more Information at:

system components for integrators

dyn*AXIS*® **galvanometer scanners** are high-performance rotary motors for optical applications. They consist of a motor section based on moving magnet technology and a high-precision position detector. The primary area of application is the fast and precise positioning of mirrors for the deflection of laser beams.

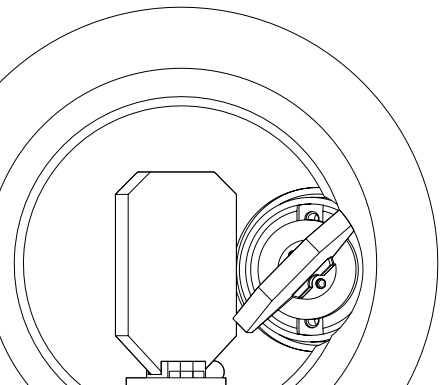
The exceptional dynamics of SCANLAB's dyn*AXIS*® scanners are the result of years of experience in developing and manufacturing scanners, scan systems and scan solutions for industrial use.

The motor section of each dyn*AXIS*® is ideally matched to the deflection mirror´s inertial load. The optimized rotor design is largely responsible for the favorable dynamic properties and resonance characteristics. Axially pre-loaded precision ball bearings guarantee a backlash-free rotor assembly with high stiffness and low friction. Special attention has been paid to long bearing lifetimes.

The optical position detector system is characterized by high resolution, as well as good repeatability and drift values. The scanners are equipped with heaters and temperature sensors (except dyn*AXIS*® XS and dyn*AXIS*® T). This allows temperature stabilization for further enhancing long-term stability, even under fluctuating ambient conditions.

SCANLAB provides all dyn*AXIS*® scanners with suitable mirrors and mirror coatings for all typical laser wavelengths. In addition to very good reflection properties, the mirrors are also optimized with respect to inertial load, stiffness and flatness.

The high quality of SCANLAB's galvanometer scanners enables error-free operation in long-term and continuous use. Comprehensive measurements on custom test benches assure that the highest level of quality is continuously maintained.



SCANLAB
innovators for industry

Mounting

The rotationally symmetrical flange facilitates mounting. The scanner housing must be electrically insulated from the machine structure. Mirror stops are already integrated in the scanners.

The mirror is directly bonded to the scanner's shaft; the mirrors of the dyn*AXIS*® M and dyn*AXIS*® L are attached via a mirror mount to the shaft.

Type-Dependent Specifications	**dyn*AXIS*® XS**	**T**	**S**	**M**	**L**
Rotor inertia	0.028 g·cm²	0.125 g·cm²	0.34 g·cm²	1.2 g·cm²	5.1 g·cm²
Torque constant	2.3 N·mm/A	5.3 N·mm/A	7.5 N·mm/A	15 N·mm/A	24 N·mm/A
Coil resistance	3.9 Ω	2.8 Ω	2.7 Ω	2.2 Ω	0.85 Ω
Coil inductance	90 µH	145 µH	165 µH	275 µH	300 µH
Max. RMS current (max. case temp. 50 °C)	1.8 A	2.2 A	2.5 A	3.5 A	5 A
Peak current	6 A	10 A	10 A	10 A	15 A
Weight	49 g	72 g	263 g	340 g	425 g
without cable	23 g	46 g	-	-	-
Connector	SD-9 plug	SD-9 plug			
with heater [1]			SD-15 socket	SD-15 socket	SD-15 socket
Inertial load					
recommended	0.02 g·cm²	0.1 g·cm²	0.35 g·cm²	1.2 g·cm²	8 g·cm²
maximum	0.05 g·cm²	0.5 g·cm²	1.5 g·cm²	6 g·cm²	25 g·cm²
Recommended aperture	7 mm	8.5 mm	10 mm	14 mm	20 - 30 mm
Step response time [2] (with SSV30 servo control board)					
1% of full scale	0.23 ms	0.24 ms	0.25 ms	0.40 ms	0.80 ms
Dynamic performance (with SSV30 servo control board)					
Tracking error	0.11 ms	0.12 ms	0.14 ms	0.24 ms	0.35 ms

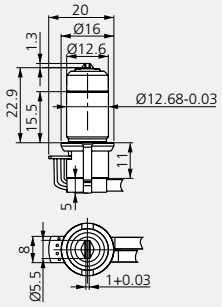
[1] heater not available for dyn*AXIS*® XS and dyn*AXIS*® T
[2] settling to 1/1000 of full scale, with recommended inertial load

Common Specifications (all angles are in mechanical degrees)	
Optical performance	
Maximum scan angle	±12°
Nonlinearity	< 0.4 % ptp
Offset drift	< 15 µrad/K
Gain drift	< 50 ppm/K
Repeatability	5 µrad
Position detector (PD)	
Typical PD output signal	
- differential mode	–11 µA/°
- common mode	–140 µA
PD supply voltage	6.5 V - 11.5 V
PD supply current	35 mA - 60 mA
Heater [1]	
Heater resistance	120 Ω
Temperature sensor resistance	1000 Ω @ 25 °C 578 Ω @ 40 °C
Cable length	approx. 0.22 m
Installation	electrically insulated
Operating temperature	25 °C ± 20 °C

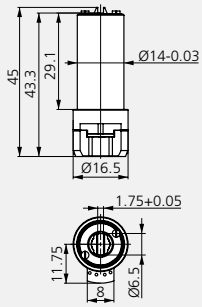
Electrical connections (with analog SSV30 servo control board) [1]	
Power supply voltage	±(15+1.5) V DC
Input signals	alternatively: ±4.8 V; ±9.6 V; ±4.8 mA; ±9.6 mA
Output signals	3 status signals, TTL level
Long-term drift over 8 hours (with servo control board)	
with temperature stabilization [1] (after warm-up)	< 0.6 mrad optical
without temperature stabilization	< 0.3 mrad optical plus temperature-induced gain and offset drift
Operating temperature (with servo control board)	25 °C ± 10 °C

[1] also available with digital servo control unit

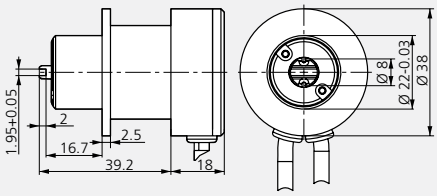
dyn*AXIS*® XS



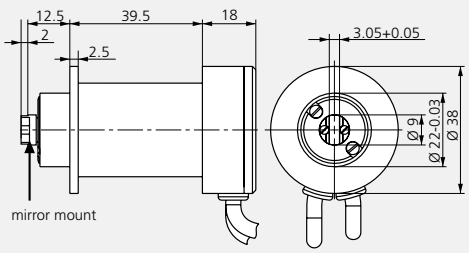
dyn*AXIS*® T



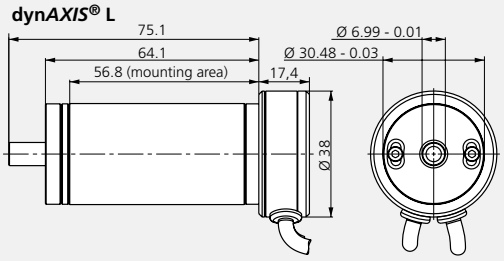
dyn*AXIS*® S



dyn*AXIS*® M



dyn*AXIS*® L



all dimensions in mm

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