

# universal and compatible

## hurrySCAN® II, hurrySCAN®, SCANgine®



These compact scan heads from SCANLAB provide optimal solutions for nearly all challenges found in industrial laser materials processing. The mechanically and electrically inter-compatible scan heads have apertures ranging from 7 to 14 mm and various levels of dynamics. High long-term stability and low drift values are ensured via integrated temperature stabilization.

A uniform housing concept as well as tight manufacturing and assembly tolerances bring high flexibility and certainty to the design and operation of laser materials processing systems. This also enables speedy adaptation to individual customer requirements.

The hurrySCAN® II scan heads set new high-end performance standards with their optimized combination of dynAXIS® galvanometer scanners, mirror designs and high-performance electronics. Marking speeds well in excess of 1000 chars/s can be achieved in combination with appropriate lasers.

The high quality of SCANLAB's scan heads is the result of years of experience in the development and manufacture of galvanometer scanners and scan systems. In addition, each scan head must first pass the SCANcheck burn-in test before it is released for shipment to the customer.

### Typical Fields of Application:

- **Industry:** marking, laser materials processing (e.g. deep engraving, drilling, ablation, cutting, welding), electronics production (e.g. trimming, drilling, structuring), microstructuring, rapid manufacturing, stereolithography, processing-on-the-fly
- **Medicine**
- **Science and research**



# hurrySCAN® II hurrySCAN® SCANgine®

## Optics

Galvanometer mirrors and objectives with optimized mounts are available for all typical laser types and image fields.

## Control

All scan heads of these series are equipped with either analog or digital standard interfaces and are easily controlled via SCANLAB's RTC® interface boards. All scan heads are optionally available with an optical fiber data interface.

## Options

- A varioSCAN can extend all SCANLAB compact scan heads into three-axis scan systems.
- Scan heads with 14 mm apertures can be equipped with an additional reference sensor system for automatic self-calibration in scan systems requiring extremely high long-term positioning stability.
- All scan heads are also available with water cooling.
- All of SCANLAB's compact scan heads are also available without a housing as scan modules.
- For process monitoring, SCANLAB offers a camera adapter.

## Common Specifications

(all angles are in optical degrees)

### Dynamic Performance

Repeatability < 22 µrad

### Optical Performance

Typical scan angle ±0.35 rad

Gain error < 5 mrad

Zero offset < 5 mrad

Skew < 1.5 mrad

### Power Requirements

±(15+1.5) V DC, max. 3 A each

### Input Signals

Analog version alternatively:  
±4.8 V; ±9.6 V;  
±4.8 mA; ±9.6 mA  
Digital version XY2-100 standard,  
SL2-100 or optical  
data transfer

### Output Signals

3 status signals per  
axis  
Analog version TTL level  
Digital version XY2-100 standard,  
SL2-100 or optical  
data transfer

**Weight** (without objective) approx. 3 kg

**Operating Temperature** 25 °C ± 10 °C

## Product-Dependent Specifications

(all angles are in optical degrees)

	hurrySCAN® II			hurrySCAN®		SCANgine®	
<b>Aperture</b>	7 mm	10 mm	14 mm	10 mm	14 mm	10 mm	14 mm
<b>Beam Displacement</b> (dimension a)	9.98 mm	12.56 mm	16.42 mm	12.56 mm	15.79 mm	12.56 mm	15.79 mm
<b>Step Response Time</b> (settling to 1/1000 of full scale)							
1% of full scale	0.23 ms	0.25 ms	0.40 ms	0.35 ms	0.80 ms	0.80 ms	1.10 ms
10% of full scale	-	-	1.60 ms	0.90 ms	2.20 ms	2.00 ms	2.60 ms
<b>Typical Speeds</b> <sup>(1)</sup>							
Marking speed	3.5 m/s	2.5 m/s	1.5 m/s	2.0 m/s	1.0 m/s	1.0 m/s	0.7 m/s
Positioning speed	15.0 m/s	10.0 m/s	7.0 m/s	7.0 m/s	7.0 m/s	7.0 m/s	5.0 m/s
Writing speed <sup>(2)</sup>							
good quality	1100 cps	800 cps	500 cps	640 cps	350 cps	300 cps	220 cps
high quality	800 cps	500 cps	340 cps	400 cps	220 cps	200 cps	140 cps
<b>Dynamic Performance</b>							
Tracking error	0.11 ms	0.14 ms	0.24 ms	0.18 ms	0.42 ms	0.42 ms	0.55 ms
Long-term drift over 8 hours (after warm-up)	< 0.3 mrad <sup>(4)</sup>	< 0.6 mrad <sup>(5)</sup>	< 0.6 mrad <sup>(5)</sup>	< 0.6 mrad <sup>(5)</sup>	< 0.6 mrad <sup>(5)</sup>	< 0.6 mrad <sup>(5)</sup>	< 0.6 mrad <sup>(5)</sup>
<b>Nonlinearity</b>	< 3.5 mrad	< 3.5 mrad	< 3.5 mrad	< 3.5 mrad	< 2.1 mrad	< 2.1 mrad	< 2.1 mrad

