

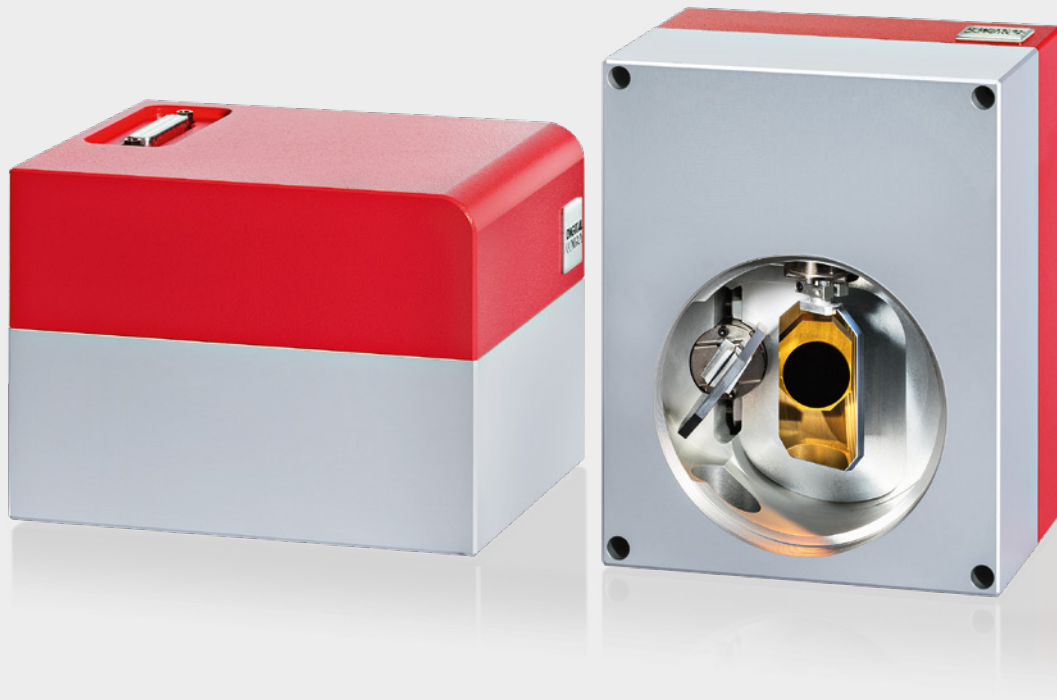
MINISCAN III-20



2-AXIS DEFLECTION UNITS

FOR COMPACT INDUSTRIAL DESIGNS

**DIGITAL
CONTROL**



- Control via SL2-100 protocol 20 bit or XY2-100 protocol 16 bit
- Digitally controlled, low noise and drift
- Robust and dust-proof for industrial applications
- Various tuning options, mirror substrates and coatings for marking and hatching (AM LPBF / SLS)
- Input aperture: 20 mm

DIGITALLY CONTROLLED, COMPACT AND ROBUST

YOUR BENEFITS

The new MINISCAN III offers very stable digital control, which further improves noise and drift values, thereby making the system even more reliable and robust. Both the XY2-100 16 bit and the SL2-100 20 bit protocols can be used with the digital interface. A corresponding cable defines the use of the protocol.

CONFIGURABLE THROUGH AND THROUGH

Lenses, protective glass, and mirror substrates and coatings are available for many standard laser types, wavelengths, power densities, focal lengths and processing areas. This allows to handle a wide range of tasks with best quality and optimized throughput. We would also be happy to help you put together the perfect configuration for your application.

TYPICAL APPLICATIONS

Natural applications include, in particular, challenging marking tasks or the hatching of surfaces in additive manufacturing with high dynamic performance. Speed and dynamic responses are guaranteed, thanks to digital control and powerful PWM output stages. You also have the option of combining the MINISCAN III with our CAMERA ADAPTER and MACHINE VISION CONTROL components for process monitoring.

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.

MINISCAN III-20



2-AXIS DEFLECTION UNITS

FOR COMPACT INDUSTRIAL DESIGNS

GENERAL SPECIFICATIONS

Power supply	Voltage	+30 or +48 V
	Current	2 A, RMS, max. 5 A
	Ripple/ Noise	Max. 300 mVpp, @ 20 MHz bandwidth
Ambient temperature		+15°C to +35°C
Storage temperature		-10°C to +60°C
Humidity		≤ 80 % non-condensing
IP-Code		IP 64
Interface signals	Digital	XY2-100-Enhanced protocol SL2-100 protocol

Typical deflection (optical)		± 0.393 rad
Resolution XY2-100 16-Bit		12 µrad
Resolution SL2-100 20-Bit		0.76 µrad
Repeatability (RMS)		< 2.0 µrad
Position noise (RMS)		< 3.2 µrad
Temperature drift	Max. Gain drift ¹	15 ppm/K
	Max. Offset drift ¹	10 µrad/K
Long-term drift 8 h ¹		< 80 µrad

¹ Angles optical. Drift per axis, after 30 min warm-up, at constant ambient temperature and process stress.

APERTURE DEPENDENT SPECIFICATIONS – MECHANICAL DATA

Deflection unit	MINISCAN III-20 SI	MINISCAN III-20 QU
Input aperture [mm]	20	20
Beam displacement [mm]	26.0	26.0
Weight (without objective) [kg]	2.5	2.5
Dimension (L x W x H) [mm]	145.0 x 116.0 x 103.5	145.0 x 116.0 x 103.5

MIRROR VARIATIONS

Wavelengths	Substrate
1,064 nm	SI
900 – 1,100 nm + AL	SI
10,600 nm	SI
515 – 540 nm	QU
980 + 1,940 nm	QU
1,060 – 1,090 nm + AL	QU

QU = quartz; SI = silicon

TYPE DEPENDENT SPECIFICATIONS – TUNING

Tuning	Description
Microstructuring-Tuning (M)	Optimized tuning for high precision beam deflection with sharp corners and minimized tracking error
Marking-Tuning (MA)	Optimized tuning for marking applications

TYPE DEPENDENT SPECIFICATIONS – DYNAMIC DATA

Deflection unit	MINISCAN III-20-SI		MINISCAN III-20-QU
Tuning	M	MA	M
Processing speed [rad/s] ¹	30	30	30
Positioning speed [rad/s] ¹	30	55	30
Tracking error [ms] ²	0.30	0.34	0.34
Step response time at 1% of full scale [ms]	0.90 ³	0.80 ⁴	1.01 ³

¹ See "Calculation of speed" ² Calculation acceleration time approx. 2.3 x tracking error.

³ Settling to 1/5,000 of full scale. ⁴ Settling to 1/1,000 of full scale.

Calculation of speed

Speed in working field = Focal length F-Theta lens x Positioning speed:

Example: MINISCAN III-20 SI with F-Theta Lens f = 163 mm, Positioning speed 30 rad/s (48 V)

$$v = 163/1,000 \times 30 = 4.9 \text{ m/s}$$

Mirrors and Lenses: Scan mirrors and objectives with optimized mounts are available many all typical laser types, wavelengths, power densities, focal lengths and working fields. Customer specific configurations are also possible. Please contact the RAYLASE support team for specific information and possible combinations on +49 8153 9999 699 or support@raylase.de.

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