

	<b>PRODUCT SPECIFICATION</b> <b>YTTERBIUM LASER SYSTEM</b> <b>Model YLS-6000-U-Y20</b>	Spec:	G22-2530119
		Revision:	--
		Date:	02.01.2020
		Page:	1 of 3

## 1. Optical characteristics

N	Characteristics	Test conditions	Symbol	Min.	Typ.	Max.	Unit
1	Operation Mode			CW / Modulated			
2	Polarization			Random			
3	Nominal Output Power		$P_{nom}$	6000			W
4	Output Power Tuning Range			10		105	%
5	Emission Wavelength	Output power: 6000 W	$\lambda$	1068		1080	nm
6	Emission Linewidth	Output power: 6000 W	$\Delta\lambda$		3	6	nm
7	Switching ON/OFF Time	Output power: 6000 W			50	100	$\mu$ s
8	Output Power Modulation Rate	Output power: 6000 W				5	kHz
9	Output Power Instability	Output power: 6000 W Time interval: 8 hrs (T=Constant)			$\pm 1$	$\pm 2$	%
10	Red Guide Laser Power				0.4	0.5	mW

## 2. Optical output

N	Characteristics	Test conditions	Symbol	Min.	Typ.	Max.	Unit
1	Delivery Fiber Connector			HLC-8, QBH-compatible LCA, QD-compatible			
2	Beam Parameter Product* (86 %)	Delivery fiber core diameter 50 $\mu$ **	BPP*		2.0	2.2	mm*mrad
	Beam Parameter Product* (86 %)	Delivery fiber core diameter 100 $\mu$	BPP*		3.3	4.0	mm*mrad
3	Beam Parameter Product* (86 %)	Delivery fiber core diameter 150 $\mu$	BPP*		5.0	6.0	mm*mrad
4	Beam Parameter Product* (86 %)	Delivery fiber core diameter 200 $\mu$	BPP*		6.0	8.0	mm*mrad
5	Delivery Fiber Length**		L	10**	20	30	m
6	Delivery Fiber Bending Radius - unstressed - stressed		R	100 200			mm

\* Measurement accuracy by means of Primes Focus Monitor  $\pm 10$  %

\*\*Maximal delivery fiber length is 10 m @ 50  $\mu$

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		Date:	02.01.2020
		Page:	2 of 3

### 3. General characteristics

N	Characteristics	Min.	Typ.	Max.	Unit
1	Operating Ambient Temperature Range	5		45	°C
2	Humidity, Ambient Temperature Range $\leq 40^{\circ}\text{C}$	10		95	%
3	Storage Temperature without water	- 40		+ 75	°C
4	Dimensions (w/o interface plugs, w/o castors), WxDxH:	430 x 808 x 700			mm
5	Weight		200		kg

### 4. Cooling

N	Characteristics	Test conditions	Min.	Typ.	Max.	Unit
1	Method		Tap and slightly DI-water			
2	Cooling Water Temperature for Laser		20	21	22	°C
3	Cooling Water Temperature for Optics		27	30	33	°C
4	Laser "Cold Start" Temperature		20			°C
5	Optics cooling water conductivity		30	40	50	$\mu\text{S}/\text{cm}$
6	Water Pressure		2.5		3.5	bar
7	Water Flow for Laser Cooling		32	50		l/min
8	Fiber Connector Cooling Water Flow Rate		1.0	1.5	2.5	l/min

### 5. Electrical characteristics

N	Characteristics	Min.	Typ.	Max.	Unit
1	Operating Voltage, 3 phases	400-460 V/3P + PE @ 50-60 Hz			
2	Laser Power Consumption at 6000 W power		15.0	17.1	kW
3	Laser Operation Current at 6000 W power and 400 VAC			29	A
4	Input fuses, 400 V			40	A

### 6. Fast power supply option.

- 6.1. Switching OFF of laser main power supplies during 130 msec accordingly Category 3 PL d EN ISO 13849-1
- 6.2. Maximal quantity of main power supplies switching ON/OFF cycles per minute is 20 times.

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## 7. External layout

