high power meets high dynamics

The wel*DYNA* **scan head** enables innovative high power applications by a unique set of properties:

- Suitable for multi-kW lasers
- Designed for highest beam quality (single mode)
- High oscillation frequencies > 2 kHz
- Modular integration with standard collimation and focussing units
- Low long-term and temperature drift
- Fully digital servo circuitry
- Integrated sensor system with real-time monitoring
- Software-independant interlock interface
- Water and air cooling in a robust housing

The wel*DYNA* scan head joins high power with high dynamics. The high power suitability is supported by ultra-low absorption coatings, air cooling of the mirrors, strict separation of electronics and optical path and in addition a set of built-in sensors. Empowered by the fully digital electronics, the integrated sensors provide extensive possibilities for real-time monitoring of the system's operational state. Light-weight SiC mirrors and highly dynamic galvanometer scanners of the dyn*AXIS* 3 series enable beam oscillation frequencies that are unprecedented in high-power scan heads.

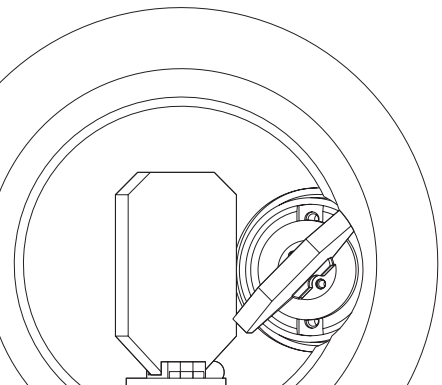
An innovative optical configuration leads to opposing beam-entrance and exit apertures, thus facilitating the integration in gantry- or robot-based machines, e. g. in the automotive or metalworking industry.

Typical Applications:

- Welding of dissimilar materials, e. g. aluminum and copper
- Joining of materials with low weldability, e. g. for power train or body-in-white components
- Cutting of thick metal sheets or fiber-reinforced plastics (FRP)

Typical Industries:

- Automotive
- Mechanical engineering and metalworking
- Aerospace industry



SCANLAB
innovators for industry

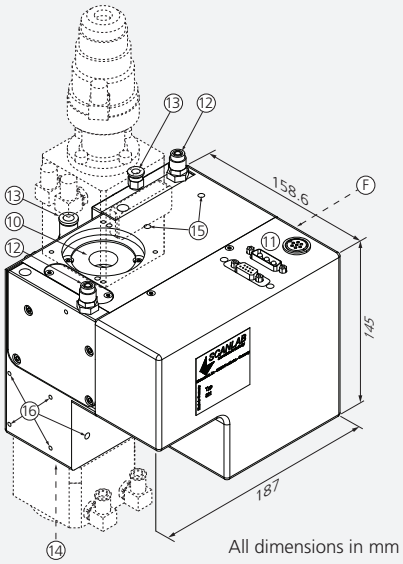
Specifications

Aperture	20.8 mm
Mirrors	
Working wavelength	1030 - 1090 nm
Reflectivity	
at 1030-1090 nm	> 99.5% per mirror
at 633 nm	> 50% per mirror
Max. laser power (with air cooling)	3000 W
at 50% duty cycle	6000 W
Max. XY oscillation amplitude	
at 2000 Hz	± 3.1 mrad
at 4000 Hz	± 0.6 mrad
Tuning	Vector
Tracking error	< 0.16 ms
Step response time (1)	
1% of full scale	0.4 ms
10% of full scale	2.3 ms
Positioning speeds	
typical	40 rad/s
(with f=245 mm focusing)	(10 m/s)
maximal	55 rad/s
(with f=245 mm focusing)	(13 m/s)

(1) settling to 1/1000 of full scale
(2) dependent on collimation and focusing module
(3) with f=245 mm focusing

Long-term drift (8h)	
Offset	< 150 µrad
Gain	< 150 ppm
Temperature drift	
Offset	< 30 µrad/K
Gain	< 20 ppm/K
Repeatability (RMS)	< 2 µrad
Positioning resolution	18 Bit
Optical performance	
Typical scan angle (2)	± 25 mrad
Typical field size (3)	10 x 10 mm²
Gain error	< 5 mrad
Zero offset	< 5 mrad
Nonlinearity	< 0.9 mrad/44°
Power requirements	30 V DC, max. 7 A or ± 15 V DC, max. 7 A
Interface	SL2-100
Operating temperature	25 °C ± 10 °C
Weight	7.5 kg
Cooling specifications	
Air cooling	20 l/min (Δp < 1 bar)
Water cooling	3 l/min (p < 4 bar)

(all angles are in optical degrees)



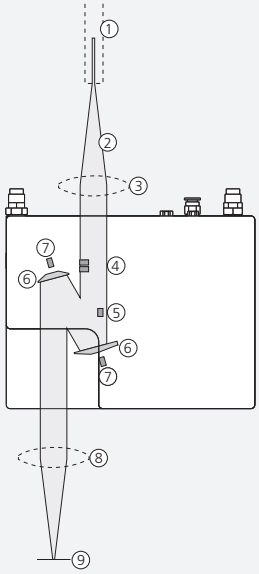
All dimensions in mm

Legend

1 Fiber*
2 Laser beam
3 Collimation optics*
4 Two IR photo diodes
5 Temperature sensor galvo mount
6 Two scan mirrors
7 Two mirror temperature sensors
8 Focusing optics*
9 Image field

10 Beam entrance, mounting option for collimation module*
11 Electrical connectors for data, power, interlock
12 Connections for cooling water
13 Connections for cooling air
14 Beam exit, mounting option for focusing module*
15 Bore holes at free disposal, e.g. for cable relief
16 Bore holes at free disposal, e.g. for illumination, camera, crossjet
F Flange surface

(*not included)



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Product photos are non-binding and may show customized features.

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