HighLight FL Single Mode

Compact Single Mode High Power Fiber Laser

HighLight™ FL Single Mode products are a series of high brightness, high power lasers offering output of 1 to 2.5 kW from a single mode, collimated fiber (output BPP ≤ 0.4 mm x mrad). Their combination of small focused spot size and high power density makes HighLight™ FL Single Mode lasers particularly well suited for applications such as remote welding and other scanner based configurations, welding using beam wobble, high speed cutting of thin sheet metal, and conductive welding of dissimilar materials.

Compact and robust HighLight™ FL Single Mode series lasers are specifically intended to deliver optimum efficiency, maximum flexibility and unmatched reliability in industrial applications. The use of field proven, reliable components, including our flexible industrial control unit (RCU), further facilitates integration, enhances reliability, and enables quick customization to the needs of a particular application.

FEATURES & BENEFITS
- Output power: 1,000 - 2,500 Watts
- Field-proven “all fiber” technology
- Inherently back reflection safe
- Industry leading power control for high process consistency
- Utmost compactness in this power class
- HighLight SQD option for smart process monitoring
- CleanWeld™ technology for perfect welding results

APPLICATIONS
- Cutting
- Welding
- Surface Treatment
- Remote and Scanner-based Applications

COHERENT®
Superior Reliability & Performance
## HighLight FL Single Mode Datasheet

### Specifications

<table>
<thead>
<tr>
<th></th>
<th>HighLight FL1000CSM</th>
<th>HighLight FL1600CSM</th>
<th>HighLight FL2000CSM</th>
<th>HighLight FL2500CSM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Power (W)</td>
<td>1000</td>
<td>1600</td>
<td>2000</td>
<td>2500</td>
</tr>
<tr>
<td>Power Range (%)</td>
<td>10 to 100</td>
<td></td>
<td></td>
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<tr>
<td>Laser Beam Quality (BPP) at Collimator</td>
<td>≤ 0.4 mm x mrad</td>
<td></td>
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<tr>
<td>Power Stability (%)</td>
<td>± 2</td>
<td></td>
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<tr>
<td>Pulse Frequency Range</td>
<td>CW - 5 kHz</td>
<td></td>
<td></td>
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<tr>
<td>Wavelength (nm)</td>
<td>1070 ± 10</td>
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</tbody>
</table>

### Electrical Ratings

- **Voltage**: 3 x 230 / 400 V ± 10% or 3 x 277 / 480 V ± 10%; 50/60 Hz; PE
- **Connected Load (kVA)**: 3.6, 5, 6.6, 7.2
- **Effective Power at Nominal Power (kW)**: 3.3, 4.7, 6.1, 6.8
- **Fuses Type NH (A)**: 16, 32

### Cooling

- **Recommended Cooling Capacity** *(kW)*: ≥ 4, ≥ 5.6, ≥ 7.3, ≥ 8.1
- **Flow Rate (l/h)**: ≥ 1000; CCU Laser: 850; Optic: 150
- **Temperature (°C)**: 25; CCU Laser: 25; Optics: 34
- **Temperature Tolerance Range (°C)**: ± 1
- **Max. Pressure (hPa)**: 6000
- **Pressure Drop (hPa)**: 4000; CCU Laser: 4000; Optic: 3500

### Fiber Delivery System

- **Interface**: QBH, QD
- **Diameter (µm)**: 20
- **Type**: Step index fiber incl. RSY safety system
- **Length (m)**: 8, 5
- **Accessories (options)**: Collimators, Focussing optics, Cross-Jet

### Dimensions & Weights

- **Laser Dimension (L x W x H) (mm)**: 751 x 953 x 584; CCU: 751 x 983 x 584
- **Laser Weight (kg)**: < 150; CCU: < 165

### Environmental Conditions

- **Ambient Temperature (°C)**: 5 - 40
- **Humidity (°C)**: Dewpoint < 24; (CCU: Dewpoint ≤ 34, other on request)

### Customer Interface

- **Digital Signals (V DC)**: 24
- **Power Control (V DC)**: 0 to 10 (50 µs to 70 µs [Level] resp. a pulse period)
- **Trigger Control (V)**: Gate 24, 15, or 5; Frequency 15/5
- **Laser Operating Elements**: Pilot Laser / PC-control

### Options Laser

- Fieldbus-Interface, Scanner processing solution, Customer specific color, Casters, Climate Control Unit (CCU), Handheld (Touch screen), Process monitoring HighLight SQD

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* The recommended cooling capacity covers maximum power dissipation due to diode degradation and 100% laser power absorbed at an internal or external beam dump.
** An additional flow rate of 500l/h is recommended for the use of an external power meter.
MECHANICAL SPECIFICATIONS

HighLight FL1000CSM - HighLight FL2500CSM

Design with Mounting Points (Standard)
Design with Climate Control Unit (Optional)
Design with Casters (Optional)

Warning labels as shown in the figure appear on each Coherent-Rofin laser to indicate the respective classification.

Coherent-Rofin industrial lasers are designed in strict accordance with the respective safety regulations. We certify that each laser manufactured by our company complies with FDA Radiation Performance Standards, 21 CFR Subchapter J and with IEC 60825. Warning labels as shown in the figure appear on each Coherent-Rofin laser to indicate the respective classification.