SDI-12 Sensor

SDI-12 Sensor

The Digital TDT® Moisture sensors used successfully in turf irrigation are now available for use with data loggers using SDI-12 protocol.

Features:

- Sensor requires no calibration
- Works in all soils
- Highly stable under a wide range of soil conductivity and temperature
- Linear range of 0-100% Volumetric Water Content (VWC)
- Made with durable, inert materials
- Very low power, battery operable
- SDI-12 version 1.3 compliant
- Low cost

MODEL# ACC-SEN-SDI

The Acclima Digital TDT® Soil Moisture Sensor represents a revolutionary advance in the irrigation industry. It is the first 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 under which crops will grow. No other sensor on the market matches its accuracy and stability. Independent test data from leading soil physicists verifies this extraordinary claim and is available upon request.

This Digital TDT® Sensor incorporates a modified SDI-12 interface capable of connecting directly to Acclima Data Recorder products or any other SDI-12 Version 1.3 compliant device. Acclima's modified SDI interface also is capable of auto-detection and address collision repair.

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T013-NUMBER Rev 1

Acclima
Closed Loop Irrigation Systems

SDI-12 Sensor

SDI-12 Sensor Characteristics

Physical Characteristics:

Dimensions (without cable):	20 cm X 5.33 cm X 1.5 cm
Weight (with 7.5 meter cable):	220g
Composition (exposed to soil):	type 304 Stainless Steel, crystalline-epoxy, polyethylene (insulation)
Cable Type and Length:	3 conductor, 18 Ga. PE sheath, 7.5 meter length

Environmental Characteristics:

Operating Temperature Range:	1 C to 50 C
Storage Temperature Range:	-20C to 75 C
Lightning and Surge Protection:	6kV @ 3kA, 8/50us

Operational Characteristics:

Volumetric Water Content Range:	0 to 100%
Resolution:	0.06% VWC
Absolute VWC Accuracy:	±2% (typical)
VWC Temperature Stability:	±1% of full scale 1 C to 50 C
VWC Soil EC Stability:	±1% of full scale 0 to 5 dS/m Bulk EC.
Temperature Reporting Accuracy:	±1C, 0 to 70 C

Architectural Characteristics:

Technology:	Waveform Digitizing Time Domain Transmissometer
Effective Acquisition Bandwidth:	200 Giga-samples/sec.
Propagation Time Resolution:	5 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
Propagated Waveform Bandwidth:	>2 GHz

Communications Characteristics:

Communications Protocol:	SDI-12 Revision 1.3
Maximum Cable Length:	60 meters (200ft)
Maximum Devices per Cable:	50

Power Characteristics:

Operating Voltage Range:	4 – 15 VDC
Listening/Sleep Mode Current:	15 uA (18 uA at 50 C)
Communications Current:	2.5 mA typical, 4 mA max
Read Moisture Comm Time:	425 ms total for each read cycle
Moisture Sense Current:	30 mA at 12 VDC input voltage 55 mA at 6 VDC input voltage 75 mA at 4 VDC input voltage
Moisture Sense Time:	450 ms for each moisture sensing operation