Sub-nanosecond Fiber Amplified Microchip PicoOne Series

KEY FEATURES

- **1064 nm, 532 nm**
- **High pulse energy stability 0.3 % (σ)**
- **Rep rate up to 100 kHz**
- **Excellent beam quality – TEM00, M^2<1.2**
- **Efficient, air-cooled**

The PicoOne amplified laser series is based on a microchip seeder and an efficient MOFA (Master Oscillator Fiber Amplifier) amplification stage. This laser produces 650 ps pulses at frequencies up to 100 kHz with an average power reaching 1W at 532nm. The laser operates with a single emission frequency and offers exceptional pulse energy stability over time.

The Passively Q-Switched (PQS) microchip laser technology and fiber amplification brought together with this laser series offers a full control over the pulse energy (or peak power) while leaving unchanged the pulse width and pulse shape. Other seeders may also be used if different characteristics are required.

APPLICATIONS

- Micromachining
  - Selective ablation of µm to nm scale layers
  - PCB Repair
- Instrumentation
  - Raman spectroscopy
  - Supercontinuum generation
  - Ranging
  - LIDAR
- Biophotonics
  - Dense tissue ablation

TECHNICAL SPECIFICATIONS

	ANP-20E-000	ANG-10E-000
Wavelength	1064 nm	532 nm
Repetition Rate(1)	>70 kHz	>70 kHz
Constant Pulse width range (FWHM)(2)	<0.65 ns	<0.65 ns
Output Power(3)	>1750 mW	>700 mW
Output Energy(4)	>25 µJ	>12 µJ
Peak Power	>38 kW	>15 kW
Short term (10min) power stability(5)	<±2 %	<±2 %
Long term (6 hrs) power stability(5)	<±3 %	<±3 %
Energy stability(5) **(150 000 pulses)**		
σ	0.5 %	0.5 %
peak-to-peak	4 %	4 %
Beam profile	Gaussian TEM00	Gaussian TEM00
Full angle divergence @1/e²		
Horizontal	TBD	TBD
Vertical	TBD	TBD
M²(6)	<1.2	<1.2
Beam ellipticity(7)	<1.3	<1.5
Polarization	Linear PER>20dB	Linear PER>20dB
Energy control function	RS232, Analog 0-5V	RS232, Analog 0-5V
Gating function	TTL 0-5V	TTL 0-5V
Options (described on page 3)	-x**S**x, -xx**I**	-x**S**x, -xx**Y**

NOTES

(1) 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
(2) Measured with 8Ghz photodiode and 6GHz oscilloscope
(3) Measurement performed with an OPHIR thermal power sensor (OPHIR 3A-FS-SH)
(4) The energy per pulse of the ANP-20E-000 and the ANG-10E-000 can be factory-set up to 30µJ and 15µJ, respectively. The repetition rate would have to be decreased.
(5) For temperature variation < ± 3°C and < 3°C/hour, stability is measured with calorimeter - detector band [DC, 2Hz]. Standard deviation (or σ) is a measure of how dispersed the data is in relation to the mean
(6) Mean average value M = √(XY), X and Y being respectively the major and minor axis of the ellipse
(7) Beam ellipticity is calculated as the ratio of the main axis far field divergence

