



dynamic and precise laser focussing

The varioSCAN II focusing unit enables highly dynamic and exceptionally precise positioning of the laser focus along the beam direction.

The z-axes enable 2D scan systems to execute 3D processing or replace costly objectives for providing a plane focusing surface.

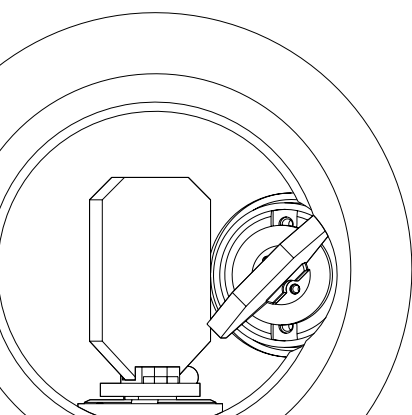
Key features

- Any mounting orientation
- Compact construction in high quality design
- Diffraction limited imaging
- Wide range of optical configurations for all typical laser wavelengths
- Configurations suited for high power lasers

The product series offers a wide range of different sizes, optics designs and functional upgrades (e.g. integrated encoder). The system design is tailor-made for the customer's application.

Typical applications

- 3D micromachining
- Additive manufacturing
- Laser cutting
- Laser marking
- Microstructuring



varioSCAN_{de} II 20i



- Fast dynamics
- Compact design
- Wavelengths down to the UV
- Optional: water-cooled entrance aperture

Typical applications

- Laser marking
- 3D micromachining

varioSCAN_{de} II 40i



- Highest laser powers
- Water-cooled entrance aperture
- Air cooling for optics chamber
- Low-absorption optics

Typical applications

- Additive manufacturing
- Laser cutting

varioSCAN_{de} II 40i FLEX



- Variable adjustment of image field size and working distance
- Integration of the electronic cards in the FLEX housing

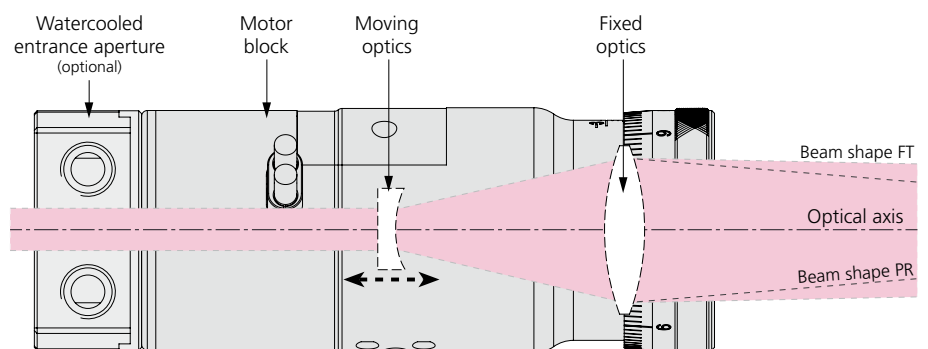
Typical applications

- Textile processing
- Laser cutting

Functional Principle z-axis

varioSCAN II z-axes shift the laser focus along the optical axis. This is done by the moving optics, which expands the incoming laser beam. Then the laser beam is either collimated or focused by the fixed optics.

This results in two optics configurations: Type FT (F-Theta) or Type PR (PRefocus). Therefore the varioSCAN II can be used in systems configurations with or without an F-Theta objective.



iDRIVE Technology

The digital varioSCAN_{de} II systems utilize iDRIVE technology. This enables real-time readback of the actual position and other status states.

varioSCAN II eBox

- Electronic cards in a compact box
- Flat design that creates flexible integration options
- Rear drilling pattern also suitable for upright installation
- EMC and RoHS compliant
- Improved thermal management
- SL2-100 and XY2-100 variants available

