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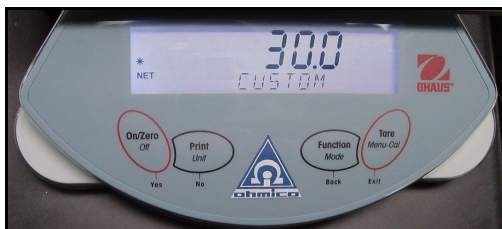


**BIOMEDICAL & ENVIRONMENTAL SENSORS, INSTRUMENTS & CONTROLS SINCE 1969**

**ULTRASOUND POWER METER MODEL UPM-DT-100AV  
PORTABLE STANDARD FOR THERAPEUTIC TRANSDUCERS**

CE Approved Electronics

- PERFORMANCE TESTED BY FDA & NIST
- FIVE POINT CERTIFICATION (NIST TRACEABLE)
- RESOLUTION: 200mW (150 mW in grams mode)
- MEASUREMENT RANGE: 0 TO 30 WATTS
- FREQUENCY RANGE: .5 TO 10MHZ
- MEASURES TOTAL PULSED OR CONTINUOUS POWER
- AUTOMATIC ZEROING & STABILIZATION
- SELECTABLE READOUT IN WATTS OR GRAMS
- BATTERY OR LINE-POWERED
- DIGITAL DISPLAY & RS-232 INTERFACE



Power Meter UPM-DT-100AV has a high contrast alphanumeric LCD display. Membrane "touch buttons" enable quick setup, automatic zero and selection of the power reading in watts or grams.



**UPM-DT-100AV**

**ACCURATE TESTING OF ULTRASOUND THERAPY EQUIPMENT**

The Model UPM-DT-100AV Ultrasound Power Meter was developed to test therapeutic transducers according to AIUM, JCAHO, FDA, and NIST guidelines. OHMIC's ultrasound watt meters have been used worldwide since 1977 and are the most widely accepted standard for documenting the power output of medical transducers. The performance of the UPM-DT-Series has been tested and verified to be within the limits of tolerance established by the Food & Drug Administration (FDA) and National Institute of Standards & Technology (NIST). The compact and light weight Model UPM-DT-100AV meets all the requirements of a portable test instrument with the reliability and proven performance of the UPM-DT-Series. The Model UPM-DT-100AV uses the identical test tank and target configuration as the higher resolution UPM-DT-1 and UPM-DT-10.

Principle of Operation

The most reliable and repeatable means of measuring

ultrasound power is by the radiation force method. The transducer to be tested is centered above a 45° air-backed cone target in de-gassed water. The coupling is made to a precision balance capable of resolving  $\pm 0.15$  watts. When acoustic energy is applied to the cone, the resultant force is directly proportional to the total radiated power. The test tank is lined with sonic absorbent rubber to prevent acoustic reflection. The balance is programmed to convert milligram magnitude forces direct to a readout in watts with good resolution. Measurement accuracy of the power meter can be verified by placing a calibrated weight on the cone's support arm. (The supplied 1 gram calibration weight equals 14.7 watts.)

Model UPM-DT-100AV weighs only eleven pounds and is simple to set up. On battery operation, the unit can be used "on-site" for approximately 20 hours.

**WARRANTY:** All products manufactured by OHMIC Co. are warranted to be free of defects in material and workmanship for one year after delivery. Any equipment found to be defective within this period will be repaired or replaced free of charge.

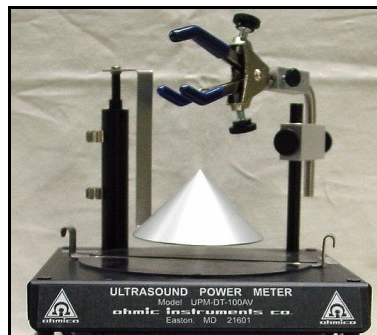
**SPECIFICATIONS: UPM-DT-100AV**



Measurement Range	0 to 30 Watts, 0.2 watts minimum detectable power
Resolution	± 200 mW, ± .01 gram (150 mW)
Accuracy	± 3% @10 Watts, 25°C
Transducer Frequency	.5 to 10 MHz
Maximum Transducer Diameter	3 Inches
Ultrasound Test Media	Degassed Water
Integration Time	2.5 seconds
Display	3-Digit LCD
Data Output	Bi-Directional RS-232
Line Power	120 VAC to 12 VAC 500 mA adapter with 6 Ft. cord
Battery	4-AA: battery life ± 20 hrs.; Battery Level Indicator
Dimensions	8"H x 12"L x 8.75"W
Weight	11 lbs. Net



Front Display Panel



The cone target and transducer positioner. Tank not shown



Rear view: RS-232 and printer ports.  
CE approved (above)

**The Importance of Calibrating Ultrasound Transducers**

To insure effectiveness of treatment and to minimize patient risk, it is important to measure ultrasound power levels to determine exact patient exposure . The FDA requires that all diagnostic and therapeutic Doppler and ultrasound equipment be calibrated periodically.

Typical safe values are defined by the temporal average intensity at the point in the acoustic field where the intensity is at its maximum value, referred to as Spatial Peak Temporal Average (SPTA) . The FDA and AIUM provide guidelines for the maximum SPTA values in

medical applications. Typical safe SPTA values are 10mW/cm<sup>2</sup> for echo sounding, 100mW/cm<sup>2</sup> for Doppler devices and 3W/cm<sup>2</sup> for therapeutic use. The watt density (watts/cm<sup>2</sup>) of a transducer is determined by measuring the total power output and dividing by the effective cross sectional area of the transducer.

A sample form to document and report ultrasound performance is included in the Model UPM-DT-100AV manual.

**ENGINEERING SUPPORT:** OHMIC Instruments Co. designs and manufactures a full line of environmental and bio-medical sensors, instruments and controls. Many of our products are custom designed to meet specific requirements. Our engineers will be pleased to discuss your application.



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