

AXIALSCAN-12



3-AXIS DEFLECTION UNITS

FOR CHALLENGING INDUSTRIAL APPLICATIONS



- Process 3D forms, planar, inclined and curved surfaces
- Offers highest focus range in Z-direction
- Smallest spot diameter and high mark quality
- Digital control via control card
- Typical Fieldsizes (mm x mm): 120 x 120, 180 x 180, 300 x 300, 400 x 400, 500 x 500, 600 x 600

COMPACT SIZE – HIGH PERFORMANCE

YOUR BENEFITS

The new concept of 3-axis deflection units enables extremely fast material processing of various forms and sizes with the smallest spot diameter in the dedicated fields. The AXIALSCAN-12 [Y] offers a focus range in Z-direction of more than 200 mm in a 300 mm x 300 mm field. The RAYLASE twin shell design reduces thermal effects allowing low drift values for high precision.

MIRRORS

Scan mirrors and objectives with optimized mounts are available for all typical laser types, wavelengths, power densities, focal lengths and working fields. Customer specific configurations are also possible.

INTERFACES

The deflection units are compatible to the XY2-100 standard. They can be digitally controlled by a control card, such as the SP-ICE-1 PCIe PRO or via an analog current or voltage interface.

TYPICAL APPLICATIONS

Material processing such as micro welding, 3D-Marking, laser direct scribing, ablation, structuring, mold texturing.

INNOVATION AND QUALITY

Innovation and maintaining high product quality standards are our priorities at RAYLASE. All our products are developed, built and tested in our own laboratories and production facilities. Through our world-wide support network we can offer best maintenance and rapid service for our customers.

GENERAL SPECIFICATIONS

Power supply	Voltage	± 15 V to ± 18 V
	Current	7 A, RMS, Peak current 10 A
	Ripple/ Noise	Max. 200 mVpp, @ 20 MHz bandwidth
Interface signals	Analog (on request)	± 5 V, ± 10 V
	Digital	XY2-100 protocol
Ambient temperature	+15°C to +35°C	
Storage temperature	-10°C to +60°C	
Humidity	≤ 80 % non-condensing	

Weight	6.5 kg
Max. input aperture AS-12-Y	8 mm
Max. input aperture AS-12-TY	5 mm
Dimension (L x W x H)	370 mm x 114 mm x 126 mm
Field sizes (beam optimized):	
Nd:YAG	120 mm x 120 mm, 180 mm x 180 mm, 300 mm x 300 mm
Nd:YAG tripled	300 mm x 300 mm, 400 mm x 400 mm, 500 mm x 500 mm, 600 mm x 600 mm

SPECIFICATIONS FOR LINEAR TRANSLATOR MODULE ND:YAG

Field size (mm x mm)	120 x 120	180 x 180	300 x 300
Working distance (mm) ¹	121.0	196.0	344.0
Spot diameter 1/e ² (µm) ²	26.0	39.0	65.0
Focus range in Z-direction (mm)	10.0	46.0	221.0
Resolution (µm)	< 4.0	< 6.0	< 10.0
Acceleration time (ms)	1.5	1.5	1.5
Maximum processing speed (m/s)	5.0	7.5	12.5

¹ From the edge of deflection unit to the processing field; the distance will vary with laser divergence and lens tolerance. ² Input beam quality: M² = 1.0.

SPECIFICATIONS FOR LINEAR TRANSLATOR MODULE ND:YAG TRIPLED

Field size (mm x mm)	300 x 300	400 x 400	500 x 500	600 x 600
Working distance (mm) ¹	344.0	467.8	591.5	715.3
Spot diameter 1/e ² (µm) ²	21.0	27.0	34.0	41.0
Focus range in Z-direction (mm)	289.0	757.0	> 1,000.0	> 1,000.0
Resolution (µm)	< 10.0	< 13.0	< 16.0	< 19.0
Acceleration time (ms)	1.5	1.5	1.5	1.5
Maximum processing speed (m/s)	12.5	16.7	20.8	25.0

¹ From the edge of deflection unit to the processing field; the distance will vary with laser divergence and lens tolerance. ² Input beam quality: M² = 1.0.

SPECIFICATIONS FOR ASSOCIATED DEFLECTION UNIT

Beam displacement (mm)	14.0
Typical deflection (optical) (rad)	± 0.393
Repeatability (RMS) (µrad)	2
Max. Gain drift (ppm/K) ¹	50
Max. Offset drift (µrad/K) ¹	30
Long-term drift (µrad) ^{1,2}	< 300
Acceleration time (µs)	320

¹ Drift per axis.

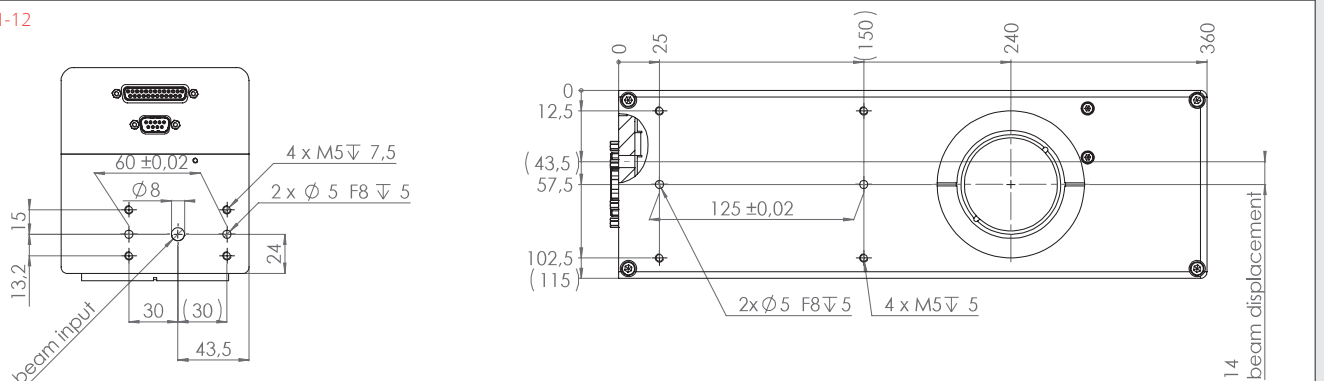
² After warming-up, variations of ambient temperature < 1K.

SPECIFICATIONS FOR OPTICS

Laser	Nd:YAG	Nd:YAG tripled
Wavelength (nm)	1,064	355
Coating	AR Coating	AR Coating
Max. laser power, cw (W/cm ²)	1,000	100

The AXIALSCAN-12 is available for other wavelengths on request.

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All dimensions in mm.

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