

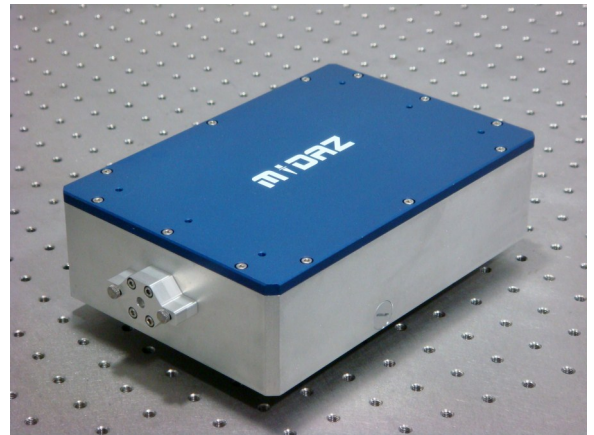
Midaz Amplifier (A70-W) Water-Cooled

Data Sheet

The water-cooled Midaz amplifier module (A70-W) is based on Midaz unique micro-slab amplifier technology, and offers unparalleled performance for amplification of a range of CW and pulsed seed lasers. The diode-pumped solid-state (DPSS) amplifier module offers customers a new breakthrough set of performance parameters including extremely high gain, high average power and peak power capabilities that were previously unavailable. The water-cooled amplifier (A70-W) offers the highest power of operation in a highly robust and compact housing.

Midaz A70-W amplifier features include:

- Highest gain DPSS amplifier ($\sim 10^4$)
- High average powers (to >40W)
- High peak power capability for pulse amplification
- Maintenance of high spatial beam quality (TEM_{00})
- Highly polarised output beam (>100:1)
- High extraction efficiency (>50%)
- Compact footprint
- Robust mechanical design



Midaz A70-W amplifier offers industry leading ultra-high gain, orders of magnitude higher than competing DPSS technologies. As a result, even low (<0.1W) or mid-power ($\sim 1-10W$) seed lasers can be amplified to tens of Watts in a single amplifier stage, eliminating cost and complexity of using multiple pre-amp stages. The high peak power handling capability of the Midaz amplifier technology allows operation in pulsed formats unavailable to fibre amplifier technology. The high spatial quality and highly polarised output beam is also highly favourable for efficient nonlinear optical conversion, if desired (e.g. harmonic conversion to green, UV, and deep UV).

Midaz Amplifiers open doors to customers to enter new commercial markets or to address new scientific applications such as:

- Amplification of CW, pulsed, modelocked, & single longitudinal mode laser sources
- Amplification of Nd:YVO₄, Nd:YAG, diode and Yb fibre seed lasers
- Scientific applications e.g. replacement for regenerative amplifiers

Midaz has a policy of continuous product improvement. Specifications are subject to change without notice

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Specifications

Typical values for CW Nd:YVO₄ seed laser.
For pulsed seeds, see pulsed data curves.

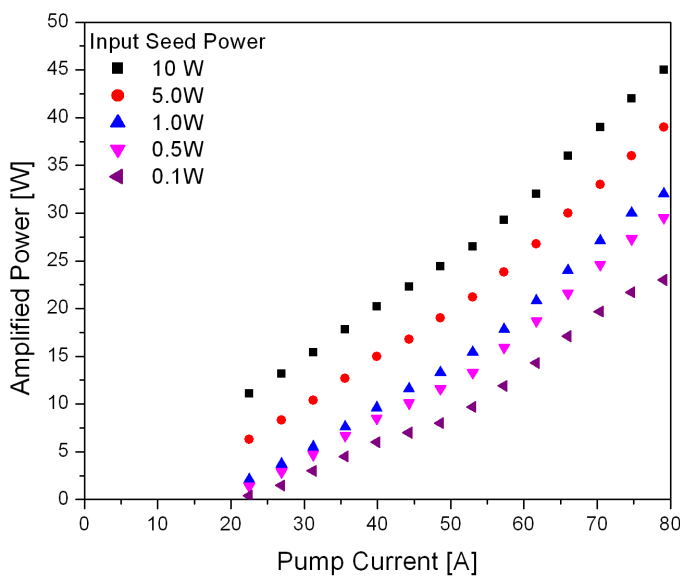
Model No	A70-W
Amplifier ^[1]	Nd:YVO ₄
Wavelength	1064 nm
Cooling method	Water
Average power @ 10 W seed @ 1.0 W seed @ 0.1W seed	>40 W >30 W >20 W
Spatial Quality ^[2]	TEM ₀₀ , M ² < 1.3
Polarisation Ratio ^[2] (vertical: horizontal)	> 100:1
Pointing stability ^[2]	~ 1 μrad

Actual performance will depend on parameters of customer's seed laser.

