

# HELPP-UV



## Unmatched Peak Power/Price

### All Solid-State IR/Visible/UV turnkey Picosecond Lasers

The HELPP-UV is a family of low-cost turnkey picosecond lasers featuring the high peak power, rugged design, and outputs at 266 nm and 355 nm (optional). The combination of short pulse length and high peak power makes HELPP-UV lasers especially effective in manufacturing of flat panel displays, photomask repair, solar cells fabrication, and other similar applications.

The main advantage of HELPP-UV is the controllable removal of thin layers of metal, plastic, polymer and resin layers via (photo-destruction and dry sublimation) without no residual heat transfer to surrounding areas.

Another important benefit is cutting thick sheets of metal, glass, and plastic with minimum material runoff due to the narrow area of laser processing (typical depth of hole  $d[mm] \approx E [mJ]$ ). For example in order to drill through  $\sim 1 mm$  stainless steel sheet the laser pulse energy  $E \approx 1 mJ$  and the bore diameter about  $60\mu m$ . The optimal UV beam diameter results in high cutting rate of thick sheets of material.

#### Laser Features

- Unmatched picosecond pulse energy per price (~8 mJ/\$120K)
- 8 ps and shorter output pulse width
- Near TEM<sub>00</sub> beam quality
- External computer control over the repetition rate and output energy via the built-in RS232 port
- Brand new patented design: compact size, low weight and consumption power

#### Applications

- Flat panel and liquid crystal display processing
- Photo-mask repair; ablation lithography
- Solar cell patterning
- Ultrahigh density 3D storage technology; transparent material modification
- Cutting thick layers of different materials, especially armor, glass, ceramics (thickness up to 15mm)
- Thin-film deposition
- Non-coherent and coherent EUV emitters
- High accuracy global and local positioning systems
- Photo ionization, LIBS, single and double photon laser induced fluorescence time resolved spectroscopy
- Fragmentation and destruction of organic and bio-molecules
- Precise machining via micro- and nano-imaging

## Specifications

Specifications	HELPP - UV
<i>Wavelength</i>	1064 nm,532 nm,266 nm,355 nm (optional) 213nm(optional)
<i>Repetition Rate</i>	400 Hz
<i>Energy Output</i>	8mJ at 1064 nm 6mJ at 532 nm 4mJ at 355 nm 2.4mJ at 266 nm 0.6mJ at 213 nm
<i>Pulse-to-pulse stability</i>	5 %
<i>Pulse counting</i>	available via RS-232 port (up to $4 \cdot 10^9$ pulses)
<i>Pulse width (at 1064 nm)</i>	8 ps
<i>Q-switch</i>	Passive
<i>Divergence</i>	Diffraction limited
<i>Beam profile</i>	Gaussian
<i>Output Beam pointing stability (std dev, 1 h)</i>	0.3 Diffraction Limit
<i>Linewidth</i>	$2.7 \text{ cm}^{-1}$ (Fourier limited)
<i>External control</i>	Connector/pin for TTL trigger input or +4 +/-1V, into 1 k $\Omega$
<i>Electrical power</i>	~ 100-240 VAC, 47-63 Hz, single phase
<i>Power consumption</i>	100 W
<i>Warm Up time</i>	< 5 minutes
<i>Laser dimensions</i>	850 x 300 x 120 mm <sup>3</sup>
<i>Weight</i>	20 kg
<i>Operating temperature and humidity</i>	20-27° C; 10-80 %
<i>Compliance</i>	CDRH, CE

### Content and Delivery

The delivered laser consists of the following:

- Integrated Laser Head/Power Unit;
- Power Cable;
- CD with Manual and Control Application; and
- Test Record.

### Warranty

1 year for all parts and labor excluding the laser pump diode. The pump diode is warranted for the lesser of 1 year or  $10^9$  pulses.

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