

HydroSense® Soil Water Measurement System

Models CS620, CD620

The HydroSense System combines a compact, handheld display and a sophisticated soil water sensing probe in a portable package to provide quick and reliable soil water content measurements. Each measurement takes less than one second and is obtained by inserting the probe rods into the soil and pressing a single button on the display unit. A choice of 12- or 20-cm long probe rods makes HydroSense a versatile tool for monitoring and managing soil water in a wide range of conditions.

The microprocessor-controlled circuitry and two-line readout are contained in a splashproof enclosure that includes two integral membrane buttons used to operate the system. A 5-foot coiled cable connects the display to the probe. The 5 mm diameter stainless steel rods are an integral part of the electronic circuitry encapsulated in the epoxy probe head. The parallel rods constitute a driven transmission line which is sensitive to dielectric permittivity and consequently water content.

The HydroSense has two modes of operation. The water content measurement mode uses standard laboratory calibrations to provide percent volumetric water content in the range from air dry to saturated. In the water deficit mode, HydroSense measurements are taken at lower and upper water contents as specified by the user and stored in memory as reference values. The reference values are then applied to subsequent measurements to determine the amount of water that must be added to bring the soil to the upper water content.



The Hydrosense system consists of the CS620 sensor (left) and the CD620 display (right).

Water Deficit Mode

	relative water content 0-100	calibration currently selected
RWC	33	Site 1
Deficit mm	34	20
	Deficit 12 cm probe	Deficit 20 cm probe

Water Content Measurement Mode

	Volumetric water content	Probe rod length
VWC	22%	P12cm
Period	0.93ms	
	Probe output period	

Specifications

Model	CD620 – HydroSense Display Unit
Measurement Parameter:	Volumetric Water Content (%), Water Deficit (mm)
Housing:	Splash resistant
Display:	16-character, two line LCD display
Keypad:	Two-button membrane keypad
Power:	3 Vdc – 2 AAA alkaline batteries
Battery Life:	Approximately 12 months typical usage
Dimensions:	120 x 73 x 24 mm (4.7" x 2.9" x 0.9")
Weight:	160 grams (7 oz.) including batteries
Reading time:	<50 milliseconds

Model	CS620 – Water Content Probe
Accuracy:	$\pm 3\%$ water content in materials with electrical conductivity $< 2 \text{ dS m}^{-1}$
Resolution:	0.25%
Range:	Dry to saturation
Output:	Square wave pulse train with $\pm 2.5 \text{ Vdc}$ amplitude
Body Dimensions:	105 x 70 x 18 mm (4.1" x 2.8" x 0.7")
Rod Dimensions:	5 mm (0.2") diameter 32 mm (1.3") spacing 120 or 200 mm (4.7", 7.9") length
Cable:	Spiral cable, 200 cm (6.6 ft) extended
Weight:	390 grams (14 oz.)