

# EQ3 Equitensiometer



The EQ3 Equitensiometer uses class leading ThetaProbe technology to avoid the many problems of water-filled tensiometers. It measures water potential (matric potential) in the range 0 to -1000 kPa and provides an accurate loggable output. It is particularly well suited for use in dry soils.

## How it works

The EQ3 tensiometer offers maintenance-free operation over a wide soil water potential range. It provides reliable matric potential measurements as well as soil temperature. The EQ3s measuring rods are embedded in a porous material (the equilibrium body). This material has a known, stable relationship between water content and matric potential. When the EQ3 tensiometer is inserted into the soil, the matric potential within the equilibrium body equilibrates to that of the surrounding soils. The water content of the matric material is measured directly by the EQ3, and this can be converted into the matric potential of the surrounding soil using the calibration curve supplied with each Equitensiometer.

## Installation and usage

The EQ3 Tensiometer is buriable (IP68) and maintenance-free. It can be inserted into augured holes or positioned in the wall of a trench (which is then carefully back-filled).

The EQ3 is rugged, maintenance-free (no refilling, degassing, or topping up required), frost resistant and low powered; this means it can left installed at remote sites over long periods of time. In such instances it is possible to access sensor data wirelessly via a GPRS enabled data logger such as the GP2.

## Applications

The EQ3 Equitensiometer is ideally suited to static long term monitoring of water potential in soils and substrates. It can even be left installed in frozen soils. Typical applications include environmental, plant, soil, ecology and geo-sciences research, as well as civil engineering and agricultural engineering applications.

## Data logging

The EQ3 can be logged by any Delta-T data logger, including the powerful GP2. It is also compatible with many other manufacturers' data loggers. The EQ3 can also be used with an HH2 Moisture Meter, but only the unconverted millivolt output is displayed, and the temperature reading is not available.



## Features

- **Convenient, accurate and reliable alternative to water-filled tensiometers**
- **Maintenance free: no refilling, degassing, or topping up**
- **Built in temperature sensor**
- **Buriable and frost resistant (IP68)**



# Specifications

Matric Potential	
Accuracy	±10 kPa over 0 to -100 kPa, ±5% of reading over -100 to -1000 kPa
Measurement range	0 to -1000 kPa (-10 bar)
Hysteresis	Not detectable if the change of matric potential is slower than 0.1 kPa/min
Soil types	Soil types
Output signal	0-1 V differential, non-linear. (Calibration data and graph supplied with each sensor)
Output compatible with	GP1, GP2, DL6, DL2e, HH2
Temperature (EQ3 must be fully buried to accurately measure soil temp)	
Sensor accuracy	±0.5°C over 0-40°C not including logger or cabling error
Output	Resistance: 5.8kΩ to 28kΩ
Output compatible with	GP1, GP2, DL6 <sup>[1]</sup> , DL2e, HH2
Cabling error contribution (for temperature readings)	Negligible for GP1, GP2 & DL6 (100 m cable limit) Negligible for DL2e (with 5 m cable) <sup>[2]</sup>
Max cable length	100 m (GP1, GP2 & DL6 data loggers) 100 m (DL2e: water content measurement) 25 m (DL2e: temperature measurement)
Power requirement	5 to 15 V, 20 mA for 1 s
Operating range	-0 to +40° C (Not damaged by use in frozen soils)
Environmental	IP68
Dimensions/weight	7.12" x 1.59" dia. / 0.57 lbs. 181 mm x 40.5 mm dia. / 260 gm (without cable)

<sup>[1]</sup> Note: The DL6 has only one temperature channel. The DL6 error contribution to EQ3 temperature measurement is negligible compared to the accuracy of the EQ3 temperature sensor itself. The two only become comparable below -15 C

<sup>[2]</sup> DL2e Logger users can apply a correction in the Ls2Win logging software (for cable lengths > 5 m)

## Ordering Information

### EQ3

EQ3 Equitensiometer sensor

### GP1

Logger in waterproof enclosure with 4 cable glands. Includes DeltaLINK PC software, serial cable and printed guide

### GP2

Advanced Data Logger and Controller. Allows (2) zone irrigation control, Expandable to (6) zones, (12) Differential Channels, (4) Pulse Counters.

### DL6

With 6 voltage inputs plus 1 resistance, 1 counter and 1 alarm channel, 16,000 readings storage. Includes PC software DL6-SW1, alkaline batteries, user manual and RS-232 cable DL6-RS232.

### DL2e

Data logger fitted with 15/30 analogue channels and 64k readings memory. Includes

### HH2

Hand held readout with integral 25-pin D-connector for sensor connection or PC connection. Including connector cap, battery, user manual, PC software, and RS-232 cable assembly.