

Soil Volumetric Water Content/Salinity Probes



Specialized tools and techniques offered by Campbell Scientific simplify probe installation while minimizing soil disturbance. The EasyAG II (shown here) can be installed in soils ranging from light sand to heavy clay.

The EasyAG II® and EnviroSMART™ probes, manufactured by Sentek, provide soil water content profile and/or soil volumetric ion content (VIC) for irrigation and fertigation management applications. These probes include several sensors that measure soil moisture/salinity at multiple depths. Around each sensor, the probe creates a high frequency electrical field that extends through the access tube into the soil. Electrical capacitance is then measured and soil water content/salinity is determined from those measurements.

The EasyAG II and EnviroSMART probes can be integrated with a Campbell Scientific datalogger or weather station. Integrating the probes into our data acquisition systems allows the data to be

telemetered back to a field station or remote computer.

Soil Water Content Profile

The standard sensors provide soil water content profiles for the range of oven dry to saturation. These sensors output either an SDI-12 or voltage signal that our CR200 series, CR800, CR850, CR1000, CR3000, CR5000, and CR9000X dataloggers can measure.

Soil Volumetric Ion Content (VIC)

The optional TriSCAN sensors determine VIC in sands and sandy loams; currently the TriSCAN is not suitable for clays. The TriSCAN sensors output an SDI-12 signal that our CR200 series, CR800, CR850, CR1000, CR3000, CR5000 and CR9000X dataloggers can measure.

Specifications

Output: SDI-12

Maximum Cable Length:
60 m (200 ft) based on
SENSDI12CBL-L cable

Output Resolution: 16 bit

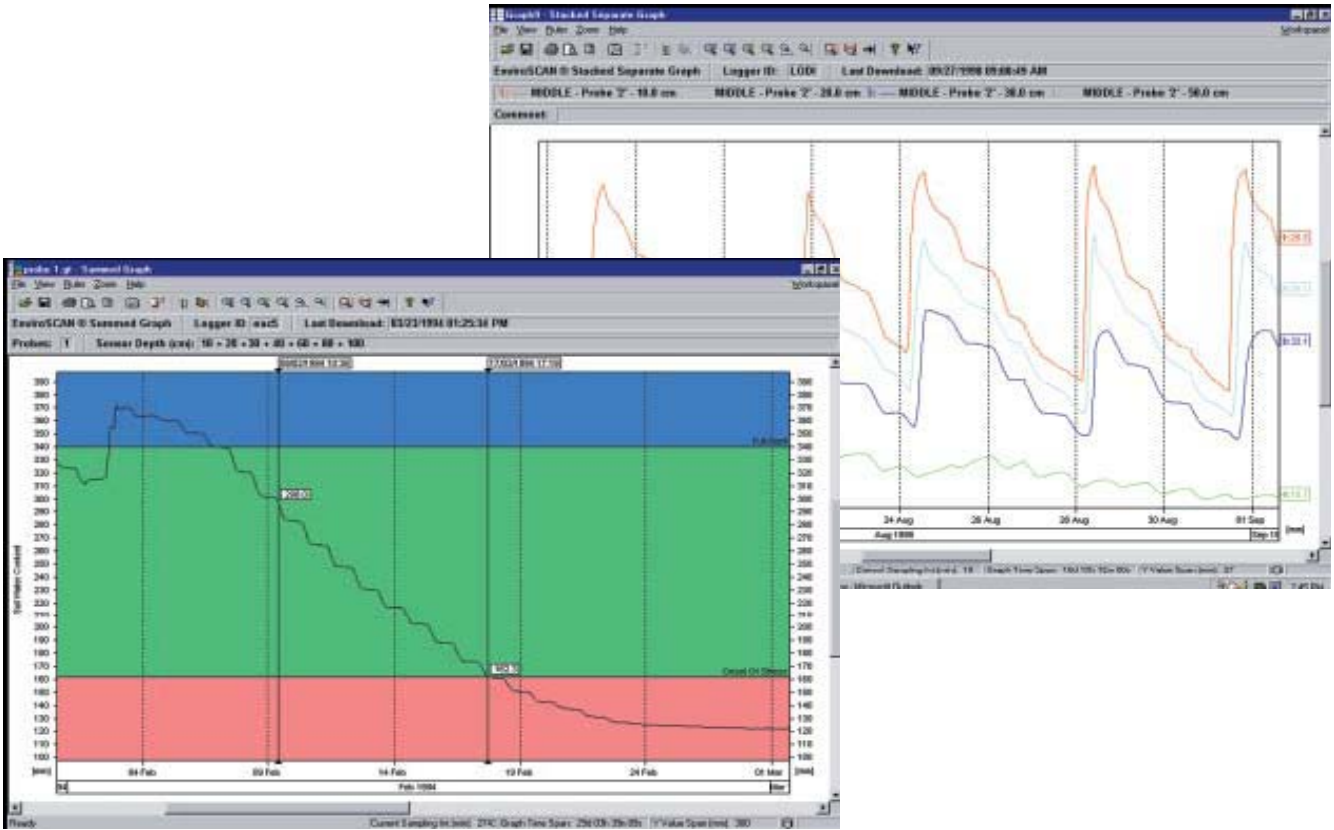
Current Consumption:
250 μ A sleep, 66 mA
standby, 100 mA
sampling

