

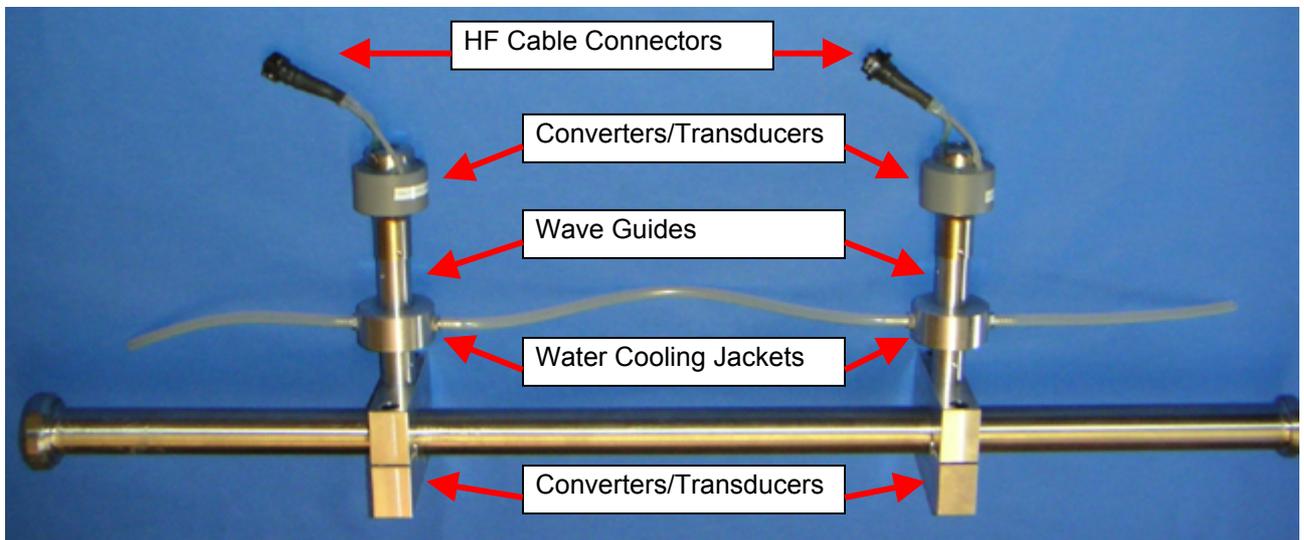
Pipe-Clamp Liquid Processing Generator and System Quick SETUP

Safety Notes:-

- **Before operating the system be sure to read the Generator Manual:**
- **The provided Generator is an Open Frame Module intended for integration into a suitable cabinet or enclosure for electrical safety.**
- **All electrical connections and operations should be performed by a qualified technician**

System Set-Up:

1.) The pipe and pipe-clamp transducers are pre-assembled for initial testing.



2.) For continuous operation use silicon tubing to connect the water cooling jackets to a flowing cold water supply. This will help prevent heat transfer and build-up to the converters.

3.) Connect the provided High Frequency Cable to the transducer HF Connectors.

4.) Make sure the HF cable connection to the generator is secure. Shield wire to ground, center High Voltage wire to red terminal. *Caution: This generator module has open high voltage terminals and should be located in a place or cabinet where contact with the open wires is prevented.*

5.) Verify Mains Power Switch is OFF (O) and connect the Mains Power Cable to a suitable mains power supply Input: 230 VAC, 50-60Hz, 20 A



6.) The MMM PC Software Control system is the best option for test and evaluation of new systems and materials. Fine control of all parameters is simplified:

- a. Connect the Serial Port Adapter (RS485 - RS232) as labeled to a Windows PC serial port and the Generator Interface 485 port.
- b. PC Software Installation:
 - i. Copy the provided Windows PC control Software (msg_x00_ow.exe) executable file to the PC desktop window or a suitable location on a disk drive.
 - ii. The software is launched by double clicking the icon of file.



- c. Clients may also implement automated control of the system via:
 - i. Custom micro-controller with a serial interface and this control adapter or a direct RS485 interface. (See operations manual)
 - ii. Electronic or PLC control via the Remote Control Connector. The provided connector with the extending yellow wire must be in place for operation with the PC control adapter. For external generator Power ON and OFF switching, cut this yellow wire and install a convenient switching device between the open-wire-ends. (See operations manual)

7.) Once the system is totally connected start-up as follows:

- a. Switch ON the mains power switch.
- b. Start the PC control software.
- c. Click the READ button to have the software read all current parameter setting from the generator memory.
- d. Change the parameter to the following **Optimum Settings**:

