.

**Water Content**

[go.meter.ly/EC5](https://go.meter.ly/EC5)



### ECH20 10HS

The 10HS soil moisture sensor is better at characterizing spatial variability as it averages soil moisture over a greater volume.

**Water Content**

[go.meter.ly/10HS](https://go.meter.ly/10HS)



### MAS-1

The MAS-1 is a current-based soil moisture sensor with ultra-long cable lengths.

**Water Content**

[go.meter.ly/MAS1](https://go.meter.ly/MAS1)











### **TEROS Borehole Installation Tool**

TEROS Borehole Installation Tool was engineered to provide easier, faster, and better sensor installation at greater depths.

[go.meter.ly/tool](https://go.meter.ly/tool)



### **TEROS 54**

We designed the TEROS 54 soil moisture profile probe to make every step of your measurement process easier—without sacrificing accuracy or durability.

**Water Content & Temp**

[go.meter.ly/TEROS54](https://go.meter.ly/TEROS54)



### **TEROS 06**

The ultra-robust TEROS 06 is a research-grade temperature profile probe that delivers accurate soil temperature data for better models and predictions.

**Soil Temp at 6 Depths**

[go.meter.ly/TEROS06](https://go.meter.ly/TEROS06)



### **RT-1**

Easy-to-use sensor for measuring the temperature of soil or other materials.

**Soil Temp**

[go.meter.ly/RT1](https://go.meter.ly/RT1)







## Soil water potential / soil suction

GEN 2



### TEROS 21

The TEROS 21 matric potential sensor is incredibly easy to use and surprisingly affordable.

**Water Potential & Temp**

[go.meter.ly/TEROS-21](https://go.meter.ly/TEROS-21)



### TEROS 22

The TEROS 22 matric potential sensor offers high accuracy, low maintenance, and quick installation and removal.

**Water Potential & Temp**

[meter.ly/teros22](https://meter.ly/teros22)



### TEROS 31

Nobody in the world makes a tensiometer this small, this simple, or this precise. Trust the TEROS 31 for fast, accurate point to point water potential in all your tightest spaces.

**Water Potential & Temp**

[go.meter.ly/TEROS31](https://go.meter.ly/TEROS31)



### TEROS 32

The new plug-and-play TEROS 32 tensiometer combines legendary precision engineering with the power of ZENTRA Cloud, giving you easier, faster, more accurate data in near-real time.

**Water Potential & Temp**

[go.meter.ly/TEROS32](https://go.meter.ly/TEROS32)

## Hydrology



### SATURO

We think you should spend less time on complex processes and more time being productive. That's why we automated almost everything in the new SATURO infiltrator.

**Saturated Hydraulic Conductivity**

[go.meter.ly/SATURO](https://go.meter.ly/SATURO)



### MINI DISK INFILTROMETER

Get a more complete picture of highly variable unsaturated hydraulic conductivity with the infiltrator that gives you more measurements for less time, less effort, less expertise, and less money.

**Unsaturated Hydraulic Conductivity**

[go.meter.ly/MINIDISK](https://go.meter.ly/MINIDISK)

GEN 2



### HYDROS 21

Measure water depth, temperature, and electrical conductivity. Low-complexity, low-maintenance, and low-cost design saves you time, hassle, and money.

**Water Level, Temp, & EC**

[go.meter.ly/HYDROS](https://go.meter.ly/HYDROS)



### G3 LYSIMETER

The Drain Gauge G3 is an easy-to-use lysimeter specifically designed to measure deep drainage over larger areas at an affordable cost.

**Deep Drainage & EC**

[go.meter.ly/G3](https://go.meter.ly/G3)



### DRAIN GAUGE G3 AUTOPUMP

The AutoPump automatically drains the Drain Gauge G3 reservoir into bottles for later collection or away from the measurement area.

[go.meter.ly/G3pump](https://go.meter.ly/G3pump)



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BACK



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## Lab instruments



### PARIO

A revolutionary new method for soil particle analysis. Automated, simple, and fast—with much less human error than traditional methods.

**Soil Particle Size Analysis**

[go.meter.ly/PARIO](https://go.meter.ly/PARIO)



### HYPROP 2

Automated calculation of high-resolution soil moisture release curves and unsaturated hydraulic conductivity—in just days, instead of months.

**Soil Moisture Release Curves & Unsaturated Hydraulic Conductivity**

[go.meter.ly/HYPROP](https://go.meter.ly/HYPROP)



### WP4C

The WP4C measures water potential by determining the relative humidity of the air above a sample in a sealed chamber (conforms to ASTM D6836).

**Water Potential in the Lab**

[go.meter.ly/WP4C](https://go.meter.ly/WP4C)



### KSAT

The KSAT is the only easy-to-use automated setup for taking saturated hydraulic conductivity measurements in the lab. Best of all, it's completely integrated.

**Saturated Hydraulic Conductivity**

[go.meter.ly/KSAT](https://go.meter.ly/KSAT)



### VAPOR SORPTION ANALYZER

For understanding complex soil issues like clay behavior, specific surface area, and more the VAPOR SORPTION ANALYZER is your simplest, most accurate option.

**Soil Adsorption & Desorption Curves**

[go.meter.ly/VSA](https://go.meter.ly/VSA)



### VARIOS

VARIOS automatically generates complete, high-resolution dry down curves with less effort and less cost, so you can focus on what you love.

**Thermal Dryout Curves**

[go.meter.ly/VARIOS](https://go.meter.ly/VARIOS)



## Thermal properties



### TEMPOS

More accurate than any thermal properties analyzer in its class, with an incredible one-minute read time.

**Thermal Conductivity/Resistivity  
Thermal Diffusivity & Specific Heat**

[go.meter.ly/TEMPOS](https://go.meter.ly/TEMPOS)



### VARIOS

VARIOS automatically generates complete, high-resolution dry down curves with less effort and less cost, so you can focus on what you love.

