

## STM Series Fiber Lasers

### Reliability and maintenance-free

- Laser MTBF: >250.000 hours verified on field data
- All components spliced together
- Specific mechanical design to protect components against shocks and vibrations
- Specific fiber design photo-darkening free (no output power decrease versus time)
- Over 7.000 hours passed on long term testing with several units (tests still on-going)



### Enhanced pulse shape

- Higher peak power during a longer time.
- Slower peak power drift with repetition rate (constant pulse duration) compare to Q-Switched laser

### Additional features

- Back-reflection alarm : protect the laser against back-reflection (no back-reflection with STM20EG which is insensitive to back-reflection)
- Secured electronic interface
- Fast + feature : reduce switch on/off time (150/9μs) and completely suppress parasitic pulses during switch off =>significantly reduce time per job and marking quality
- USB Control Software for laser control and monitoring

### Easy integration and use

- Only few parameters to be set to obtain high marking quality

	STM10	STM20	STM20HF	STM20EG	STM30EG
Wavelength (nm)	1064	1064	1064	1064	1064
Average power (W)	10	20	20	20	30
Energy (mJ)	0.5	1	0.2	0.8	1
Typical peak power (kW)	6 (20kHz)	8.5 (20kHz)	6 (100kHz)	8.5 (25kHz)	12 (30kHz)
Typical pulse width (FWHM/10%, ns)	80/100	100/160	25/50	80/120	80/120
Repetition rate (kHz)	20-250	20-250	100-500	25-250	30-250
Typical beam quality M2	2.2	2.3	1.6	2.0	2.0
Beam diameter at 99% (mm)	8.5	8.5	8.5	8.5 or 12	8.5
Applications	Marking metals & plastics	1. Engraving & marking metals 2. Marking plastics	1. Fast marking 2. Oxides & coating removal 3. D&N	1. Engraving high reflective metals 2. Fine marking	1. Engraving high reflective metals 2. Fine marking



Marking mirror with coated material

## STM10 & STM20 High Energy Pulsed Fiber Lasers

STM10 and STM20 series of laser products are rugged compact pulsed fiber lasers intended for integration into industrial equipment. These lasers offer 10W or 20W average power which is delivered via a flexible output fiber and collimating optics. These high peak power pulses are suitable for applications such as marking, engraving, micromachining, and surface treatments.

Pulse repetition rate and output power can be controlled either by 8-bits TTL signal or USB, providing the user both fast communication and user-friendly interfaces at the same time.

Due to excellent pump to signal efficiency in the optical fiber, these powerful air-cooled laser systems are maintenance free with significantly low operational costs.

The standard systems come with an optical output isolator. Additional beam expander, focusing lens, and red aiming beam are optional.



Model		STM10	STM20
Mode of operation		Pulsed	Pulsed
Average Output Power	W	10	20
Central operating wavelength	μm	1.06	1.06
Pulse energy	mJ	Up to 0.5	Up to 1
Pulse duration @ Full Width Half Max	ns	100	100
Pulse duration @ Full Width 10% Max	ns	160	160
Pulse repetition frequency	kHz	20 - 250	20 - 250
Output peak power	kW	Up to 5	Up to 10
Output beam shape		Gaussian	Gaussian
Output collimated beam diameter	μm	600	600
Beam Expander Option*	mm	9 or 12	9 or 12
Focusing Lens Option	mm	100	100
Power consumption	W	250	250
Electrical supply voltage	VDC	24	24
Operating temperature	°C	5 - 40	
Storage temperature	°C	-20 - 55	
Weight	kg	<10	
Dimensions L x W x H	mm	215 x 286 x 95	

\* There are two ways of defining a beam diameter  $1/e^2$  and 99% of power (full aperture). We use second one. It means our 12 mm beam expanders deliver about 12 mm beam diameter considering 99% of the output power (with our beam characteristics it corresponds to 9 mm at  $1/e^2$ ). Our 9 mm beam expanders deliver about 9 mm beam diameter considering 99% of the output power (with our beam characteristics it corresponds to 6 mm at  $1/e^2$ ).

### Options:

- 24VDC Power Supply
- Delivery fiber cable lengths on request
- Shorter pulse durations on request

## STM20EG Fiber Laser

The STM20EG is a new product based on our STM20 platform. This rugged compact pulsed fiber laser is intended for integration into industrial equipment.

This laser delivers 20W average power via a long flexible fiber delivery and collimating optics.