Operating range:
-20° to +75°C

Accuracy: $\pm 1.8\%$ with a
repeatable change of
VIC of 1 μ S cm^{-1} in
saturated soil conditions
at low EC 55 μ S cm^{-1} ;
 $\pm 0.4\%$ with a repeatable
change of VIC at 25 μ S
 cm^{-1} in saturated soil
conditions at medium
EC 5600 μ S cm^{-1} .
Sentek's field testing
have achieved $r^2 = 0.9$

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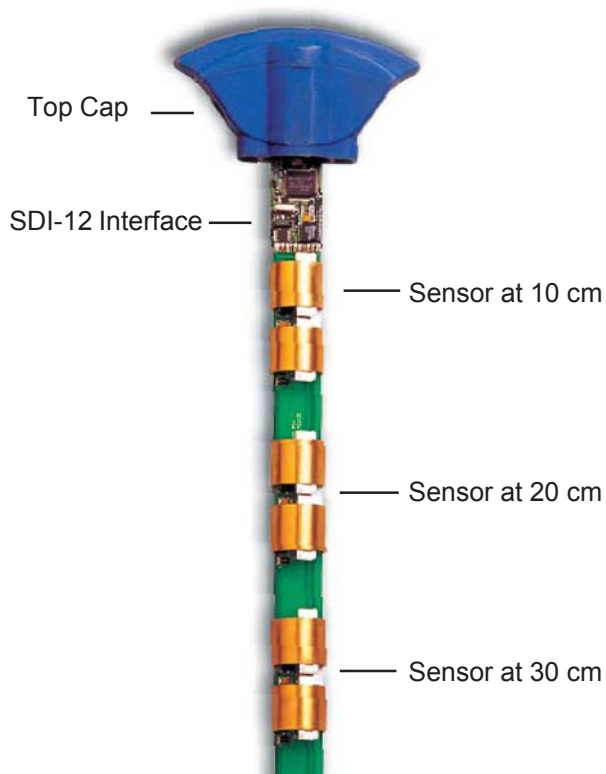


Software options for displaying the EasyAG II or EnviroSMART data include our LoggerNet Datalogger Support Software or where compatible, Irrimax, Sentek's dedicated irrigation scheduling software

EasyAG II

EasyAG II is intended for cultivated soils of good tilth, commonly found in vegetable production areas. It is unsuitable for stony soils where the average stone size is greater than 10 mm; EnviroSMART should be used for those applications.

