

Ultrasonic Sieving & Screening Application Note:

Active Ultrasonics now offers the industry's most advanced ultrasonic technology for sieving and screening applications. Using our patented MMM (Multifrequency, Multimode, Modulated) ultrasonic generators we are now delivering systems that provide wideband (sonic to megahertz) acoustic energy to nearly any sieve or screen shape.

Key benefits to the MMM ultrasonic technology are:

- Wideband (sonic to megahertz) acoustic energy provides greater sieve/screen stimulation to improve process volumes (kg/hr) beyond the limitations of standard fixed frequency systems.
- MMM eliminates the standing waves seen in fixed frequency systems.
 - Eliminates binding in low amplitude nodal points
 - Eliminates damage to screens in high amplitude nodal points.
- More ultrasonic power can be applied to the screen to improve processing.
- Fully programmable power and modulation technology
 - Power adjust 1% to 100% (available power 300 W, 600 W, up to 20 kW on request)
 - Pulse Width Modulation Period (Period (10 ms to 1,000 ms)
 - Pulse Width Modulation Ratio (0% to 100%)
 - MMM special modulation settings (fast sweeping, sweeping, & tracking)
- Programmable features allows greater processing flexibility with all kinds of powders and especially difficult powders.
- MMM technology will drive most any shape (round, oval, square, rectangle) sieve or screen, even large mass systems.
- MMM converters may be connected to most any efficient point on the sieve/screen or frame.

MMM Generators (Multifrequency, Multimode, Modulated) Technology:

MMM generators have the unique capability to deliver wide-band sonic and ultrasonic energy (ranging from infrasonic up to the MHz domain) through arbitrary shaped solid structures such as sieve or screen frames. The secret to MMM Technology is its use of advanced Digital Signal Processing (DSP) to initiate and control ringing and relaxing, modulated, multimode mechanical oscillations including harmonics and sub-harmonics. MMM Technology is producing pulse-repetitive, phase, frequency and amplitude-modulated bulk-wave-excitation covering and sweeping an extremely wide frequency band. Such sonic and ultrasonic driving creates uniform and homogenous distribution of acoustical activity on a surface and inside of the vibrating system, while avoiding the creation of stationary and standing waves, so that the whole vibrating system is fully agitated.

MMM Generator Options:

- For sieving/screening applications our open frame modules are most commonly used for integration into existing electronic control cabinets.
- We also offer a bench top model with a stainless steel cover and integrated front panel control.
- For special environments we can deliver custom generator modules and special enclosures.



Frequency Agility:

The same DSP technology that allows the MMM generator to be adaptable to any shape sieve or screen is used to provide unprecedented frequency agility. Other fixed-frequency systems are driving the total acoustic system (converter & sieve) at a frequency optimized for the converter without full consideration of how the sieve is changing the whole system resonant frequency. Rather than fighting physics our systems are adapting to the new resonant frequency when an un-tuned mass (the sieve frame) is attached to a converter. Normal MMM factory options allow for system resonant frequency adjustment within a 12 kHz window (e.g. 25 kHz to 37 kHz). Such agility allows fine tuning for optimum performance.

Converter Agility:

Additional system flexibility is provided through adaptive inductive compensation that allows attachment and efficient driving of converters from other manufacturers. This allows us to improve existing ultrasonic systems through a simple MMM retrofit.

System Control:

MMM Wideband Generators may be optioned for:

- Front Panel Control (Fig 1 bench top model only)
- Removable Handy Panel Control (Fig 2)
- Remote PC or microprocessor Control (Fig 3). This software interface is excellent for initial system development and production setup fine tuning.



Fig 1 Bench Top Model with Front Panel Control & Interface Connector for Handy Controller or PC Controller



Open Frame Model with Interface Connectors for Handy Controller, PC, or microprocessor Control

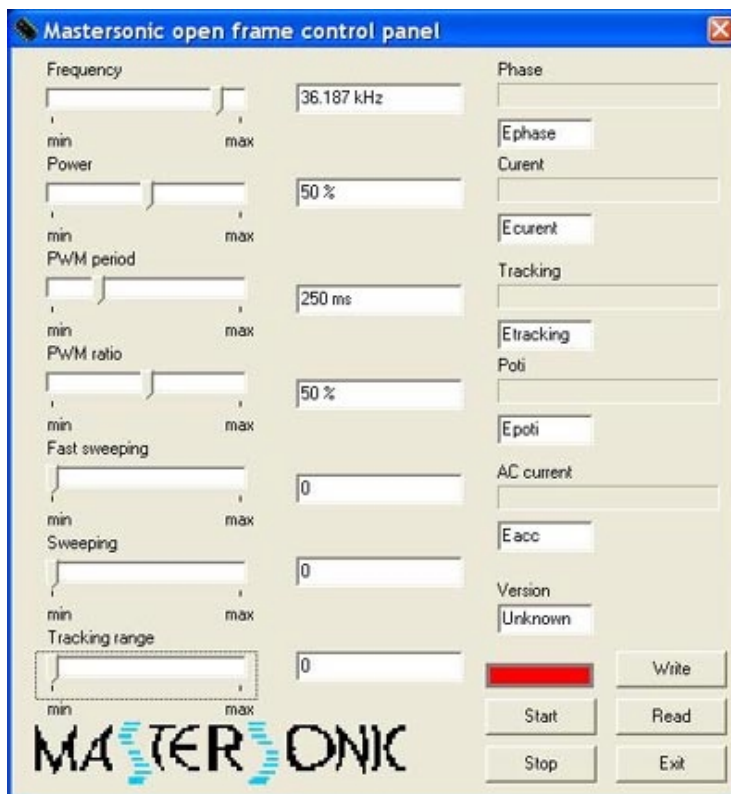


Fig 3 Windows PC Software Interface



Fig 2 Handy Controller