

## Product Specification Sheet

# Ultrasonic processor

"LS – MR 200 / 400"



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## General Information

The Ultrasonic processors LS – MR 200 and LS – MR 400 are ultrasonic devices especially for laboratory applications. They provide a power output of maximum 200 or 400 watts at a frequency of 24 kHz. The output-amplitude is continuously adjustable between 50 and 100 %. The Generators are equipped with an automatic frequency-tuning-unit.

The Ultrasonic processors are protected against short circuit, overload, idle run and overtemperature. The internal LCD-display provides easy readout of the process parameters e.g. power, energy, time and medium-temperature. The touchscreen makes it easy to setup different parameters. **The processors are designed for continuous operation!**

The available accessories, such as different sonotrodes and boosters, pedal-operated switch and temperature sensor for recording the medium –temperature, make the devices universally applicable for all laboratory applications, such as:

- Disruption of cells, bacteria, virus, tissue, also mixed tissue e. g. for extraction of cell contents
- Emulsifying of hardly mixable liquids, e.g. oil and water
- Deagglomeration of nanoparticles in material in medicine, biotechnology, automobile industry
- Acceleration of chemical reactions
- Production of dispersions
- Reduction of particle size

<b>Analysis</b>	<b>Biochemistry – Biology - Medicine</b>	<b>Chemistry - Sonochemistry</b>	<b>Pharmacy - Cosmetics</b>
<ul style="list-style-type: none"> <li>➤ Homogenizing of cheese samples for determination of nitrates</li> </ul>	<ul style="list-style-type: none"> <li>➤ Due to high amplitudes, disruption of high-resistant bacteria, cells or tissues is possible.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Acceleration of chemical reactions</li> </ul>	<ul style="list-style-type: none"> <li>➤ Production of larger volumes of long lasting emulsions, e. g. lotions</li> </ul>
<ul style="list-style-type: none"> <li>➤ Preparing samples for grain size determination or environmental analysis</li> </ul>	<ul style="list-style-type: none"> <li>➤ Detection of prions by cyclic amplification of protein misfolding</li> </ul>	<ul style="list-style-type: none"> <li>➤ Destruction of highly-molecular compounds</li> </ul>	<ul style="list-style-type: none"> <li>➤ Production of antigens, vaccines or liposomes</li> </ul>

## Technical Data

Mechanical Data	
Dimensions	275 x 85 x 225 ( W x H x D)
Weight	approx. 2,5 kg
Protection class	IP 20

Electrical Data	
Power Output	<b>200 / 400 watt continuous operation!</b>
Mains Supply	230 volt      50/60 Hz
Frequency	24 kHz      +/- 1 kHz
Protection against overtemperature	Protection against overtemperature of the generator and the connected transducer

### Back view



socket for "Transducer" connection

"Interface" socket for connection of the pedal-switch

### Transducer-system



As hand held unit  
or for clamping in a stand

## Optional Accessories

*pedal-switch*



*stand*



*More optional accessories:*

- USB-port
- PC-Software for the recording of process-parameters, current power, energy (Joule, WS), medium-temperature

## Sonotrodes

Type	Maximum immersion depth (mm)	Apex flange (mm)	max. amplitude (µm)	Power spectrum density (W/cm <sup>2</sup> )
MR3 – 24 Tip 3	90	3	210	460
MR7 – 24 Tip 7	90	7	175	300
MR14 – 24 Tip 14	90	14	125	105
MR40 – 24 Reverse horn 40	20	40	12	12
MR22 – 24 Horn 22	45	22	100	85
MR22 – 24D Flow through 22	45	22	100	85