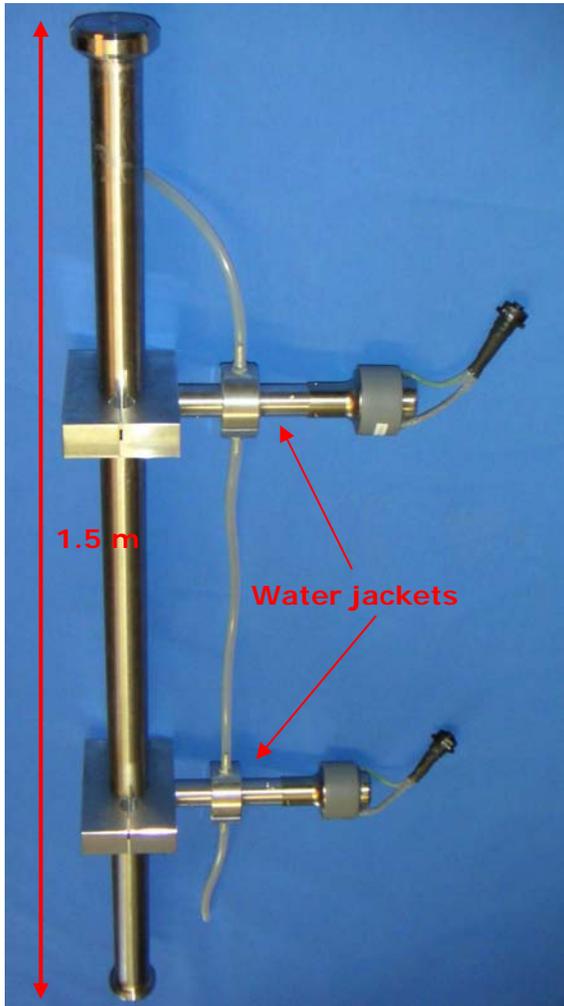
	Optimum (with water)	Min to Max Range
CONTROL TAB		
Frequency	21553 Hz to 21927 Hz	21553 Hz to 21927 Hz
Ultrasonic Power	0 to 2000	0 to 2000
Power	Start at 30%	0 to 50%
SWEEPING TAB		
Fast Sweeping	135	0 to 255
Sweeping	20	0 to 100
Tracking Range	30	10 to 30
PWM Period	30 ms to 100 ms	10 ms to 100 ms
PWM Ratio	50% to 100%	0% to 100%

- e. Click on the WRITE button to write all displayed parameters to the generator memory.
- f. The system is now ready for powered operation. **START WITH POWER SETTING AT 30% TO VERIFY OPERATION.** After some initial testing power may be increased to 50%.
- g. Click the software START button to apply power.
- h. Click the STOP button to stop power
- i. Click the Exit Button to exit and close the software control window.

8.) Do not exceed maximum Range settings:

- a. Frequency: 21553 Hz to 21927 Hz is the optimum operating range for this system. **DO NOT Operate at frequencies outside of this range.** Operation outside of the tested range will put the system into harmful non-resonance modes causing inefficient power usage and mechanical losses resulting in heat build-up and possible damage to the transducers.
- b. Ultrasonic Power: This setting limits the input power.
- c. Power: This is the Start at 30% until proper operation is verified. Increase to a maximum of 50%. If the liquid load is approximately the same density as water setting the power above 50% will not likely result in increased ultrasonic power to the system. By optimizing the system resonant frequency we have significantly improved the input power efficiency to maximize power to the load. The mechanical system and load (Clamp assembly, pipe, and water) are dictating the optimum power input. If necessary volumetric power may be increased by adding more clamp/transducer assemblies.
- d. Fast Sweeping: This sets a dynamic sweeping range around the center operating frequency.
- e. Sweeping: This sets a special random sweeping technique used by our MMM technology. In the pipe clamp system such random sweeping should be kept to a minimum.
- f. Tracking Range: This sets a frequency window range for tracking feedback signals used by our special MMM system for modulation.
- g. PWM Period: May be set from minimum to maximum.
- h. PWM Ratio: A 100% setting gives a 100% duty cycle, continuous power on. A 50% Setting will give a 50% duty cycle of the set PWM Period. A 10% setting will give 10% of the set PWM Period time ON and 90% OFF.

Solving problems with air bubbles in liquid food products using MMM, Clamp-On Ultrasonic technology



Fruit and vegetable processing plants.
Degassing products that have small air bubbles in the mixture.
Milk degassing, blending and homogenizing.
Wines degassing, homogenizing and aging.
Heat exchange optimizing by removing gas bubbles.
Filters deblinding.



Pipes cleaning in NPP (Nuclear Power Plants)

Removing builds-up

High temperatures...

High radioactivity

Any size, length, shape

