



# TDT SOIL MOISTURE SENSOR



### Temperature-BEC Sensor

The MUNRO Digital TDT® soil moisture sensor represents a revolutionary advance in the irrigation industry. It is the first soil moisture sensor to incorporate the accuracy of digitized Time Domain Transmissometry in a low-cost instrument providing highly accurate absolute readings of soil moisture under all conditions of temperature and soil chemistry where crops will grow. No other TDT sensor on the market matches

its accuracy and stability. Independent test data from leading soil physicists verifies this extraordinary claim & are available upon request. This Digital TDT sensor incorporates a modified SDI interface capable of connecting directly to MUNRO data loggers or any other third-party SDI version 1.4 compliant device. The MUNRO modified SDI interface also is capable of auto-detection and address collision repair with MUNRO data loggers.

### Features:

- Works in all soils • Highly stable under a wide range of soil conductivity and temperature
- Range of 0 -100% volumetric water content • Made with durable inert materials
- Very low-power, battery operable • SDI-12 version 1.4 compliant • Low cost.

### Physical Characteristics:

Dimensions (without cable)	20 cm x 5.33 cm x 1.5 cm
Weight (with 5m cable)	299 g
Composition	Type 304 stainless steel, crystalline-epoxy
PVC (insulation) Cable	3 conductor, 22 ga PVC sheath, 5 meters

### Environmental Characteristics:

Operating Temp Range	1 °C to 50 °C for VWC (no ice), -20 °C to 50 °C for the other data
Storage Temp Range	20 °C to 75 °C
Lightning & Surge Protection	6 kV @ 3 kA, 8/50 μs

**Operating Characteristics:**

Volumetric Water Content	0 to 100%
Resolution	0.06% VWC
Absolute VWC Accuracy	±2% typical
VWC Soil EC Stability	±1% of full scale 0 to 5 dS/m BEC
Temp. Reporting Accuracy	±2 °C from +1 °C to +50 °C
EC Reporting Accuracy	±0.2 dS/m 0 to 5 dS/m BEC

**Architectural Characteristics:**

Technology	Waveform Digitizing Time Domain Transmissometer
Effective Acquisition Bandwidth	200 Giga-sample/second
Propagation Time Resolution	ps
Waveform Propagation Resolution	1.5 mm in air, 0.16 mm in water
Waveguide Length	30 cm
Permittivity to VWC Calculation	Modified Dielectric Mixing Model
Propagation Waveform Bandwidth	>2 GHz

**Communications Characteristics:**

ommunication Protocol	SDI-12 Revision 1.4
Maximum Cable Length	60 meters

**Power Characteristics:**

Operating Voltage Range	6–15 VDC
Listening/Sleep Mode Current	60 µA at 50 °C
Communications Current	6 mA typical, 8 mA max
Read Moisture Comm Time	425 ms total for each read cycle
Moisture Sense Current	84mA at 12VDC input, 98mA at 8 VDC input, 110mA at 6 VDC input
Moisture Sense Time	450 ms each sensing operation

