

# YBYAG-40xx

YBYG-PL0001-W2N

## SINGLE CRYSTAL FIBER AMPLIFIER

Single Crystal Fiber (SCF) amplifiers are the best solution to amplify short pulse lasers in a MOPA configuration since they do not suffer from the strongly aberrant thermal lensing effect that degrades the beam in bulk crystal amplifiers. Fibercryst pioneered the SCF technology and developed the Taranis module benefiting from a unique, patented, cooling solution for high power pumping. Taranis module is an industrial component with no adjustments; the only requirements are proper alignment and focusing of the seed laser.



A Taranis module can amplify a pulsed seed laser from a few kHz to several tens of MHz, or a seed laser from tens of nanoseconds down to a few hundred of femtoseconds with seed powers ranging from a few hundred of mWatts up to tens of Watts.

Taranis modules are available with Yb:YAG (Ytterbium) or Nd:YAG (Neodymium) material.

## Yb:YAG Water cooled module

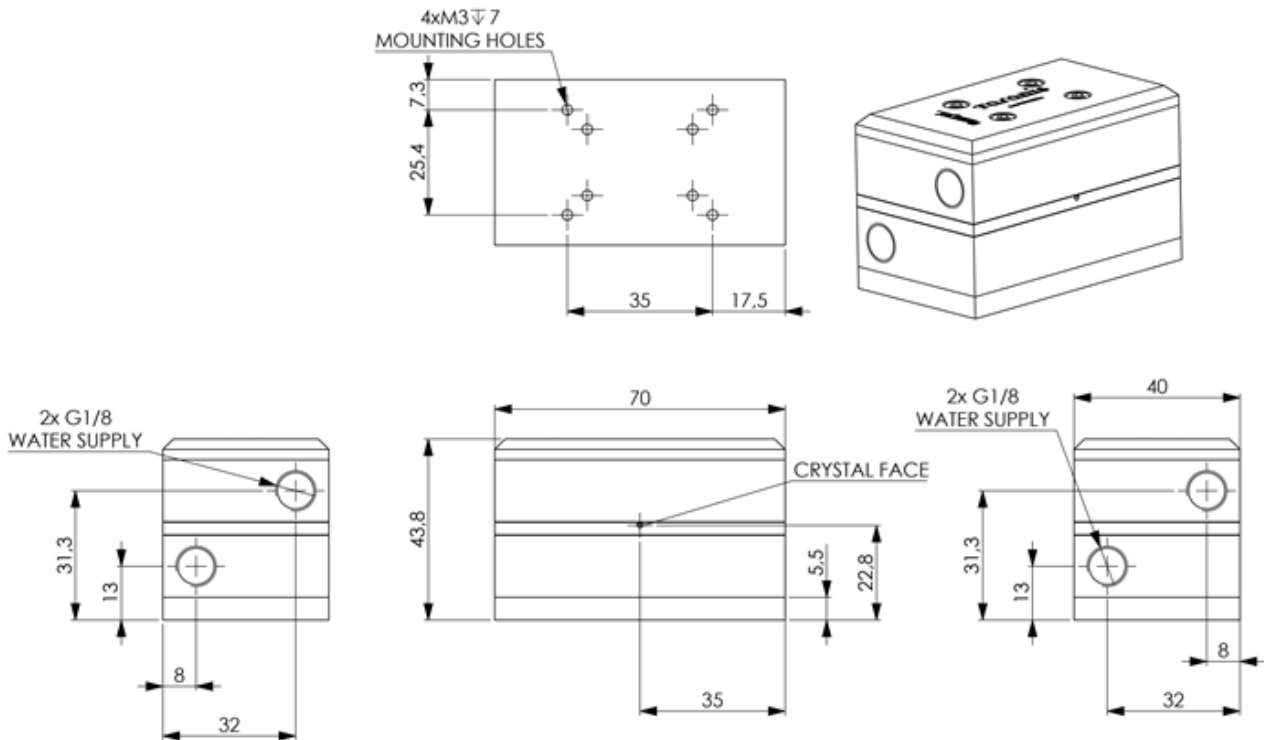
CRYSTAL DIMENSION	WATER-COOLED SYSTEM
<ul style="list-style-type: none"> <li>○ Length : 40 +/- 1 mm</li> <li>○ Typical Diameter : 1 mm +/- 5%</li> <li>○ Typical doping rate: 1% at. +/- 0.1%</li> </ul>	<ul style="list-style-type: none"> <li>○ Typical heat transfer coefficient fiber/metallic plate <math>H=5W/(cm^2.K)</math></li> <li>○ Dimensioned for up to 200W pumping</li> <li>○ Copper water box with protective Ni layer</li> </ul>

Water cooling should be operated under 5 bars of pressure and between 3 to 4 l/min at 20°C

Operating temperature: +15°C to +35°C (no condensing water)

Storage temperature: +15°C to +35°C (no condensing water)

## DIMENSIONS



## OPTICAL SPECIFICATIONS

<b>Typical transmission</b>	>95% at 1 $\mu\text{m}$ (see note 1 and note 4)
<b>Depolarization losses</b>	< 2% (see note 1)
<b>Guiding efficiency</b>	> 80% at 1 $\mu\text{m}$ (see note 1)
<b>Coating</b>	AR/AR 940 nm and 1030 nm.
<b>Clear aperture diameter</b>	800 $\mu\text{m}$
<b>Max energy density</b>	10 J/cm <sup>2</sup> at 1 ns pulse duration
<b>Pump wavelength</b>	940 nm
<b>Max pump power</b>	200 W (see note 2)
<b>Max input pulse duration</b>	Continuous wave
<b>Min output pulse duration</b>	400 fs (see note 3)

(1) Experimental conditions upon request. The transmission value takes into account the reabsorption effect at 1  $\mu\text{m}$  without pumping.

(2) Above 200 W of pump power, contact FIBERCRYST for specific recommendation.

(3) This value can be achieved after compression of amplified ultra-short pulses. It is limited by the bandwidth of the crystal.

(4) For optimum performances the center wavelength should be at 1030 nm + or - 0,3 nm and the full width at half maximum (FWHM) lower than 2.5 nm.