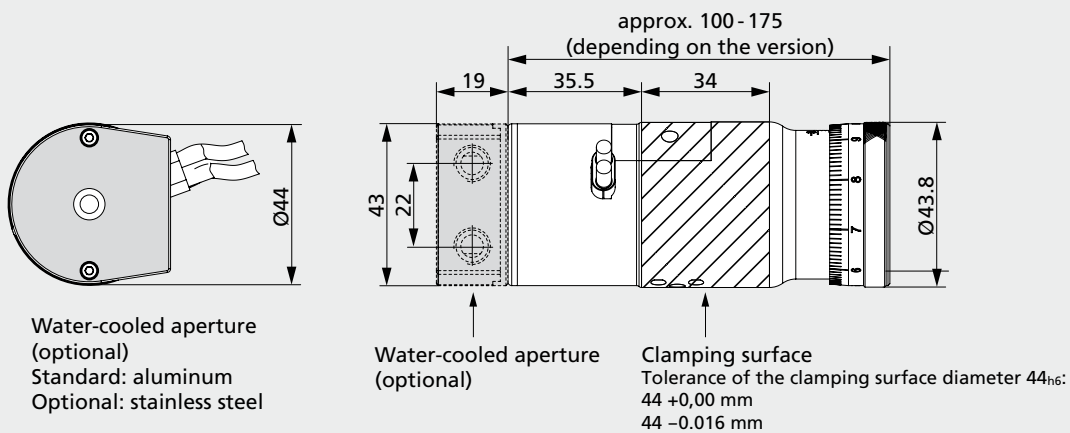


varioSCAN II Video

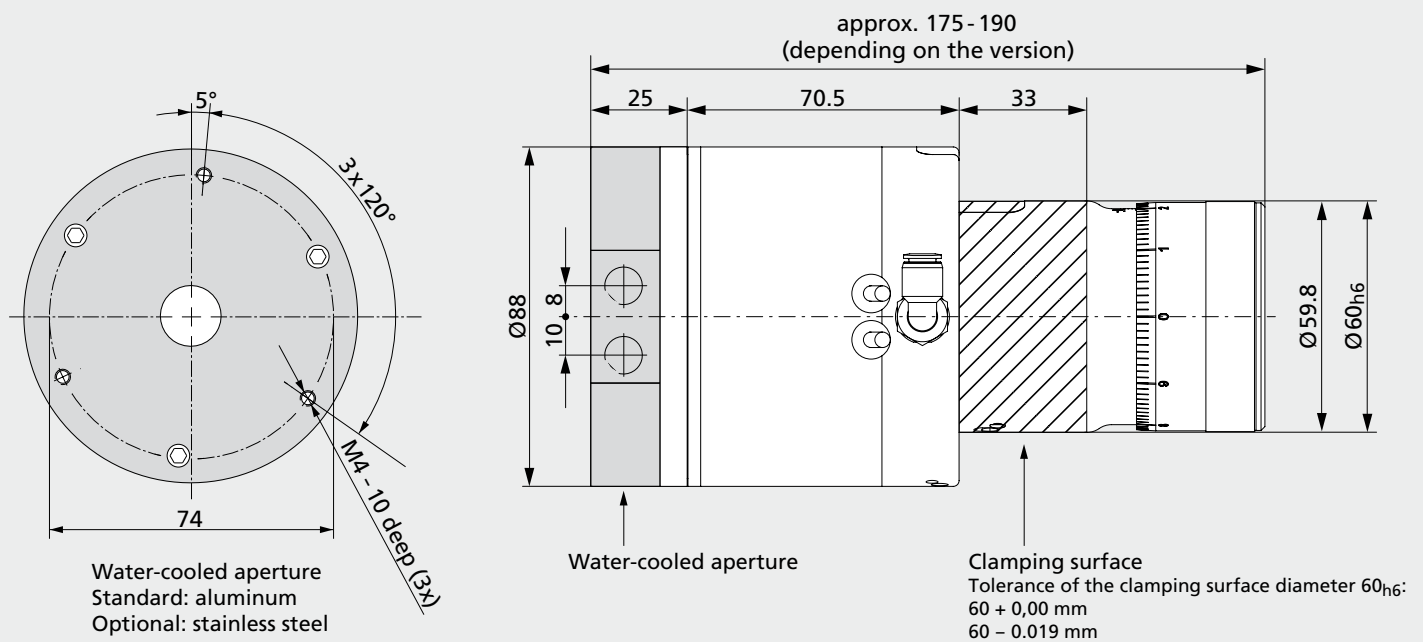
More information and application examples:



