**FLEXIBLE**

The new H-LASE series provides customers [unique freedom to design](#) the most ideal electronics and control software for their specific high power welding cutting or drilling application. This superior flexibility results in [increased total performance](#) and [reduced cost and size](#).

**SCALABLE**

H-LASE fiber laser module is based on up to 2 kW single oscillator. Scalable output powers up to 8 kW with [best-in-class power range (1–100%)](#) provide functionality and flexibility needed in high precision processing with wide range of materials. Modular design enables intelligent and cost effective solution.

**EFFICIENT**

The new OEM series is providing [high beam quality](#) (BPP < 0.4 single mode) throughout the whole dynamic operating range. Industry leading [optical to optical conversion efficiency](#) (typical > 80%) enables [high wall plug efficiency](#) for the system.

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**H-LASE SPECIFICATIONS**

<table>
<thead>
<tr>
<th>H-LASE</th>
<th>1,5 kW</th>
<th>2 kW SM</th>
<th>2 kW MM</th>
<th>4 kW</th>
<th>6 kW</th>
<th>8 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power rating (W)</td>
<td>1500</td>
<td>2000</td>
<td>2000</td>
<td>4000</td>
<td>6000</td>
<td>8000</td>
</tr>
<tr>
<td>Output power tunability</td>
<td>1–100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Center wavelength</td>
<td>1070 nm ± 5 nm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delivery fiber core</td>
<td>20 µm</td>
<td>20 µm</td>
<td>50 µm / 100 µm</td>
<td>50 µm / 100 µm</td>
<td>100 µm</td>
<td>100 µm</td>
</tr>
<tr>
<td>Beam Parameter Product (BPP)</td>
<td>&lt; 0.4 mm x mrad</td>
<td>&lt; 0.4 mm x mrad</td>
<td>&lt; 2.5 / &lt; 4 mm x mrad</td>
<td>&lt; 4 mm x mrad</td>
<td>&lt; 4 mm x mrad</td>
<td>&lt; 4 mm x mrad</td>
</tr>
<tr>
<td>Output connector</td>
<td>QBH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delivery fiber length²</td>
<td>10 m</td>
<td>5 m</td>
<td>20 m</td>
<td>20 m</td>
<td>20 m</td>
<td>20 m</td>
</tr>
<tr>
<td>Number of laser cavities</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2 + combiner</td>
<td>3 + combiner</td>
<td>4 + combiner</td>
</tr>
</tbody>
</table>

**Electrical Specifications**

| Input current max. (A) / module | 40 | 40 | 40 | 40 | 40 | 40 |
| Input voltage max. (V) / module | Dependent on configuration and application | | | | | |
| Electrical-optical efficiency | > 38% | > 38% | > 38% | > 38% | > 38% | > 38% |
| Minimum rise /fall time³ | 20 µs | | | | | |
| Interfaces | Integrated power and temperature monitoring sensors | | | | | |

**Cooling Interface**

Flow rate | Water cooling, 25 liter / minute / module, +25 ± 1°C |
Fiber Laser Combiner | Water cooling, 5 liter / minute / module, +25 ± 1°C |
QBH Delivery Cable | Water cooling, 1.7 liter / minute / module, +25 ± 1°C |

**Mechanical Interface**

<table>
<thead>
<tr>
<th>Dimensions⁴</th>
<th>3 U and 59 mm deep</th>
<th>3 U and 59 mm deep</th>
<th>3 U and 59 mm deep</th>
<th>7 U and 596 mm deep</th>
<th>10 U and 596 mm deep</th>
<th>13 U and 596 mm deep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>~ 45 kg</td>
<td>~ 45 kg</td>
<td>~ 45 kg</td>
<td>~ 120 kg</td>
<td>~ 165 kg</td>
<td>~ 210 kg</td>
</tr>
</tbody>
</table>

