

# PL2241

## SERIES

### High Energy Picosecond Nd:YAG Lasers



Unique rugged and compact design establishes **PL2241** series picosecond lasers as versatile tool for research applications.

The heart of the system is diode pumped solid state (**DPSS**) master oscillator placed in hermetically sealed monolithic block. Combined,

the **DPSS** master oscillator and flash lamp pumped regenerative amplifier offer reliable performance and hands free operation.

Up to **250 Hz** repetition rate speeds up data acquisition and processing in spectroscopic systems.

#### EFFICIENT POWER AMPLIFIER AND HARMONIC GENERATORS

The optimized multiple-pass power amplifier with pulse polarization rotation between the passes efficiently extracts the energy stored in the rod, at the same time, maintaining near Gaussian beam profile and low wavefront distortion.

Angle-tuned KD\*P 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. Built 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.

Software can protect optics from the accidental increases of pulse energy, by providing user with alerting messages and by stopping the laser, when the pulse energy exceeds the preset level.

#### FEATURES

- Up to **100 mJ** per pulse at **1064 nm**
- **< 30 ps** pulse duration (<25 ps optional)
- Excellent pulse duration stability
- Up to **250 Hz** repetition rate
- Streak camera triggering option with **< 0.1 ns** optical jitter
- Hermetically sealed **DPSS** master oscillator
- Excellent beam pointing **stability**
- Thermo stabilized **second, third or fourth** harmonic options
- **PC control** by RS232 and LabView drivers
- Remote control via keypad

#### APPLICATIONS

- OPG pumping
- Nonlinear spectroscopy
- SFG/SHG spectroscopy
- Material research
- Time resolved spectroscopy
- Remote laser sensing
- Satellite ranging
- Other spectroscopic and nonlinear optics experiments
- Your application is welcome...

## SPECIFICATIONS <sup>1)</sup>

MODEL	PL2240	PL2241	PL2241A	PL2241B	PL2241C
<b>Pulse energy, mJ</b>					
At 1064 nm	4	30	50	80	100
At 532 nm <sup>2)</sup>	1.8	15	25	40	50
At 355 nm <sup>3)</sup>	1.2	10	15	24	30
At 266 nm <sup>4)</sup>	0.7	3	7	10	12
<b>Pulse energy stability (StDev), % <sup>5)</sup></b>					
At 1064 nm			<1.5		
At 532 nm			<3		
At 355 nm			<5		
At 266 nm			<7		
<b>Pulse duration (FWHM), ps <sup>6)</sup></b>					
Pulse duration stability, $\pm$ ps <sup>7)</sup>					
Repetition rate, Hz <sup>8)</sup>					
Polarization					
Post-pulse contrast					
Triggering mode					
Typical SYNC OUT pulse jitter, ns <sup>9)</sup>					
Typical SYNC OUT pulse delay, ns <sup>10)</sup>					
Beam divergence, mrad <sup>11)</sup>					
Beam pointing stability, $\mu$ rad <sup>12)</sup>					
Typical beam diameter, mm <sup>13)</sup>					
Typical Warm-up time, min					
<b>PHYSICAL CHARACTERISTICS</b>					
Laser head size (W×L×H), mm					
Electric cabinet size (W×H×L), mm					
Umbilical length, m					
<b>OPERATING REQUIREMENTS</b>					
Water consumption (max 20 °C), l/min					
Room temperature, °C					
Relative humidity (non-condensing), %					
Mains requirements <sup>14)</sup>					
Power, kVa					

### OPTIONS

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

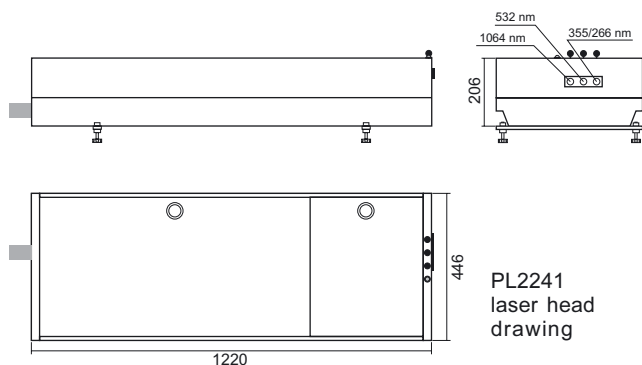
**Option P25** provides less than 25 ps output pulse duration

Pulse duration (FWHM), ps <25

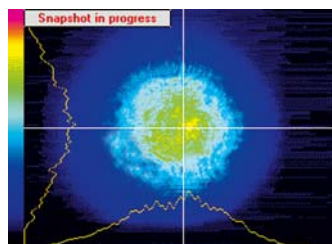
**Option P80** provides less than 80 ps output pulse duration

Pulse energy @ 1064 nm, mJ 8 60 100 160 200

Pulse duration (FWHM), ps <80



PL2241 laser head drawing



Typical beam profile of PL2241 series lasers

Requests for custom made products are welcome !

<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 PL214x-SH option. Outputs are not simultaneous. Please inquiry for pulse energies at other wavelengths.

<sup>3)</sup> For PL214x-TH option. Outputs are not simultaneous. Please inquiry for pulse energies at other wavelengths.

<sup>4)</sup> For PL214x-FH option. Outputs are not simultaneous. Please inquiry for pulse energies at other wavelengths.

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

<sup>6)</sup> Optional <25 ps duration.

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

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

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

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

<sup>11)</sup> Full angle measured at the  $1/e^2$  point @ 1064 nm.

<sup>12)</sup> RMS value measured from 300 shots.

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

<sup>14)</sup> Single phase 208–240 VAC mains for 10 Hz versions are available.

### RELATED PRODUCTS

#### Diode pumped picosecond Nd:YAG lasers PL2210 series

- High pulse energy at kHz rates
- Diode pumped solid state design
- Air cooled
- Turn-key operation
- Low maintenance costs
- PC connection with LabView drivers
- 532 / 355 / 266 / 213 nm wavelengths available

#### Picosecond tunable optical parametric generators PG400 series

- Unprecedented tuning range 0.21–16  $\mu$ m
- Up to 15% conversion efficiency
- <6  $\text{cm}^{-1}$  linewidth in all tuning range
- Solid-state convenience
- PC control using RS232 and LabView drivers



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