

Ultrasonic Processor UIP1000hd

www.hielscher.com/1000

UIP1000hd
transducer and
generator



UIP1000hd set for batch and
inline sonication



UIP1000hd recirculation setup
with flow cell for continuous
sonication

Technical Details

Ultrasonic processor UIP1000hd (1000W, 20kHz) consisting of transducer and generator; automatic frequency tuning, amplitude 25 micron, amplitude adjustable from 50 to 100%, dry running protected, interface for remote or PC-control, transducer IP65 grade, titanium horn

Applications

Homogenization, Dispersing & Deagglomeration (e.g. nano particles), Wet-milling & Grinding (e.g. nano materials), Emulsifying, Lysis & Cell Disintegration, Extraction, Sonochemistry

Advantages

Effectiveness: High-power, high performance ultrasonic device with 1000 watts power, various recirculation setups for continuous processing,
Reproducibility: Exact reproducibility by full control over the parameters „ Amplitude, Pressure, Temperature, Viscosity, and Concentration“
Scalability: All results achieved can be scaled up linearly.
Industrial Grade: Full industrial grade, for heavy-duty operation and permanent use 24 hours per day (24h/7d)

Items:

- | | |
|---|--|
| <input type="checkbox"/> Ultrasonic processor UIP1000hd | <input type="checkbox"/> Flow Cell Insert34 |
| ○ 115 volts ○ 230 volts | <input type="checkbox"/> Booster Horn B2-1.8 |
| <input type="checkbox"/> Sonotrode BS2d22 (tip diameter 22mm) | <input type="checkbox"/> Stand ST2 |
| <input type="checkbox"/> Sonotrode BS2d34 (tip diameter 34mm) | <input type="checkbox"/> Sound Protection Box SPB2 |
| <input type="checkbox"/> O-Ring-Flange RFLA100 | <input type="checkbox"/> Power Meter PowMet115 |
| <input type="checkbox"/> Flow Cell FC100L1-1S w/ cooling jacket | |

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UIP1500hd – Industrial Ultrasonic Device for Benchtop and Production

www.hielscher.com/1500

Ultrasonic
Processor
UIP1500hd



UIP1500hd transducer and generator



UIP1500hd for inline sonication

Technical Details	Ultrasonic processor UIP1500hd (1500W, 20kHz) consisting of transducer and generator; automatic frequency tuning, amplitude 25 micron, amplitude adjustable from 50 to 100%, dry running protected, interface for remote or PC-control, transducer IP65 grade, titanium horn
Applications	Homogenization, Dispersing & Deagglomeration (e.g. nano particles), Wet-milling & Grinding (e.g. nano materials), Emulsifying, Lysis & Cell Disintegration, Extraction, Sonochemistry & Sonocatalysis
Advantages	<p>Effectiveness: High-power, high performance ultrasonic device with 1500 watts power, various recirculation setups for continuous processing,</p> <p>Reproducibility: Exact reproducibility by full control over the parameters „ Amplitude, Pressure, Temperature, Viscosity, and Concentration“</p> <p>Scalability: All results achieved can be scaled up linearly.</p> <p>Industrial Grade: Full industrial grade, for heavy-duty operation and permanent use 24 hours per day (24h/7d)</p>



Items:

- | | |
|---|--|
| <input type="checkbox"/> Ultrasonic processor UIP1500hd | <input type="checkbox"/> Booster Horn B2-1.8 |
| ○ 115 volts ○ 230 volts | <input type="checkbox"/> Stand ST2 |
| <input type="checkbox"/> Sonotrode BS2d34 (tip diameter 34mm) | <input type="checkbox"/> Sound Protection Box SPB2 |
| <input type="checkbox"/> Sonotrode BS2d40 (tip diameter 40mm) | <input type="checkbox"/> Power Meter PowMet |
| <input type="checkbox"/> O-Ring-Flange RFLA100 | <input type="checkbox"/> LabLift |
| <input type="checkbox"/> Flow Cell FC100L1-1S w/ cooling jacket | |

