

# PL2210

## SERIES

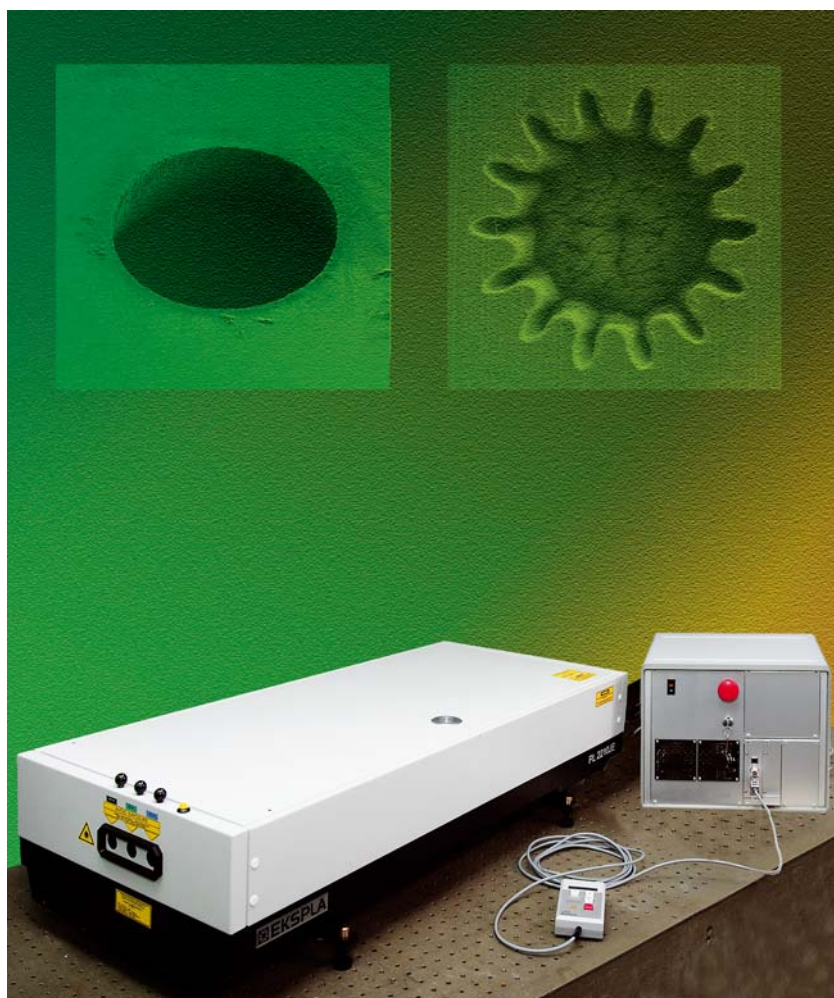
### Diode Pumped Picosecond Nd:YAG Lasers

#### FEATURES

- High pulse energy at kHz rates
- Diode pumped solid state design
- Air cooled – external water supply is not required
- Turn-key operation
- Low maintenance costs
- Optional Low jitter SYNC OUT pulse for streak camera triggering
- PC connection with LabView drivers
- Remote control keypad
- 532 / 355 / 266 / 213 nm wavelengths available

#### APPLICATIONS

- OPG/OPA pumping
- Time resolved fluorescence, absorption, pump-probe spectroscopy
- Micromachining
- Laser tweezers
- Characterization of bulk and nonlinear optical materials
- Your application is welcome...



Short pulse duration, high energy, up to 2 kHz repetition rate and excellent pulse-to-pulse stability makes PL2200 series diode pumped picosecond lasers a first choice for many applications, like material processing, laser spectroscopy, optical parametric generator pumping and other tasks.

#### BUILD-IN HARMONIC GENERATORS

Angle-tuned LBO and KDP crystals mounted in thermostabilised ovens are used for second, third and fourth harmonic generation. Harmonics separators ensure high spectral purity of each harmonic directed to different output port.

#### SIMPLE AND CONVENIENT LASER CONTROL

For customer convenience the laser is controlled through its RS 232 type PC interface with LabView drivers (included) or a user-friendly remote control pad. The remote pad allows easy control of all the parameters and features a backlit display that is easy to read even while wearing laser safety eyewear. Build in energy monitors ensure easy operation control. Data from the energy monitor can be seen on the remote keypad or PC monitor via the LabView drivers. LabView drivers, supplied together with the laser, enables long term monitoring of the output energy.

- Model **PL2210** delivers **less than 20 ps** pulse duration at up to **2 KHz** repetition rate

- Model **PL2210B** provides pulses with up to **2.5 mJ** energy at **1 kHz** at slightly longer pulse duration of **80 ps**

