

APL2100 SERIES



APL210x series amplifiers are designed to produce up to 1000 mJ picosecond pulses.

High pulse energy, excellent pulse-to-pulse energy stability, superior beam quality makes APL210x series picosecond amplifiers well suited for applications like OPCPA pumping, non-linear optics and others.

Regenerative amplifier / Power amplifier design

APL210x series amplifiers are designed to be seeded by external seeding source. Diode pumped regenerative amplifier ensures amplification of seed signal to stable mJ level pulse for amplification in linear amplifiers. Advanced beam shaping ensures smooth, without hot spots beam spatial profile at the laser output. Low light depolarization level allows high efficiency generation of up to 4th harmonics with build-in harmonics generators.

Build-in harmonic generators

Angle-tuned DKDP crystals harmonics generators mounted in temperature stabilized heaters are used for second, third and fourth harmonic generation. Harmonics separation system is designed to ensure high spectral purity of radiation and direct it to the output ports.

Simple and convenient laser control

For customer convenience the amplifier can be controlled through user-friendly remote control pad or USB interface. The control pad features a backlit display that is easy to read even while wearing laser safety eyewear. Alternatively, the amplifier can be controlled from personal computer with supplied software for Windows™ operating system. LabVIEW™ drivers are supplied as well.

APL2100 series available models

Model	Features
APL2105	Delivers 500 mJ, 90 ps pulses at up to 10 Hz repetition rate
APL2106	Delivers 1000 mJ, 90 ps pulses at up to 10 Hz repetition rate

High Pulse Energy Picosecond Amplifiers

FEATURES

- ▶ Diode pumped regenerative amplifier
- ▶ Seeding of regenerative amplifier with customers super-continuum seeding source
- ▶ Flashlamp pumped power amplifier
- ▶ Advanced beam shaping for high pulse energy
- ▶ Thermally induced birefringence compensated design for high pulse repetition rates
- ▶ Low jitter synchronisation pulses for streak camera triggering with 10 ps rms jitter (optional)
- ▶ Water-water heat exchanger for cooling of pump chambers
- ▶ Remote control pad
- ▶ Control through CAN or USB interface (RS232 is optional)
- ▶ Optional temperature stabilized second, third and fourth harmonic generators

APPLICATIONS

- ▶ OPCPA pumping
- ▶ OPG/OPA pumping
- ▶ Other spectroscopic and nonlinear optics applications...

APL2100 series available options

- ▶ Option P30 provides 30±3 ps output pulse duration. Contact EKSPLA for pulse energy specifications.

SPECIFICATIONS ¹⁾

Model	APL2105	APL2106
Output energy		
at 1064 nm	550 mJ	1000 mJ
at 532 nm ²⁾	250 mJ	500 mJ
at 355 nm ³⁾	170 mJ	300 mJ
at 266 nm ⁴⁾	60 mJ	100 mJ
Pulse energy stability (StdDev) ⁵⁾		
at 1064 nm	1.5 %	
at 532 nm	2.5 %	
at 355 nm	5 %	
at 266 nm	7 %	
Pulse duration (FWHM) ⁶⁾	90±10 ps	
Pulse duration stability ⁷⁾	±2 ps	
Pulse repetition rate ⁸⁾	10 Hz	
Triggering mode	external	
Spatial mode ⁹⁾	super-Gaussian	
Beam divergence ¹⁰⁾	<0.5 mrad	
Typical beam diameter ¹¹⁾	~11 mm	~17 mm
Beam pointing stability ¹²⁾	<±60 µrad	
Pre-pulse contrast	>200 : 1	
Polarization	Linear, >100 : 1	
INPUT		
Wavelength	1064 nm	
Linewidth	< 5 cm ⁻¹	
Pulse repetition rate	50–95 MHz	
Average power	> 10 mW	
PHYSICAL CHARACTERISTICS		
Laser head size (W×L×H)	600 × 1500 × 350 mm	600 × 1800 × 350 mm
Power supply size (W×L×H)	550 × 600 × 1100 mm	550 × 600 × 1230 mm
OPERATING REQUIREMENTS		
Water service	<12 l/min, below 20 °C	
Relative humidity (non condensing)	20–80 %	
Operating ambient temperature	22±2 °C	
Mains voltage	208 or 230 V AC, single phase, 50/60 Hz	
Power rating ¹³⁾	2.5 kVA	<4.5kVA

¹⁾ Due to continuous improvement, 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.
²⁾ For APL210x-SH and APL210x-SH/FH options. Outputs are not simultaneous.
³⁾ For APL210x-TH option. Outputs are not simultaneous.
⁴⁾ For APL210x-SH/FH option. Outputs are not simultaneous.
⁵⁾ Averaged from 300 pulses at 10 Hz pulse repetition rate.
⁶⁾ Optional 30 ps duration. Inquire for pulse energies.
⁷⁾ Measured over 1 hour period when ambient temperature variation is less than ±2 °C.
⁸⁾ Should be specified when ordering. Inquire for custom pulse repetition rates.
⁹⁾ Gaussian fit >80%.

¹⁰⁾ Full angle measured at the 1/e² level at 1064 nm.
¹¹⁾ Beam diameter is measured at 1064 nm at the 1/e² level.
¹²⁾ RMS value measured from 300 shots.
¹³⁾ Required current rating can be calculated by dividing power rating by mains voltage.



Ordering information

APL2105-P90-10-SH/TH/FH

