

Logging Tensiometers

APPLICATIONS

- Soil science research
- Soil hydraulic properties
- Water retention properties
- Wetting/sorption curves
- Drying/desorption curves
- Ground water leachate
- Catchment hydrology
- EPA monitoring
- Agricultural research

FEATURES

- Easy installation
- Plug & Play operation
- LCD display
- Universal software
- Scientific accuracy
- Communication options
- Modular and expandable

Field station for logging tensiometers

Soil tension measurements are an important aspect of soil & crop management. The tension under which water is held in the soil can be used to determine the amount of water in the soil and the stress under which the plant is growing.

With the introduction of the tensiometer field station ICT International offers scientists a highly accurate, low cost, plug & play solution to logging soil tension

in the field. The system consists of a Smart Logger with LCD display, logger housing with mast and free-standing base. The system has a maximum capacity of 250 sensors but for most applications between 3 and 30 tensiometers are common.



Applications

Jet Fill tensiometers equipped with pressure transducers connected to a Smart Logger are being employed to determine approach to equilibrium in the water-retention testing of stony-solids and weathered-rock materials that are widely used for store/release-covers on mine-wastes in the semi-arid areas of Western Australia. Due to the occurrence of stones and rock-fragments ranging up to several centimetres, large testing-cells are employed on conventional suction-plate apparatus, and attainment of equilibrium at the pre-set suction is confirmed via tensiometry. This technique is proving very useful in characterising the water-retention properties of such stony materials at the “wet-end” of the suction range.

Jet Fill Tensiometers



Jet Fill tensiometers have been used by farmers and researchers throughout the world for over 50 years. Through the use of precision moulded components and high grade ceramic cups of specified air entry values, Jet Fill tensiometers are unsurpassed for reliability, accuracy and quality. The unique Jet Fill reservoir enables refilling of the water column without breaking the intimate contact of the ceramic cup with the soil which reduces the chance of cavitation of the column and loss of data.



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Smart logging

A feature of the field station is Plug & Play or smart logging. The SL5 Smart Logger does not require any knowledge of electronics or computer programming.

To operate the station simply plug in a sensor and press both buttons on the front panel of the Smart Logger together. The Smart Logger will then search the DataBus strip and automatically identify the quantity of tensiometers connected and begin logging them at hourly intervals. For custom configuration of the Smart Logger or tensiometers a simple menu system can be accessed through HyperTerminal that provides complete control over each individual sensor's set-up. Instantaneous readings from sensors can be viewed on the Smart Logger's display directly in the field without the need for a laptop.



Smart interface

Each tensiometer is fitted with an external smart interface that consists of an integrated microprocessor. This interface contains all the required information to allow autonomous operation of the sensor, including the transducer calibration, power requirements and logging interval. The smart interface resolution is 16 Bit (1 in 65,000) offering highly precise and accurate recording of the tensiometer's pressure transducer.

Each interface is fitted with a standard cable length of 5 m, extension cables of any length can be interchanged as different experiments demand.

Pressure transducer

The Jet Fill transducer incorporates the GT3 Honeywell pressure transducer into a custom design specifically for the Jet Fill tensiometer range. The tough milled aluminium body has a brass 1/4" NPT thread that provides longevity of the unit even under the most extreme environmental conditions. With the Honeywell reputation for producing quality transducers you know you are measuring with accuracy.



Ordering information

SL5-1L	Smart Logger
IB8	DataBus interface
LH1	Lockable data logger housing (small)
MK6	Lower mast—900 mm length
MK7	Free standing base assembly—to suit 2 m mast
ST1	Tensiometer smart interface
ICTGT3	Pressure transducer
2725ARL06NG	Jet Fill Tensiometer 15 cm length
2725ARL12NG	Jet Fill Tensiometer 30 cm length
2725ARL18NG	Jet Fill Tensiometer 45 cm length
2725ARL24NG	Jet Fill Tensiometer 60 cm length
2725ARL36NG	Jet Fill Tensiometer 90 cm length

Optional

LH3	Lockable data logger housing (medium)
SP10	10 W 12 V solar panel
MK2	Solar panel mounting kit
CBEX05	Extension cable 5 m length
CBEX10	Extension cable 10 m length
CBEX25	Extension cable 25 m length
CBEX50	Extension cable 50 m length

SPECIFICATIONS

Datalogger:

Operating Range: -20 to + 60°C

Accuracy: +/- 1%

Resolution: 16-bit

Sampling Rate: Minimum period 1 second, maximum period 24 hours.

Number of Channels: 250

Memory: 4 MB Flash memory

Battery Type :

Sealed lead acid 6 V 7 Ahr

Battery life: three months

Dimensions:

170 mm x 145 mm x 90 mm

Weight: 2.5 kg

Features: LCD display, 1 Amp

- 100–240 V 50–60 Hz battery

charger, 2 m serial comms

cable and manual.

Sensors:

SMART INTERFACE

Range: 0–100 cBar

Resolution: 16 Bit

Accuracy: +/- 1%

Power: 5–28 V unregulated

Current drain: 1.3 mA

TENSIOMETER

Range: 0 to 100 cBar

Accuracy: +/-1 cBar

Resolution: 0.1 cBar

TRANSDUCER

Range: 0 to 100 kPa

Accuracy: +/- 1%

Resolution: 0.1 kPa

Power requirement: 1.3 mA @
10 V DC Stabilised

Temp shift: Temperature compensated in the range 0–50°C. Typical shift 0.5% of full scale

Enclosure

IP Rating:

IP68 fully enclosed and environmentally protected

Mounting apparatus

Enclosure: LH1 300 mm x 200 mm x 180 mm powder coated white steel

Mast: MK6 lower mast - 900 mm x 50 mm x 50 mm tubular steel

Base: MK7 - 50 mm x 50 mm tubular steel freestanding base

System packing

Dimensions:

1,000 mm x 460 mm x 520 mm

Weight: 8.5 kg

Associated products

SP10: 10 W 12 V solar panel

MK2: mounting kit for SP10 solar panel

DM4: Removable logger memory module 4 MB

DS1: Docking Station to download data from DM4 to PC