

Application Note 108

Operating Frequency Measurement

The operating frequency of the ultrasonic generator is available on connector J20 pin 11, referenced to J20 pin 9, which is chassis ground. The output waveform is sinusoidal with a magnitude of about 30V_{rms} (20 kHz) or 15V_{rms} (40 kHz). This signal output has an output impedance of 1,000 Ohms for protection purposes (no detrimental effects will result if this signal is accidentally grounded). The 1 k Ω output impedance is also useful if attenuation is needed, due to maximum input voltage limitations for the frequency counter being used. The signal voltage can easily be reduced by installing a (voltage divider) resistor across the input to the frequency counter. Using a 1 k Ω resistor across the input will halve the signal voltage (15V_{rms}) and a 200 Ω resistor will reduce the voltage to one-sixth the value. For intermittent uses, a 1/2 Watt resistor will be adequate.

The operating frequency will be active on this output only when the generator is producing ultrasound. Use a frequency counter that is appropriate to measure the ultrasound frequency with the accuracy that you require. In most cases, a frequency counter with a resolution of ± 1 Hz will provide the most useful information. **Note:** the operating frequency will drift with time, temperature, and horn deterioration or wear.