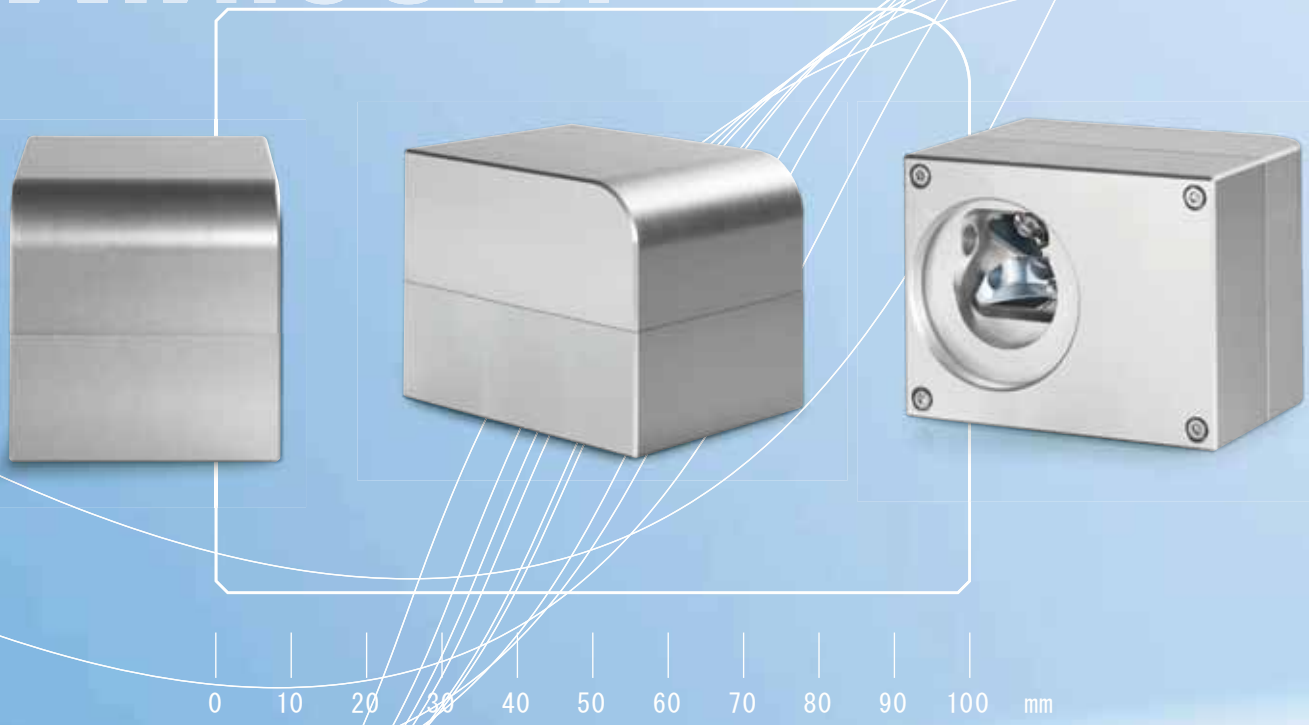
RAYLASE
focus on laser

NEW 2-AXIS LASER BEAM DEFLECION UNITS

MINISCAN



Minimum Size, Maximum Performance

High Speed, Low Drift

MINISCANは、8時間以上で300μrad以下の低ドリフト性のみならず、益々拡大するマーケット要求に応えるべく、ハイクオリティモードで＞500cps（characters per second）の高速性を実現しています。

- 軽量デザイン　：800g（MINISCAN-10）、700g（MINISCAN-7）
- 低ドリフト　　：＜300μrad　＞８時間
- 高速　：MINISCAN-10：ハイクオリティ＞500cps / 120mm×120mm
  MINISCAN-7　：ハイクオリティ＞900cps / 120mm×120mm
- 堅牢で防塵対策済（ＣＥ適合）
- コンパクトシステムに最適

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東京本社　〒160-0014　東京都新宿区内藤町１番地　内藤町ビルディング
TEL:03(3356)1064 FAX:03(3356)3466 E-mail:info@optoscience.com
大阪支店　〒532-0011　大阪市淀川区西中島7-7-2　新大阪ビル西館
TEL:06(6305)2064 FAX:06(6305)1030 E-mail:osk@optoscience.com
名古屋営業所　〒450-0002　名古屋市中村区名駅2-37-21　東海ソフトビル
TEL:052(569)6064 FAX:052(569)8064 E-mail:ngo@optoscience.com

NEW 2-AXIS LASER BEAM DEFLECTION UNITS

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DESIGN
The MINISCAN deflection units are designed with compact laser systems in focus, weighing only 800 grams, the size has been minimized without compromising the performance. The scan speeds and low drift values of these units are unparalleled. The combination of fine tolerance mechanics, optimized mirror design, miniature electronics and superior galvanometer scanners allow remarkable performance.