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UIP2000hd – Powerful Industrial Ultrasonic Device

www.hielscher.com/i2000

<p>Ultrasonic Processor UIP2000hd</p>	 <p>UIP2000hd transducer and generator</p>	 <p>UIP2000hd at stand ST2</p>
<p>Technical Details</p>	<p>Ultrasonic processor UIP2000hd (2000W, 20kHz) consisting of transducer and generator; automatic frequency tuning, amplitude 25 micron, amplitude adjustable from 50 to 100%, dry running protected, interface for remote or PC-control, transducer IP65 grade, titanium horn</p>	
<p>Applications</p>	<p>Homogenization, Dispersing & Deagglomeration (e.g. nano particles), Wet-milling & Grinding (e.g. nano materials), Emulsifying, Lysis & Cell Disintegration, Extraction, Sonochemistry & Sonocatalysis</p>	
<p>Advantages</p>	<p>Effectiveness: High-power, high performance ultrasonic device with 2000 watts power, various recirculation setups for continuous processing, Reproducibility: Exact reproducibility by full control over the parameters „ Amplitude, Pressure, Temperature, Viscosity, and Concentration“ Scalability: All results achieved can be scaled up linearly. Industrial Grade: Full industrial grade, for heavy-duty operation and permanent use 24 hours per day (24h/7d), scale-up by cluster installation</p>	

Items:

- | | |
|---|--|
| <input type="checkbox"/> Ultrasonic processor UIP2000hd | <input type="checkbox"/> Flow Cell Insert34 |
| ○ 115 volts ○ 230 volts | <input type="checkbox"/> Booster Horn B2-2 |
| <input type="checkbox"/> Sonotrode BS2d34 (tip diameter 34mm) | <input type="checkbox"/> Stand ST2 |
| <input type="checkbox"/> Sonotrode BS2d40 (tip diameter 40mm) | <input type="checkbox"/> Sound Protection Box SPB2 |
| <input type="checkbox"/> O-Ring-Flange RFLA100 | <input type="checkbox"/> Power Meter PowMet115 |
| <input type="checkbox"/> Flow Cell FC100L1-1S w/ cooling jacket | |

hielscher ultrasonics

UIP500hd – Industrial Ultrasonic Device for Benchtop and Small Scale Production

www.hielscher.com/500

Ultrasonic Processor
UIP500hd



UIP500hd for batch sonication



UIP500hd for inline sonication

Technical Details

Ultrasonic processor UIP500hd (500W, 20kHz) consisting of transducer and generator; automatic frequency tuning, amplitude 25 micron, amplitude adjustable from 50 to 100%, dry running protected, interface for remote or PC-control, transducer IP65 grade, titanium horn

Applications

Homogenization, Dispersing & Deagglomeration (e.g. nano particles), Wet-milling & Grinding (e.g. nano materials), Emulsifying, Lysis & Cell Disintegration, Extraction, Sonochemistry, Gourmet Applications

Advantages

Effectiveness: High-power, high performance ultrasonic device with 500 watts power, various recirculation setups for continuous processing,
Reproducibility: Exact reproducibility by full control over the parameters „ Amplitude, Pressure, Temperature, Viscosity, and Concentration“
Scalability: All results achieved can be scaled up linearly.
Industrial Grade: Full industrial grade, for heavy-duty operation and permanent use 24 hours per day (24h/7d)

Items:

- | | |
|---|--|
| <input type="checkbox"/> Ultrasonic processor UIP500hd | <input type="checkbox"/> Booster Horn B2-1.8 |
| ○ 115 volts ○ 230 volts | <input type="checkbox"/> Stand ST2 |
| <input type="checkbox"/> Sonotrode BS2d34 (tip diameter 34mm) | <input type="checkbox"/> Sound Protection Box SPB2 |
| <input type="checkbox"/> O-Ring-Flange RFLA100 | <input type="checkbox"/> Power Meter PowMet |
| <input type="checkbox"/> Flow Cell FC100L1-1S w/ cooling jacket | |

hielscher ultrasonics

UP100H – Compact Ultrasonic Lab Device

www.hielscher.com/up100

Ultrasonic
Lab Device
UP100H



UP100H - compact light-weight
ultrasonic device



UP100H at stand ST1-16

Technical
Details

UP100H: Compact ultrasonic lab device (100W, 30kHz) for handheld and stand-mounted operation, automatic frequency tuning, amplitude adjustable from 20 to 100%, pulse adjustable from 0 to 100%, dry running protected, with 9-pin DSUB interface, light-weight (1.1kg), in portable case, IP40 grade, titanium horn

Applications

Sample Preparation, Homogenization, Dispersing & Deagglomeration (e.g. nano particles), Wet-milling, Emulsifying, Lysis & Cell Disintegration, Extraction, Degassing, Sonochemistry

Advantages

Performance: With 100 watts power, the UP100H is much more powerful than an ultrasonic bath or tank.
Flexibility: For handheld or stand-mounted use, with various accessories for optimal adaption to your process.
Quality: The ultrasonic lab device UP100H fullfills the highest quality standards. All devices are designed, engineered and manufactured in Germany.