Its high peak power pulses combined with enhanced beam quality are ideal for applications such as deep engraving, and hole drilling even on highly reflective material such as gold and copper.

With its enhanced optical design and isolation, the STM20EG is insensitive to back reflection. The laser is delivered with a full warranty including marking on copper or highly reflective materials. As part of STM series, STM20EG might be driven either by TTL signal (8 bit TTL for power setting, synchronization signal for repetition rate and activation signal to switch on/off the laser) or by its user-friendly USB software.

### Highlights

- High peak power
- Enhanced beam quality
- Warranty on highly reflective materials

### Options and accessories

- 12 mm beam expander
- Red aiming beam

Reference	Unit	STM20EG
Mode of Operation		Pulsed
Operating Wavelength	nm	1064
Average Power	W	20
Pulse Duration	ns	80
Pulse Repetition Frequency	kHz	25 to 250
Output Peak Power	kW	10
Energy per pulse	mJ	0.8
Output Beam Shape		Gaussian
Collimated Beam Diameter	mm	8
Power Consumption	W	240
Electrical Supply Voltage	VDC	24
Operating Temperature	°C	5 to 40
Storage Temperature	°C	
Dimensions (L x W x H)	mm	286 x 215 x 95
Weight	kg	<10

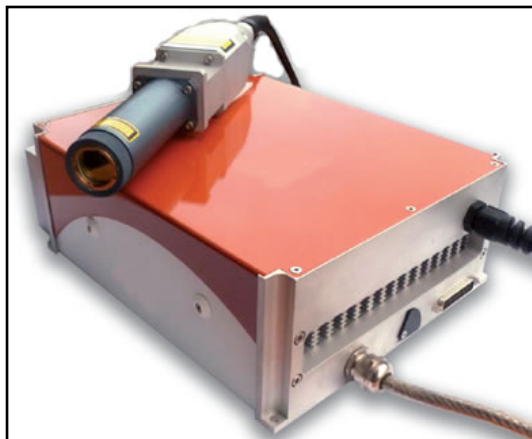
## STM30EG Fiber Laser

The ideal laser for high speed engraving on all metals

The STM30EG is a rugged and compact pulsed fiber laser intended for integration into industrial equipment.

This laser delivers 30W average power via a long flexible fiber delivery and collimating optics. Its high peak power pulses combined with high average power are ideal for fast deep engraving and holes drilling applications even on high reflective materials such as gold and copper. Short pulse duration and high beam quality further improve texturing and isolation for photovoltaic applications without degrading heat affected zone (HAZ).

As part of the STM series, STM30EG might be driven either by TTL signal (8 bit TTL for power setting, synchronization signal for repetition rate and activation signal to switch on/off the laser) or by its user-friendly USB software.



### Highlights

- 30 W fiber laser
- High average and peak power
- Enhanced beam quality
- Warranty on high reflective materials
- Powerful back reflection protection
- Proven field reliability

### Main applications

- Fast deep engraving (+80% compared to 20W)
- Hole drilling
- Dual head marking
- Solar edge isolation P1 and P4
- Diamond bruting

Reference	Unit	STM30EG
Mode of Operation		Pulsed
Operating Wavelength	nm	1064
Average Power	W	30
Pulse Duration	ns	80
Pulse Repetition Frequency	kHz	30 to 250
Output Peak Power	kW	12 at 30kHz
Energy per pulse	mJ	1.0
Output Beam Shape		Gaussian
Beam Quality (4 sigma)		2.0
Collimated Beam Diameter (99%)	mm	11
Beam Divergence (beam expander)	mrad	< 1
Power Consumption	W	160
Electrical Supply Voltage	VDC	24
Operating Temperature	°C	5 to 35
Cooling		Air cooled (heatsink & fans included)
Optical Head Dimensions	mm	299 x 53 x 48
Laser Box Dimensions	mm	285 x 210 x 95
Weight	kg	<10

### Options and accessories

- 9 mm beam expander
- Red aiming beam

## STM20HF High Frequency Pulsed Fiber Laser

Built on same robust architecture than STM10/M20, this laser takes advantage of our specific optical design to reach very high performances at high repetition rate using a fully compatible interface and package.

Because of its high peak power available at high repetition rate and short pulse duration (20ns), STM20HF is ideally suitable for high speed paint / anodize / coatings removal, selective ablation and metal oxidation.

To achieve fine marking even on small components such as semi-conductor, STM20HF is doted with an excellent beam quality; spot diameter as small as 30µm are easily achievable with 160mm focal length.

