

Rm-3700

Universal Radiometer



- Measure Both Power and Energy
- 2 kHz Rs-232 Computer Interface
- Battery and AC Power
- Low Cost

The Rm-3700 Universal Radiometer, when paired with the correct probe, can measure cw and average power (in Watts), as well as the energy (in Joules) of individual pulses up to 2 kHz, over a wide range of intensities and wavelengths. A high-speed Rs-232 computer interface, full statistical analysis of pulse sets, battery/AC power, and audible tuning are just some of the standard features. This tremendous versatility makes it the ideal instrument for research labs, universities, hospitals, and other facilities with multiple light sources and applications.

The front panel features a custom, two-color LCD display, dual-use numeric/function keypad, and power switch. The high-contrast, backlit LCD exhibits excellent "readability" over a wide viewing angle. The backlighting can be turned off for no-light measurements.

The display consists of a 4 digit numeric readout of the power/energy with the appropriate engineering notation units, a two-color bar graph with the 75 - 100% portion in red, and various enunciators that light when appropriate.

The Rm-3700 measures the true power of cw sources and the average power of pulsed (or chopped) sources. The Background Cancel function can be used to remove background noise from the measurement, leaving only the signal. When activated it records a power level, which is then subtracted from each subsequent measurement until the feature is deactivated. The power can be displayed in Watts or in dBm.

The Rm-3700 can measure the true integrated energy of discrete pulses up to 2 kHz and pass it in real time over the Rs-232 computer interface. Further, Event Averaging allows the operator to configure a number of pulses (2 - 2,000 pulses/set)

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to be collected and analyzed. After a set is finished the STATS key toggles the display through the mean energy, minimum energy, maximum energy, and standard deviation. Other energy functions include Single-Shot (capture-and-hold) mode and External Trigger.

Reference mode allows the Rm-3700 to behave as a dual-channel instrument, by ratioing the measured power/energy against a stored value. The reference value can be captured or entered via the numeric keypad.

Other features common to both power and energy measurement include Wavelength Select and Correction Factor (0.1 - 1.0). Wavelength Select loads the appropriate spectral correction factor (probe dependent), and Correction Factor can be used to correct the displayed power/energy for the transmission loss of a filter or attenuator.

Rear panel features include the external power supply connector, Probe connector, External Trigger BNC (for energy measurement), Analog Output BNC, optional Preamp Output BNC, and Rs-232 connector.

In power mode the Rs-232 updates with the front panel display at 5 Hz. However, in energy mode it will transmit energy data in real time up to 2 kHz. The Rs-232 is fully bidirectional - all front panel commands are duplicated via the computer interface.

The Analog out is 0-10 VDC, with 10 Volts corresponding to full scale for the active range; the voltage represents the mantissa in Reference Mode. The Preamp Output shows the waveform after the preamplifier; the baseline-to-peak amplitude is proportional to the pulse energy.

The Rm-3700 is compatible with the following probes:

POWER

RkP-400
RkT Series

ENERGY

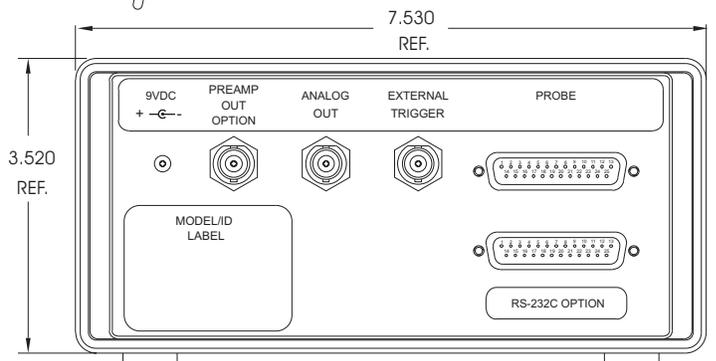
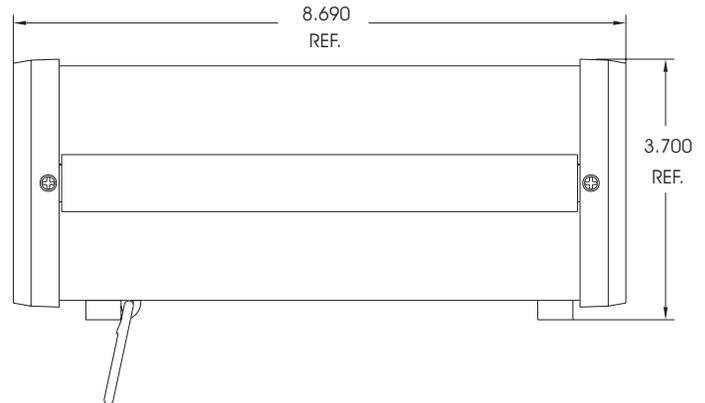
RjP-400
RjP-600
RjP-700
RjT Series

Contact the factory for additional information regarding probe compatibility and available options.

The Rm-3700 is provided with a certificate of calibration showing traceability to the National Institute of Standards and Technology (NIST) and compliance with MIL-45662 and ANSI-Z540 Sections 7-18.

SPECIFICATIONS

Energy Measurement	
Max. pulse width	250 ms (probe dependent)
Max. pulse rep rate	2 kHz (probe dependent)
Resolution	0.03% of full scale
Calibration factor	0.100 to 1.000
Ratio range	10 ¹⁵ to 1 (probe dependent)
Ratio accuracy	± 2 LSD
Trigger select	Internal, External
Accuracy	± 0.5%
Power Measurement	
Resolution	0.05% of full scale
Calibration factor	0.100 - 1.000
Ratio range	10 ¹⁵ to 1 (probe dependent)
Ratio accuracy	± 2 LSD
Background subtract	Up to P _{max} of probe
Accuracy	± 0.5%
Outputs	
Analog output	0 - 10 VDC, 10 volts equal full scale; the voltage equals the mantissa in ratio mode
RS-232C	9600 - 115k baud; 8 data bits; parity N; stop bits 1
Operating Parameters	
Power supply	4 NiCad "D" Cells 6 Volt Supply/Charger rated at 2000 mA
Temperature range	0°C to 40°C operating; -20°C to 70°C storage
Dimensions (l x w x h)	22.1 cm x 19.2 cm x 9.0 cm (8.7" x 7.6" x 3.6")
Weight	5.5 kg (12.0 lb)



As a result of our ongoing commitment to product improvement specifications are subject to change without notice. REV 019801js

