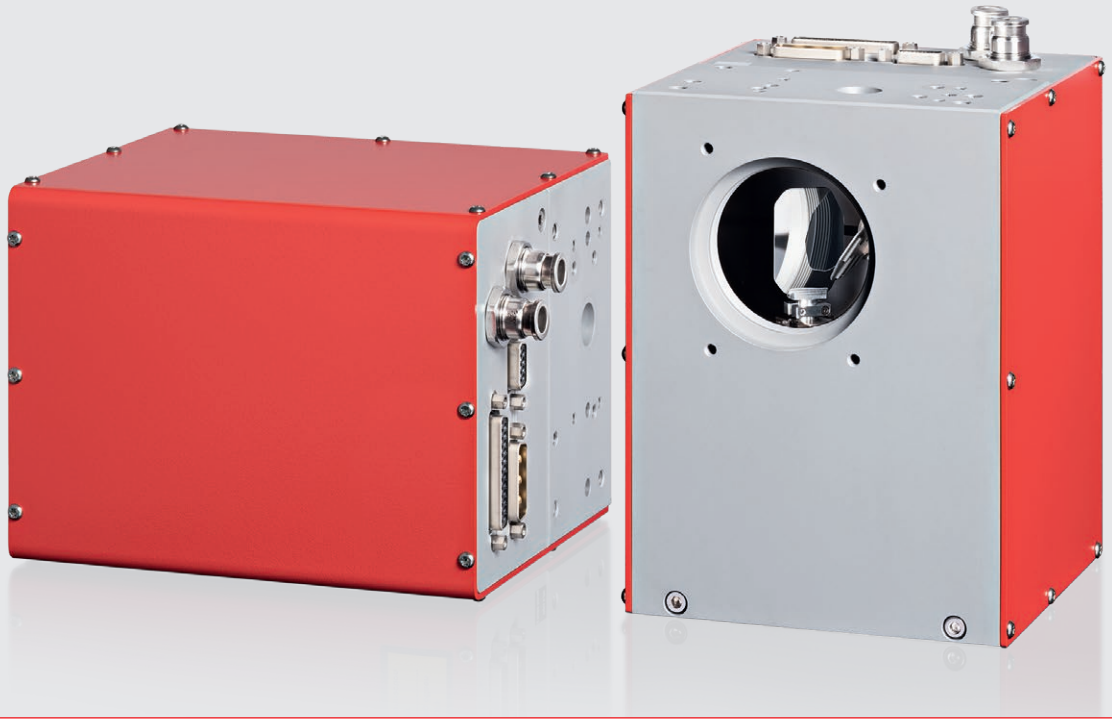
SUPERSCAN IV-15 HighDYN

2-AXIS DEFLECTION UNITS

FOR CHALLENGING INDUSTRIAL APPLICATIONS

DIGITAL CONTROL



- Dynamic high frequency deflection unit with up to 200 rad/s speed
- Digital driver board (PWM) with significantly reduced power loss and minimal heat development
- Optimised temperature management thanks to special cooling master block design
- Control via SL2-100 protocol 20 bit or XY2-100 protocol 16 bit
- Input aperture: 15 mm

SHORTEST JUMP TIMES AT HIGH FREQUENCY

YOUR BENEFITS

The SUPERSCAN IV-15 HighDYN model-based, digital control offers high dynamic responses and speeds up to 200 rad/s, which really come into play when high acceleration is repeatedly required with high frequency. The special cooling master block design allows very high jump frequencies in conjunction with the light and stiff silicon carbide mirrors.

CONFIGURABLE THROUGH AND THROUGH

For the wavelength of 10,600 nm different F-Theta lenses available. Other wavelengths, coatings and mirror substrates are in preparation. Talk to us regarding your application.

