






# The Helios Range

## EvapoSensor

-  **Measures Evaporation-Transpiration**
-  **Wet & dry black 'leaf' elements react to RH, T, wind and radiation**
-  **Wet / dry temperature difference is directly related to PET**
-  **Range of outputs for loggers and controllers**
-  **Compares very well with AWS PET calculations**



This sensor was produced by Skye Instruments during their participation in the HortLink project "Improving the Efficiency of Water Use in Container-Grown Nursery Stock", however it is suitable for use in any horticulture or agriculture application.

The Skye EvapoSensor consists of 2 black 'leaf' elements, one dry and one kept wet via a wick and water reservoir. The temperature of these 2 'leaves' are measured individually and the temperature differential can be recorded by most dataloggers or controllers, including the Skye DataHog logger.

The design of the EvapoSensor was initialised by Horticulture Research International at East Malling, Kent, UK. The 2 simulated leaves are affected by their local environment just like plant leaves, and react to the four weather factors which drives water loss from plants, namely relative humidity, air temperature, wind speed and solar radiation.

Comparisons of the EvapoSensor directly against Potential Evaporation-Transpiration calculations, made using the Penman-Monteith method from automatic weather station measurements, are extremely good please see overleaf for details.

At the moment the EvapoSensor gives only the wet / dry temperature differential, not mm / day Evaporation / Transpiration.

The sensor is proving to be very successful for irrigation control and regulating misting during propagation. However the user must make some initial simple, on-site calibrations to adjust for local conditions.

The EvapoSensor is also available as a system with EvapoMeter, which records and displays Day Degree temperature differences and has an alarm set point. It is simple and easy to use with no need for PC connection.



## SPECIFICATIONS

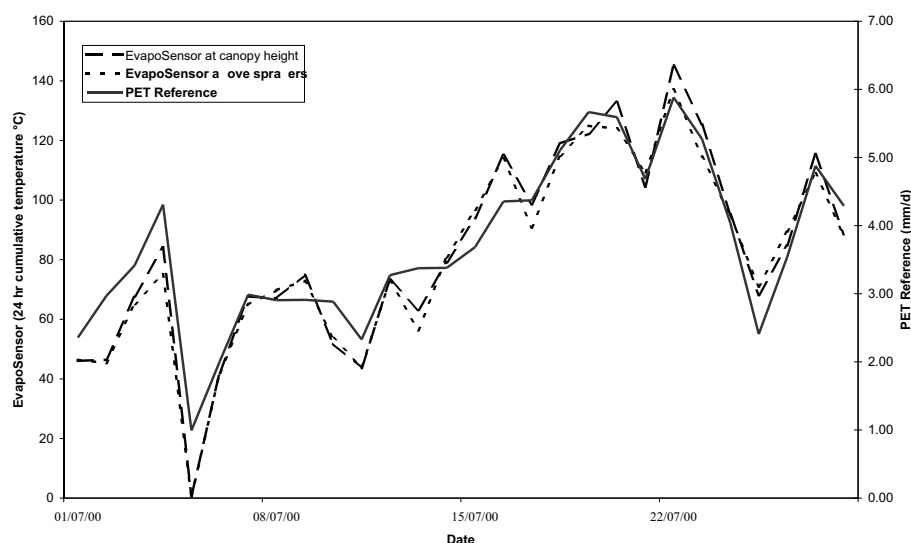
| Housing  | Dimensions                             | Weight   | Cable   | Outputs   | Operating Environment                    | Operating Temperature                           | Connectors   | Wicks  |
|--|--|--|---|---|--|---|--|--|
| Grey ABS<br>Base contains water reservoir<br>Lid with sensors sealed to Ip65 | 100 x 85 x 65 mm                       | 200g   | 3m screened cable<br>DEF std 61-12/4<br>(Other lengths available) | Two separate temperature outputs for wet and dry "leaves" | 0-100% RH                                | -20 to +70°C                                    | 5 pin Binder sub miniature connector for Skye loggers / meters<br>Wire ended for other devices | Two black wicks supplied for wet "leaf".<br><br>Wicks can be washed and reused |
| SKTS 500/D Version   | Output                                 | Accuracy   | SKTS 500/10k Version  | Output  | Accuracy                                 | SKTS 500/PT100 Version                          | Output   | Accuracy   |
| Semiconductor temperature sensor   | Output compatible with Skye EvapoMeter | Typically better than 0.2 C at 25 C.<br>Total error of 0.5 C over the range -55 to +85 C | Curve matched thermistor  | Two 10k ohm thermistor resistance outputs                 | 0.2°C from 0 to 60°C<br>(0.3°C at -20°C) | Pt100 Platinum Resistance Thermometer 1/3rd DIN | Two 4 wire PT100 resistance outputs  | ±0.05°C<br>Max error at 0°C  |

## PET COMPARISON

Two EvapoSensors were installed in an outdoor site, one at a crop canopy height so that it would be subject to irrigation with the crop, and the second at 1m above the canopy and sprinklers. An automatic weather station was also installed nearby and Potential Evaporation-Transpiration (PET) calculated from measurements of relative humidity, air temperature, wind speed and solar radiation using the Penman-Monteith method.

The graph shows excellent correlation between the pair of EvapoSensors, irrespective of whether in the irrigation zone or not, and also between the weather station PET calculations.

Reference: More for the Pots.  
Article in The Grower Magazine, p 14 & 15, issue March 14 2002.



## ORDERING INFORMATION

### EvapoSensors

SKTS 500/D/I

EvapoSensor with connector for EvapoMeter

SKTS 500/10k/I

EvapoSensor with thermistor output and connectors for a DataHog logger

SKTS 500/PT100

EvapoSensor with PT100 output for other loggers / controllers

### Meter & Loggers

SEM 550

EvapoMeter

SDL 5000 series

DataHog2 logger

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