

## The Oral Potential Meter II



The Oral Potential Meter aids the dental professional in detecting potential caries. The OPM II aids in determining potentially active caries and can not detect mineralized caries that have no potential energy. Operation is simple and automatic with the touch of single button. The OPM II is completely self contained in an attractive, sturdy, and versatile case and viewing angle is adjustable via two easy-grip knobs.

## The Oral Potential Meter II

The PERTEC ORAL METER II performs measurements of certain electrochemical properties of various metallic restorations. These measurements are displayed on large, easy-to-read, LCD displays targeted for operator-patient viewing. Operation is simple and automatic, with the touch of a single button integrated into one of the two specially designed oral probes. A subtle "beep" punctuates each measurement to assure both operator and patient of proper and complete switch operation. The OPM II is completely self-contained in an attractive, sturdy, and versatile case. The viewing angle is adjustable via two easy-grip knobs.

The OPM II is battery-operated and free of power cord connections, making it suitable for use on any level surface. It's completely portable and uses a PIC 14000 microcomputer chip. After the expected year or more of battery life, a low battery light indicator in the LCD display will prompt the operator to change the standard alkaline AA batteries.

The Oral Potential Meter aids the dental professional in detecting potential caries. Measurements above 10 millivolts, 1 microamp and 0.0 1 microwatts x seconds indicates a need for the dental professional to look at potentially carious lesions by also using other means, such as direct exploration, radiographs, etc. The OPM II aids in determining potentially active caries and can not detect mineralized caries that have no potential energy. Remineralized teeth are no longer considered carious.

The OPM is a device that measures and displays voltage and conducts through caries related to metallic restorations in the oral cavity. The dentist may be able to, on visual exam, detect caries at the margins or with x-ray under a restoration with these readings. It also provides a power measurement (energy or joules) integrated over a measured period of time and displays it. The meter has two probes that are used to make the measurements. One is a reference probe, Red, with push-button switch to turn on the meter and initiate the measurements. The other is used as the primary input, Black to the meter's electronics.

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The OPM II is battery powered and free of power cord connections making it suitable for use on any level surface and completely portable. Long battery life is controlled by the microcomputer chip that controls turning off the OPM II and calculations for the readings. After the expected year or more of battery life a low battery indicator in the LCD display will prompt the operator to change all the standard alkaline AA Batteries.

Measurements made consist of "open Circuit Voltage" in Millivolts up to 990 , " Current Under 10K Ohm Load" in microamps up to 99, and Microwatt seconds up to 1.990. Polarity indication is given in the Energy Window.

The OPM II is available with the wire-less infrared transmitter that transmits measurement information for use by the optional equipment.

The ORAL POTENTIAL METER quickly records, stores and displays electrical activity from metallic restorations.

The Oral Potential Meter provides an aid to the dental profession with X-rays and exam.

Caution: This instrument is intended to be used with standard procedures to find caries, it is not a stand alone procedure for finding decay.

Research indicates from our dental studies, readings above 10 millivolts, 0.1 microamps and .01 microwatts x seconds were associated with permeable enamel which may be carious and/or porous and should be visually checked for marginal decalcification that results in continuous decay over time. Below these readings were associated with non-decayed enamel, NOTE, eight decayed teeth were

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found in the lower range of 10 millivolt, 01 microamps and 0.01 microwatts x sec. X-ray should be used in conjunction with the electrical readings to find decay under restorations. However, these conditions may be temporary as teeth have been known to remineralize spontaneously. Readings should be taken before prophylaxis paste is used. Clean surfaces from food, plaque and heavy corrosion form metallic oxides, before measuring. "Reproducibility maybe diminished by moisture contamination from saliva, dental plaque, or respiration by the patient and the OPM's sensitivity".

The Meter's Primary Function is Two-Fold: One is to detect caries susceptibility related to the migration of calcium ions from the enamel with metallic ions from the amalgam fillings. Determined current from the amalgam shows decalcification evidenced on the surface of the enamel wall in contact with the filling. Amalgam is electronegative and calcium ions migrate together with metallic ions of the amalgam.

The second function measures the microamps in the metallic restorations which determines ions leaving the restoration. For every microamp, there are 3 times 10 to the 12th power ions per second leaving the restoration. The OPM II has an easy-to-read digital counter that displays the following:

- o VOLTS in Millivolts
- o CURRENT in Microamperes
- o ENERGY in Microwatts x Second. (joules)
- o LOW BATTERY INDICATOR on display
- o POSITIVE/NEGATIVE display