**Thermal Dryout Curves**

[go.meter.ly/VARIOS](https://go.meter.ly/VARIOS)

## Plant and canopy



### PHYTOS 31

The PHYTOS 31 leaf wetness sensor is not only a more accurate instrument, it's also the easiest to set up, making it a simple and straightforward solution.

**Leaf Wetness**

[go.meter.ly/PHYTOS31](https://go.meter.ly/PHYTOS31)



### ACCUPAR LP-80

The LP-80 is a highly accurate way to determine canopy growth and canopy light interception (PAR and LAI), along with calculating fractional interception and crop coefficient.

**Light Interception (PAR & LAI)**

[go.meter.ly/LP80](https://go.meter.ly/LP80)



### SC-1 LEAF POROMETER

Quick measurements. Easy-to-use engineering. Low cost in the short and the long run. The SC-1's breakthrough steady-state technology makes it the best for measuring stomatal conductance.

**Stomatal Conductance**

[go.meter.ly/SC1](https://go.meter.ly/SC1)



### NDVI SENSOR

Apogee NDVI sensors combine an ultra-rugged form with sophisticated cloud data delivery for an unbeatable price-to-performance ratio.

**NDVI**

[go.meter.ly/NDVI](https://go.meter.ly/NDVI)



### PAR SENSOR

The SQ-521 PAR Sensor provides accurate and cost-effective measurement of photosynthetically active radiation (PAR) from all light sources used to grow plants.

**PAR**

[go.meter.ly/PAR](https://go.meter.ly/PAR)



### IRT

The IRT infrared thermometer monitors surface temperature by measuring the thermal energy radiated from any surface.

**Surface Temp**

[go.meter.ly/IRT](https://go.meter.ly/IRT)



### PYR Sensor

The PYR solar radiation sensor is designed for continuous outdoor use and is completely waterproof and submersible.

**Solar Radiation**

[go.meter.ly/PYR](https://go.meter.ly/PYR)



### NET RADIATION SENSOR

If you need research-grade net radiation accuracy at an affordable price, then you'll love the easy-to-use Apogee Net Radiometer.

**Net Radiation**

[go.meter.ly/radiation](https://go.meter.ly/radiation)



### ULTRAVIOLET (UV) SENSOR

The low-cost Apogee Ultraviolet (UV) Sensor is a scientific-grade sensor that provides the accuracy you need for less. Access remote data in real-time, wherever you are.

**Total Radiation from 300 - 400 nm**

[go.meter.ly/UV](https://go.meter.ly/UV)

## Supporting sensors



### SO-411 Oxygen Sensor

The rugged, reliable SO-411 Oxygen Sensor is perfect for the lab or field. And the best part? Easy remote data access through ZENTRA Cloud.

Soil Oxygen

[go.meter.ly/oxygen](https://go.meter.ly/oxygen)



### ECRN-100 Rain Gauge

High-resolution rain gauge for measuring precipitation and for use in scientific research.

Precipitation

[go.meter.ly/ECRN100](https://go.meter.ly/ECRN100)



### ECRN-50 Rain Gauge

Low-resolution rain gauge for measuring irrigation events.

Precipitation

[go.meter.ly/ECRN50](https://go.meter.ly/ECRN50)



### ECT

An easy-to-use research-grade air temperature sensor.

Air Temp

[go.meter.ly/ECT](https://go.meter.ly/ECT)



### ES-2

The ES-2 is designed to measure the electrical conductivity of water in a pipe or tank.

Electrical Conductivity

[go.meter.ly/ES2](https://go.meter.ly/ES2)



### PS-1

The PS-1 Irrigation Pressure Switch adds irrigation water on/off data into the soil moisture data set.

[go.meter.ly/PS1](https://go.meter.ly/PS1)





### FM-25 Flow Meter

The FM-25 combines the accuracy of positive displacement meters with the reliability and economy of nutating disc technology.

[go.meter.ly/FM25](http://go.meter.ly/FM25)



### D1 DENDROMETER

The D1 Dendrometer is a simple tool to manually measure changes in the circumference of tree stems over time.

**Tree Circumference**

[go.meter.ly/D1](http://go.meter.ly/D1)



### VS-Pro

The VS-pro series of vacuum systems are capable of applying a constant or tension-controlled vacuum for long-term monitoring projects. Keyboard display allows for status checks and configuration without hooking it up to your PC.

**Vacuum Pump**

[go.meter.ly/VSPRO](http://go.meter.ly/VSPRO)



### Vacuporter Portable Electric Vacuum

This portable vacuum has a rugged case and uses a powerful pump and rechargeable battery, which make it easy to collect pore water samples at remote locations.

**Vacuum Pump**

[go.meter.ly/vacuporter](http://go.meter.ly/vacuporter)



### SPE20 Suction Cup with Shaft Storage

The SPE20 allows for water and solute collection down to depths of 8 meters that could not normally be collected from other pore water samplers.

**Water & Solute Collection**

[go.meter.ly/SPE20](http://go.meter.ly/SPE20)



### SKS20 Suction Cup with Shaft Storage

The SKS20 allows for water and solute collection down to depths of 8 meters that could not normally be collected from other pore water samplers.

**Water & Solute Collection**

[go.meter.ly/SKS20](http://go.meter.ly/SKS20)



**METER**

## Contact

### USA

2365 NE Hopkins Ct.

Pullman, WA 99163

P +1.509.332.2756

[info@metergroup.com](mailto:info@metergroup.com)

### Europe

Mettlacher Straße 8

81379 München

T +49 89 1266520

[info.europe@metergroup.com](mailto:info.europe@metergroup.com)

