

fiber connection for scan heads

The **Collimation Module** enables direct connection of a fiber-coupled laser to a scan head (typical: 30-mm aperture).

Key benefits:

- Robust housing (water-cooled entrance aperture; stainless steel)
- Manually adjustable collimation optic, incl. scale ring
- Optionally with or without camera port (90°/180° variants)
- Flexible mounting possibilities
- Replaceable protective window in front of collimation optic
- Good transmission for red pilot lasers

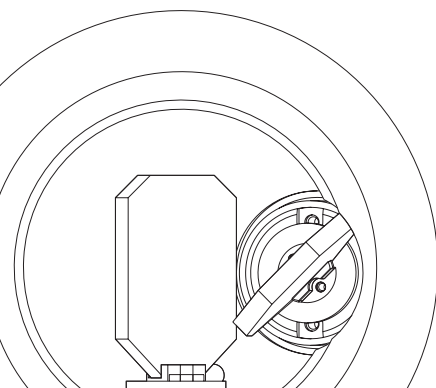
The module features robust mechanical coupling, along with optical collimation of laser radiation to match the scan head's aperture. The employed optical components are suitable for multi-kW laser powers and adaptable to various beam qualities.

Typical Applications:

- Welding, micro-welding
- Cutting
- Rapid prototyping, additive manufacturing

Typical Industries:

- Automotive
- Mechanical engineering and metalworking



Collimation Module

Layout and Principle of Operation

The solidly designed Collimation Module includes an adapter for mounting the module and scan system to a machine. Installation is possible from four sides, providing a high level of integration flexibility.

Various fiber adapters are offered for laser coupling. The water-cooled, stainless-steel beam entrance aperture is corrosion-free even when using DI water. A scale ring facilitates manual adjustment of the movable collimation optic. This allows precisely setting the focus position to the scan system's nominal working distance, as well as compensating for tolerances.

Housing

The Collimation Module's robust housing is dust and splash proof – particularly at the junction to the scan head. A replaceable protective window in front of the collimation optic additionally protects the lens unit from dust infiltration when changing fibers. This guarantees a long service life in industrial environments.

Optional Camera Port

The Collimation Module can be optionally equipped with a camera adapter for process control or workpiece position detection. The light arriving from the workpiece is coupled out of the laser beam path by an integrated beam splitter and directed to an observation port. The laser light itself, however, is nearly fully reflected by the beam splitter to establish a 90° angle between fiber-in and beam-out.

Specifications

Laser wavelength	1030 - 1090 nm	
Max. average laser power	5 kW ⁽¹⁾	
Collimator		
Fiber adapter	QBH, QD/LLK-D, Q5/LLK-B	
Focal length	116 mm	132 mm
Limiting NA (half angle)	125 mrad	110 mrad
Manual z-adjustment range	approx. ± 6 mm	
Water cooling		
Material	stainless steel	
Flow rate	5 l/min	
Compatible scan systems ⁽²⁾	intelliSCAN 30, hurrySCAN 30	

(all angles are in optical degrees)

⁽¹⁾ depends on scan system

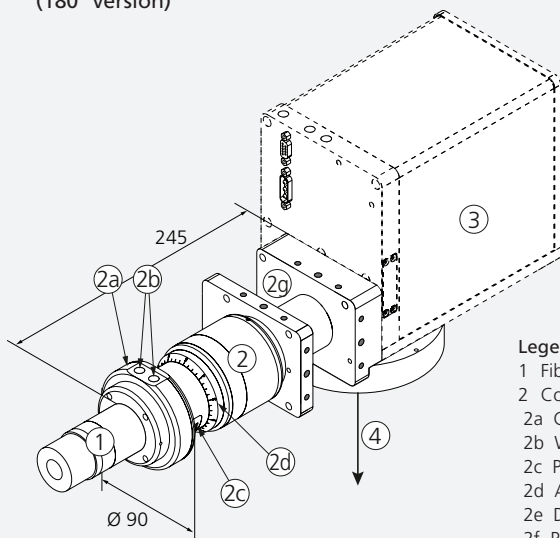
⁽²⁾ others on request

Versions

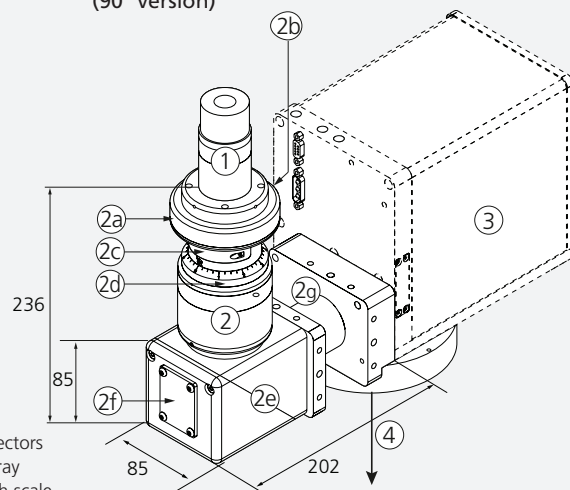
	without camera port	with camera port
Fiber adapter position	180°	90°
Camera port		
Wavelength		600-900 nm
Clear aperture		23 mm
Recommended objective focal length ⁽³⁾		> 100 mm
Weight	4.5 kg	6 kg

⁽³⁾ for 1/2" camera chip

Collimation Module without camera adapter
(180° version)



Collimation Module with camera adapter
(90° version)



Legend

- 1 Fiber adapter
- 2 Collimation module
- 2a Cooling ring
- 2b Water cooling connectors
- 2c Protective window tray
- 2d Adjustment ring with scale
- 2e Deflection unit
- 2f Process monitoring connector (under lid)
- 2g Adapter
- 3 Scan head with objective
- 4 Emerging beam

all dimensions in mm