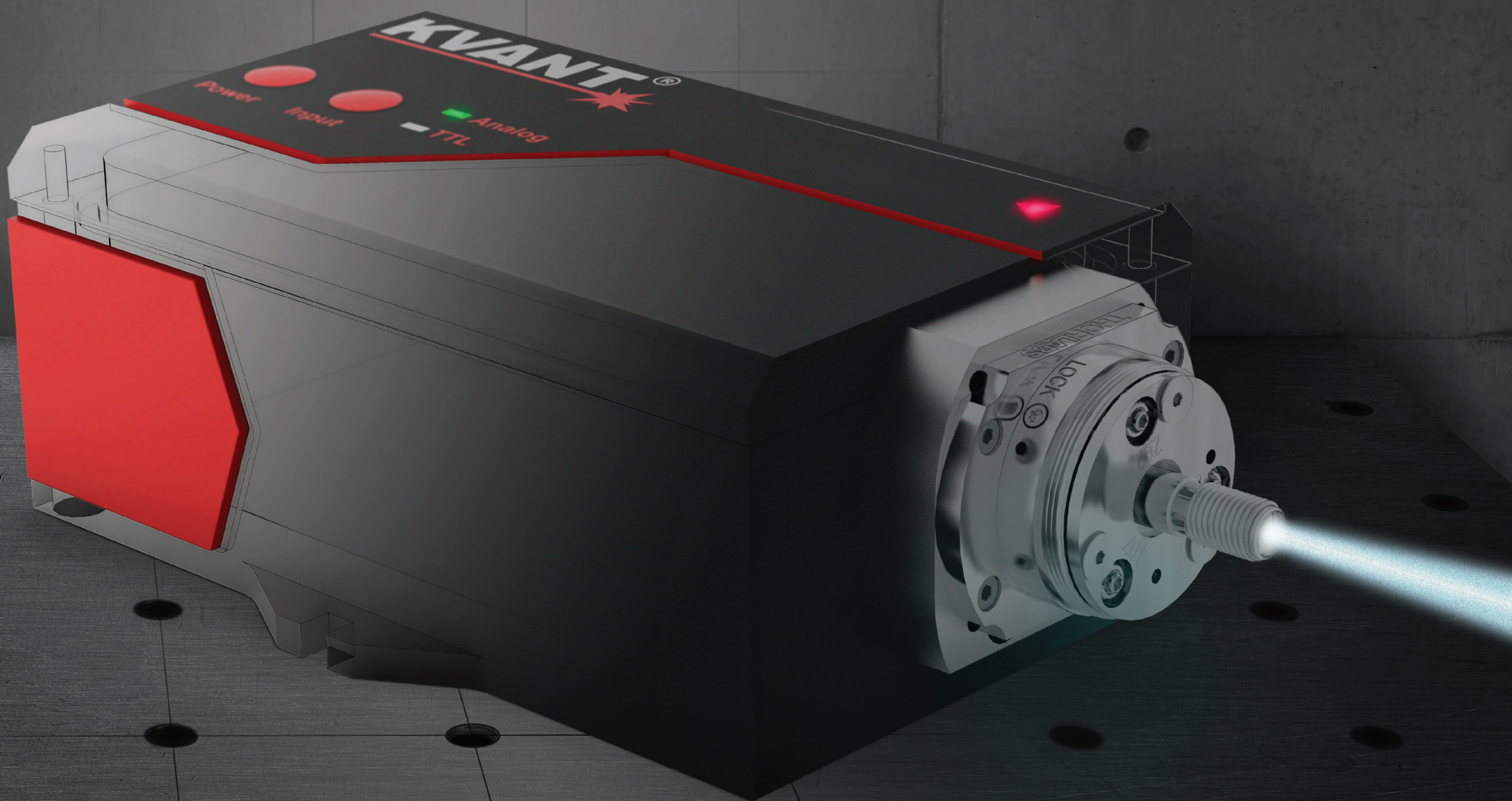


Laser Modules

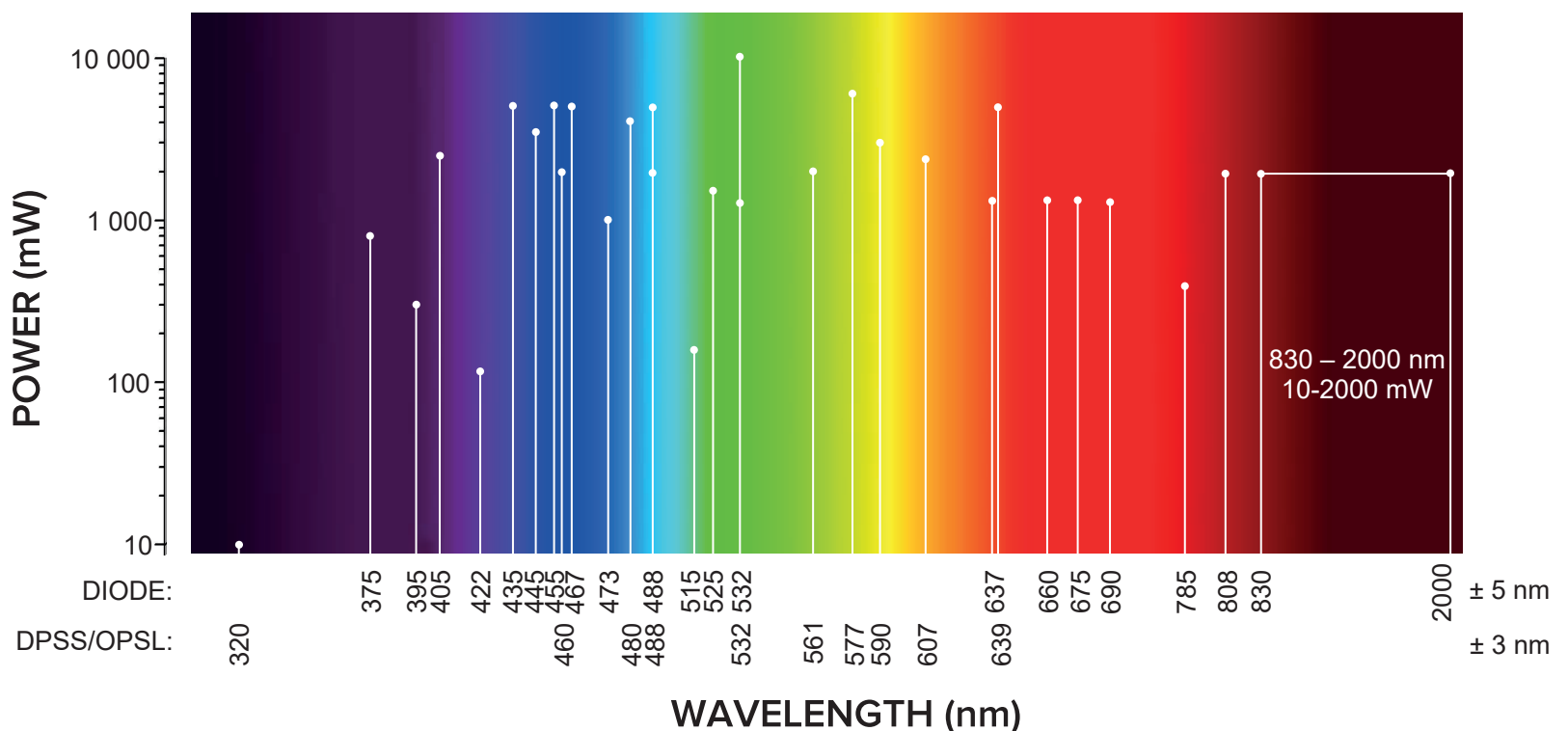


KVANT[®]
LASERS

ABOUT KVANT LASERS

Kvant Lasers Ltd. produces laser systems for R&D, industry, military, advertisement, art, architecture, medical and display applications. Kvant Lasers Ltd. is a spin-off of Kvant Ltd., which was established in 1995, focusing mainly on the development and production of new laser solutions, exerting its outmost efforts and whatever it takes to meet the worldwide market demands. Since our foundation, the assortment and quality of products have increased unequivocally with the experience and knowledge of our engineers and designers. The ultimate goals and objectives of our professional experts are to vehemently develop and supply products with the highest quality, outstanding reliability, encompassing a wide range of options and customization to select from, in view of meeting all customers' needs and expectations, whilst proposing the most competitive commercial value. Furthermore, our devoted post-sales support team is prepared to assist with any potential enquiries.

Our wavelength range



Our R&D team has invented several industrial designs and patents in many laser related fields, including laser beam shaping and the modification of laser light parameters. Ongoing research and product development is carried out under the same roof as our production line. In our 1,800 sq. meter floor buildings