

FULL RANGE TENSIO-METER FRT 15D-SM

POLYMER TENSIO-METER WITH A WIDE MEASURING RANGE AND SOIL TEMPERATURE AND MOISTURE MEASUREMENT

The Full Range Tensiometer FRT 15D-SM measures soil water tension, soil moisture, and soil temperature and covers the entire plant-relevant water tension range with a measurement range of up to 1500 kPa (pF 4.2). Water tension is measured directly as pressure. The polymer tensiometer responds quickly to changes in water tension and automatically resumes measurement after drying out beyond the measurement range – without the need for refilling. Soil moisture is measured using a capacitive FDR (Frequency Domain Reflectometry) measurement method.

APPLICATIONS

- Remote monitoring sites with limited power supply thanks to low energy consumption
- Long-term stationary measurements with the FRT requiring minimal maintenance
- Reliable data transmission over longer distances via RS485/Modbus, even in measurement environments with an increased risk of electromagnetic interference

ACCESSORIES

- FRT Transport sleeve (strongly recommended)
- Stainless-steel pre-drill with a conical profile for easy installation of the tensiometer in the soil and to ensure optimal soil contact with the ceramic component; available in large and small sizes (for lysimeters)
- Standpipe extension (customizable)
- Connection cable (Lengths can be customized)
- 4-pin connector on the connection cable
- Data logger / NB-IoT box



Transport sleeve



Pre-drill

TECHNICAL DATA

PARAMETERS FRT 15D-SM	SPECIFICATIONS
Dimension	Ø 25 mm, length 157 mm (possible extension up to 1000 mm)
Dimension Ceramics (porous, cylindrical)	Ø 17 mm, length 35 mm
Measurement range tension	-100 ... +1500 kPa, accuracy across the measurement range: ±35 kPa, Temperature range during calibration: 4 ... 30 °C (at 100% water saturation)
Measurement range temperature	0 ... +40 °C, accuracy ± 0.2%, resolution 0.01 °C between 0 and +40 °
Measurement range moisture	0 ... 40% (0...100% with limited accuracy), accuracy ±5% / accuracy after specific calibration ±3%, resolution 0.1%
Thread for standpipe extension	M22x1,5
POWER SUPPLY / INTERFACE	
Power consumption	6 mA; peak current up to 22 mA for a short time during soil moisture measurement; typical measurement time 10 s
Supply voltage	4 ... 24 V
Output Signal	RS485 (Modbus)
Cable length	5 m potted
APPLICATION RANGE	
Operating temperature	+1 ... +40 °C (ambient soil temperature)
pH value during operation	pH 5 ... pH 9

TRANSPORT SLEEVE	SPECIFICATIONS
Dimensions	Ø 25 mm, length 65 mm
Material	soft PVC
PRE-DRILL LARGE	
Drill groove	Ø 12 mm, length 500 mm
Diameter	Ø 25 mm solid bar
Length without / with impact head	580 mm / 630 mm (extension possible)
Reinforced impact head, screw-on shaft	Ø 40mm x 50mm
Material	special steel alloy
Steel handle with PVC grip	Ø 16 mm x 400 mm
PRE-DRILL SMALL	
Drill groove	Ø 12 mm, length 130 mm (extension possible)
Diameter	Ø 25 mm solid bar
Material	special steel alloy
Features	threaded connection for the handle or extensions