

# Hydra Probe

- *Measure 21 different parameters*
- *Instantaneous sensor response*
- *Rugged for years of in-soil use*
- *Addressable SDI-12 digital output*
- *Quick iSIC or SDL system integration*



The Stevens **Hydra Probe** soil moisture sensor is an in-situ soil probe that measures 21 different soil parameters simultaneously. The **Hydra Probe** instantly calculates soil moisture, electrical conductivity, salinity, and temperature as well as supplying raw voltages and complex permittivity for research applications. A compact, rugged design with potted internal components makes the **Hydra Probe** easy to deploy and leave in the soil for years with no maintenance.

The **Hydra Probe** design is unique compared to other soil moisture probes because the electrical response of soils can be specified by two parameters - the dielectric constant and the conductivity. The dielectric constant is most indicative of water content, while the conductivity is strongly dependent on soil salinity. Unlike other capacitance type sensors, the **Hydra Probe** measures both of these components simultaneously. The high frequency electrical measurements indicating the capacitive and conductive properties of soil are then directly related to the soil's moisture and salinity content, while a thermistor determines soil temperature.

The sensor includes built-in RS-485 and SDI-12 outputs for interfacing with NexSens **iSIC** and **SDL** data loggers. Sensor cable can be factory-connectorized with NexSens underwater connectors for integration to an SDL submersible data logger sensor port. Data collection options include direct-connect, landline phone, cellular, radio, Ethernet, WI-FI, and satellite telemetry. NexSens **iChart** Software is a Windows-based program for interfacing both locally (direct-connect) and remotely (through telemetry) to a NexSens data logger or network of data loggers.

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## specifications

<b>Dielectric Constant Range</b>	1 to 65 where 1 = Air, 78 = Distilled Water
<b>Dielectric Constant Accuracy</b>	± 1.5% or ± 0.2 whichever is typically greater
<b>Soil Moisture Range</b>	From completely dry to fully saturated
<b>Soil Moisture Accuracy</b>	± 0.03 water fraction by volume in typical soil
<b>Conductivity Range</b>	0-20 dS/m
<b>Conductivity Accuracy</b>	± 2.0% or ± 0.002 dS/m whichever is typically greater
<b>Temperature Range</b>	-10 to +65°C
<b>Temperature Accuracy</b>	+/- 0.6°C
<b>Power Requirement</b>	7-30 VDC
<b>Power Consumption</b>	<1mA idle; 30mA active
<b>Operating Temperature In Soils</b>	Freezing to +65°C
<b>Operating Temperature Range</b>	-10 C to +65°C
<b>Storage Temperature</b>	-40 to +70°C
<b>Water Resistance</b>	Tolerates continuous full immersion
<b>Length</b>	4.9" (12.4cm)
<b>Diameter</b>	1.6" (4.2cm)
<b>Weight</b>	200g not including cable



## parts list

Part #	Description
<b>93640-025</b>	Hydra Probe II soil moisture, temperature, & salinity sensor, SDI-12 interface, 25' cable
<b>93640-050</b>	Hydra Probe II soil moisture, temperature, & salinity sensor, SDI-12 interface, 50' cable
<b>93640-100</b>	Hydra Probe II soil moisture, temperature, & salinity sensor, SDI-12 interface, 100' cable
<b>A50</b>	Junction box
<b>3100-MAST</b>	Mast-mounted 3100-iSIC data logging system with cellular modem telemetry
<b>4100-MAST</b>	Mast-mounted 4100-iSIC data logging system with spread spectrum radio telemetry
<b>6100-MAST</b>	Mast-mounted 6100-iSIC data logging system with Iridium satellite telemetry
<b>UW-CON</b>	UW-connectorization of user-supplied sensor cable assembly
<b>SDL500</b>	Submersible data logger
<b>SDL500R</b>	Submersible data logger with spread spectrum radio telemetry
<b>SDL500C</b>	Submersible data logger with cellular modem telemetry
<b>1001</b>	iChart Software for Windows-based computers



**937.426.2703**  
8am to 7pm EST, Monday-Friday

**937.426.1125**  
24 hours a day, every day

NexSens Technology, Inc.  
PO Box 151  
Alpha, OH 45301-0151

**E** info@nexsens.com

**→** nexsens.com