Items:

- ☐ Ultrasonic Processor UP100H ○ 115 volts ○ 230 volts
- ☐ Sonotrode MS3 (tip diameter 3mm)
- ☐ Sonotrode MS10 (tip diameter 10mm)
- ☐ Stand ST1-16
- ☐ ST1-Clamp
- ☐ PowerMeter PowMet ○ 115 volts ○ 230 volts

hielscher ultrasonics

UP200H – Ultrasonic Homogenizer for Handheld and Stand-mounted Use

www.hielscher.com/up200

Ultrasonic
Device
UP200H



UP200H for handheld use



and for stand-mounted use

Technical
Details

UP200H: 200 watts, 24kHz; for handheld and stand-mounted use; automatic frequency tuning, amplitude adjustable from 20 to 100%, pulse adjustable from 0 to 100%, dry running protected, 9-pin DSUB interface, in portable case, IP40 grade, with titanium horn

Applications

Homogenization, Dispersing & Deagglomeration (e.g. nano particles), Emulsifying, Lysis & Cell Disintegration, Extraction, Degassing, Sonochemistry

Advantages

Performance: With 200 watts power, the UP200H is much more powerful than an ultrasonic bath or tank.
Flexibility: For handheld or stand-mounted use, with various accessories for optimal adaption to your process.
Quality: The UP200H device fulfills the highest quality standards. All devices are designed, engineered and manufactured in Germany.

Items:

- ☐ Ultrasonic Processor UP200H ◦ 115 volts ◦ 230 volts
- ☐ Sonotrode S3 (tip diameter 3mm)
- ☐ Sonotrode S14 (tip diameter 14mm)
- ☐ Stand ST1-16
- ☐ ST1-Clamp
- ☐ Power Meter PowMet ◦ 115 volts ◦ 230 volts

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UP200Ht – A Powerful and Smart Ultrasonic Lab Device

www.hielscher.com/up200ht

Ultrasonic
Device
UP200Ht



UP200Ht – comfortable use as handheld homogenizer



UP200Ht with acrylic sound protection box

Technical
Details

UP200Ht: 200 watts, 26kHz; for handheld and stand-mounted use; automatic frequency tuning, amplitude adjustable from 20 to 100%, pulse adjustable from 0 to 100%, with colored touch-screen & digital control, operation and control via LAN, automatic data recording, dry running protected, IP41 grade, titanium horn Ø 10mm, amplitude at horn 70µm, in portable case

Application

Homogenization, Dispersing & Deagglomeration (e.g. nano particles), Emulsifying, Lysis & Cell Disintegration, Extraction, Degassing, Sonochemistry

Advantages

Performance: With 200 watts power, the UP200Ht is much more powerful than an ultrasonic bath or tank.
Flexibility: For handheld or stand-mounted use, with various accessories for optimal adaption to your process.
Comfortable Operation: The light-weight device is ergonomically designed. The operation settings can be adjusted via the colored touch-screen. All functions are easily and intuitively reachable through one main menu.
Quality: The UP200Ht device fulfills the highest quality standards. All devices are designed, engineered and manufactured in Germany.

Items:

- ☐ Ultrasonic Processor UP200Ht ○ 115 volts ○ 230 volts
- ☐ Sonotrode S26d2 (tip diameter 2mm)
- ☐ Sonotrode S26d7 (tip diameter 7mm)
- ☐ Sonotrode S26d14 (tip diameter 14mm)
- ☐ Stand ST1-12
- ☐ Sound Protection Box SPB-L, made from acryl glass



color touch-screen

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UP200S – Powerful Ultrasonic Lab Homogenizer

www.hielscher.com/up200

Ultrasonic
Device
UP200S



UP200S for powerful sonication



UP200S with flow cell

Technical
Details

UP200S: 200 watts, 24kHz; for stand-mounted use; automatic frequency tuning, amplitude adjustable from 20 to 100%, pulse adjustable from 0 to 100%, dry running protected, 9-pin DSUB interface, in portable case, IP40 grade, with titanium horn

Applications

Homogenization, Dispersing & Deagglomeration (e.g. nano particles), Emulsifying, Lysis & Cell Disintegration, Extraction, Degassing, Sonochemistry

Advantages

Performance: With 200 watts power, the UP200S is much more powerful than an ultrasonic bath or tank.