in the capital city of Bratislava, involving over 50 loyal and dedicated employees. We only utilize components from reputable American, Japanese, German and Slovak manufacturers. All our products meet the most stringent international and EU HSEQM requirements.

KVANT LASERS is at the cutting edge of research into laser technology, where our researchers remain entirely compatible throughout their professional collaborations with Slovakian and German industrialists as well as other academic institutions worldwide. Our trustworthy expertise and well proven track record allows us to offer any customized and tailor-made laser systems to meet your most stringent technical specifications as well as a diversified range of applications.



Single Diode Laser Modules

The KVANT MONOLITH Laser Module series includes high-quality single diode laser heads with a wide variety of wavelengths powered by high-output laser diodes.

Each module features temperature stabilization for optimal performance and a separable interface box for safety and modulation options.

With integrated driving electronics allowing for up to 240 kHz analogue modulation, TTL modulation, USB computer interface and additional features like data display, signal LEDs, and fiber coupling options, the Monolith lasers are versatile and functional.

The manufacturer also offers after-sales services for customer satisfaction and support.

FEATURES:

- Elliptical, round or square beam profile
- Control options: potentiometer, Analog or TTL, USB (software)
- Free space beam or fiber coupled version
- Integrated TEC for power stabilization and long lifetime
- Control push buttons
- Data display and LEDs signalization
- Interface box for safety and modulation features
- Operation through the KVANTUM software



WAVELENGTHS AND POWERS

Wavelength (nm)	Single mode (mW)	Multi-mode (mW)
375	70	200, 400, 800, 1000
380		200
395	120	300
405	200, 300	300, 500, 800, 1200, 2500
415	120	
422	120	
425		1500
435		5000
440		5000
445	100, 500	1500, 3500, 5000
455	500	5000
462		1400, 4000
473	100, 300	1000
488	50, 200, 300	2000
515	150	
520	120	300, 500
525		1500
532		1250
638	180	600, 1000, 1200, 1500
650	200	
660	200	1200
675	200	1200
690	200	1200
785	100	400
808	500	2000
830	600	1000, 2000
852	600	700
915	300	1000
940	200	700, 4000, 6000
960	250	
976	900	
980	200	1500, 4000, 6000
1030		3000, 5000
1064	450	1500, 4000
1064-2000	On request	On request

Beam size (1/e ²)	2.5 ± 0.5 mm
Beam divergence (full angle)	0.2 mrad (TEM00)
Linear polarization	Y
Mode structure	Single transversal, multi-longitudinal mode
Analog input signal	0 – 5 V
Bandwidth (analog, 3 dB cut-off frequency)	240 kHz
Rise time (10%-90%)	700 - 900 ns (signal dependent)
Laser head dimensions (LxWxH)	70(84) x 120 x 46 mm
Power stability (20 minutes, warm-up)	< 0.5 % (peak-to-peak)
Input voltage of the power supply	USB-C power delivery 3.0 (max: 20V, 5A)