This new laser is fully compatible and complementary of STM10/STM20 and designed to cover an extended range of applications keeping same high reliability and ease-of-use.

### Highlights

- Average Power: 20W
- High Beam Quality
- High Repetition Rate
- Ease of use
- Maintenance-free

### Options and accessories

- Focusing and Collimating Optics
- Red Aiming Beam
- Multiple Output Fiber Lengths



Model	Unit	STM20HF
Mode of Operation		Pulsed
Operating Wavelength	µm	1.06
Average Power	W	20
Pulse Duration	ns	20
Pulse Repetition Frequency	kHz	100 to 500
Output Peak Power	kW	7
Energy per pulse	mJ	0.2
Output Beam Shape		Gaussian
Collimated Beam Diameter	mm	0,6 to 9
Power Consumption	W	<250
Electrical Supply Voltage	VDC	24
Operating Temperature	°C	5 to 40
Storage Temperature	°C	-20 to 55
Dimensions (L x W x H)	mm	286 x 215 x 95
Weight	kg	<10

## 980nm Fiber Lasers



Wavelength	980nm
Fiber output power @ 25°C	1~25000mW
Fiber specification	SM Fiber 9um, MM Fiber 62.5um; 100um; 200um;
Fiber length	0.4M; 1M; 2M;
Numerical aperture	0.2~0.22
Group index of reflection	1.491~1.496
Attenuation	<=2.7 dB/km <=0.6 dB/km
Cladding diameter	124.8±1.0 [um]
Coating diameter	245±7 [um]
Fiber connector	FC/APC; FC/PC; FC/SMA; SMS/SMA
Output Power Stability	Typically < ± 0.025dB3
Output Wavelength Stability	Typically < ± 0.1nm3
Operating Temperature	15 - 35°C
Operating Humidity	0-95% Non-condensing
Power supply	3~5VDC or 85~245VAC 50-60Hz
Storage temperature	0-50°C
Modulation	TTL Modulation >5KHz or analog Modulation >2KHz
Expect life time	10000 hours
Warranty time	1 year

ST500-MM-AC-Y11  
**500W CW Fiber Laser**

The ST500-MM-AC-Y11 is a compact CW Fiber Laser delivering up to 500W of output power, through a fiber with core diameter of 50um (option on 100um and 200um). Since fiber technology, maintenance and lifetime of the product is no more an issue. The excellent beam quality and power stability make our fiber laser multi-purpose tool. The reliable technology allows the use of highly reliable broad area laser diode pumps, for a cost effective and maintenance-free operation. The all-fibre design guarantees the robustness of the laser, without any optical parts to align or to stabilize. The simple integration of the system requires no after-installation service. The ST500-MM-AC-Y11 is the ideal solution for a broad range of industrial and scientific applications.

**Features:**

- Up to 500W CW of output power
- Excellent beam quality
- Highly reliable laser diode pumps
- Maintenance free operation
- Compact & rugged design
- Forced air cooled
- Cables included
- QBH compatible connector
- Safety Interlock
- High wall plug efficiency
- Touch Screen Display/Analog/RS232/Ethernet control interface

