

Ultrasonic Power Measurement

Ultrasonic power can be measured in three different ways using Dukane equipment:

- Using the 43A301 Ultra-Com Ultrasonic Process Controller (configured with the Energy module)
- Using the 40A365 Ultrasonic Wattmeter
- Using the 438-639 Energy Module

Using the Ultra-Com

The Ultra-Com is a computerized process controller designed to work with an ultrasonic press and an ultrasonic generator. It allows the user to control and monitor a number of parameters related to the ultrasonic welding process. Particularly, it can measure true ultrasonic power delivered to the transducer. The resolution is 1 Watt for power levels below 1,000 Watts and 3 Watts for power levels of 1,000 Watts and above. The Ultra-Com samples power once per millisecond (0.001 sec.) and it calculates power over a user-selectable number of samples. The results are displayed on the front panel 32-character display or an optional Advanced Programmer display. A hardcopy printout can also be printed by an auxiliary printer.

An analog dc signal (0-5Vdc), proportional to ultrasonic power is available at the J11 connector labeled "Chart Recorder Out" on the rear panel of the Ultra-com.

Power range	5,000mVdc = 3,072W (614.4 Watts per Volt)
Connector	Miniature Phono Jack

Using the Ultrasonic Wattmeter

The ultrasonic wattmeter is a standalone instrument designed to measure ultrasonic power. The power is displayed by the analog meter in 8 ranges, from 125 W to 4,000 W, selectable with the front panel knob/switch.

An analog dc signal (0-300mVdc), proportional to ultrasonic power is available at the Recorder Output connector in the back of the wattmeter.

300mV = Full scale of the meter power range selected

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Using the Energy Module

The Energy Module is an analog device that produces a dc analog signal proportional to ultrasonic power. Typically, the Energy Module is used in conjunction with the Ultra-Com, but it can be purchased separately. It must be powered by an external, user-supplied, regulated 5Vdc @ 0.25A minimum power source.

An analog dc signal (0-5 Vdc), proportional to ultrasonic power is available at PCB connector J601 and phono jack connector J600. Power ranges are as follows:

J600 power range: 5,000mVdc = 3,072W (614.4 Watts per Volt)

J601-5 power range: 5,000mVdc = 3,072W (614.4 Watts per Volt)

J601-6 power range: 5,000mVdc = 1,024W (204.8 Watts per Volt)