

SDI-SMT-1
Soil Sensor
Operating Manual

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GENERAL DESCRIPTION

FTS Forest Technology Systems Limited SDI-SMT-1 is a soil sensor which measures soil temperature, soil moisture, soil electrical conductivity and the complex dielectric permittivity. The sensor is an SDI-12 sensor which operates with FTS data loggers' SDI-12 interface (see Figure 1). The SDI-SMT-1 sensor consists of a Stevens Hydra Probe[®] Soil Sensor and an armoured SDI interface cable in a jacketed, aluminum conduit. The sensor operates in polled mode as a slave on the SDI-12 bus. SDI-12 (Serial Data Interface at 1200 baud) is a standardized protocol that defines how microprocessor based sensors and data loggers communicate.

The Hydra Probe sensor is a designed for many years of service device containing no moving parts. This results in a robust sensor that does not require field calibration.

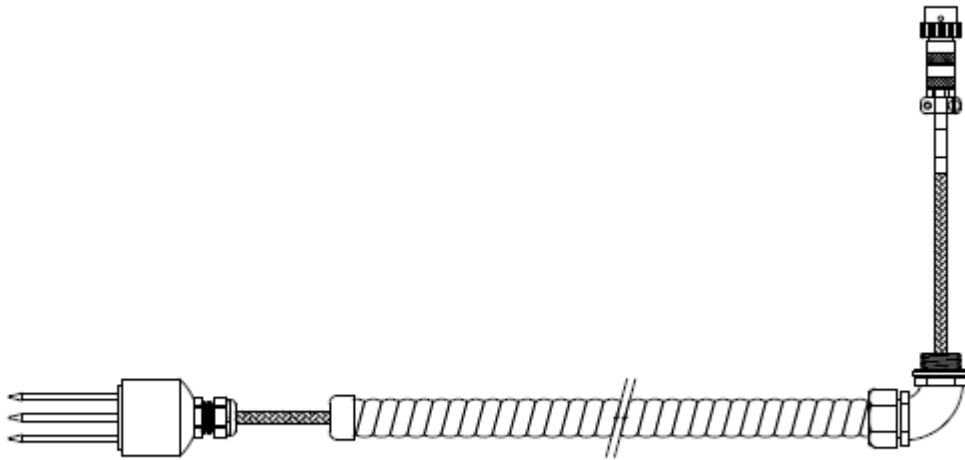


Figure 1: SDI-SMT-1 Soil Sensor Components

INSTALLATION

The SDI-SMT-1 sensor is design to mount to an aluminum frame.

Installation for the SDI-SMT-1 is as follows (see Figure 2):

- a) Bury the frame base to a depth of 20 to 30 cm depending on soil type (deep enough to keep the frame upright). The frame is supplier with the soil sensor.
- b) Dig a hole under the crossbar of the frame to the desired soil sensor depth.
- c) Install the SDI-SMT-1 sensor at the desired depth making sure not to have any air space around the probe or pebbles between the probe tines. (see Appendix 1).
- d) Back fill the hole after installation and then secure the cable to the mounting frame with the U-bolt.
- e) Connect the SDI-SMT-1 sensor to the appropriate SDI port on the FTS data logger front panel.

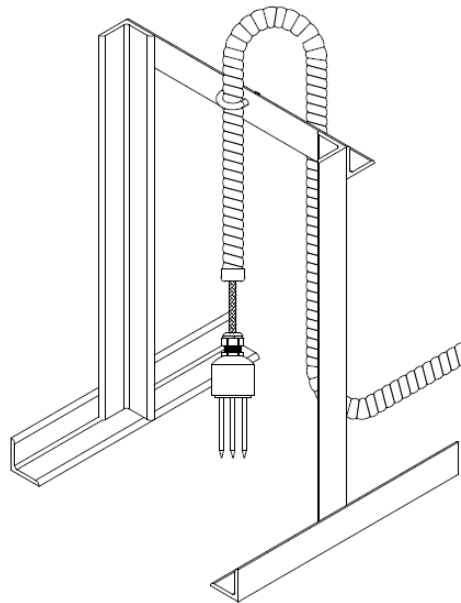


Figure 2: SDI-SMT-1 Soil Sensor Site Diagram

Connector Pin-out

The SDI-SMT-1 connector is an environmentally sealed, bayonet mount, keyed, military style connector. The connector is waterproof even without a mating connector attached. Electrical signal connections for the SDI-SMT-1 connector are shown in Table 1 below.

PIN	SIGNAL
A	+12 Vdc
B	Data
C	Ground

Table 1: SDI-SMT-1 Soil Sensor Signal Connections

OPERATION

The SDI-SMT-1 is designed to operate with the FTS data loggers on the SDI-12 bus. The data logger polls the sensor for a measurement as determined by the data logger configuration.

Configuration

Generally all SDI-12 sensors are shipped from FTS with a default address of 0; however, for specific applications or system, FTS will preset the sensor SDI address to the required value. The only configuration that may be required by the sensor is to change the address to another value if more than one SDI-12 sensor is on the same bus. See the SDI-12 Command section for instructions on how this is done.

SDI-12 Commands

SDI-12 Command details can be found in Appendix 1 – Stevens Hydra Probe Soil Sensor Manual.

MAINTENANCE

The SDI-SMT-1 Soil Sensor is designed not to require re-calibration within its lifetime; however, the following procedure should be performed on an annual basis:

- 1. Check cables and connectors for deterioration or damage and replace if needed.**
- 2. If soil moisture measurements appear incorrect, then check the probe's installation to ensure there is no void space, pebbles, or vegetation growing between or around the probe tines.**

Please contact FTS technical support if the unit ceases to operate properly.

SPECIFICATIONS

SDI-SMT-1 SOIL SENSOR

Type	Stevens Hydra Probe [®] Soil Sensor
Voltage	+12 Vdc nominal
Current	<1 mA idle, 30 mA active
Interface	SDI-12
Soil Moisture	
Range:	From completely dry to fully saturated
Accuracy:	+/-0.01 wfv for most soils, +/-0.03 max for fine textured soils
Soil Temperature	
Range:	-10 °C to +55 °C
Accuracy:	+/- 0.1 degree

APPENDIX 1

STEVENS HYDRA PROBE SOIL SENSOR MANUAL

< attach FTS document 701-Stevens Hydra Probe >