



# MO-200

## DESCRIPTION

The MO-200 is designed to measure 0 to 100 % oxygen and is connected to a hand-held meter via cable that displays and stores measurements. The wide measurement range allows it to be used for applications either in the soil or in the lab with the diffusion or flow-through head accessories. The sensor is housed in a polypropylene body and electronics are fully potted. Typical applications include measurement of O<sub>2</sub> in laboratory experiments, monitoring gaseous O<sub>2</sub>, in indoor environments for climate control, monitoring of O<sub>2</sub> levels in compost piles and mine tailings, monitoring redox potential in soils, and determination of respiration rates through measurement of O<sub>2</sub> consumption in sealed chambers, or measurement of O<sub>2</sub> gradient in soil/porous media.

The meter has a sample and log mode, and will record an average daily value. Sample mode will record up to 99 manual measurements. Log mode will power the meter on/off to make a measurement every 30 seconds.



### Features:

#### Heated Detector

The protective membrane can be heated to prevent water from condensing and blocking the diffusion path. The heater is typically used when sensors are deployed in soil or compost where relative humidity is close to 100 %.

#### Output Options

Available as an analog version with unamplified voltage output or digital version with SDI-12 communication protocol. Sensor also comes attached to a hand-held meter.

#### Internal Temperature Sensor

All oxygen sensors have an internal thermistor (type-K thermocouple is available upon request) that allows for temperature monitoring and correction of signal for temperature effects.

#### Simple Calibration

Output is proportional to oxygen concentration, enabling on-site calibration in open air conditions.

#### Typical Applications

Applications include: measurement of O<sub>2</sub> in laboratory experiments, monitoring gaseous O<sub>2</sub> in indoor environments for climate control, monitoring of O<sub>2</sub> levels in compost piles and mine tailings, monitoring redox potential in soils, and determination of respiration rates through measurement of O<sub>2</sub> consumption in sealed chambers or measurement of O<sub>2</sub> gradients in soil/porous media.

#### Rugged Housing

Housed in a polypropylene body and electronics are fully potted, ideal for long-term deployment in porous media, including acidic environments (mine tailings). Two head options are available: a diffusion head that creates a small air pocket for measurement in porous media and a flow-through head with two adapters for tubing that allows measurement of gas flowing in lines.

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Every 30 minutes the meter will average the sixty 30 second measurements and record the averaged value to memory. The meter can store up to 99 averages, once full it will start to overwrite the oldest measurement with new ones. An average daily value will be recorded from the 48 averaged measurements (making a 24 hr period). Sample and log measurements can be reviewed on the LCD display or by downloading the data to a computer, however, the average daily value can only be viewed by downloading the data to a computer. Downloading data to a computer requires the AC-100 communication cable (a standard USB cable will not work) and Apogee AMS software.

|                               | MO-200  |
|-------------------------------|---|
| Measurement Range             | 0 to 100 % O <sub>2</sub>   |
| Measurement Repeatability     | ± 0.1 % at 20.9 % O <sub>2</sub>  |
| Non-linearity                 | Less than 1 %   |
| Oxygen Consumption Rate       | 2.2 μmol O <sub>2</sub> per day at 20.95 % O <sub>2</sub> and 23 C (galvanic cell sensors consume O <sub>2</sub> in a chemical reaction with the electrolyte, which produces an electrical current)   |
| Response Time                 | 14 s (time required to read 90 % of saturated response)   |
| Operating Environment         | 0 to 50 C; less than 90 % non-condensing relative humidity up to 30 C; less than 70 % non-condensing relative humidity from 30 to 50 C; 60 to 140 kPa   |
| Meter Dimensions              | 126 mm length, 70 mm width, 24 mm height  |
| Sensor Dimensions             | 32 mm diameter, 68 mm length  |
| Diffusion Head (Accessory)    | 35 mm diameter, 35 mm length, 125 mesh screen   |
| Flow Through Head (Accessory) | 32 mm diameter, 91 mm length, 0.25 in barbed nylon connectors   |
| Mass                          | 210 g   |
| Cable                         | 2 m of two conductor, shielded, twisted-pair wire; additional cable available; TPR jacket (high water resistance, high UV stability, flexibility in cold conditions)  |
| Influence from Various Gases  | Sensors are unaffected by CO, CO <sub>2</sub> , NO, NO <sub>2</sub> , H <sub>2</sub> S, H <sub>2</sub> , and CH <sub>4</sub> . There is a small effect (approximately 1 %) from NH <sub>3</sub> , HCl, and C <sub>6</sub> H <sub>6</sub> (benzene). Sensors are sensitive to SO <sub>2</sub> (signal responds to SO <sub>2</sub> in a similar fashion to O <sub>2</sub> ). Sensors can be damaged by O <sub>3</sub> . |
| Warranty                      | 4 years against defects in materials and workmanship  |

## Contact info



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This Instrument is manufactured by our principle company

**Apogee Instruments - USA**