smart scanning

intelli*SCAN*®

The intelli*SCAN*® series of **scan heads** features digital servo electronics based on SCANLAB's i*DRIVE*® technology. Employing high-performance algorithms for controlling the industry-proven dyn*AXIS*® galvanometer scanners, these digital servos enable improved dynamics and marking quality. In addition, the electronics extensively enhance the range of diagnosis possibilities as well as communication between the scan system and the customer's control computer.

SCANLAB can equip its digital servo firmware with multiple control algorithms and parameter sets. Switching between different algorithms or sets (even during processing) allows scan head dynamics etc. to be reconfigured and thereby optimally adapted to particular task requirements.

The intelli*SCAN*® allows real-time monitoring of all key operational states of the scan system, such as mirror positions and speeds, drive currents, supply voltage and temperature. As a result, processing operations can be simulated or – especially in safety-critical applications – monitored, logged and modified if required.

The intelli*SCAN*® also creates new remote-diagnosis possibilities. It has the necessary facilities to support software-querying of accumulated operating hours, serial number, date-of-manufacture and essential operational states. Thus, deviations can be quickly detected and corrected.

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intelli*SCAN*®

Housing

The housings of all intelli*SCAN*® scan heads are identical with those of the hurry*SCAN*® series. For detailed dimensions, refer to these products' data sheets.

Optics

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

Control

The intelli*SCAN*® is equipped with a digital standard interface and is easily controlled via SCANLAB's RTC®4 or RTC®5 PC interface board. Scan head diagnosis and all essential configuration parameters are controlled via software commands. The intelli*SCAN*® is optionally available with an optical fiber data interface.

Quality

The high quality of SCANLAB's scan solutions is the result of years of experience in the development and manufacture of galvanometer scanners and scan systems. In addition, every scan system must first pass the *SCAN*check burn-in test before it is released for shipment to the customer.

Options

- A vario*SCAN*$_{de}$ can extend the intelli*SCAN*® into a three-axis scan system.
- intelli*SCAN*® 20 and 30 scan heads can be equipped with high-performance light-weight mirrors.
- intelli*SCAN*® 7, 10, 14 scan heads are also available with water cooling (standard for intelli*SCAN*® 20,25,30).
- The intelli*SCAN*® is also available without a housing as a scan module.
- For process monitoring, SCANLAB offers a camera adapter.
- The intelli*SCAN*® scan heads can be equipped with an additional reference sensor system for automatic self-calibration to obtain extremely high long-term stability [6].

Common Specifications

(all angles are in optical degrees)

Dynamic Performance	
Repeatability	< 22 µrad
Long-term drift over 8 hours (after warm-up)	< 0.6 mrad
Optical Performance	
Typical scan angle	±0.35 rad [1]
Gain error	< 5 mrad
Zero offset	< 5 mrad
Nonlinearity	< 3.5 mrad
Power Requirements	±15 V DC, max. 6 A each [2] or 30 V DC, max. 6 A [2]
Interface	XY2-100 Enhanced, SL2-100 or optical data transfer
Positioning resolution	up to 18 bit [3]
Operating Temperature	25 °C ± 10 °C
Typical Air Requirements [4]	clean, filtered air 20 l/min at Δp < 2 bar
Typical Water Requirements [5]	5 l/min at Δp < 0.1 bar, p < 4 bar

[1] for intelli*SCAN*® 25: ±0.26 rad (scanner 1), ±0.40 rad (scanner 2)
[2] max. 3A with intelli*SCAN*® 7, 10, 14
[3] only with SL2-100 interface, otherwise 16 bit
[4] only with intelli*SCAN*® 20, 25, 30
[5] optional for intelli*SCAN*® 7, 10, 14
[6] not available with intelli*SCAN*® 7

Dynamic Performance intelli*SCAN*® 10

(tuning-dependent)

