

SPECIFICATIONS

Measurement Units: kPa
Measurement range: 0-800 kPa
Operating range: -20 to 80°C
Accuracy: +/-1 kPa
Resolution: 16 Bit (0.1 kPa)
Output: Serial data ASCII format, plus either voltage 0-1 or 0-2.5V, or frequency +5V pulse (2-10Hz)
Options: 4-20mA

Power requirements:

Power Supply: 5-28V DC unregulated
Current Drain: 2mA nominal

Cable Length:

Standard cable length is 5 m.
Maximum cable length 4km using Monibus communications

Dimensions:

Length: 125mm
Width: 50mm
Depth: 25mm

Related products:

Soil Field Station Unlimited channel logging system
EnviroStation™ Automatic Weather Station
SL5 Smart Logger

APPLICATIONS

Irrigation Scheduling of vineyards

Irrigation Scheduling of Horticultural crops

Measurement of Soil Tension

FEATURES

Plug & Play Operation

Continuously Logged Data

Four Watermark Sensor Capacity

Connect Existing Watermark Sensors

Data recorded in kPa

DocRef: Ver1.0

Watermark smart interface

The WATERMARK (granular matrix) sensor is an indirect method of measuring soil water. It is an electrical resistance type sensor, that converts the electric resistance reading to a calibrated reading of centibars of soil water suction. The Watermark sensor operates on the same principal as the gypsum block but incorporates a punched stainless steel outer cover over a membrane that is designed to provide greater longevity of the sensor in harsh conditions.



Principle of measurement

The Gypsum Block is a cylindrical block of gypsum (CaSO_4) into which two electrodes are inserted. The gypsum is porous and allows water to move in and out of the block as the soil wets (under irrigation or rainfall) and dries (as the plant draws water away). In the presence of moisture the CaSO_4 goes into solution allowing ion movement between the two electrodes. When the block is excited electrically, ions move to the respective electrodes establishing an effective block resistance. A greater amount of water in the block equals more ions and a lower resistance to electrical current flow.

Microprocessor Interface

ICT International has designed a Plug & Play smart interface specifically for use with the Watermark sensor. The interface consists of a microprocessor that provides a regulated AC voltage to excite the sensor, holds resident in memory the calibration equation to automatically convert the electrical resistance to kPa of soil water suction and allows up to four Watermark sensors to be logged at a user defined interval.

Flexibility of experimental design

Typically the Watermark sensor is used with a hand meter and read manually. This can be time consuming and limit the application of the sensor. By interfacing the sensor with a microprocessor it can now be continually logged with an SL5 smart logger and incorporated into a wide variety of research projects involving a range of other sensors all on a single logging system.

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