OPTIONAL EQUIPMENT:

- air cooled heat sink with actively controlled fan
- mechanical shutter
- beam expander
- beam shaping optics (e. g. line generating lens etc.)
- fiber coupling system (SM PM or MM fiber, round or square core profile)



Quattro - Multiwavelength Laser Modules

In fluorescent microscopy, clinical diagnosis, and biomedical science in general (i.e.: protein cell imaging, cancer diagnostics, flow cytometry), varying light sources are utilized to excite the fluorophores, such as LEDs, supercontinuum lasers and/or monochrome lasers. It is common to have multiple fluorophores present in a specimen, and therefore varying wavelengths would be needed to achieve an efficient excitation. More wavelengths used for excitation will result in more cellular properties detected simultaneously.

Our Quattro series laser source embodies a combination of four individual laser sources in a single compact package and a single laser output. Aligning the four beams to shine them into a microscope will be your least concern, as we have taken it upon ourselves to do it for you. It is a quick and cost-effective method to integrate four laser wavelengths simultaneously into your research system. The four wavelengths can be selected from various wavelengths ranging from 375nm to 915nm and output power up to hundreds of milliwatts per wavelength.

The most frequent combination is 405nm, 488nm, 561nm with 638nm, which our RYCV model conveniently includes. Furthermore, all wavelengths are controlled via a single control box so that controlling this module can be extremely efficient and dependable.

Both the free space beam and fiber coupled versions are currently available.



QUATTRO RYCV SERIES

Model nr.	RYCV-200 (RYCV-600)	
Optical output power and wavelengths	50 (150) mW / (405 ± 5) nm	
	50 (150) mW / (488 ± 5) nm	
	50 (150) mW / (561 ± 5) nm	
	50 (150) mW / (637 ± 5) nm	
	(For other wavelengths please contact our sales team)	
Light source	Diode (405/488/637 nm) OPSL** (561 nm)	
Laser class according to IEC 60825-1 standard	3B (4)	
Beam size (D95) (horizontal*vertical)	3.5 mm *	
Beam divergence (horizontal/vertical)	0.2 mrad*	
Polarization ratio	> 100:1	
M ² (horizontal/vertical)	< 1.3	
Mode structure	TEM00	
Modulation input (individual for each color)	Analogue input:	SMA or 6-pole terminal, 0 – 5 V, CW to 50 kHz
	TTL input:	SMA or 6-pole terminal, CW to 50 kHz
	Computer control:	USB
	TTL input:	four potentiometers
Impulse rise time	< 5 µs @ 405/488/637 nm < 18 µs @ 561 nm	
Interlock	yes	
Shutter	electro-mechanical	
Power consumption	< 95 W	
Input voltage	24 V	
Dimensions laser head (LxWxH)	204 x 114 x 82 mm (excl. connectors)	
Control box dimensions (LxWxH)	169 x 169 x 36 mm (excl. connectors)	
Operating temperature	10 – 35 °C	
Storage temperature	5 – 50 °C	
Heat dissipation	< 70 W	
ESD protection	STN EN 61326-1	

* Other beam size/divergence on request
** Optically Pumped Semiconductor Laser head made by Coherent Inc.



Custom Production

The customization of laser systems is our favorite activity besides serial manufacture. We can help with the custom system development and transform it into a serial production later for you. With or without scanning, single or multi-color, with beam shaping optics or incredible beam divergence, for creative or scientific applications, extra light or ultra-stabile, from hand-held pointers to hundreds of watts, from UV to IR, we are waiting for your enquiries.

