

2-AXIS LASER BEAM DEFLECTION UNITS

RLA



Low-cost XY-Deflection Units

- Robust and reliable (CE)
- Compact XY-deflection units for wavelengths from 400 to 1,064 nm and 10,600 nm
- Easy integration and multi-head applications
- Performance at an attractive price

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● DESIGN

RLA XY-deflection units offer good performance at an attractive price. The compact design (CE) and the reduced weight makes it the perfect choice for all industrial applications. RAYLASE products combine fine tolerance mechanics, optimized mirror design, high-quality electronics and state of the art galvanometer scanners.

● QUALITY

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

● MIRRORS AND OBJECTIVES

Mirrors and objectives are available for all typical laser types and working field sizes.

● INTERFACES

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

● TYPICAL APPLICATIONS

Marking; material processing such as drilling, cutting, welding, hardening, texturing.

● GENERAL SPECIFICATIONS

Power Supply	Voltage	±15 to ±18 V	Storage Temperature	-10 to +60 °C		
	Current	3 A, RMS, max. 10 A		Humidity	≤ 80 % non-condensing	
	Ripple	≤ 200 mV			Typical Deflection	±0.393 rad
	Noise	≤ 0.5 % DC to 30 MHz				Resolution
Interface Signals	Analog	±5 V, ±10 V, 0-10 V	Repeatability			
		±20 mA, 0-40 mA		Max. Gaindrift ⁽¹⁾		
	Digital	XY2-100 Protocol	Max. Offsetdrift ⁽¹⁾		0.02°/K	
Ambient Temperature		+15 to +35 °C		Long-term Drift over 8 hours ^(1,2)	< 600 µrad	

(1) Drift per axis. (2) After warming-up, variations of ambient temperature < 1K. Specifications for F-Theta objective f=160 mm / for field size 110 mm x 110 mm.

● APERTURE DEPENDENT SPECIFICATIONS

Deflection Unit	RLA-1004	RLA-1504	RLA-2004
Mechanical Data:			
Input Aperture (mm)	10.0	15.0	20.0
Beam Displacement (mm)	12.4	17.0	26.0
Max. Immersion Depth for Objectives (mm) ⁽¹⁾	19.9	17.6	12.5
Weight (kg) (without objective)	approx. 2.4	approx. 2.5	approx. 3.1
Dynamic Data:			
Writing Speed (cps) ^(2,3)	> 300	> 230	> 170
Positioning Speed (m/s) ⁽²⁾	> 7	> 5	> 4

(1) From bearing surface of objective ring, incl. 1 mm safety clearance. (2) With F-Theta objective f=160 / field size 110 mm x 110 mm. (3) Single-stroke font with 1 mm height.

● MIRROR SPECIFICATIONS

Laser	Broadband	CO ₂
Wavelength (nm)	400 - 1,064	10,600
Coating	Silver IP	Gold IP
Reflectivity @ Wavelength (nm)	> 98.0 %	> 99.0 %
Flatness @ 633 nm	λ/4	λ/4
Max. Laser Power, cw (W/cm ²)	70	80

Mirrors for other wavelengths available on request.

● OBJECTIVE INFORMATION

Laser	Nd:YAG			Nd:YAG doubled	Diode	CO ₂		
Wavelength (nm)	1,064	1,064	1,064	532	808 - 980	10,600	10,600	10,600
Objective (f in mm)	f = 100	f = 160	f = 254	f = 160	f = 163	f = 100	f = 200	f = 300
Typical Field Size (mm x mm)	60x60	110x110	180x180	110x110	100x100	70x70	140x140	210x210
Spot Diameter TEM00 (µm)								
Aperture 10 mm	~23	~35	~55	~20	-	~230	~380	~570
Aperture 15 mm / 20 mm	~16 / -	~25 / -	~35 / ~25	~13 / -	- / -	~180 / -	~270 / -	~375 / -
Working Distance (mm) ⁽¹⁾	129	207	368	209	270	92	194	292

(1) Distance between edge of deflection unit and working surface. This distance is dependent on the objective model and will vary with laser divergence and objective tolerance.

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