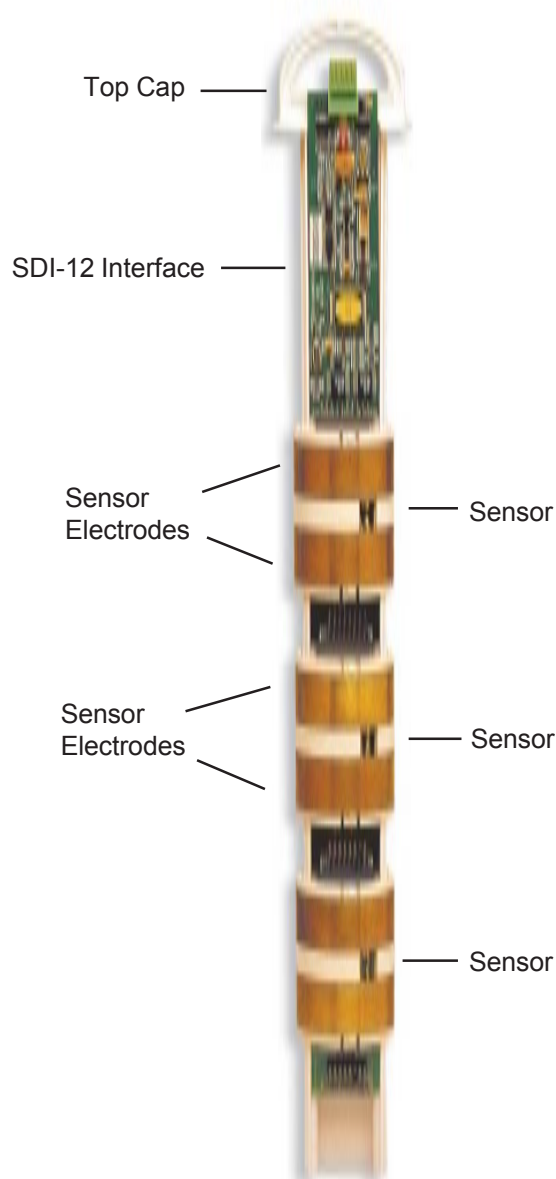
Campbell Scientific offers EasyAG II probes that provide measurements at depths of 10 cm, 20 cm, 30 cm, as well as probes that provide measurements at depths of 10 cm, 20 cm, 30 cm, 40 cm and 50 cm. The probes can either include the standard water content sensors or the TriSCAN salinity sensors.



The EasyAG II probe is ideal for measuring soil water content profiles in agricultural soils.

EnviroSMART

EnviroSMART is recommended for higher accuracy research measurements, measurements deeper than 80 cm, or stony soils. It is customized for individual applications by adding sensors at user-specified measurement depths. The standard water content sensors and the TriSCAN sensors can be combined at any 10 cm interval. The maximum measurement depth of the standard configuration is 2 metres (6 ft); deeper measurements are possible with special provisions.



The EnviroSMART probe can provide water content profiles for deep-rooted, perennial crops.

Specifications

General

	<i>EasyAG II</i>	<i>EnviroSMART</i>
<i>Number of Sensors per Standard Probe</i>	3 or 5 sensor configuration	16 maximum
<i>Sensor Measuring Principle</i>	high frequency capacitance	high frequency capacitance
<i>Sphere of Influence</i>	99% of the reading is taken within a 10 cm radius from the outside of the access tube	99% of the reading is taken within 10 cm radius from the outside of the access tube
<i>Sensor Diameter</i>	2.65 cm	5.05 cm
<i>Access Tube Diameter</i>	3.2 cm	5.65 cm
<i>Time to Read One Sensor</i>	1.1 seconds	1.1 seconds
<i>Interface Measuring Principle</i>	16-bit pulse count	16-bit pulse count

Volumetric Water Content

	<i>EasyAG II</i>	<i>EnviroSMART</i>
	<i>SDI-12 Output</i>	<i>SDI-12 Output</i>
<i>Output</i>	SDI-12	SDI-12
<i>Protocol Options</i>	SDI-12	SDI-12
<i>Maximum Cable Length</i>	60 m *	60 m *
<i>Output Resolution</i>	16 bit	16 bit
<i>Current Consumption</i>	250 μ A sleep 66 mA standby 100 mA sampling	250 μ A sleep 66 mA standy 100 mA sampling
<i>Accuracy when Calibrated</i>	R ² =0.89 based on field calibrations	R ² =0.89 based on field calibrations
<i>Resolution</i>	0.008%	0.008%
<i>Precision</i>	±0.06% volume	±0.03% volume
<i>Measurement Range</i>	oven dry to saturation	oven dry to saturation
<i>Temperature Effects</i>	±3%, 5° to 35°C	±3%, 5° to 35°C
<i>Operating Range</i>	-20° to +75°C	-20° to +75°C

*Based on SENSDI12CBL-L cable