SUPPLEMENTAL INFORMATION & OPTIONS

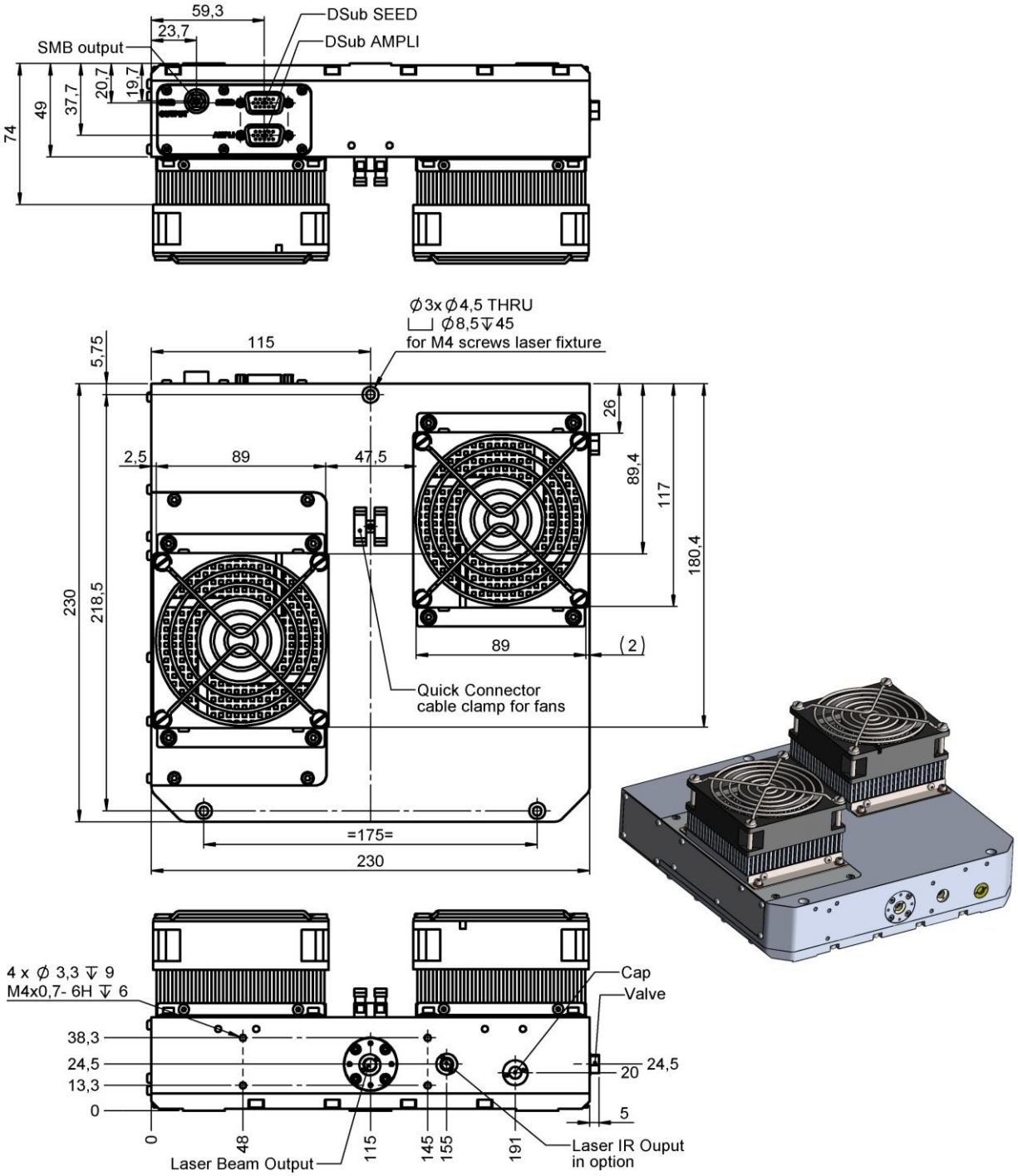
Environment Parameters	
Operating Temperature Range	15-30°C
Maximum Power Consumption	<25 W
Storage Temperature	0-50°C
Shock of 11ms according to IEC 68-2-27, non operating	25g
Vibration 5Hz to 500Hz sinusoïdal according to IEC 68-2-6	2g

Certification	
Laser classification according to IEC 60825-1:2007	4
CDRH compliance	In Process
RoHS	Yes

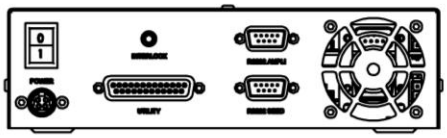
Package	
Laser Head dimensions, LxWxH	See mechanical drawings on page 4
Laser Head weight	4.5 kg
Controller dimensions, LxWxH	See mechanical drawings on page 5
Controller weight	1.1 kg

Options	
Synchronization output (-xSx)	TTL compatible output signal for synchronization/monitoring
Optical Isolator option (-xxI)	1064 nm return signal Optical Isolator added inside the laser head
Additional Infrared Output for Synchronization (-xxY)	Additional output emitting Infrared 1064nm light that can be used for Synchronization/Monitoring. *The performances of this 1064nm light are not factory tested, and consequently not specified.*

LASER HEAD MECHANICAL DRAWINGS



CONTROLLER MECHANICAL DRAWINGS



NOTES: All dimensions are in millimeters
Third Angle Projection