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 engraving, ablation, drilling, cutting, welding; electronic production such as structuring, trimming; processing on the fly.

GENERAL SPECIFICATIONS

Power Supply	Voltage	±15 to ±18 V
	Current	2 A, RMS, max. 10 A
	Ripple	≤ 200 mV
	Noise	≤ 0.5 % DC to 30 MHz
Interface Signals	Analog	±5 V, ±10 V
	Digital	XY2-100 Protocol
Ambient Temperature		+15 to +35 °C

Storage Temperature	-10 to +60 °C
Humidity	≤ 80 % non-condensing
Typical Deflection	±0.393 rad
Resolution	12 µrad
Repeatability	20 µrad
Max. Gaindrift (1)	0.005 %/K
Max. Offsetdrift (1)	30 µrad/K
Long-term Drift over 8 hours (1,2)	< 300 µrad

(1) Drift per axis. (2) After warming-up, variations of ambient temperature < 1 K. Specifications for F-Theta objective f=162 mm / for field size 100 mm x 100 mm. The above specifications are preliminary.

APERTURE DEPENDENT SPECIFICATIONS

Deflection Unit	MINISCAN-7	MINISCAN-10
Mechanical Data:		
Input Aperture (mm)	7.0	9.0
Beam Displacement (mm)	9.0	12.4
Max. Immersion Depth for Objectives (mm) (1)	7.0	7.0
Weight (kg) (without objective)	approx. 0.7	approx. 0.8
Dynamic Data:		
Acceleration Time (ms)	0.18	0.22
Writing Speed (cps) (2, 3)	> 900	> 500
Positioning Speed (m/s) (2)	> 10	> 7

(1) From bearing surface of objective ring, incl. 1 mm safety clearance. (2) With F-Theta objective f=163 / field size 120 mm x 120 mm. (3) Single-stroke font with 1 mm height. The above specifications are preliminary.

MIRROR SPECIFICATIONS

Laser	Nd:YAG	Nd:YAG doubled	Nd:YAG tripled	Broadband	Diode	CO_2	
Wavelength (nm)	1,064	532	355	400 - 1,064	800 - 980	10,600	10,600
Coating	dielectric	dielectric	dielectric	Silver IP	dielectric	dielectric	Gold IP
Min. Reflectivity @ Wavelength (nm)	99.5 % @ 1,064 80.0 % @ 633	99.5 % @ 532 50.0 % @ 633	99.0 % @ 355 80.0 % @ 633	97.0 % @ 400 - 1,064 97.0 % @ 633	99.0 % @ 808 - 980 50.0 % @ 633	99.9 % @ 10,600 80.0 % @ 450 - 650	99.0 % @ 10,600 80.0 % @ 450 - 650
Flatness @ 633 nm	λ/4	λ/4	λ/4	λ/4	λ/4	λ/4	λ/4
Max. Laser Power, cw (W/cm²)	500	500	100	70	500	500	80
Max. Max. Laser Power, 100 ns Pulse Width (MW/cm²)	100	100 (10 ns)	20 (10 ns)	N/A	N/A	400	400
Surface Quality (Scratch/Dig)	40/20	40/20	40/20	40/20	40/20	40/20	40/20

Mirrors for other wavelengths available on request.

OBJECTIVE INFORMATION

Laser	Nd:YAG			Nd:YAG doubled	Nd:YAG tripled	CO_2		
Wavelength (nm)	1,064	1,064	1,064	532	355	10,600	10,600	10,600
Objective (f in mm)	f = 63	f = 162	f = 254	f = 160	f = 160	f = 100	f = 200	f = 300
Typical Field Size (mm x mm)	36 x 36	100 x 100	180 x 180	110 x 110	110 x 110	70 x 70	140 x 140	210 x 210
Spot Diameter TEM00 (µm)								
Aperture 7 mm / 9 mm	~17 / ~13	~44 / ~34	~70 / ~55	~22 / ~17	~15 / ~13	~330 / ~255	~540 / ~420	~810 / ~630
Working Distance (mm) (1)								
Aperture 7 mm / 9 mm	104.0	200.0	369.3	220.7	225.7	106.8	206.3	306.1
Thread	M55x1	M55x1	M85x1	M85x1	M85x1	M85x1	M85x1	M85x1

(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. The above specifications are preliminary.

RAYLASE AG
Argelsrieder Feld 2+4
82234 Wessling
Germany
www.raylase.com

Phone: +49-(0)8153/88 98-0
Fax: +49-(0)8153/88 98-10
E-mail: info@raylase.com

RAYLASE AG
Shenzhen Representative Office
Room 706, Petrel Building, Jiabin Road
Luohu District, Shenzhen
518001 Guangdong, China
www.raylase.cn

Phone: +86 755-82228324
Fax: +86 755-82228193
E-mail: info@raylase.cn

Local Distributor

August 2008. Information is subject to change without prior notice.