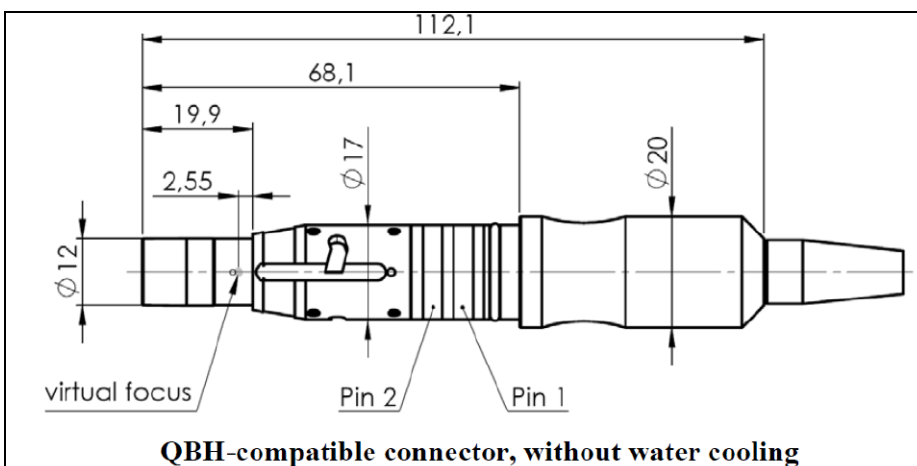
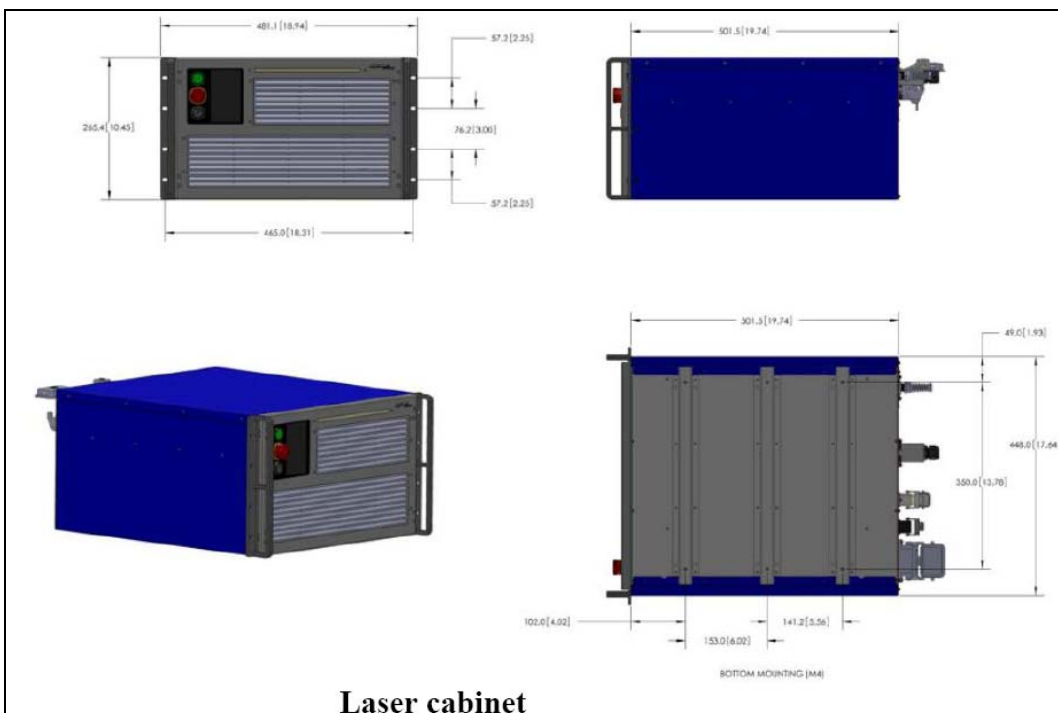
**Applications:**

- Cutting
- Marking
- Welding
- Printing
- Sintering
- Soldering
- Engraving
- Measurement
- Graphic Imaging

Parameter	Value	Unit
Operation mode	CW / Modulated	-
Polarization	Random	
Nominal output power	500	W
Emission wavelength(Output power: 500W)	1070	$\mu$ m
Emission linewidth(Output power: 500W)	Typical 4, max 5	$\mu$ m
Short-term power instability (Output power: 500W, Frequency range:10k-20kHz)	1.0-2.0	rms%
Long-term power instability (Output power: 500W, time interval:4hrs, T=Constant)	Typical $\pm$ 1, max $\pm$ 3	%
Switch ON/OFF time(Output power: 500W)	Typical 30, max 50	$\mu$ s
Power modulation rate(Output power: 500W)	50	kHz
Red guide laser power	0.1	mW
Beam parameters product (BPP)	1-2 (50 $\mu$ m core fiber) 2-5 (100 $\mu$ m core fiber) 5-15 (200 $\mu$ m core fiber)	mm*mrad
Delivery fiber length	5	m
Delivery cable bending radius	50	mm
Output fiber termination	QBH-compatible connector	

Cooling method	Forced air	
Operating ambient temperature range	+10 - +35	°C
Humidity	10 - 95	%
Storage temperature	-40 - +75	°C
Dimension, W*D*H	6U 19" rack mountable 448 x 502 x 266	mm
Weight	50	kg
Operating voltage, single-phase	220-240VAC, 50-60Hz	
Max power consumption	1600, max1900	W
Control interface	Touch screen display / Analog / RS-232 /Ethernet	-

### External layout:





## STR Series Pulsed Fiber Lasers

STR series pulsed fiber laser is a compact module up to 100W output power with fiber delivery through a near diffraction limited beam. The excellent beam quality and power stability make this series laser a multipurpose tool with cost effective performance and maintenance free operation.

