

### ULTRASONIC GENERATORS FOR NARROW-BAND PIEZOELECTRIC TRANSDUCERS (SONOTRODES)

#### **RAL400 System**

**Model up to 400 W<sub>RMS</sub> Electronic ultrasonic generator for professional precision applications.**

A complete range of electronic generators for driving any type of narrowband piezoelectric power transducer.

**We are specialists in the production of ultrasonic generators for every scientific and industrial application.**



A sonotrode is a device used to amplify and transmit ultrasonic vibrations generated by a piezoelectric transducer powered by a suitable generator. It is used in industrial applications such as welding (for thermoplastic materials and metals), cutting (plastics, fabrics, food), cleaning and other scientific and laboratory processes that require the use of ultrasound. The geometry and mechanics of the component are designed according to the application and the characteristics of the materials to be treated. Suitable electronic generators supply electrical energy to the device (with a frequency typically between 19 kHz and 40 kHz) which converts it into mechanical vibrations of high intensity. The maximum efficiency of the system is concentrated within a narrow frequency band around the central resonance frequency (characteristic of each transducer) which depends on the workload, the operating temperature and other variable parameters. The correct use of such devices therefore requires electronic generators equipped with sophisticated control systems that maintain the optimal working point of the system as the operating conditions vary.

**High frequency resolution, combined with efficient control algorithms and extensive programming options for operating parameters, make our RAL400 generators perfect for driving narrow-band piezoelectric transducers.**

**Extensive parametric customization options for any type of application.**



**A sophisticated electronic microprocessor control system manages the operation of our RAL400 generators: precision, reliability and robustness guarantee maximum power and efficiency in ultrasonic treatment.**

Digital control panel for controlling the machine and displaying operating parameters. RS485 serial connection for remote control of the generator.

## PROFESSIONAL GENERATORS FOR NARROW BAND PIEZO TRANSDUCERS

### RAL400 System Series: General Technical Features

#### Model up to 400 W<sub>RMS</sub>

- External dimensions: (275 x 205 x 165) mm
- Weight: approximately 1.8 Kg
- Single-phase mains power supply: 230 Vac – 50/60 Hz
- Real electrical power of the US generator: up to 400 W<sub>RMS</sub>
- High-performance electronic generator suitable for intensive use.
- Backlit LCD display for viewing the status and operating parameters, keyboard for commands and parameter programming.
- RS485 serial port for remote control of the generator with proprietary communication protocol (control software provided).
- US generator frequency (programmable): from 19 kHz to 60 kHz
- High frequency resolution of the US generator for maximum operating precision.
- **Automatic control of the output frequency of the US generator with lock on the resonance frequency of the transducer used, regardless of the operating conditions (temperature, load conditions, aging of the transducer, etc.).**
- Continuous variation of the US power output: from 25% to 10% of the max. power.
- Possible programmable TIMER for the deferred shutdown of the generator (from 1 to 60 minutes).
- Automatic limitation of the maximum power output, regardless of the load.
- Alarm condition for the maximum operating temperature of the power stage.
- Alarm condition for overload at the output.
- Possible frequency modulation (SWEEP) with programmable parameters.
- Possible amplitude modulation (PULSE) with programmable parameters.
- Automatic forced ventilation system for the US generator.

**Our laboratories are available for any further information or test:  
contact us to organize a demonstration!**

Our robust and sophisticated electronic generators are equipped with microprocessors dedicated to managing the operating functions and programming the parameters. A control system continuously checks the operating conditions of the generator and the load, blocking the operation of the machine (with acoustic and display alarm signal) if anomalies occur. **Regardless of the conditions of use, the maximum power that can be supplied by the US generator is automatically limited to a set value and the system locks onto the resonance frequency of the transducer to ensure excellent performance in all operating conditions. Appropriate modulations (with programmable parameters) optimize the treatment.**

### THE ULTRASOUND LABORATORY

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