<sup>(1)</sup> with F-Theta objective, f = 160 mm

<sup>(2)</sup> single-stroke characters of 1 mm height

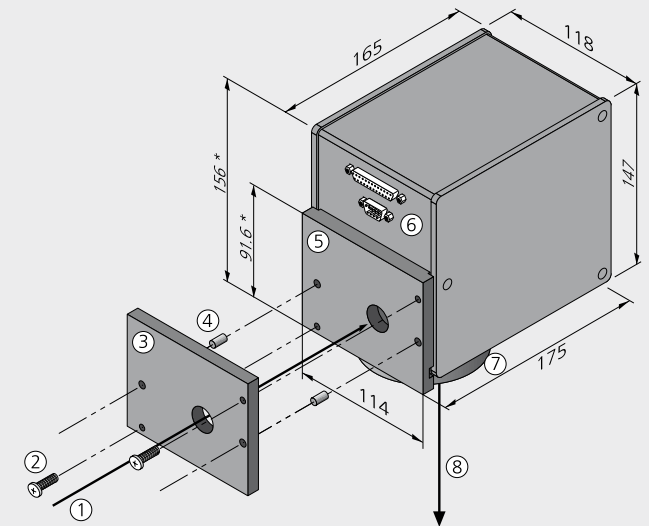
<sup>(4)</sup> at constant ambient conditions, plus offset drift < 30 µrad/K and gain drift < 100 ppm/K

<sup>(5)</sup> after warm-up



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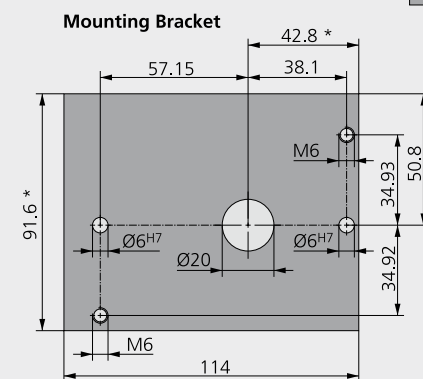
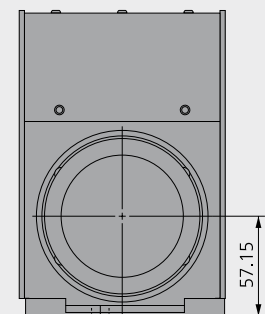
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## Legend

- 1 Beam in
  - 2 Screws (M6 thread) <sup>(#)</sup>
  - 3 Flange <sup>(#)</sup>
  - 4 Alignment pins (Ø<sub>H6</sub>) <sup>(#)</sup>
  - 5 Mounting bracket
  - 6 Connectors
  - 7 Objective
  - 8 Beam out
- <sup>(#)</sup> not included

## Beam Exit Side with Beam Displacement



\* The hurrySCAN® II 7's mounting bracket is higher (101.6 mm instead of 91.6 mm) and the bore holes are horizontally displaced (45.3 mm instead of 42.8 mm)

All dimensions in mm