

AXIALSCAN-50

AXIALSCAN-20



Smallest Spot, High Speed

- Variable working area: 300 x 300 to 1,500 x 1,500 mm²
- High processing speeds and superior performance
- Innovative compact design for industrial conditions
- High power Nd:YAG and CO₂ subsystems

● DESIGN

The AXIALSCAN-50 is an addition to the AXIALSCAN family designed in a compact water-tempered housing to minimize drift effects caused by temperature variations. The unit combines the Z-axis and XY scanner in a single housing and the 50mm mirrors ensure extremely fine spots in the various field sizes. The lens sets are easily changeable without the need to open the scanner allowing the full spectrum of field sizes from 300 mm x 300 mm to 1,500 mm x 1,500 mm. Furthermore the AS-50 is well equipped for high power application of up to 4 kW.

● QUALITY

Maintaining high product quality standards is a priority at RAYLASE. Subsystems are shipped to customers only after extensive tests.

● OPTICS

Objectives, protection windows and mirrors are available for Nd:YAG and CO₂ lasers.

● INTERFACES

The subsystems are electrically compatible with the XY2-100 standard. They can be controlled via high-speed data link, with a suitable control card, or by using an analogue current or voltage interface.

● TYPICAL APPLICATIONS

The AXIALSCAN-50 is ideal for applications in the textile, automotive, and packaging industries where precision and processing on the fly is required. Additional application areas are welding, 3D processing, surface treatment, leather cutting and marking.



AXIALSCAN-50

● GENERAL SPECIFICATIONS

Power Supply	Voltage	±15 to ±18 V
	Current	15 A, RMS, max. 25 A
	Ripple	≤ 100 mV
	Noise	≤ 0.5 % DC to 30 MHz
Ambient Temperature	+15 to +35 °C	
Storage Temperature	-10 to +60 °C	
Humidity	≤ 80 % non condensing	

Weight	approx. 32 kg	
Interface Signals	Analog	±5 V, ±10 V
	Digital	XY2-100 Protocol
Max. Input Aperture	20 mm	
Field Sizes:		
Field Sizes Nd:YAG	300 x 300 to 1,200 x 1,200 mm ² beam optimized	
Field Sizes CO ₂	300 x 300 to 1,500 x 1,500 mm ² beam optimized	

● SPECIFICATIONS FOR ND:YAG (λ = 1,064 NM) AXIALSCAN-50-Y

Field Size (mm x mm)	300 x 300	500 x 500	600 x 600	600 x 600	800 x 800	1,000 x 1,000	1,200 x 1,200
Mechanical Data:							
Distance D (mm) ⁽¹⁾	14.39	26.77	28.82	24.63	24.63	24.63	24.63
Working Distance (mm) ⁽²⁾	280	527	651	775	898	1,146	1,393
Dynamic Data:							
Average Spot Diameter 1/e ² (μm) ^(2,3)	19	31	37	43	49	61	73
Resolution (μm)	< 10	< 16	< 19	< 22	< 25	< 30	< 37
Typical Processing Speeds (m/s)	3	5	6	7	8	10	12
Acceleration Time (ms)	≤ 2.5	≤ 2.5	≤ 2.5	≤ 2.5	≤ 2.5	≤ 2.5	≤ 2.5

(1) From the front edge of the linear translator to the inner side of housing plate. (2) From the edge of deflection unit to the processing field; the distance will vary with laser divergence and lens tolerance. (3) Input beam quality: M² = 1.0.

● SPECIFICATIONS FOR CO₂ (λ = 10,600 NM) AXIALSCAN-50-C

Field Size (mm x mm)	300 x 300	500 x 500	800 x 800	1,200 x 1,200	1,500 x 1,500
Mechanical Data:					
Distance D (mm) ⁽¹⁾	19	19	19	19	19
Working Distance (mm) ⁽²⁾	280	527	898	1,394	1,764
Dynamic Data:					
Average Spot Diameter 1/e ² (μm) ^(2,3)	155	260	405	600	730
Resolution (μm)	< 10	< 17	< 25	< 37	< 46
Typical Processing Speeds (m/s)	3	5	8	12	15
Acceleration Time (ms)	≤ 2.5	≤ 2.5	≤ 2.5	≤ 2.5	≤ 2.5

(1) From the front edge of the linear translator to the inner side of housing plate. (2) From the edge of deflection unit to the processing field; the distance will vary with laser divergence and lens tolerance. (3) Input beam quality: M² = 1.0.

● SPECIFICATIONS FOR ASSOCIATED DEFLECTION UNIT

Deflection Unit	AXIALSCAN-50
Mechanical Data:	
Beam Displacement (mm)	60.0
Max. Immersion Depth for PW (mm) ⁽¹⁾	44.0
Dynamic Data:	
Typical Deflection (rad)	±0.393
Repeatability (μrad)	20
Max. Gaindrift (%/K) ⁽²⁾	0.005
Max. Offsetdrift (μrad/K) ⁽²⁾	30
Long-term Drift over 24 hours (μrad) ^(2,3)	< 200
Acceleration Time (10-90%) (ms)	1.9

(1) From bearing surface of PW ring, incl. 1 mm safety clearance.
 (2) Drift per axis. (3) After warming-up, variations of ambient temperature < 1K.

● SPECIFICATIONS FOR OPTICS

Laser	Nd:YAG	CO ₂
Wavelength (nm)	1,064	10,600
Coating	AR Coating	AR Coating
Max. Laser Power, cw, 1/e ² (W/cm ²)	1,600	1,600

● WATER TEMPERING

Specifications		Flow rate	Pressure loss
Water	deionized	4 l / min	0.8 (bar)
Temperature (°C)	25 - 28	6 l / min	1.1 (bar)
Max. Pressure (bar)	2 - 3		

AXIALSCAN-50