### Features:

- >High efficiency
- >Good beam quality
- >Compact rugged package
- >Maintenance free operation

### Applications:

- >Marking
- >Engraving
- >Micromachining
- >Precision drilling
- >Welding
- >Cutting



### Technical specifications:

Model	STR-P10	STR-P20	STR-P30	STR-P50	STR-P100
Central Emission wavelength (nm)	1060-1085	1060-1085	1060-1085	1060-1085	1060-1085
Polarization	Random	Random	Random	Random	Random
Nominal average output power (W)	10	20	30	50	100
Pulse energy (mJ)	0.5@20kHz	1.0@20kHz	1.0@20kHz	1.0@20kHz	2.0@20kHz
Pulse repetition rate (kHz)	20-80	20-80	30-80	50-100	50-100
Pulse width (ns)	90@20kHz	120@20kHz	120@30kHz	120@50kHz	200@50kHz
Typical beam quality ( $M^2$ )	<1.5	<1.5	<1.5	<1.8	<2.0
Collimated beam diameter (mm)	6-8	6-8	6-8	6-8	6-8
Output power tunability (%)	10-100	10-100	10-100	10-100	10-100
Long term power stability (8hrs)	<3%	<3%	<3%	<3%	<3%
Length of beam delivery fiber (m)	2.0	2.0	2.0	2.0	2.0
Operating voltage	24VDC	24VDC	24VDC	24VDC	220VAC
Typical power consumption (W)	80	150	250	350	500
Cooling	Air	Air	Air	Air	Air
Operating temperature ( $^{\circ}$ C)	0-45	0-45	0-45	0-45	0-45
Dimension WxDxH (mm)	260x391x120	260x391x120	260x391x120	484x490x185	484x490x185



## STR Series Single Mode CW Fiber Lasers

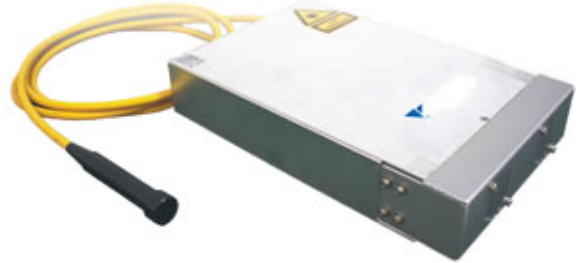
STR series low power single mode CW fiber laser is a compact module up to 50W output power with fiber delivery through a near diffraction limited beam. The excellent beam quality and power stability make this laser a multipurpose tool with cost effective performance and maintenance free operation.

**Features:**

- > High efficiency
- > Excellent beam quality
- > Compact air-cooled package
- > Maintenance free operation

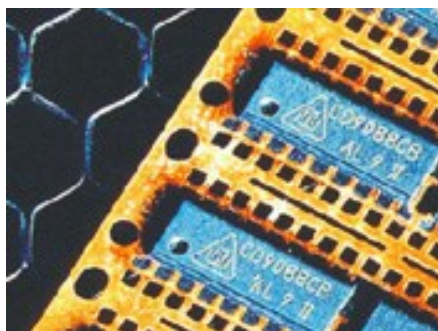
**Applications:**

- > Marking
- > Engraving
- > Micromachining



**Technical specifications:**

Model	STR-C5	STR-C10	STR-C20	STR-C50
Mode of operation	CW	CW	CW	CW/Modulated
Central Emission wavelength (nm)	1060-1085	1060-1085	1060-1085	1060-1085
Polarization	Random	Random	Random	Random
Nominal output power (W)	5	10	20	50
Max. modulation frequency (kHz)	NA	NA	NA	50
Beam quality ( $M^2$ )	<1.05	<1.05	<1.05	<1.1
Collimated beam diameter (mm)	3-7	3-7	3-7	3-7
Output power tunability (%)	10-100	10-100	10-100	10-100
Long term power stability (8hrs)	<3%	<3%	<3%	<3%
Length of beam delivery fiber (m)	2	2	2	5
Operating voltage	24VDC	24VDC	220VAC	220VAC
Power consumption (W)	35	55	100	250
Cooling	Air	Air	Air	Air
Operating temperature ( $^{\circ}$ C)	0-45	0-45	0-45	0-45
Dimension WxDxH (mm)	146x230x42	146x230x42	215x304x105	450x650x246



## STR Series Single Mode CW Fiber Lasers

STR series high power single mode CW fiber laser is up to 500W output power with fiber delivery through a near diffraction limited beam. The excellent beam quality and power stability make this series laser a multipurpose tool with cost effective performance and maintenance free operation.