OPTIONS:

- Free space beam
- Single mode fiber coupling
- High power multimode fiber coupling
- Static beams
- Scanned systems
- Single wavelength
- Multi-wavelength
- From 320 nm to 2000 nm
- Long lifetime
- Wavelength selection
- Beam shaping
- Power up to hundreds of watts
- IP68 for permanent immersion
- Ultra-compact and light
- Eye-safe projection
- Speckle-free projection

APPLICATION AREAS THAT WE SUPPORTED

ALREADY IN THE PAST:

- Biomedicine
- Fluorescence
- Spectroscopy
- Particle and gas analysis
- Polymerization
- Dermatology
- Ophthalmology
- Surgery
- Advertisement
- Automotive industry
- HUD display
- Entertainment
- Education
- R&D
- Crystal pumping
- Laser cinema
- Signal transfer
- Industrial production
- Decoration
- Cutting and engraving
- Excitation
- Production navigation
- Production quality control
- Flatness measurement
- Sport activities
- Night vision



Solid State Laser Modules

KVANT Ltd. is the official worldwide integrator of Coherent Inc. Genesis Taipan optically pumped semiconductor laser (OPSL) heads. All Coherent Inc. heads are equipped with Kvant electronics and delivered **as stand-alone laboratory systems** or **as industrial OEM version** for further integration. Available both in single and multi-mode versions. The advantage of the OPSL technology is the ability to deliver high output powers at unique wavelengths and excellent beam quality, independent of the power or operational mode. Over 1500 Coherent laser heads have already been integrated in our laser systems prior to the end of 2022.

FEATURES:

- Free space beam or fiber coupled version
- Stable beam quality over whole power range
- OEM version for integrators or laboratory version for labs
- Lifetime over 10 000 hours
- Incl. air heat sink and power supply

LOW POWER RANGE MODULES

Our solid-state lasers which have been equipped on the **InGaN-based** pumping laser diode and fluoride crystals are best known for their durability and lifetime longevity. Not too long ago, while implementing our scientific breakthroughs, we evolved the market and invented our popular orange and red lasers based on this innovative technology. We have recently introduced our first UV laser with 320nm wavelength and a few milli-watts of power with the goal of substituting the current HeCd metal ion gas lasers and which is remarkably close to nitrogen, excimer and some other gas lasers. Its application can be found in biotechnology, medicine, microelectronics technology, etching substrates or polymerization.

WAVELENGTH, BEAM QUALITY FACTOR AND POWER

Wavelength (nm)	M2 factor	Power (W)
460	< 1.2	2
	< 6	2
480	< 1.2	2
	< 6	2, 4
488	< 1.2	3
	< 6	3, 5
514	< 6	3, 5
	< 1.2	3, 5
532	< 6	3, 5, 8, 10
	< 1.2	3
577	< 6	3, 5, 6
	< 1.2	2
590	< 6	3
	< 6	2.5, 5

Center wavelength tolerance	± 3 nm
Beam diameter	1 – 10 mm
Fiber core diameter (optional)	50 – 400 µm
Fiber core NA (optional)	0.1 – 0.22
Polarization	Linear, 100:1
Modulation input	Analog 0 – 5 V
Modulation frequency	CW to 30 kHz
Rise time	< 30 µs
Spectral bandwidth	< 0.5 nm



OPSL modules



Wavelength (nm)	M2 factor	Power (W)
320	< 3	20
607	< 1.1	180
639	< 1.1	400

Center wavelength tolerance	± 1 nm
Beam diameter	3 mm
Beam divergence	0.32 mrad
Polarization	Linear, 100:1
Modulation input	Analog 0 – 5 V



