High Power Fiber Coupled Diode Laser

visotek Inc.
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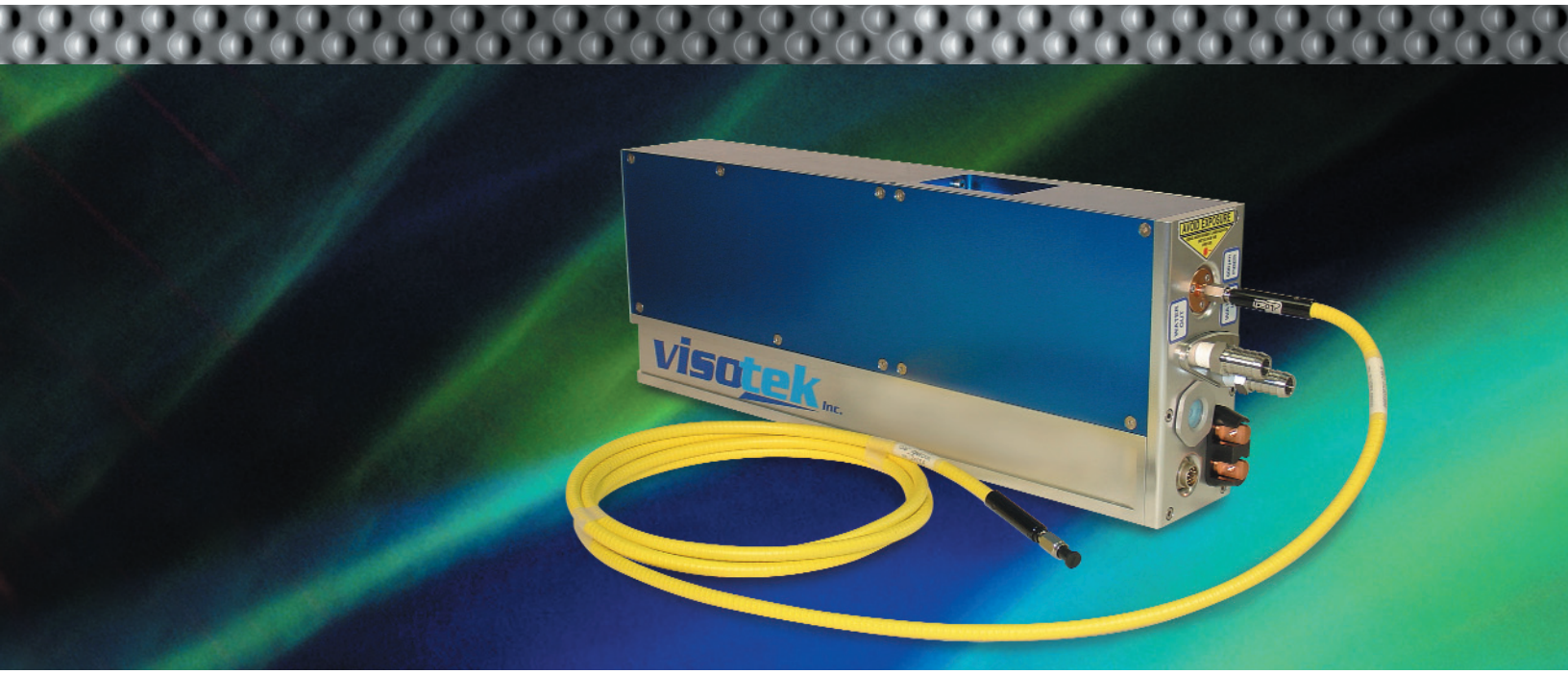

The **Visotek HPFC** (High Power Fiber Coupled) series diode lasers consist of a high power semiconductor laser stacked array efficiently coupled into a low numerical aperture detachable single fiber using patented and proprietary beam shaping and lensing technology. This efficient fiber coupling offers a huge advantage in that the diode output power is fiber delivered directly to the work piece eliminating the cost, complexity and risks associated with mounting the diode laser head to a robot or gantry.

Polarization multiplexing and spatially combining the output from individual laser modules allows power scaling while maintaining a single wavelength. Even higher powers are achieved by wavelength multiplexing. In both cases, efficient coupling into the same fiber size in maintained.

The modular design of the HPFC provides a very flexible platform, allowing for power scaling, easy upgradability and customization. Visotek offers these diode lasers as stand-alone OEM style laser modules or as fully integrated turn-key laser systems.

