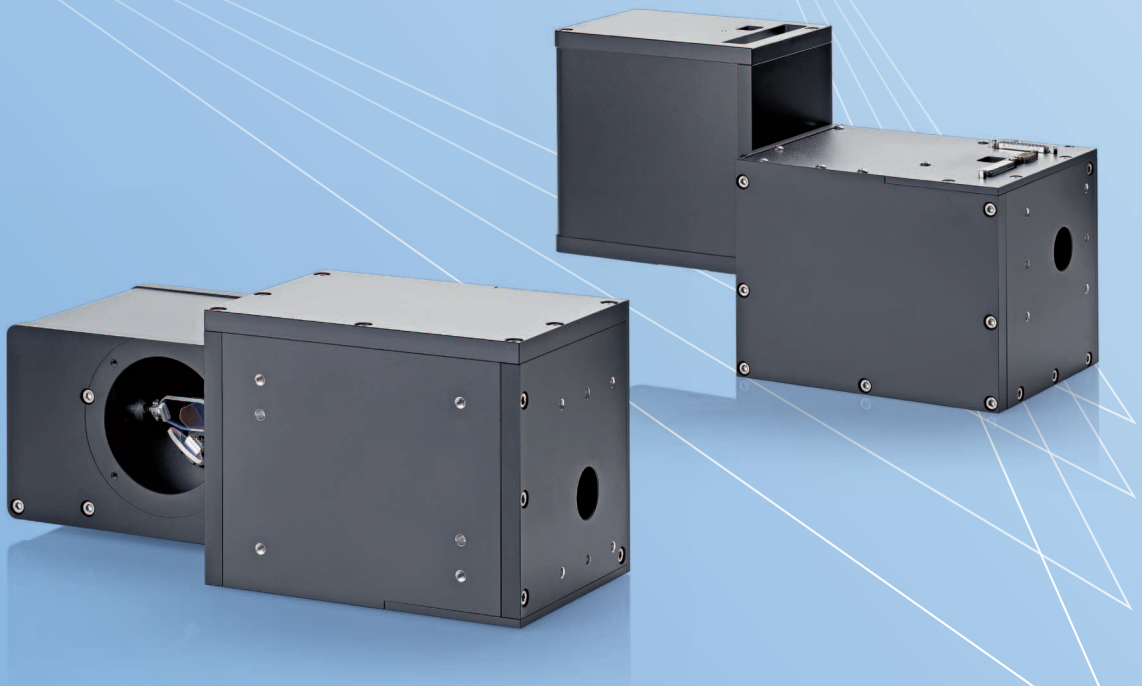
RAYLASE
focus on laser

3-axis submodules

FOCUSSHIFTER



Flexible deep processing with smallest spot diameter

- Variable, easy to adjust focus range in Z direction
- Modular and compact design for easy integration
- Excellent price-performance ratio

Scan head apertures: 15, 20 mm

YOUR BENEFITS

The FOCUSSHIFTER submodules provide tiny spot diameters with flexible focusing range in Z direction. The modular, compact, robust, and pre-aligned design (CE) makes integration easy. Submodules for Nd:YAG and CO_2 lasers are designed for field sizes from 100 mm x 100 mm to 300 mm x 300 mm. The field sizes are determined by the f-theta objective type. Submodules for other wavelengths are available upon request.

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.

MIRRORS AND OBJECTIVES

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.

INTERFRACES

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

TYPICAL APPLICATIONS

Deep engraving, deep processing of materials and in-glass marking.

3-axis submodules

FOCUSSHIFTER

For specialised industrial applications

GENERAL SPECIFICATIONS

Power supply	Voltage	±15 to ±18 V
	Current	7.5 A, RMS, max. 10 A
	Ripple / Noise	Max. 200 mVpp, @ 20 MHz bandwidth
Ambient temperature		+15 to +35 °C

Storage temperature		-10 to +60 °C
Humidity		≤ 80 % non-condensing
Interface signals	Analog	±5 V, ±10 V
	Digital	XY2-100 Protocol

SPECIFICATIONS FOR LINEAR TRANSLATOR MODULES

Laser	Nd:YAG	Nd:YAG doubled	Nd:YAG tripled	CO_2	
Input aperture (mm)	5.0	5.0	5.0	10.0	10.0
Beam expansion factor	3.0	3.0	2.0	1.5	2.0
Focus range in Z-direction (mm)	± 15.0 (1)	± 10.0 (1)	± 25.0 (1)	± 10.0 (2)	± 15.0 (2)
Weight (kg)	approx. 7.5	approx. 7.5	approx. 7.5	approx. 7.5	approx. 7.5

(1) With F-Theta objective f = 160 mm. (2) With F-Theta objective f = 250 mm.

SPECIFICATIONS FOR ASSOCIATED DEFLECTION UNITS

Deflection unit	SUPERSCAN IIE-15	SUPERSCAN III-15				SUPERSCAN IIE-20	
Mechanical data:							
Input aperture (mm)	15.0	15.0				20.0	
Beam displacement (mm)	18.05(4) / 18.55	18.1(4) / 18.6				26.28(4) / 25.63	
Weight (without objective) (kg)	approx. 3.3	approx. 2.9				approx. 3.3	
Dynamic data:							
Typical deflection (rad)	±0.393	±0.393				±0.393	
Repeatability (RMS) (µrad)	2	2				2	
Max. Gaindrift (ppm/K) (1)	15	15				15	
Max. Offsetdrift (µrad/K) (1)	10	10				10	
Long-term drift (µrad) (1, 2)	< 150	-				< 150	
Long-term drift with water tempering [W] [W2] (µrad) (1, 2, 3)	100	60				100	
Mirrors	QU	QU		SI		QU	SI
Tunings		LN	RA	LN	RA		
Acceleration time (10-90%) (ms)	0.36	0.36	0.31	0.30	0.27	0.58	0.61

(1) Drift per axis. (2) After warming-up, variations of ambient temperature < 1K. (3) With water tempering at 4.5 l/min and 22°C water temperature after 0.5h warm up.
(4) Specifications for QU fused Silica mirrors.

SPECIFICATIONS FOR OPTICS

Laser	Nd:YAG	Nd:YAG doubled	Nd:YAG tripled	CO_2
Wavelength (nm)	1,064	532	355	10,600
Coating	AR Coating	AR Coating	AR Coating	AR Coating
Max. laser power, cw (W/cm²)	1,000	500	100	700

SPECIFICATIONS FOR F-THETA LENSES

Laser	Nd:YAG	Nd:YAG doubled	Nd:YAG tripled	CO_2
Wavelength (nm)	1,064	532	355	10,600
Objective (mm)	f = 160	f = 160	f = 160	f = 250
Typical field size (mm x mm)	95 x 95	95 x 95	95 x 95	150 x 150
Spotdiameter 1/e², TEM00				
Aperture 15 mm / 20 mm (µm)	30 / -	15 / -	10 / -	270 / 220
Working distance (mm)	209 +/- Focus range	208 +/- Focus range	248 +/- Focus range	193 +/- Focus range

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