**Features:**

- > High efficiency
- > Excellent beam quality
- > Collimated output
- > Maintenance free operation

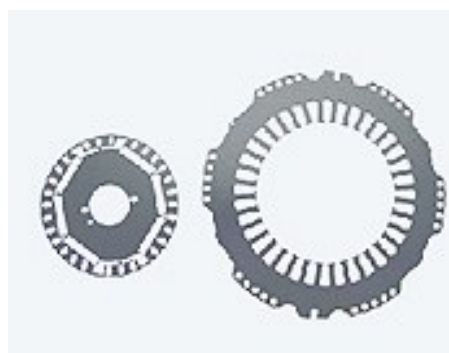
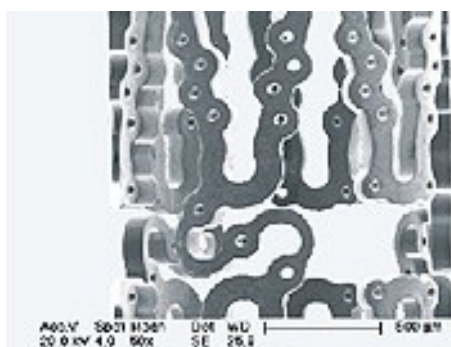
**Applications:**

- > Micromachining
- > Cutting
- > Welding
- > Drilling
- > Printing



**Technical specifications:**

Model	STR-C100	STR-C200	STR-C300	STR-C400	STR-C500
Mode of operation	CW/Modulated	CW/Modulated	CW/Modulated	CW/Modulated	CW/Modulated
Central Emission wavelength (nm)	1060-1085	1060-1085	1060-1085	1060-1085	1060-1085
Polarization	Random	Random	Random	Random	Random
Nominal output power (W)	100	200	300	400	500
Max. modulation frequency (kHz)	50	50	50	50	50
Beam quality (M <sup>2</sup> )	<1.1	<1.1	<1.1	<1.1	<1.1
Collimated beam diameter (mm)	3-7	3-7	3-7	3-7	3-7
Output power tunability (%)	10-100	10-100	10-100	10-100	10-100
Long term power stability (8hrs)	<2%	<2%	<2%	<2%	<2%
Length of beam delivery fiber (m)	5-10	5-10	5-10	5-10	5-10
Operating voltage (VAC)	220	220	220	220	220
Typical power consumption (W)	500	900	1200	1600	2000
Cooling	Air	Air /Water	Water	Water	Water
Operating temperature (°C)	0-40	10-40	10-40	10-40	10-40
Dimension WxDxH (mm)	450x650x246	450x650x246	450x650x246	450x650x246	450x650x246



## STR High Power CW Fiber Lasers

STR series high power single mode CW fiber laser is up to 4000W output power with fiber delivery through a near diffraction limited beam. The excellent beam quality and power stability make this series laser a multipurpose tool with cost effective performance and maintenance free operation.

### Features:

- > High efficiency
- > Excellent beam quality
- > Easy plug-in and play
- > Maintenance free operation

### Applications:

- > Cutting
- > Welding
- > Drilling
- > Forming
- > Surface treatment



### Technical specifications:

Model	STR-C1000S	STR-C1000	STR-C2000	STR-C4000
Mode of operation	CW/Modulated	CW/Modulated	CW/Modulated	CW/Modulated
Central Emission wavelength (nm)	1060-1085	1060-1085	1060-1085	1060-1085
Polarization	Random	Random	Random	Random
Nominal output power (W)	1000	1000	2000	4000
Max. modulation frequency (kHz)	10	10	10	10
Beam quality (mm.mrad)	<0.6	<3	<4	<5
Output power tunability (%)	10-100	10-100	10-100	10-100
Long term power stability (8hrs)	<2%	<2%	<2%	<2%
Length of beam delivery fiber (m)	10-20	10-20	10-20	10-20
Operating voltage (VAC)	380	380	380	380
Typical power consumption (W)	4000	4000	8000	16000
Cooling	Water	Water	Water	Water
Operating temperature (°C)	10-40	10-40	10-40	10-40
Dimension WxDxH (mm)	600x900x812	600x900x812	600x900x1600	1200x800x910

