



SOLYX-14 (CDX TECHNOLOGY) SOIL MOISTURE-TEMPERATURE-EC SENSOR

METER

The future of soil moisture monitoring starts here

Get more out of every measurement with the SOLYX 14 featuring CDX. Continuously monitor dielectric permittivity, soil temperature, bulk electrical conductivity (ECb), volumetric water content (VWC), and pore water electrical conductivity (ECw). Designed and proven through rigorous durability testing, the SOLYX 14 is METER's toughest, longest-lasting sensor yet—ensuring you get consistent, accurate soil moisture data season after season, year after year.

Soil moisture-evolved

Accurate soil moisture measurement relies on more than just collecting and processing data. To truly trust data validity, sensors should be easy to consistently install correctly and durable enough to endure years of use in harsh environmental conditions. METER instruments are chosen by scientists, growers, and engineers worldwide for their accuracy, and the CDX technology behind the SOLYX 14 marks the next advancement in soil moisture measurement.

Redefining what's possible with CDX technology

Developed by METER scientists, Complex Dielectric through intersection, or CDX, is a patented impedance technology that makes accurate measurement of VWC, EC, and soil temperature possible in soil, substrates, and porous material across a wide range of salinities and temperatures.

By measuring complex dielectric permittivity, the SOLYX 14 independently measures both the real dielectric permittivity (related to water content) and the imaginary dielectric permittivity (which is influenced by salts and lossy clays). That means you can achieve accurate soil moisture measurements in more places than ever before.

Consistent installation = higher accuracy

The more consistent the sensor installation, the more reliable the data. That's why the SOLYX 14 can be installed using the Borehole Installation Tool (TBIT) which minimizes air pockets and ensures solid sensor-to-soil contact. The TBIT firmly inserts the sensor into the side of a 10 cm borehole at depths of up to 5 meters, making installation quicker, easier, and more accurate. Once installed, setup is as simple as plug-and-play with METER data loggers, sending real-time data to ZENTRA Cloud for remote data visualization, computation, and collaboration.

Engineered for endurance

Whether you're measuring soil moisture over a season or a decade, SOLYX 14 delivers long-term stability and reliability. Its low-power requirements make it ideal for permanent installation—even at remote sites. Robust stainless-steel needles, a high-durability cable, and epoxy fill enable this sensor to provide research-grade accuracy year after year, even under harsh conditions. We're so confident about the long life of the SOLYX 14, we've increased our standard warranty from one to three years.



Feature summary

- CDX technology accurately measures dielectric, soil moisture, and EC in a wide range of soil types, salinities, and temperatures
- Sensor-to-sensor consistency ensures trustworthy measurements
- Simplify sensor installation with the Borehole Installation Tool
- On-board diagnostic tool checks sensor functionality with every measurement
- Robust design with epoxy fill, stainless steel needles, and cable with braided metal shield to protect against damage
- Ideal for long-term deployment



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Specifications

MEASUREMENT SPECIFICATIONS

Volumetric water content (VWC)	RANGE Mineral Soil Calibration: 0.00-0.72 m ³ /m ³ Real Dielectric Permittivity (ϵ_a): 1 (air) to 80 (water) RESOLUTION (VWC) 0.001 m ³ /m ³ ACCURACY (VWC) Generic Calibration: ± 0.03 m ³ /m ³ typical in mineral soils Medium Specific Calibration: ± 0.01 m ³ /m ³ in any porous medium Real Dielectric Permittivity (ϵ_a): $\pm 1 \epsilon_a$ (unitless)
Dielectric measurement frequency	70 MHz
Temperature	Range: -40 to 60°C Resolution: 0.1°C Accuracy: $\pm 1^\circ\text{C}$ from -40 to 0°C , $\pm 0.5^\circ\text{C}$ from 0 to +60°C
Bulk electrical conductivity (EC _b)	Range: 0 to 20 dS/m (bulk) Resolution: 0.001 dS/m Accuracy: $\pm (5\% + 0.01 \text{ dS/m})$ from 0 to 10 dS/m $\pm 8\%$ from 10 to 20 dS/m

COMMUNICATION SPECIFICATIONS

Output	DDI serial or SDI-12 communication protocol
Temperature	Operating range: -40 to 60 °C
Data logger compatibility	METER data loggers and any data acquisition systems capable of 4.0-15 VDC power and serial or SDI-12 communication.

PHYSICAL SPECIFICATIONS

Dimensions	Length: 8.9 cm Width: 2.5 cm Height: 7.5 cm
Needle/Probe length	5.5 cm
Cable length	5 m (standard) 75 m (maximum custom cable length)
Connector types	3.5-mm stereo plug connector or stripped and tinned wires

ELECTRICAL AND TIMING CHARACTERISTICS

Operating temperature range	Minimum: -40°C Typical: NA Maximum: 60°C
Measurement duration	Minimum: NA Typical: 50 ms Maximum: NA

COMPLIANCE	Manufactured under EM ISO/IEC 17050:2010 (CE Mark) 2014/30/EU (EMC) via EN 61326-1:2013 and 2011/65/EU (RoHS) via EN 63000:2018 CISPR 11:2024 Group 2 Class A
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