DPSS laser modules

High Power Diode Laser Modules

WAVELENGTHS AND POWERS

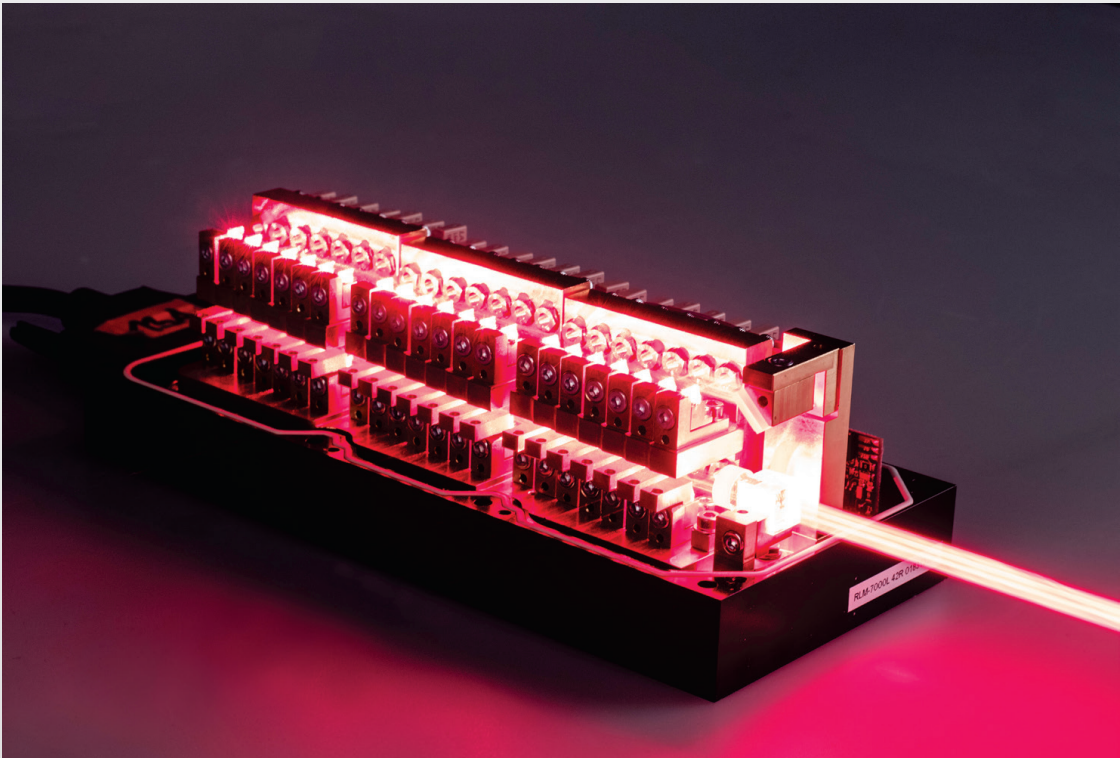
Wavelength (nm)	Power (W)
405 ± 5	Up to 8 W
445 ± 5	Up to 30 W
455 ± 5	Up to 200 W
525 ± 5	Up to 50 W
637 ± 5	Up to 7 W
808 ± 10	Up to 8 W

Beam diameter	5 – 12 mm
Polarization	Random
Modulation input	Analog 0 – 5 V or TTL
Modulation frequency	CW to 100 kHz
Rise time	< 3 μs
Spectral bandwidth	2 – 10 nm
Power fluctuations (CW mode)	< 1 %

There are applications for lasers, requiring a high-power output which cannot be achieved by single emitter laser diodes. Therefore, we have combined up to 64 individual laser diodes and bundled the single laser beams into a single output beam. Additionally, we also offer coupling into a high-power multi-mode fiber with air gap ferrule to prevent fiber damage. For most demanding projects, it is possible to have a more precise wavelength diode selection as well as more subtle wavelength tuning through the diode temperature control. Mixing a plethora of wavelengths to get white or any other color beam in a single laser module is where we excel and stride to achieve competitive edge in this market. These laser modules are mainly used in laser display, optical crystal pumping, architecture, surgery and material processing.

FEATURES:

- Free space beam or fiber coupled output
- Integrated TEC for power stabilization and long lifetime
- Air or liquid cooling



multi-diode modules