

| | | | |
|---|--|-----------|-------------|
|  | PRODUCT SPECIFICATION YTTERBIUM LASER SYSTEM Model YLS-8000-U-Y20 | Spec: | G22-2530342 |
| | | Revision: | -- |
| | | Date: | 19.02.2020 |
| | | 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} | 8000 | | | W |
| 4 | Output Power Tuning Range | | | 10 | | 105 | % |
| 5 | Emission Wavelength | Output power: 8000 W | λ | 1068 | | 1080 | nm |
| 6 | Emission Linewidth | Output power: 8000 W | $\Delta\lambda$ | | 3 | 6 | nm |
| 7 | Switching ON/OFF Time | Output power: 8000 W | | | 50 | 100 | μ s |
| 8 | Output Power Modulation Rate | Output power: 8000 W | | | | 5 | kHz |
| 9 | Output Power Instability | Output power: 8000 W Time interval: 8 hrs (T=Constant) | | | ± 1 | ± 2 | % |
| 10 | Red Guide Laser Power | | | | 0.4 | 0.5 | mW |

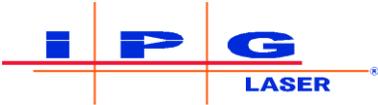
2. Optical output

| N | Characteristics | Test conditions | Symbol | Min. | Typ. | Max. | Unit |
|---|---|--|--------|---|------|------|---------|
| 1 | Delivery Fiber Connector | | | HLC-8, QBH-compatible LCA, QD-compatible Option: HLC-16 | | | |
| 2 | Beam Parameter Product* (86 %) | Delivery fiber core diameter 100 μ | BPP* | | 3.3 | 4.0 | mm*mrad |
| 3 | Beam Parameter Product* (86 %) | Delivery fiber core diameter 150 μ | BPP* | | 5.0 | 6.0 | mm*mrad |
| 4 | Beam Parameter Product* (86 %) | Delivery fiber core diameter 200 μ | 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 $\pm 10\%$

CONFIDENTIAL: This document and any data disclosed therein is the property of IPG Photonics Corporation and its affiliates, and constitute and contain proprietary information. Neither receipt nor possession of this document confers or transfers any right to duplicate, use, or disclose any information contained herein except as expressly authorized in writing by IPG Photonics Corporation. No representations and warranties are made hereby, except in a binding purchase order.

YLS-8000-U-Y20 specification G22-2530342.docx

| | | | |
|---|--|-----------|-------------|
|  | PRODUCT SPECIFICATION YTTERBIUM LASER SYSTEM Model YLS-8000-U-Y20 | Spec: | G22-2530342 |
| | | Revision: | -- |
| | | Date: | 19.02.2020 |
| | | 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 ≤ 40°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 900 | | | mm |
| 5 | Weight | | 230 | | 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 | μS/cm |
| 6 | Water Pressure | | 2.5 | | 3.5 | bar |
| 7 | Water Flow for Laser Cooling | | 40 | 60 | | 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 8000 W power | | 20.0 | 22.9 | kW |
| 3 | Laser Operation Current at 8000 W power and 400 VAC | | | 39 | A |
| 4 | Input fuses, 400 V | | | 50 | A |