Flexibility: Various accessories allow for optimal adaption to your process.

Quality: The UP200S device fulfills the highest quality standards. All devices are designed, engineered and manufactured in Germany.

Items:

- ☐ Ultrasonic Processor UP200S ◦ 115 volts ◦ 230 volts
- ☐ Sonotrode S3 (tip diameter 3mm)
- ☐ Sonotrode S14 (tip diameter 14mm)
- ☐ Stand ST1-16
- ☐ ST1-Clamp
- ☐ Power Meter PowMet ◦ 115 volts ◦ 230 volts

hielscher ultrasonics

**UP200St – A Powerful and Robust 200 Watts Ultrasonic Device
for Lab and Small Scale Production**

www.hielscher.com/up200st

Ultrasonic
Device
UP200St



UP200St – handheld or stand-mounted use & digital operation

Technical
Details

UP200St: 200 watts, 26kHz; for handheld and stand-mounted use; separated generator and transducer (UP200St-T + UP200St-G) fulfilling IP51 + IP65 grade, automatic frequency tuning, amplitude adjustable from 20 to 100%, pulse adjustable from 0 to 100%, with colored touch-screen & digital control, operation and control via LAN, automatic data recording, dry running protected, titanium horn Ø 14mm, amplitude at horn 70µm, in portable case

Applications

Homogenization, Dispersing & Deagglomeration (e.g. nano particles), Emulsifying, Lysis & Cell Disintegration, Extraction, Degassing, Sonochemistry & Sono-Catalysis

Advantages

Performance: 200 watts power, very reliable & robust device for heavy duty operation
Flexibility: Handheld or stand-mounted use, with various accessories for optimal adaption to your process.
Comfortable Operation: The separated design of transducer and generator allows to place the generator safely outside the operation area.. The operation settings can be adjusted via the colored touch-screen. All functions are intuitively reachable through one main menu.
Quality: The UP200St device fullfills the highest quality standards. All devices are designed, engineered and manufactured in Germany.

Items:

- ☐ Ultrasonic Device UP200St (generator + transducer)
- ☐ Sonotrode S26d2 (tip diameter 2mm)
- ☐ Sonotrode S26d7 (tip diameter 7mm)
- ☐ Sonotrode S26d14 (tip diameter 14mm)
- ☐ Stand ST1-16
- ☐ Sound Protection Box SPB-L, made from acryl glass





UP200St-G

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UP50H – Compact Lab Homogenizer

www.hielscher.com/up50

<p>Ultrasonic Lab Device UP50H</p>	 <p>UP50H - compact light-weight ultrasonic device</p>	 <p>UP50H at stand ST1-16</p>
<p>Technical Details</p>	<p>UP50H: Compact ultrasonic lab device (50W, 30kHz) for handheld and stand-mounted operation, automatic frequency tuning, amplitude adjustable from 20 to 100%, pulse adjustable from 0 to 100%, dry running protected, with 9-pin DSUB interface, light-weight, in portable case, IP40 grade, titanium horn</p>	
<p>Applications</p>	<p>Homogenization, Dispersing & Deagglomeration (e.g. nano particles), Wet-milling, Emulsifying, Lysis & Cell Disintegration, Extraction, Degassing, Sonochemistry</p>	
<p>Advantages</p>	<p>Performance: With 50 watts power, the UP50H is much more powerful than an ultrasonic bath or tank.</p> <p>Flexibility: For handheld or stand-mounted use, with various accessories for optimal adaption to your process.</p> <p>Quality: The UP50H device fullfills the highest quality standards. All devices are designed, engineered and manufactured in Germany.</p>	

Items:

- ☐ Ultrasonic Processor UP50H ○ 115 volts ○ 230 volts
- ☐ Sonotrode MS3 (tip diameter 3mm)
- ☐ Sonotrode MS14 (tip diameter 7mm)
- ☐ Stand ST1-16
- ☐ ST1-Clamp
- ☐ PowerMeter PowMet ○ 115 volts ○ 230 volts

