High Performance on Best Focus
Laser Processing Head BIMO
## Modules

The Precision Modules of BIMO

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<td>Cover slide drawer and cover slide monitoring</td>
<td>CCTV-viewing with imaging optics, CCD camera and integrated illumination</td>
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<td>Collimation module</td>
<td>Variable double focus forming module VDFM</td>
<td>Cross jet and shielding gas module</td>
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<td>Focusing module</td>
<td>HP module for lasers with more than 6 kW average power</td>
<td>Cover slide for additional protection of collimation</td>
<td>Laser power meter module (LPM) as insert in cover slide cartridge receptacle</td>
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Welcome to the industry-proven BIMO processing head which has been successfully deployed in thousands of production scenarios.

The robust modular design masters the optical requirements for all common fiber coupled laser light sources, from the diode laser to the disc and fiber laser. It also permits safe and simple operation in a 24/7 production environment.

Thus, the flexible, modular system of the BIMO laser processing head forms the basis for most tasks in laser-based material processing.

The processing head can be configured in individual and modular ways. This includes simple tasks, like focusing the laser light onto the workpiece, as well as configuration of the entire turnkey subsystem of the laser processing head inside the laser cell. In the most advanced stage of expansion, the processing head provides, in addition to process-relevant components, all accessories necessary for the integration into an automated production cycle. These include the proven modules for media guiding via a cable management system and the EPS electric-pneumatic installation system as interface with the system PLC and the media supplies.
Laser light cable receiver LLK-Auto
Laser light cable receiver LLK-HP
Laser light cable receiver QBH

Aperature module
Aperature module with cover slide

Variable double focus forming module

Focus forming module

Mechanical interface module

Process monitoring module 0°/90°

Camera

Preparation for pyrometer

CCTV viewing

CCTV viewing with illumination

Cover slide module

Shielding gas nozzle (coaxial)

Cross jet module

Shielding gas nozzle (finger)

1. Zoom collimation module (M) with manual adjustment of focus diameter*
   - f = 60-110 mm
   - f = 110-185 mm

2. Zoom collimation module (MZ) with machine controlled adjustment of focus diameter and focus position*
   - f = 50-120 mm

3. Collimation module*
   - M = 1.0 @ f = 200 mm
   - M = 1.2 @ f = 167 mm

4. Collimation module*
   - M = 1.33 @ f = 150 mm
   - M = 1.4 @ f = 143 mm
   - M = 1.6 @ f = 125 mm

5. Collimation module*
   - M = 1.75 @ f = 114 mm
   - M = 2.0 @ f = 100 mm
   - M = 2.5 @ f = 80 mm

* Others on request, not all available for diode lasers
With the modular optical system of the BIMO laser processing head HIGHYAG managed to satisfy the requirements of focusing single mode and 20 kW laser radiation in uncompromising ways. The BIMO laser processing head focuses the respective potential of laser devices of the types diode laser, fiber laser and disc laser onto the workpiece for optimal effect, as defined by the user.

The BIMO laser processing head provides optimal preservation of the laser’s beam quality. It also permits flexible deployment of modules for beam shaping and process monitoring.

Additional process optimization is possible with focus forming modules that enable a variable energy distribution at the work piece.

Performance of Different Focus Heads
Numerical Aperture = 0.11 (86% Power Content), Magnification = 2

![Plot of a Focus with 300 µm Diameter.](image)
# Technical Data

## Optical System

<table>
<thead>
<tr>
<th>Focusing system (magnification @ focal length)</th>
<th>1.0 @ 200 mm, 1.25 @ 250 mm, 1.5 @ 300 mm, 2.3 @ 460 mm, 3.0 @ 600 mm, *, **</th>
</tr>
</thead>
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<tr>
<td>Collimation system (magnification @ focal length)</td>
<td>1.0 @ 200 mm, 1.2 @ 167 mm, 1.33 @ 150 mm, 1.4 @ 143 mm, 1.6 @ 125 mm, 1.75 @ 114 mm, 2.0 @ 100 mm, 2.5 @ 80 mm, zoom collimation (M2) with focal length 50 - 120 mm, zoom collimation (M) with focal length 60 - 110 mm or 110 - 185 mm, *, **</td>
</tr>
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</table>

| Max. laser power | average 6 kW (optional 20 kW), peak 200 kW |
| Max. beam parameter acceptance (half angle) | 97% power content within 125 - 240 mrad (depending on collimation system) |
| Wavelength | $\lambda = 900 - 1060$ nm (e.g. for diode lasers), $\lambda = 1025 - 1080$ nm (e.g. for YAG, fiber and disc lasers), * |

| Transmission | > 97% @ $\lambda = 1064$ nm |
| Core diameter laser light cable | 10 - 1000 μm (typical) |
| Laser light cable receiver | HIGHYAG LLK-HP, LLK-Auto, LLK-B, LLK-D, QBH, * |

## CCTV Viewing

| Interface CCTV viewing | C-Mount |
| Optional camera system | Ethernet, * |

## Dimensions

| W x D x H, examples: | Approx. 210 x 95 x 580 mm |
| BIMO G | Approx. 350 x 95 x 450 mm |
| BIMO W | Approx. 3.6 kg |
| BIMO G | Approx. 4.4 kg |

## Supply

| Electric | DC 24 V, 2.5 A, * |
| Pneumatics | $\leq 1.0$ MPa |
| Cross jet | 1.0 MPa, approx. 500 l/min @ 0.6 MPa |
| Shielding gas | On request, approx. 5 - 40 l/min, 0.6 MPa |
| Cooling | Flow rate 2 l/min, temperature 15 - 35 °C (avoiding condensation) |
| PLC / field bus system | Hard wired, Interbus, Profi bus, DeviceNet, * |

Subject to change without prior notice * Others on request, ** Not all available for diode lasers

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