**Options**

Optics | External optics and coupling units (Optoskand) |
---|---|

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¹ Typical value, check details from factory  
² With Optoskand QBH connector, check details from factory  
³ Typical value, dependent on power supply  
⁴ Up to 2 kW delivered as single units, for 4 kW, 6 kW and 8 kW check details from factory
**H-LASE INTEGRATION**

**H-LASE WITHIN CUSTOMER’S SYSTEM**

PROCESS AUTOMATION SYSTEM e.g CUTTING SYSTEM

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**H-LASE 1.5 kW–2 kW**

- **User Interface**
- **Control Electronics**
- **PSUs**
- **Cooling**
- **Fiber Laser Module with Integrated Diode Pumps**
- **QBH Cable**

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**H-LASE 4 kW–8 kW**

- **User Interface**
- **Control Electronics**
- **PSUs**
- **Cooling**
- **H-LASE 2kW Module**
- **Fiber Laser Combiner**
- **QBH Cable (4kW – 8kW)**

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**H-LASE SPECIFICATIONS**

**H-LASE 1.5 kW 2 kW SM 2 kW MM 4 kW 6 kW 8 kW**

- **Power rating (W)**: 1,500 kW, 2,000 kW, 2,000 kW, 4,000 kW, 6,000 kW, 8,000 kW
- **Output power tunability**: 1–100%
- **Center wavelength**: 1070 nm ± 5 nm
- **Delivery fiber core**: 20 µm, 20 µm, 50 µm / 100 µm, 50 µm / 100 µm, 100 µm, 100 µm
- **Beam Parameter Product (BPP)**: < 0.4 mm x mrad, < 0.4 mm x mrad, < 2.5 / < 4 mm x mrad, < 2.5 / < 4 mm x mrad, < 4 mm x mrad, < 4 mm x mrad
- **Output connector**: QBH
- **Delivery fiber length**: 10 m, 5 m, 20 m, 20 m, 20 m, 20 m
- **Number of laser cavities**: 1, 1, 1, 2 + combiner, 3 + combiner, 4 + combiner

**Electrical Specifications**

- **Input current max. (A) / module**: 40 A, 40 A, 40 A, 40 A, 40 A, 40 A
- **Input voltage max. (V) / module**: **Dependent on configuration and application**
- **Electrical-optical efficiency**: > 38%
- **Minimum rise / fall time**: 20 µs
- **Interfaces**: Integrated power and temperature monitoring sensors
- **Cooling Interface**: Water cooling, 25 liter / minute / module, +25 ± 1°C
- **Fiber Laser Combiner**: Water cooling, 5 liter / minute / module, +25 ± 1°C
- **QBH Delivery Cable**: Water cooling, 1.7 liter / minute / module, +25 ± 1°C

**Mechanical Interface**

- **Dimensions**: 3 U and 596 mm deep, 3 U and 596 mm deep, 3 U and 596 mm deep, 7 U and 596 mm deep, 10 U and 596 mm deep, 13 U and 596 mm deep
- **19'' rack**: 19'' rack, 19'' rack, 19'' rack, 19'' rack, 19'' rack, 19'' rack
- **Weight**: ~ 45 kg, ~ 45 kg, ~ 45 kg, ~ 120 kg, ~ 165 kg, ~ 210 kg

**Options**

- **Optics**: External optics and coupling units (Optoskand)

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¹ Typical value, check details from factory
² With Optoskand QBH connector, check details from factory
³ Typical value, dependent on power supply
⁴ Up to 2 kW delivered as single units, for 4 kW, 6 kW and 8 kW check details from factory
H-LASE SERIES

APPLICATIONS
• Welding
• Cutting
• Drilling
• Cladding
• Annealing
• Heat treatment

BENEFITS
• Superior freedom in system design
• Industry leading operating power range 1–100%
• Modular concept with scalable output powers
• Allows true real time closed loop power control
• Enables processing of sensitive and tough materials including bright metals

FEATURES
• High power OEM configuration, up to 8 kW
• Based on up to 2 kW single oscillator
• High beam quality
• High electrical-optical efficiency over full range of output powers
• High back reflection resistance
• Integrated power and temperature monitoring sensors