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ULTRASOUND POWER METER MODEL UPM-DT-50SP

CE Approved Electronics USB RS 232

- RESOLUTION: 50mW (150 mW in grams mode)
- MEASUREMENT RANGE: 0 TO 30 WATTS
- FREQUENCY RANGE: .5 TO 10MHZ
- MEASURES PULSED OR CONTINUOUS POWER
- SELECTABLE READOUT IN WATTS OR GRAMS
- BATTERY OR LINE-POWERED
- DIGITAL LIQUID CRYSTAL DISPLAY
- OPTIONAL RS-232 OR USB INTERFACE
- AUTOMATIC ZEROING & STABILIZATION
- FIVE POINT CERTIFICATION (NIST TRACEABLE)
- UPM SERIES APPROVED BY FDA & NIST

UPM-DT-50SP

The Power Meter UPM-DT-50SP has a high contrast alphanumeric, 7 segment, 6 Digit, .6" High LCD display. Easy two button operation enables quick setup, zeroing and selection of the power reading in watts (custom) or grams.

ACCURATE TESTING OF ULTRASOUND THERAPY EQUIPMENT

OHMIC's ultrasound watt meters have been used world-wide since 1977 and are a widely accepted standard for documenting the power output of medical transducers. The Model UPM-DT-50SP Ultrasound Power Meter was developed to test therapeutic and diagnostic transducers according to AIUM, JCAHO, FDA, and NIST guidelines. 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-50SP meets all the requirements of a portable test instrument with the reliability and proven performance of the UPM-DT-Series. The Model UPM-DT-50SP uses a 5" diameter, 3 1/2" high test tank and utilizes the same method as the higher resolution UPM-DT-1 and UPM- DT-10.

The Model UPM-DT-50SP is light weight weighing less than ten pounds and is simple to set up. Battery operation allows the unit to be used "on-site" for approximately 40 hours.

This feature insures universal use without a need to verify proper power supply connection normally required in various countries.

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 ± 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.)

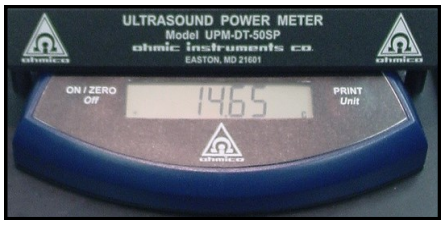
WARRANTY: All products manufactured by OHMIC Instruments are warranted to be free of defects in material and workmanship for one year after delivery. Any equipment found to be defective within this period will be repaired or replaced free of charge.

SPECIFICATIONS: UPM-DT-50SP

CE Approved Electronics

Measurement Range	0 to 30 Watts, 0.05 watts minimum detectable power
Resolution/Uncertainty	± 50 mW
Accuracy	± 3% @10 Watts, 25°C
Transducer Frequency	.5 to 10 MHz
Maximum Transducer Diameter	4 1/2 Inches
Ultrasound Test Media	Degassed Water
Integration Time	2.5 seconds
Display	7 segment 6 Digit 0.6" (15mm) high LCD
Data Output	"OPTIONAL" Bi-Directional RS-232 or USB
Line Power	120 VAC to 12 VAC 500 mA adapter with 6 Ft. cord
Battery Operation	4-AA: battery life over 40 hrs.; Battery Level Indicator
Dimensions	6"H x 16 3/4"L x 12.0"W
Weight	9.75 lbs (Polyethylene case)

The cone target and transducer positioner. Tank not shown to allow viewing of the cone target.



The front display panel showing the simple two button operation and the 15 mm (0.6" high LCD display.

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^2 for echo sounding, 100mW/cm^2 for Doppler devices and 3W/cm^2 for therapeutic use. The watt density (watts/cm^2) 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-50SP manual.

ENGINEERING SUPPORT: OHMIC Instruments 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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