

# HNx High Peak Power PicoSpark™ Series



## KEY FEATURES

- 1064nm and 532nm
- Ultra-short pulses down to 500ps
- High Rep Rate up to 100kHz
- AOM option @532nm
- Peak power over 200kW
- Excellent beam quality – TEM00,  $M^2 < 1.2$
- Efficient, air-cooled
- Sealed package, long life

The PicoSpark™ series combine multi-watt output level with high repetition rate and exceptional pulse characteristics to provide the best price/quality ratio for micromachining application. Passively Q-Switched (PQS) microchip laser technology and fiber amplification are brought together, delivering pulses with hundreds of kilowatt peak power and hundreds of gigawatt per square centimeter power density in a sealed and air-cooled compact package.

This Master Oscillator Fiber Amplifier (MOFA) architecture notably offers a full control over the pulse energy (or peak power) while leaving unchanged the pulse width and pulse shape. An Acousto-Optic Modulator (AOM) option is also available to offer a rapid control of the repetition rate without distortion of the pulse and high energy stability from the first pulse on.

## APPLICATIONS

- Micromachining
  - Selective ablation of  $\mu\text{m}$  to nm scale layers
  - Edge isolation
  - Cutting from PCB to PCD with no heat effect
- Instrumentation
  - Laser Induced Breakdown Spectroscopy
  - Raman spectroscopy
  - Supercontinuum generation
  - Ranging
  - Differential absorption LIDAR
- Biophotonics
  - Dense tissue ablation
  - Micro-surgery

## TECHNICAL SPECIFICATIONS

	HNP-70F-100 <sup>(4)</sup>	HNG-70F-100
<b>Wavelength</b>	1064nm	532nm
<b>Repetition Rate</b>	>70kHz <sup>(5)</sup>	>70kHz <sup>(5)</sup>
<b>Constant Pulse width range (FWHM)</b>	<0.65ns	<0.65ns
<b>Output power</b>	>5.8W	>3.5W
<b>Output energy</b>	>72μJ <sup>(6)</sup>	>45μJ <sup>(7)</sup>
<b>Peak Power</b>	>110kW <sup>(8)</sup>	>70kW <sup>(9)</sup>
<b>Short term(10min) power stability<sup>(1)</sup></b>	<±3%	<±3%
<b>Long term (6 hrs) power stability<sup>(1)</sup></b>	<±5%	<±5%
<b>Beam profile</b>	Gaussian TEM00	Gaussian TEM00
<b>Beam diameter at output</b>	2.8mm±0.5mm	0.65mm±0.2mm
<b>Full angle divergence @1/e<sup>2</sup></b>		
<b>Horizontal</b>	0,5±0.2 mrad	3±1 mrad
<b>Vertical</b>	0,5±0.2 mrad	3±1 mrad
<b>M<sup>2</sup><sup>(2)</sup></b>	<1.2	<1.2
<b>Beam ellipticity<sup>(3)</sup></b>	<1.20	<1.22
<b>Polarization</b>	Linear PER>20dB	Linear PER>20dB
<b>Energy control function</b>	RS232, Analog 0-5V	RS232, Analog 0-5V
<b>Gating function</b>	TTL 0-5V	TTL 0-5V
<b>Synchronisation output included</b>	TTL compatible output signal for synchronization/monitoring	TTL compatible output signal for synchronization/monitoring
<b>Option*</b>	-	A

### NOTES

(1) For temperature variation < ± 3°C and < 3°C/hour, stability is measured with calorimeter - detector band [DC, 2Hz]

(2) Mean average value  $M = \sqrt{XY}$ , X and Y being respectively the major and minor axis of the ellipse

(3) Beam ellipticity is calculated as the ratio of the main axis far field divergence

(4) Contact factory for availability. Performances are given without optical isolator.

(5) The repetition rate can be factory-set to any fixed higher (up to 100 kHz) or lower (down to 30 kHz) value. The energy per pulse would decrease / increase accordingly.

(6) The energy per pulse of the HNP-70F-100 can be factory-set up to 100μJ, the repetition rate would have to be decreased

(7) The energy per pulse of the HNG-70F-100 can be factory-set up to 60μJ, the repetition rate would have to be decreased

(8) The peak power depends on the energy per pulse customization and the laser pulse width (up to 200kW for the HNP-70F-100)

(9) The peak power depends on the energy per pulse customization and the laser pulse width (up to 100kW for the HNG-70F-100)