**SPECIFICATIONS <sup>1)</sup>**

MODEL	PL2210	PL2210A	PL2210B
Output energy, mJ			
@ 1064 nm	0.4	0.9	2.5
@ 532 nm <sup>2)</sup>	0.2	0.45	1.3
@ 355 nm <sup>3)</sup>	0.11	0.3	0.8
@ 266 nm <sup>4)</sup>	0.05	0.15	0.5
Pulse energy stability (StDev), % <sup>5)</sup>			
@ 1064 nm		1	
@ 532 nm		2	
@ 355 nm		3	
@ 266 nm		4	
Pulse Duration (FWHM), ps <sup>6)</sup>	<25	<25	<80
Pulse Duration stability, ±% <sup>7)</sup>	3	3	5
Pulse Repetition rate, Hz <sup>8)</sup>	1000 or 2000	1000 or 2000	1000
Triggering mode	Internal / External		
Typical SYNC OUT pulse delay, ns <sup>9)</sup>	450		
SYNC OUT pulse Jitter (St,Dev), ns <sup>10)</sup>	<0.25		
Spatial mode <sup>11)</sup>	TEM <sub>00</sub>		
Beam divergence, mrad <sup>12)</sup>	<1.6		
Typical Beam Diameter, mm <sup>13)</sup>	~3		
Beam pointing stability, µrad <sup>14)</sup>	<30		
Contrast Ratio (to residual post-pulse)	>200:1		
Polarization	Linear, >100:1		
<b>PHYSICAL CHARACTERISTICS</b>			
Laser head size (W×L×H), mm <sup>15)</sup>	446×1220×260		
Power supply size (W×L×H), mm	340×365×290	472×460×290	472×460×290
<b>OPERATING REQUIREMENTS</b>			
Water service	Not required, air-cooled		
Relative Humidity (non condensing), %	10–80		
Operating ambient temperature, °C	22±2		
Mains requirements	100–240 VAC, single phase, 47–63 Hz		
Power consumption, kW	<0.5	<1	<1

• Option **PRETRIG** provides low jitter pulse for streak camera triggering.

• Option **P80** provides 80 ps output pulse duration. Main specifications:

Model	PL2210	PL2210A
Pulse energy, mJ*	0.7	1.2
Pulse duration (FWHM), ps	<80	
Pulse repetition rate, Hz	1000	1000

\* At 1064 nm.

• Option **SRT** – shorter laser head (1020 mm). Only 1064 nm output is available for this option, for harmonic generation use external harmonic generator unit.

<sup>1)</sup> All specifications are subject to change without notice. The parameters marked typical are not specifications. They are indications of typical performance and will vary with each unit we manufacture. Unless stated otherwise all specifications are measured at 1064 nm.

<sup>2)</sup> For PL2210x-SH and PL22210x-SH/FH option. Outputs are not simultaneous. Please inquiry for pulse energies for other harmonic generator options.

<sup>3)</sup> For PL210x-TH option. Outputs are not simultaneous. Please inquiry for pulse energies for other harmonic generator options.

<sup>4)</sup> For PL210x-SH/FH option. Outputs are not simultaneous. Please inquiry for pulse energies for other harmonic generator options.

<sup>5)</sup> Averaged from 300 pulses.

<sup>6)</sup> Optional <80 ps duration.

<sup>7)</sup> Measured over 1 hour period when ambient temperature variation is less than ±2 °C.

<sup>8)</sup> Should be specified while ordering. Inquiry for other pulse repetition rates.

<sup>9)</sup> Delay is negative, SYNC OUT pulse emerges earlier than optical pulse.

<sup>10)</sup> In respect to optical pulse. <100 ps jitter is provided with PRETRIG option.

<sup>11)</sup> Gaussian fit >90%.

<sup>12)</sup> Full angle measured at the 1/e<sup>2</sup> point@ 1064 nm.

<sup>13)</sup> Beam diameter is measured @ 1064 nm at the 1/e<sup>2</sup> point.

<sup>14)</sup> RMS value measured from 300 shots.

<sup>15)</sup> 446x1020x260 (WxLxH) laser head size is optional.

**RELATED PRODUCTS**

**Industrial Grade Picosecond Diode Pumped Laser PL10100 series**

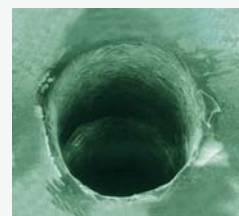
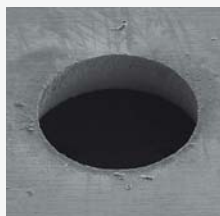
- Up to ~ 200 µJ high pulse energy
- Up to 100 kHz repetition rate
- Short pulse duration ~10 ps
- 10 W output power at 1064 nm

**PG432 series Optical Parametric generators**

- Tunable in 420–2300 nm range
- >20 µJ output at 2 kHz pulse repetition rate
- Linewidth <10 cm<sup>-1</sup>
- Optional second harmonic generator for 240–320 nm range

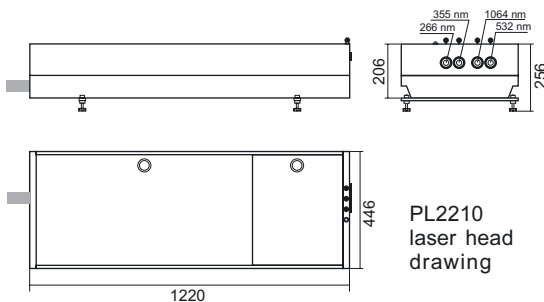
**Requests for custom made products are welcome.**

**MICROMACHINING SAMPLES**



Hole made in 200 µm thickness stainless steel:  
Inlet, diameter 570 µm      Outlet, diameter 475 µm

200 µm through-out hole made in diamond



PL2210 laser head drawing



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