Features

- OEM stand-alone module or integrated turn-key system
- Fiber coupled output powers up to 4,500 W
- Flexible, scalable, upgradable design
- High efficiency with low cooling and operating requirements

Applications

- Welding (metals and plastics)
- Brazing and Soldering
- Cladding and Coating
- Hardening (Heat Treatment)
- Pumping Fiber and other Solid State Lasers

Options

- Processing optics for laser welding, cutting and cladding
- 2D scanning optics
- Pilot laser
- Internal shutter
- Power monitoring, measuring laser output power launched into the fiber

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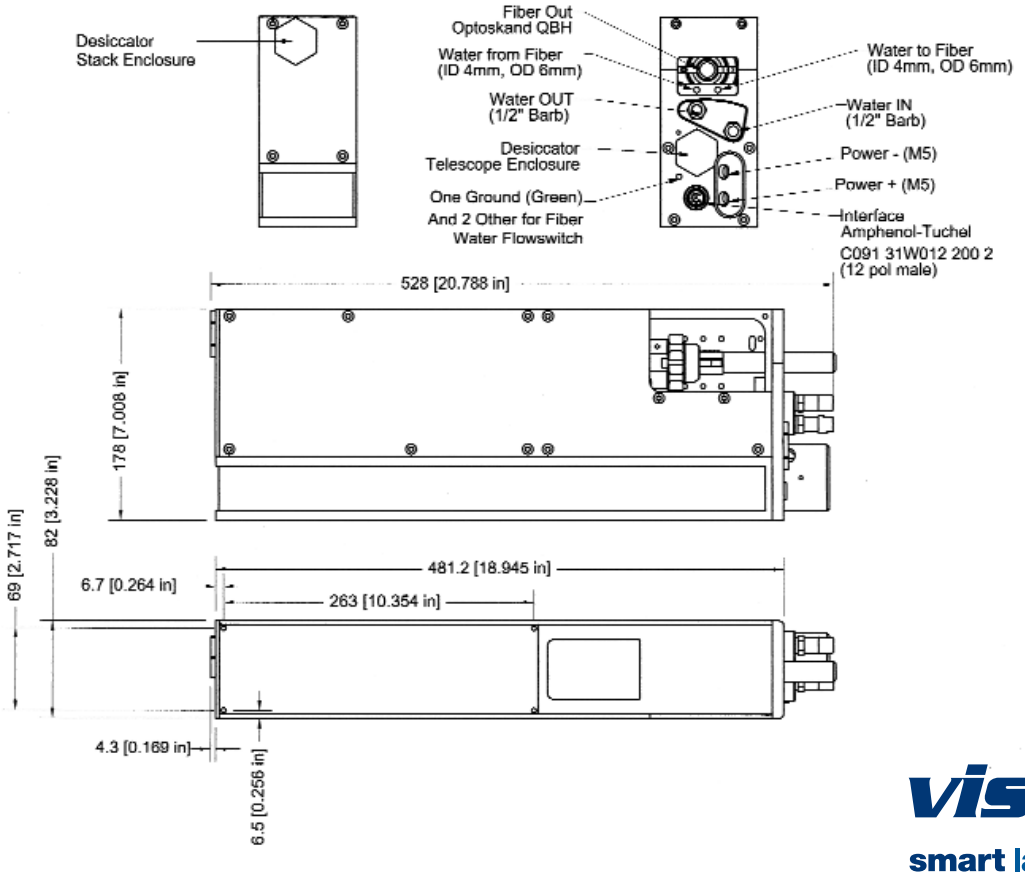
Specifications

Optical				
Output Power	Fiber size	Power from 1 module	Max output power at a single wavelength	Max output power at multiple wavelength
	600 um	500 W	950 W	2,500 W
	1000 um	1,000 W	1,800 W	4,500 W
Center Wavelength	790-980 nm			
Central wavelength variation	Typicaly +/- 3nm			
Spectral width	Typicaly 3 nm (FWHM)			
Beam divergence (NA)	0.22 +/- 0.02			
Minimum Pulse Width	5ms / 0.5msec upon request			
Duty Cycle	1 % to 100 % / max. 10% for 0.5 msec pulse duration			
Max. Repetition Rate	200 Hz standard / (customs to higher PRR)			
Output Fiber Cable Length	>500W QBH (Optoscand), 5 m - 50m / <500W LD80 or SMA 3m			
Electrical				
Typical operatng current	60 A to 135 A			
Typical operatng Voltage	Depends on output power			
Mechanical				
Overall Dimensions		500 x 200 x110 mm (20" x 8" x 4") see drawing below	Contact factory	Contact factory
Mass		10 kg (22 lbs)	Contact factory	Contact factory
Cooling				
Flow Rate		4.5 l/min	7.2 l/ min	Contact factory
Flow Rate Tolerance		+/- 10 %	+/- 10 %	+/- 10 %
Water quality	Dionized water, 2-10 uS/cm, mixed bed ion exchanger, particle filter 25 um			
Water Temperature		15-35 C		
Maximum inlet Pressure		400 kPa, 60 PSI	400 kPa, 60 PSI	400 kPa, 60 PSI
Environmental				
Storage Temperature	5 to + 60 C			
Operating Temperature Range	10 to 35 C - >17degr.C to avoid contamination			
Altitude	0 to 3000 m			
Humidity	10-80 %, non condensing			
Warm-up time	Less than 1 minute			



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