\* Described on page 3

## COMPLEMENTARY INFORMATION & OPTIONS

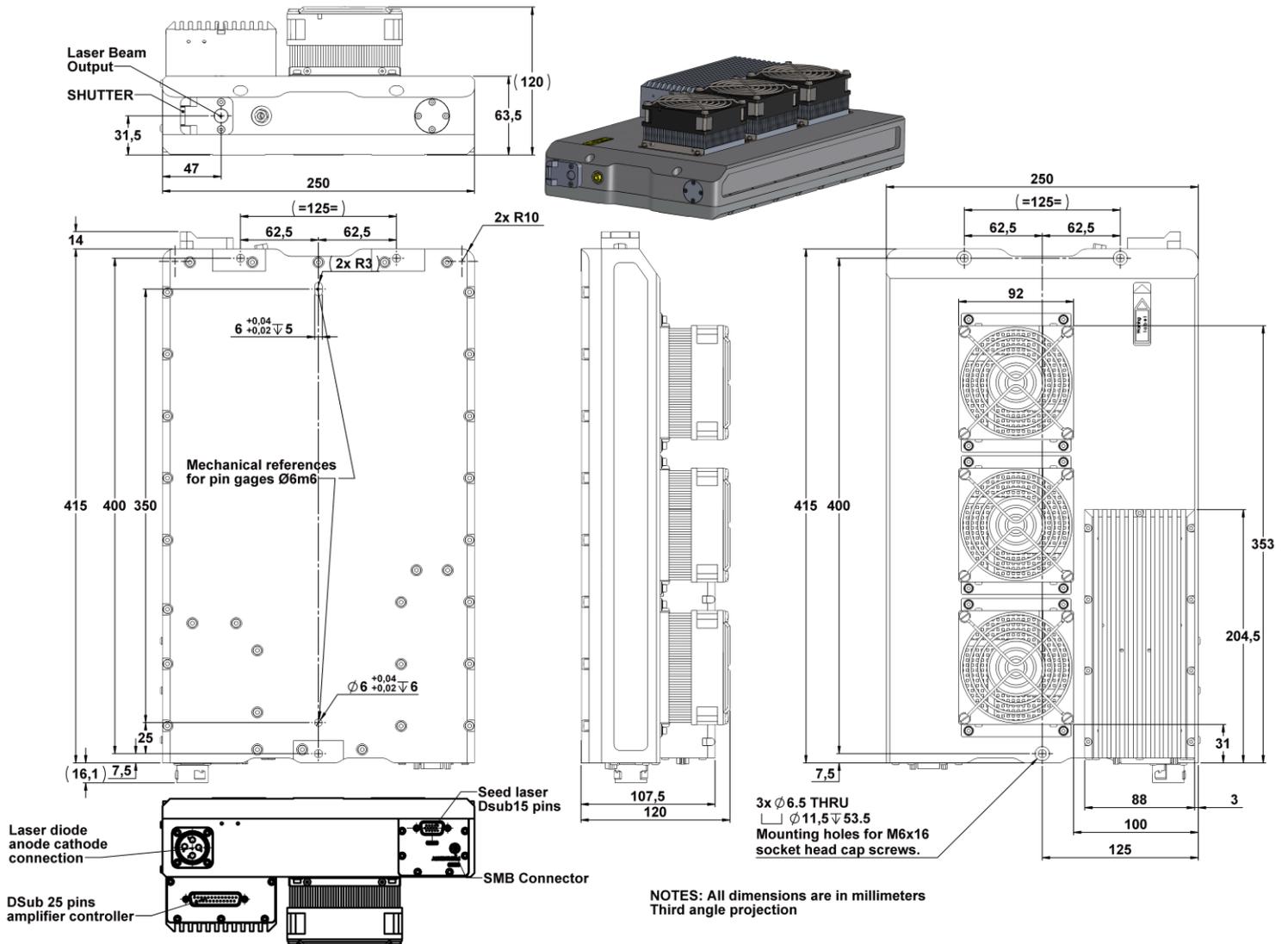
Environment Parameters	
Operating Temperature Range	15-30°C
Maximum Power Consumption	<600W
Storage Temperature	0-50°C
Shock of 11ms according to IEC 68-2-27, non operating	25g
Vibration 5Hz to 500Hz sinusoidal according to IEC 68-2-6	2g

Certification	
Laser classification according to IEC 60825-1:2007	4
CDRH compliance	Yes
ROHs	Yes

Package	
Laser Head dimensions, LxWxH	429x250x120mm
Laser Head weight	9kgs
Cable length between head and controller	2m
Controller dimensions, LxWxH	483x390x88mm
Controller weight	10kgs

Option	
Acousto-Optic Modulator (A)	For HNG series only

# CDRH LASER HEAD MECHANICAL DRAWINGS



## CDRH CONTROLLER MECHANICAL DRAWINGS