varioSCAN_{de} II 20i

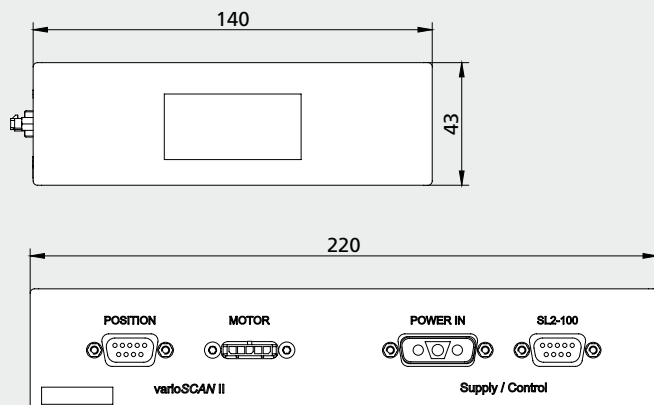


varioSCAN_{de} II 40i

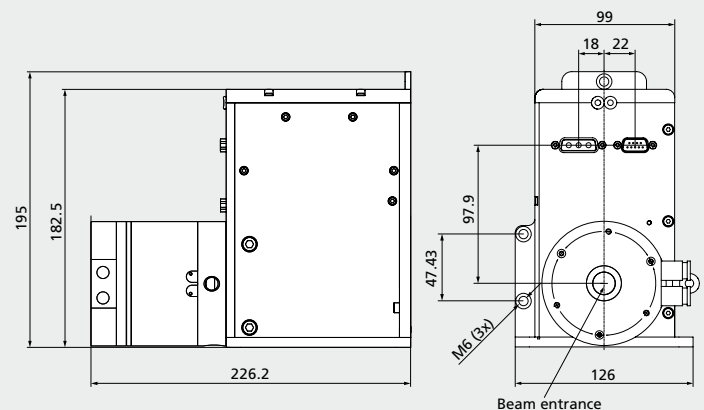


varioSCAN II eBox (optional)

(Variant SL2-100, connector positions differ for variant XY2-100)



varioSCAN_{de} II 40i FLEX



Specifications

Dynamic- and motor

	varioSCAN _{de} II 20i	varioSCAN _{de} II 40i (FLEX)
Tracking error [ms]	0.55	0.70
Motor ⁽¹⁾		
Max. travel of the moving lens [mm]	± 2	± 3
Typ. speed of the moving lens [mm/s]	≤ 280	≤ 140
Long-term drift (> 8h) [μm]	< 3	< 3
Repeatability [μm]	< 0.5	< 0.5

Optics and mechanics

	varioSCAN _{de} II 20i	varioSCAN _{de} II 40i	varioSCAN _{de} II 40i FLEX
Common optics ⁽²⁾			
Aperture [mm]	4 – 7	8 – 18	16
Typ. exit beam diameter [mm]	≤ 20	≤ 40	≤ 40
Typ. wavelengths [nm] ⁽³⁾	257 – 266, 335 – 360, 1020 – 1090, 10600	515 – 532, 1030 – 1090, 9400, 10600	9300, 10600
Beam expansion factor	2 – 5	1.4 – 3.8	2 – 2.5
Max. laser power cw [W] ⁽⁴⁾	75 (UV), 150 (green), 250 (IR), 250 (CO ₂)	1000 (green), 3000 (IR), 2000 (CO ₂)	1000 (CO ₂)
Mechanics			
Weight [kg]	0.5 – 0.7	approx. 2.4	approx. 4.4
System cooling	Optional: water cooled entrance aperture	Air cooling & water cooled entrance aperture	Air cooling & water cooled entrance aperture

Electronics and general

	varioSCAN _{de} II 20i varioSCAN _{de} II 40i FLEX	varioSCAN _{de} II 40i
Power supply (requirements for the power supply unit)	30 V DC (29 - 33 V), min. 1.5 A	available variants: 30 V DC (29 - 33 V) and 48 V DC, max. 1.5 A each
Interfaces	SL2-100, XY2-100 Enhanced	SL2-100, XY2-100 Enhanced
Installation	Clamping, electrically insulated, thermally connected	
Operating temperature	25°C ± 10°C	

Example applications

	Laser marking	Micromaterial- processing	Additive Manufacturing	Textile processing
Configuration				
Typ. scan head aperture [mm]	10	14	30	30
varioSCAN II type	20-20 FT	20-133 FT	40-116 PR	40-89-PR (FLEX)
Aperture diameter [mm]	5	7	16	16
Beam expansion factor	2.8	2.0	2.0	2.0 – 2.5
Coating: Wavelength [nm]	1020 – 1090	1020 – 1090	1030 – 1090	10600
FT: Objective focal length [mm] PR: medium back focal length [mm]	163	100	850	370 – 2015
Square image field edge length [mm]	95	50	500	180 – 1400
Focus shift / mm [mm]	17.1	2.2	23.5	11. – 600
Focus shift (for varioSCAN _{de} II) [mm]	± 32	± 4	± 20	± 0

⁽¹⁾ All specifications mentioned refer exclusively to the motor only. The influence of these specifications on the actual positioning of the laser beam in the processing field/volume depends on the specific optical configuration.

⁽²⁾ A specific type design is defined from the specifications given.

⁽³⁾ Coatings for double & multiple wavelengths are available on request.

⁽⁴⁾ Higher laser powers are dependent on laser beam diameter, beam quality and cooling options.