6. Fast power supply option.

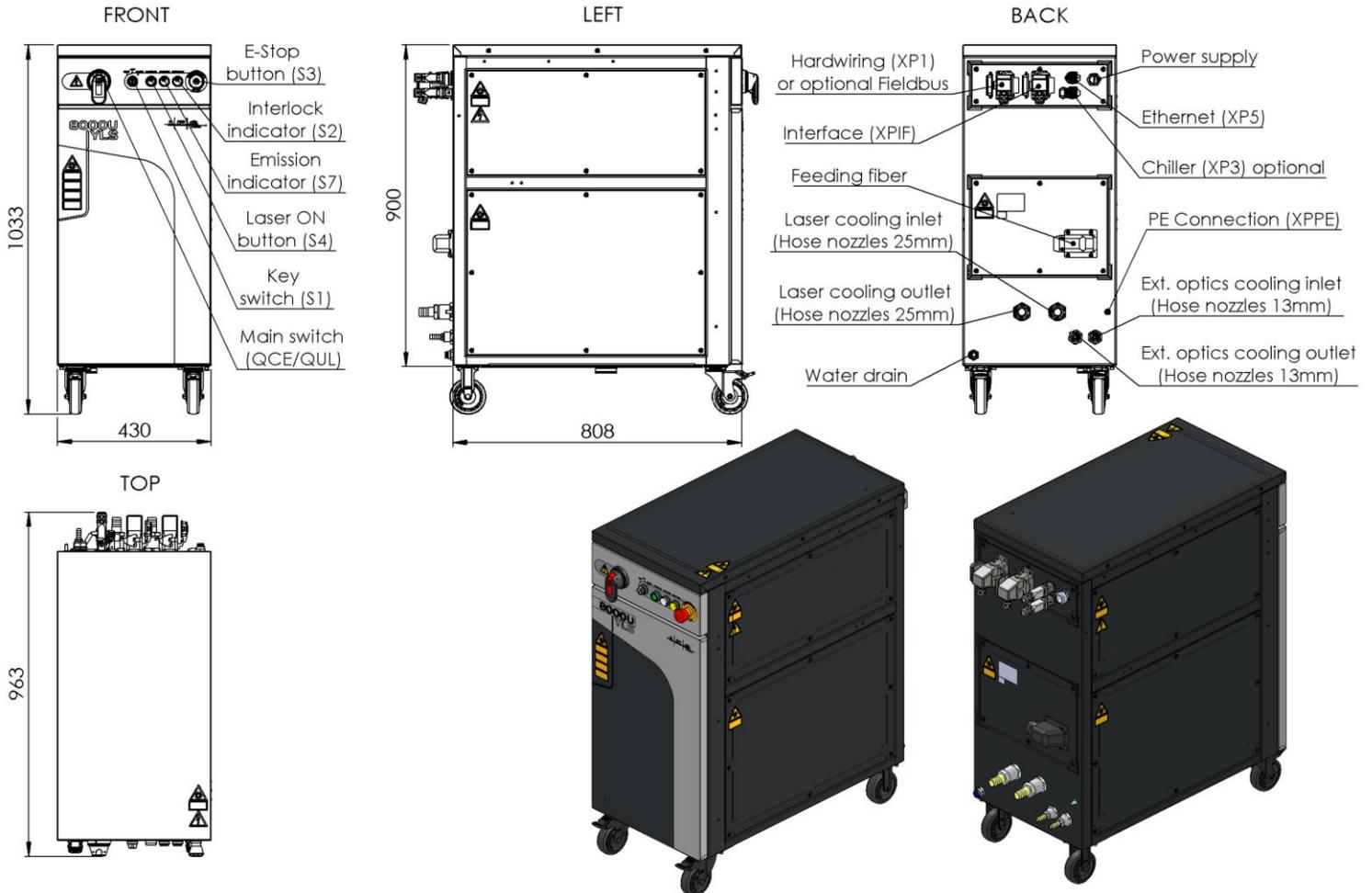
- 6.1. Switching OFF of laser main power supplies during 130 msec accordingly Category 3 PL d EN ISO 13849-1
- 6.2. Maximal quantity of main power supplies switching ON/OFF cycles per minute is 20 times.



**PRODUCT SPECIFICATION
YTTERBIUM LASER SYSTEM
Model YLS-8000-U-Y20**

| | |
|-----------|-------------|
| Spec: | G22-2530342 |
| Revision: | -- |
| Date: | 19.02.2020 |
| Page: | 3 of 3 |

7. External layout



CONFIDENTIAL: This document and any data disclosed therein is the property of IPG Photonics Corporation and its affiliates, and constitute and contain proprietary information. Neither receipt nor possession of this document confers or transfers any right to duplicate, use, or disclose any information contained herein except as expressly authorized in writing by IPG Photonics Corporation. No representations and warranties are made hereby, except in a binding purchase order.