

# ICTO2 Soil Oxygen Sensor

The ICTO2 Soil Oxygen Sensor performs measurements based on a Galvanic cell principle. Therefore it is a passive sensor and does not require voltage input. The sensor has an automatic temperature compensation via an in-built thermocouple compensation circuit. The sensors are Teflon coated and made from long lasting plastics. Life expectancy in the field is five years.

ICT International can offer to assist with defining objectives of measurement programs, developing a plan for measurement and interpreting data.

## Soil Oxygen Sensor Features

- Can be used for long term observation with easy set-up.
- Automatic temperature compensation as it has a built in thermocouple compensation circuit.
- Not influenced by the rain or water. TEFLON water protection.
- Easy span calibration. Users can calibrate at the usual atmosphere (20.9% Oxygen concentration).
- Zero calibration is not needed. 0% Oxygen = 0 mV output.



## For Geotechnical Engineers

The ICTO2 Soil Oxygen Sensor is not affected by saline or sodic soils and can be used in wide ranging applications. For example, in the mining and landfill industries the sensors could be buried in wastes to aid assessment of the effectiveness of covers designed to reduce oxygen flux into the waste.

## For Plant Physiologists

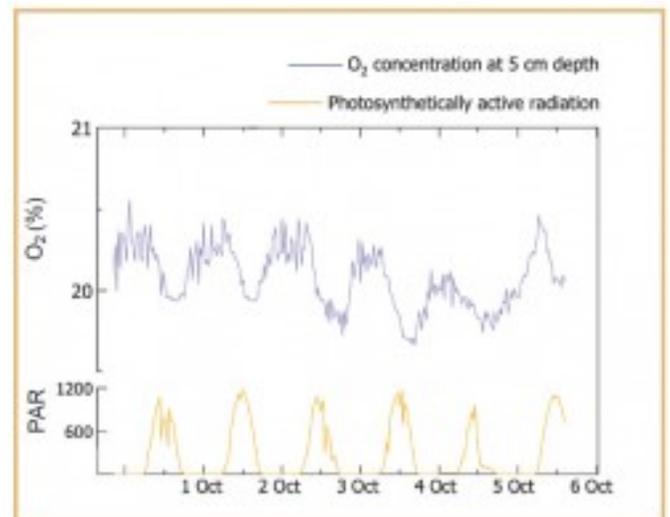


Figure 4

Figure 4

Plant species vary in their tolerance to anaerobic and



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oxygen deprived soils. The Soil Oxygen Meter can quantify the exact level of tolerance for all plant species. Plant root systems uptake oxygen to support respiration and other energy requirements. Figure 4 shows a correlation between photosynthetically active radiation (PAR) and soil oxygen where a noticeable decrease in soil oxygen content occurs during the day. With additional measurements this decrease in oxygen content can be related to plant or microbe activity. The formation of aerenchyma in plant roots is a common morphological response to decreased oxygen in soils. The Soil Oxygen Meter can be used to quantify the level of soil oxygen content whereby this occurs for individual plants.

## Applications:

- Geo, Civil and Environmental Engineering
- Hydrology Management
- Mine Site, Land Fill, Road & Railway Monitoring
- Plant Canopy Monitoring



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## Specifications

Theory	Galvanic battery + porous membrane sheet
Shape	Diameter 35 mm, length 65mm (cable connector length 50mm)
Output	45~65 mV at 20.9% O <sub>2</sub> (users must check the output of the air before set-up)
Accuracy	±0.5%
Weight	220 grams (includes 5m cable)
Cable Length	5 m (+ white, – black, shield cable)
Temperature effect	At R.H. 100% and O <sub>2</sub> 20.9%. Sensor output is 20.8% at 5°C, 19.4% at 40°C. At R.H. 0% and O <sub>2</sub> 20.9%. Sensor output is not Influenced by temperature.
Temperature	0~40°C when in use



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## Accessories



### Data to the Web

Wireless Communication Module - Includes; MCC Radio Frequency Logging Hub, Comms and ICT Data View Software, GSM/2G/3G modem, 3V 5Ah Lithium Polymer Battery, 11W solar panel, IP66 enclosure.



### Wireless Data Collector

Wireless data logger. 4GB SD Card storage. Communicates with any ICT International instrument.