TYPICAL APPLICATIONS

Especially the drilling of electronic boards (via hole drilling) but also perforating, structuring and ablation applications where it depends on high deflection frequency are predestined Applications. Speed and dynamic responses are guaranteed, thanks to digital control and powerful PWM driver stages. When combined with our camera adapter and MVC components, the SUPERSCAN IV-15 DRILL becomes the ideal precision tool with 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.

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GENERAL SPECIFICATIONS

Power supply	**Voltage**	48 V
	Current	5 A, RMS, max. 10 A
	Ripple/ Noise	Max. 200 mVpp, @ 20 MHz bandwidth
Ambient temperature		+15°C to +35°C
Humidity		≤ 80 % non-condensing
Interface signals	**Digital**	XY2-100-Enhanced protocol SL2-100 protocol

Typical deflection		± 0.393 rad
Resolution XY2-100-E 16-Bit		12 µrad
Resolution SL2-100 20-Bit		0.76 µrad
Repeatability (RMS)		< 2.0 µrad
Position noise (RMS)		< 4.5 µrad
Temperature Drift	**Max. Gaindrift [1]**	15 ppm/K
	Max. Offsetdrift [1]	10 µrad/K
Long-term drift 8 h with water temperature control [1, 2]		< 40 µrad

[1] Angles optical. Drift per axis, after 30 min warm-up, at constant ambient temperature and process stress.
[2] After 30 min warm-up, under varying process loads, with water temperature control set for ≥ 2 l/min and 22°C water temperature.

APERTURE DEPENDENT SPECIFICATIONS – MECHANICAL DATA

Deflection unit	**SUPERSCAN IV DRILL**
Input aperture (mm)	15
Beam displacement (mm)	18.3 (SC)
Weight (without objective) (kg)	4.2
Dimension (L x W x H) (mm)	170.0 x 130.2 x 142

MIRROR VARIATIONS

Wavelengths	**Substrate**
10,600 nm	SC

SC = silicon carbide

TYPE DEPENDENT SPECIFICATIONS – TUNING

Tuning	**Description**
High Frequency Tuning (H1)	Optimized for fast jumps with high frequency

TYPE DEPENDENT SPECIFICATIONS – DYNAMIC DATA

Deflection unit	**SUPERSCAN IV-15 HighDYN**
Mirror substrate	SC
Positioning speed (rad/s) [1]	200
Tracking error (ms) [2]	0.23
Step response time at 1 % of full scale (ms) [3]	0.55
Step response time at 10 % of full scale (ms) [3]	0,95

[1] See "Calculation of speed". [2] Calculation acceleration time approx. 1.7 x tracking error. [3] Controlled to 1/5,000 of full scale.

Calculation of speed
Speed in working field = Focal length F-Theta lens x Positioning speed:
Example: SUPERSCAN IV-15 HighDYN with F-Theta Lens f = 100 mm, Positioning speed 200 rad/s
v = 100/1,000 x 200 = 20 m/s

Lenses: CO_2 lenses are available in different focal lengths.
Please contact the RAYLASE support team for specific information and possible combinations on +49 8153 88 98-0 or support@raylase.de.

Water cooling: The SUPERSCAN IV-15 HighDYN has connections for water cooling. Water cooling must be connected according to the specified values, as otherwise the galvo drives can overheat and be automatically switched off beforehand. This ensures constant working conditions as well as excellent long-term stability and guarantees reliable operation.

WATER TEMPERATURE CONTROL

Specifications	
Water [1]	Clean tap water with additives
Temperature	22°C – 28°C
Max. water pressure	< 3 bar

Flow rate	**Pressure drop**
2 l/min	0.4 bar
4 l/min	0.8 bar
6 l/min	1.2 bar

[1] **Caution:** When using cooling water, even if it is deionized water, suitable additives must be used to prevent the growth of algae and protect the aluminium parts against corrosion.

Additive recommendations (Please consult your additive supplier for dosage information):
Standard industrial applications: Products of company NALCO, e.g. CCL105
Food & beverage, packaging applications: Polypropylene glycol of company Dow Chemical, e.g. DOWCAL N

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