

Created by DG on 23 October 2014, revised by MG

Product
Division



LDBA

Laser Diode Bar Assemblies

Product

PH-720-CW-KRP4-YAG5

Description

Pump Laser Diode Head with Laser Crystal Nd:YAG of Ø5mm, pumped with 720W-CW, water cooling. More than 240W-CW @ 1064nm.

Main
Features

This compact laser pump head consists of three water-cooled diode laser bars STACKS, arranged radially around a central cavity suitable for accommodating a crystal laser rod as Nd:YAG. It delivers excellent gain uniformity and lensing performance. The driver and safety devices such as flowmeter and interlock can be integrated in the housing.

Monocrom has more than 10 years of experience with this product. It combines the best high power laser diodes, with a smart design that optimizes efficiency, beam quality and lifetime, and reduces costs. We are very satisfied with its superior characteristics and reliability, which can give competitive advantages to our customers.

The rod pumped length of 46 mm is much shorter than other similar products existing in the market. This is advantageous for regenerative amplifiers, since higher energy is available before self-focusing appears.

The pumping laser diodes are mounted using our clamp-mounting technology. The main features of the solder-free concept of the clamp-mounting technology, exclusive from monocrom, are:

- **Long lifetime**, due to the absence of the mechanical stress caused by the soldering process at high temperature.
- **Minimum "smile"**, less than 0.5 µm
- **High reliability** in pulsed conditions, since the clamped bars do not suffer the same fatigue effect than the soldered ones due to the thermal cycle
- **Small thermal resistances**, owing to the reduction of the contact resistance between electrodes and laser bar. No micro channels are needed to reach low thermal resistances.
- **Large storage temperature** interval tested from -60°C to + 85°C.

Monocrom active mounting uses millimetre-water channels instead of micro-channels.

INDUSTRIAL WATER CAN BE USED FOR COOLING, without any obstruction or channel degradation.

A mixture of deionised water + 2% ethylenglycol is recommended.

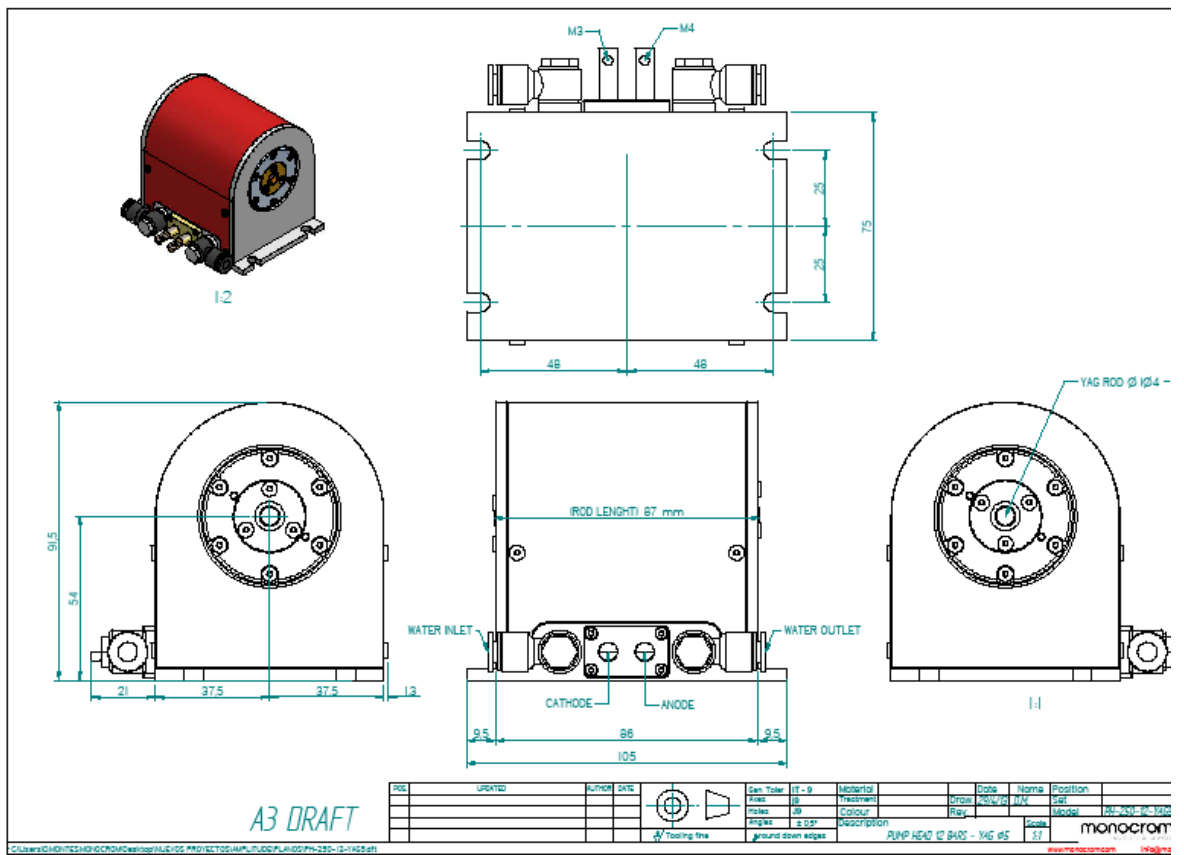
Some
Applications

It is designed for scientific and industrial applications. For example:

- Micro-machining
- Manufacturing
- Regenerative amplifiers
- Medical and aesthetical (ophthalmology, oncology, cosmetic medicine, dentistry laser)
- Scientific (fluid dynamics, laser spectroscopy)



Picture(s)



PH-720-CW-KRP4-YAG5 | TECH SPECIFICATION

Emission Wavelength	1064 nm
Pumping wavelength @ Max. Op. current- 25°C- CW	808 ± 3 nm
Wavelength Temperature shift	0,27-0,3 nm/°C
Number of pumping LD bars	3 stacks, 4 LD bars each
Maximum difference of wavelength in LD bars	1,5 nm
Pumping power @ Max.Op.Current CW, Maximum	720W
Output power @ 1064nm @ Max.Op.Current – CW ¹	220W
Maximum Operating Current	70 A
CW Operating current	60 A
Pumping Threshold Current, typical	10 A
Voltage before cables	<26V
Output Beam Diameter without Aperture	5 mm
Active Medium ²	0.4 – 1,1% Nd:YAG rod
Active Medium Rod Size ²	Ø5 x 87 mm
Rod pumped length	46 mm
Cooling Water Requirements	>3l/min @ 2-3 bar
Cooling Water Temp Range ³	<30 °C, Out of condensation conditions
Water connection	Water flow outlet for Ø8mm tube
Electrical connections	Thread M6 for cathode and anode.
Expected lifetime	10 ⁴ hours
Laser class product (EN-60825)	4

Typical value in the beginning of life performance at 25°C

1. Assuming 33,3% of optical efficiency, at maximum operation current. Typical values between 30 and 40% of optical efficiency are obtained. These depend on the type of laser rods chosen by customer. Typical specifications are based on standard rods of Nd:YAG
2. Other active media on request.
3. The optimum water temperature depends on the operation current and water flow. It is recommended to measure the wavelength of the diode by using a spectrometer, so that water temperature is changed to achieve 808nm for optimum pumping.

Ordering Information:



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