Writing speed for "Fast Vector" tuning [7], [8]	
good quality	1150 cps
high quality	800 cps
Writing speed for "Micromachining" tuning [7], [8]	
good quality	800 cps
high quality	500 cps
Jump frequency for "Jump and Shoot" tuning	3000 jumps/sec

[8] single-stroke characters of 1 mm height

Product-Dependent Specifications (with „Fast Vector" tuning)

(all angles are in optical degrees)

	intelli*SCAN*® 10	14	20	25	30
Typical Speeds [7]					
Marking speed	3.0 m/s	1.5 m/s	1.0 m/s	0.8 m/s	0.7 m/s
Positioning speed	14.0 m/s	12.0 m/s	11.0 m/s	10.0 m/s	9.0 m/s
Dynamic Performance					
Tracking error	0.12 ms	0.21 ms	0.32 ms	0.50 ms	0.55 ms

[7] with F-Theta objective, f =160 mm (f = 163 mm for intelli*SCAN*® 20, 25, 30)

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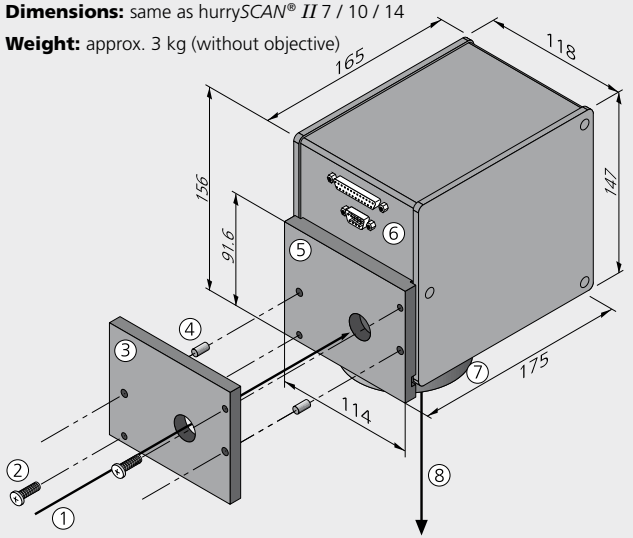
intelli*SCAN*® 7 / 10 / 14

Dimensions: same as hurry*SCAN*® *II* 7 / 10 / 14

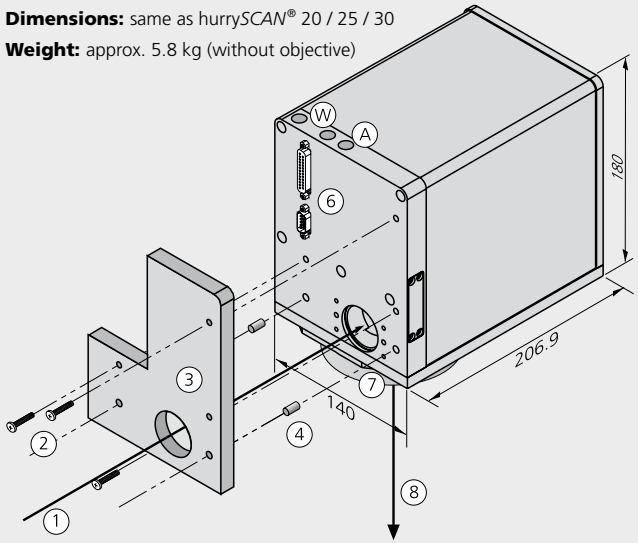
Weight: approx. 3 kg (without objective)



intelli*SCAN*® 20 / 25 / 30

Dimensions: same as hurry*SCAN*® 20 / 25 / 30

Weight: approx. 5.8 kg (without objective)



Legend

1 Beam in
2 Screws (M6 threads) *
3 Flange *
4 Alignment pins *
5 Mounting bracket
6 Electrical connectors
7 Objective
8 Beam out
A Connection for cooling air
W Connections for cooling water
(* not included)

All dimensions in mm

05/2010 Information is subject to change without notice.