



USP-400 Series: Handheld Ultrasonic Homogenizer – 250W or 400W, 0.1–300 mL, Touch Control (PRO5691 / PRO5692)

1. MODEL COMPARISON – POWER & VOLUME

SKU / Model	Power output (continuously adjustable)	Processing volume *	Standard horn	Typical applications
PRO5691	2.5 – 250 W	0.1 – 150 mL	Φ5 mm titanium	Cell lysis (E. coli, yeast, mammalian), enzyme assays, DNA/RNA shearing, nanoparticle dispersion up to 50 mL
PRO5692	4 – 400 W	0.1 – 300 mL	Φ5 mm titanium	Tough tissues (plant, animal), liposomes, cannabis oil emulsification, graphene dispersion, pilot scale batches

* Processing volume depends on horn selection, sample viscosity, and vessel geometry.

2. COMMON TECHNICAL SPECIFICATIONS

Display	True-color capacitive TFT touch screen, 4.3" (adjustable brightness)
Single ultrasound time	0.1 – 99.9 s (programmable)
Single gap (pause) time	0.1 – 99.9 s
Total process timer	1 s – 99 h 59 min 59 s
Ultrasonic frequency	20 – 30 kHz (automatic frequency tracking – AFT)
Temperature monitoring	0 – 100 °C ±1 °C, real-time display, compatible with optional cooling cell
Alarm & protection	Time, overload, no-load, over-temperature – audible and visual alerts
Duty cycle	0.1 – 99.9 % (pulsed or continuous mode)
Program memory	20 groups – store and recall complete parameter sets
Power supply	110–120 V / 220–240 V, 50/60 Hz (universal input)
Dimensions (net)	410 × 225 × 290 mm (D × W × H)
Weight	~3.8 kg (handheld unit with cable)
Optional interfaces	Computer communication (RS-232 / USB) + data printing
Warranty	12 months
Spare parts availability	7 years

3. ULTRASONIC PROBES (HORNS) – TECHNICAL PARAMETERS

Both PRO5691 and PRO5692 are compatible with the following titanium horns (autoclavable, replaceable tip).

◆ Φ2 mm micro-probe

- **Working volume:** 0.1 – 5 mL
 - **Tip diameter:** 2 mm
 - **Material:** Titanium alloy (Ti-6Al-4V)
 - **Sterilization:** Autoclavable (121–134 °C)
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- **Application:** Microtubes, PCR strips, 96-well plates, single cells

◆ Φ3 mm micro-probe

- **Working volume:** 2 – 15 mL
 - **Tip diameter:** 3 mm
 - **Material:** Titanium alloy (Ti-6Al-4V)
 - **Sterilization:** Autoclavable (121–134 °C)
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- **Application:** Small vials, enzyme reactions, bacterial disruption

◆ Φ5 mm standard probe

- **Working volume:** 10 – 150 mL
 - **Tip diameter:** 5 mm
 - **Material:** Titanium alloy (Ti-6Al-4V)
 - **Sterilization:** Autoclavable (121–134 °C)
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- **Application:** Universal – supplied with every unit, suitable for most R&D protocols

◆ Φ6 mm high-volume probe

- **Working volume:** 20 – 300 mL
 - **Tip diameter:** 6 mm
 - **Material:** Titanium alloy (Ti-6Al-4V)
 - **Sterilization:** Autoclavable (121–134 °C)
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- **Application:** Larger flasks, pilot scale, high-density cell suspensions

Probe – technical data overview

Probe diameter	Tip area (approx.)	Amplitude range	Recommended volume	Max. immersion depth
Φ2 mm	3.1 mm ²	40 – 120 μm	0.1 – 5 mL	8 – 12 mm
Φ3 mm	7.1 mm ²	30 – 110 μm	2 – 15 mL	10 – 15 mm
Φ5 mm	19.6 mm ²	20 – 100 μm	10 – 150 mL	12 – 18 mm
Φ6 mm	28.3 mm ²	15 – 90 μm	20 – 300 mL	15 – 20 mm

Amplitude is power-dependent and adjustable via duty cycle / energy setting.

4. STANDARD ACCESSORIES & OPTIONAL EQUIPMENT

Included in box (both models)	Optional (order separately)
✓ Φ5 mm titanium probe	⚡ Φ2, Φ3, Φ6 mm titanium probes
✓ Foot switch (manual mode)	⚡ Flow-cell / continuous processing chamber
✓ Temperature sensor (PT100)	⚡ Low-temperature cooling kit (circulator + double-wall vessel)
✓ Power cord (EU / US / UK)	⚡ RS-232 / USB communication module
✓ Quick start guide	⚡ Data printing software

5. PHYSICAL DIMENSIONS & ENVIRONMENTAL

Unit dimensions (D × W × H)	410 × 225 × 290 mm
Weight (handheld unit + cable)	~3.8 kg
Operating temperature	5 – 40 °C
Storage temperature	-10 – 60 °C
Humidity	≤ 80% non-condensing
Protection class	IP20 (indoor use only)



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Specifications subject to change without notice. Version 02/2026