

# HydroSense®

## Soil Water Measurement System (CD620, CS620)



The HydroSense system combines a compact, hand-held display (CD620) and a sophisticated soil water sensing probe (CS620) 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 splash-proof enclosure that includes two integral membrane buttons used to operate the system. A 5-ft 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), the CD620 display (right), and two rods.

### Water Deficit Mode

relative water content 0-100	calibration currently selected
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<b>RWC</b>	<b>33</b>	<b>Site 1</b>
<b>Deficit mm</b>	<b>34</b>	<b>20</b>

Deficit 12 cm probe	Deficit 20 cm probe
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### Water Content Measurement Mode

Volumetric water content	Probe rod length
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<b>WVC</b>	<b>22%</b>	<b>P12cm</b>
<b>Period</b>	<b>0.93ms</b>	

Probe output period

## Ordering Information

To get a complete HydroSense system, you must order a display unit, a sensor, and rods (see below).

### Display Unit

**CD620** Display Unit for Hydrosense® system. Sensor and rods are purchased separately (see below).

### Water Content Sensor

**CS620** Water Content Sensor for Hydrosense® system. Cable length is 5 ft. The sensor is shipped with threadlock loctite, and a wrench for attaching the rods. Display (see above) and rods (see below) are purchased separately.

### Rods

Two rod lengths are offered. The choice of length depends on the application. Additional pairs of rods can also be purchased to allow alternation between the two measurement depths.

**18591** 12-cm long rods for Hydrosense system. Includes two rods.

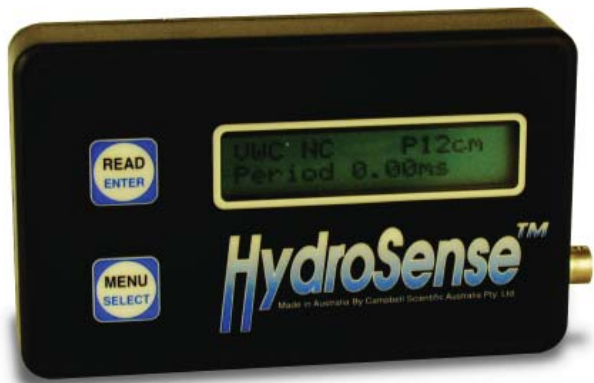
**18592** 20-cm long rods for Hydrosense system. Includes two rods.

### Replacement Parts

**10184** One 12-cm long rod. Purchase the 10184 when you need to replace only one 12-cm rod on the CS620 (the 18591 orders two 12-cm rods).

**12007** One 20-cm long rod. Purchase the 12007 when you need to replace only one 20-cm rod on the CS620 (the 18592 orders two 20-cm rods).

**26156** Open Ended 7/16 Wrench used to remove the nut that fastens the rods to the CS620 sensor. This wrench began shipping with the CS620 sensor in December 2009. The wrench is not shipped with replacement rods.



The CD620 display (shown above), CS620 sensor, and two rods are purchased separately.

## Specifications

### CD620 – HydroSense Display Unit

**Measurement Parameter:** Volumetric Water Content (%), Water Deficit (mm)

**Housing:** Splash resistant

**Display:** 16-character, two line LCD

**Keypad:** Two-button membrane

#### Power

**Voltage:** 3 Vdc

**Battery Type:** 2 AAA alkaline batteries

**Battery Life:** ~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

### CS620 – Water Content Probe

**Accuracy:** ±3% water content in materials with electrical conductivity <2 dS m<sup>-1</sup>

**Resolution:** 0.25%

**Range:** Dry to saturation

**Output:** Square wave pulse train with ±2.5 Vdc amplitude

**Dimensions:** 105 x 70 x 18 mm  
(4.1 x 2.8 x 0.7 in.)

**Weight:** 390 grams (14 oz.)

**Cable:** Spiral, 200 cm (6.6 ft) extended

#### Rods

**Diameter:** 5 mm (0.2 in.)

**Spacing:** 32 mm (1.3 in.) center to center

#### Length

**18591:** 12 cm (4.7 in.)

**18592:** 20 cm (7.9 in.)