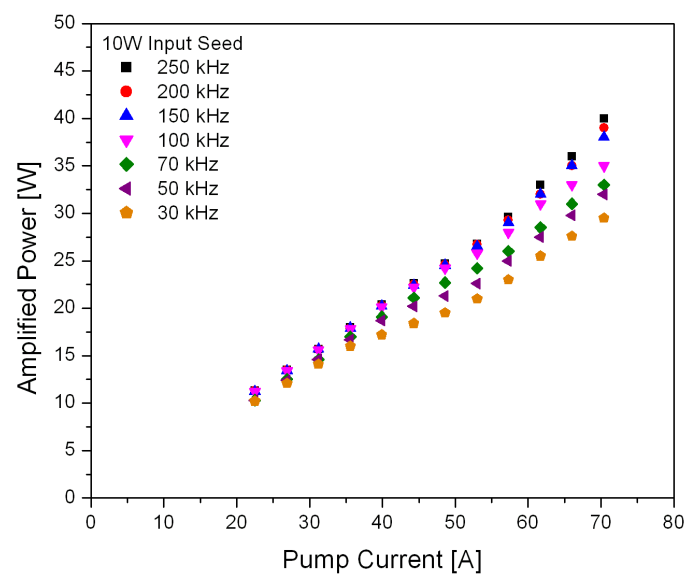
[1] For other amplifier options (e.g. Nd:YAG) contact Midaz

[2] Amplifier parameters are dependent on input seed parameters

CW Seed Laser



Pulsed Seed Laser



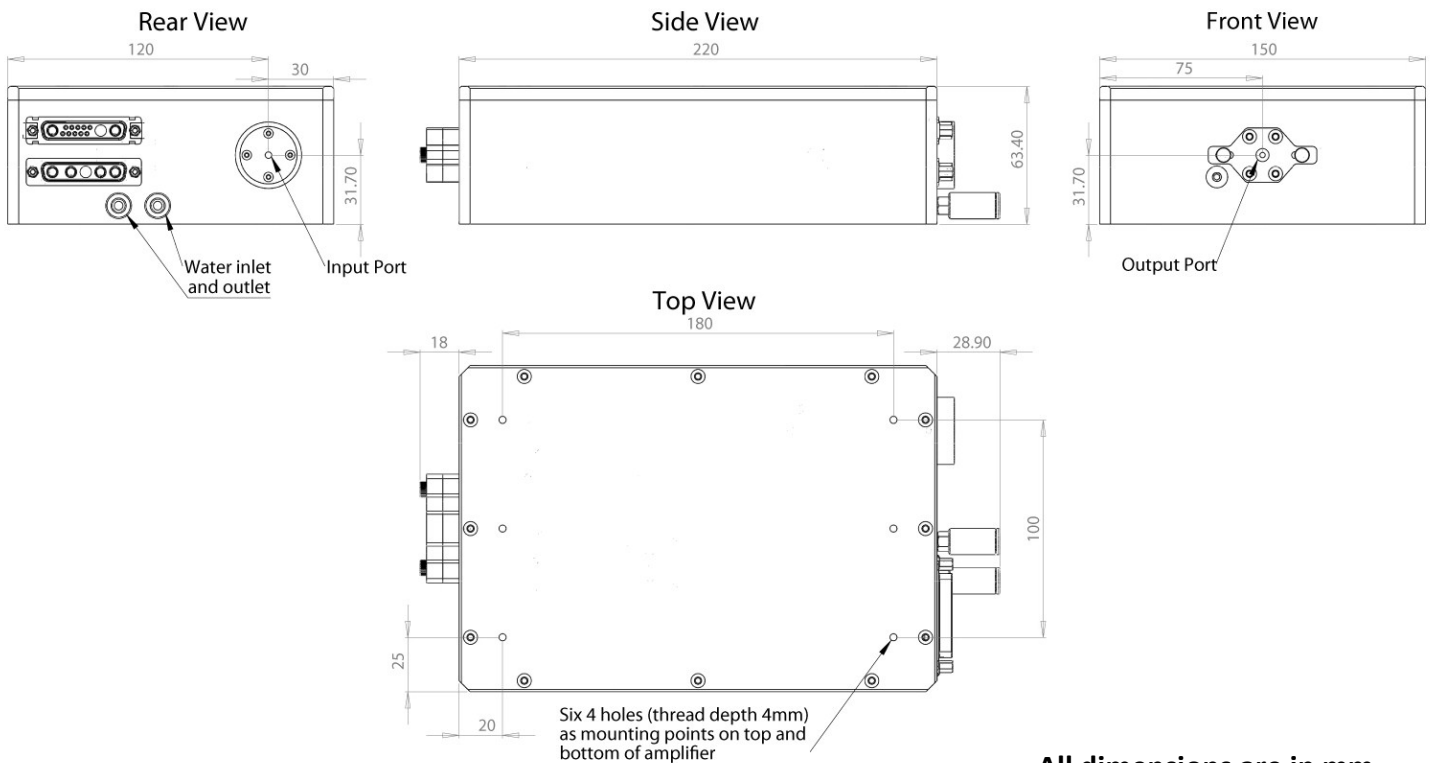
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Dimensions



All dimensions are in mm

Options / Accessories for amplifier module:

- [1] Amplifier module is supplied with an (optional) alignment tool that attaches to the input port to aid initial alignment
- [2] Amplifier is factory optimised for low astigmatism at “set-point” current (typically, 70A). A user-accessible adjustment/optimisation control of the astigmatism is available as standard, to accommodate other currents and input seed variations. A user-adjustable spatial filter, attached to output port, is available for customer to improve the spatial quality of amplified beam, if desired.
- [3] A Laser Controller can be supplied with amplifier module (19in rack unit, 3U height) providing diode current control and full thermal management and full cabling (2m length, standard) between head and controller.
- [4] Midaz can supply a water chiller (stand-alone or rack-mount) for heat extraction from the amplifier head.