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UP200St – A Powerful and Robust 200 Watts Ultrasonic Device for Lab and Small Scale Production

www.hielscher.com/up200st

Ultrasonic
Device
UP200St



UP200St – digital homogenizer
with acrylic sound protection box



UP200St for stand-mounted and
hand-held use

Technical
Details

UP200St: 200 watts, 26kHz; for handheld and stand-mounted use; separated generator and transducer (UP200St-T + UP200St-G) fulfilling IP51 + IP65 grade, automatic frequency tuning, amplitude adjustable from 20 to 100%, pulse adjustable from 0 to 100%, with colored touch-screen & digital control, operation and control via LAN, automatic data recording, dry running protected, titanium horn Ø 14mm, amplitude at horn 70µm, in portable case

Applications

Homogenization, Dispersing & Deagglomeration (e.g. nano particles), Emulsifying, Lysis & Cell Disintegration, Extraction, Degassing, Sonochemistry & Sono-Catalysis

Advantages

Performance: 200 watts power, very reliable & robust device for heavy duty operation
Flexibility: Handheld or stand-mounted use, with various accessories for optimal adaption to your process.
Comfortable Operation: The separated design of transducer and generator allows to place the generator safely outside the operation area.. The operation settings can be adjusted via the colored touch-screen. All functions are intuitively reachable through one main menu.
Quality: The UP200St device fulfills the highest quality standards. All devices are designed, engineered and manufactured in Germany.

Items:

- ☐ Ultrasonic Device UP200St (generator + transducer)
- ☐ Sonotrode S26d2 (tip diameter 2mm)
- ☐ Sonotrode S26d7 (tip diameter 7mm)
- ☐ Sonotrode S26d14 (tip diameter 14mm)
- ☐ Stand ST1-16
- ☐ Sound Protection Box SPB-L, made from acryl glass



hielscher ultrasonics

Hielscher Ultrasonics– Your Expert for Ultrasonic Processes

Hielscher Ultrasonics is the top supplier for high power ultrasound devices. Hielscher offers various ultrasonic processors for the use in lab, bench-top and industry. Important applications are homogenizing, emulsifying, dispersing, de-agglomeration as well as the sonochemistry and sono-catalysis.

Ultrasonic Homogenizing:

Hielscher homogenizers are very efficient for the reduction of soft and hard particles. By intense cavitational forces, ultrasound reduces small particles (solids or liquids) in a liquid to improve uniformity and stability.

Ultrasonic Emulsifying:

Emulsions are dispersions of two or more immiscible liquids. Highly intensive ultrasound supplies the power needed to disperse a liquid phase (dispersed phase) in small droplets in a second phase (continuous phase). In the dispersing zone, imploding cavitation bubbles cause intensive shock waves in the surrounding liquid and result in the formation of liquid jets of high liquid velocity. As ultrasonication can produce very small droplets of almost uniform size in batch and production process, ultrasound is an effective methods to create stable emulsions and even microemulsions.



Ultrasonic Dispersing & Deagglomeration:

The dispersing power of ultrasound is well-known and a reliable and efficient method to mix powders into liquids. High power ultrasound grinds and deagglomerates particles held together by attraction forces of physical and chemical nature down to micron and nano size and disperses the individual particles fine and evenly in the liquid. Generally, ultrasound produces very narrow particles size distribution.

Sono-Chemistry:

Sonochemistry is the application of ultrasound to chemical reactions and processes. The mechanism causing sonochemical effects in liquids is the phenomenon of acoustic cavitation.

High power ultrasound

- increases the reaction speed and reaction output,
- provides a more efficient energy usage,
- improves the performance of phase transfer catalysts or makes an avoidance of phase transfer catalysts possible,
- increases the reactivity of reagents or catalysts,
- offers sono-chemical means for switching of the reaction pathway,
- enables to use crude or technical agents,
- and activates metals and solids.

Sono-Catalysis:

Ultrasonication affects the catalyst reactivity during catalysis by enhanced mass-transfer and energy input. In heterogeneous catalysis, where the catalyst is in a different phase to the reactants, ultrasonic dispersion increases the surface area available to the reactants. Ultrasonication contributes to heterogeneous and homogeneous catalysis in many ways. Cavitation erosion on particle surfaces generates unpassivated, highly reactive surfaces. Short-lived high temperatures and pressures contribute to molecular decomposition and increase the reactivity of many chemical species. Ultrasonic irradiation can be used in the preparation of catalysts, e.g. to produce aggregates of fine-size particles.



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