



## **dynAXIS 421**

**Compact High Performance Galvanometer Scanner**

# dynAXIS 421

SCANLAB expands its product range with the dynAXIS 421 galvanometer scanner. This moving-magnet closed-loop galvo is particularly suitable for applications with small apertures and highest dynamic performance. With its very small dimensions, it is ideal for compact and handheld devices, including medical and ophthalmic instruments.

The dynAXIS 421 is available with both analog and digital servo-driver boards, and a variety of mirrors and coating options.

## Quality Made in Germany

The dynAXIS 421 galvanometer scanner is engineered and manufactured in Germany with ISO 9001:2015 certification.

SCANLAB stands for over 25 years of innovation in galvanometer motors and scanning solutions, as well as scan system optimization and rigorous in-house testing to ensure unsurpassed system performance and reliability in any application.

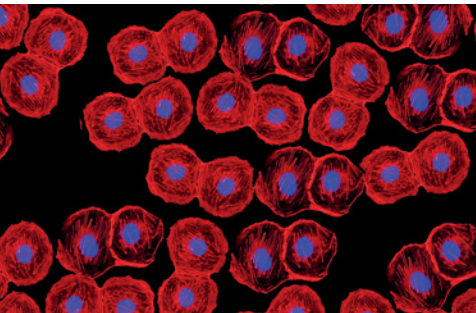
Our scanning solutions are proven in the most challenging industrial and medical applications worldwide.

## Key Features

- Suitable for very small apertures (3 mm – 7 mm)
- Optimized motor design enabling faster and more efficient scanning
- A new optical position detector, resulting in high precision and stability
- Superior acceleration and efficient power handling, for minimum heat generation and maximum scan speeds
- Highest dynamic performance when used in combination with SCANLAB's innovative digital servo drivers

## Typical Applications

- Ophthalmic imaging
- Microscopy
- Medical laser treatments
- Laser material processing



### Recommended Servo-Driver Boards

In combination with the new, compact SCANLAB **microISB digital servo-driver board**, the dynAXIS 421 achieves maximum dynamic performance and precision with low heat generation. The digital technology also provides the system status values and output signals relevant for the respective application.

Very high accelerations and scan rates can also be achieved with the high performance and compact **miniSSV analog servo-driver board**. Also the miniSSV allows optimized scan efficiency while heat generation is kept low.

### Flexibility to the User

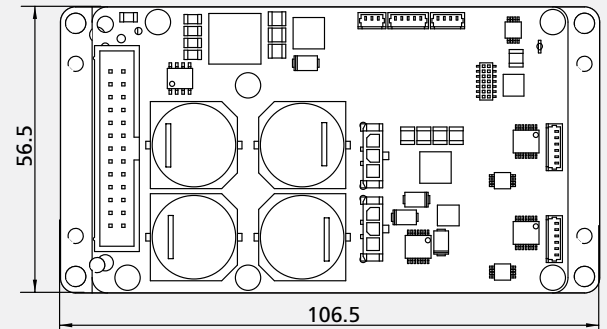
- Extensive choice of control options depending upon cost and performance goals
- Miniature analog servo drivers to fit the most compact systems
- Fully digital servo control options, including advanced and customizable system status monitoring

### Control Boards

Digital and analog galvanometer scanning systems can be operated using SCANLAB's RTC control boards via digital commands. Alternatively customers may use their own controllers to provide either digital or analog command signals.

### Examples of suitable SCANLAB servo boards

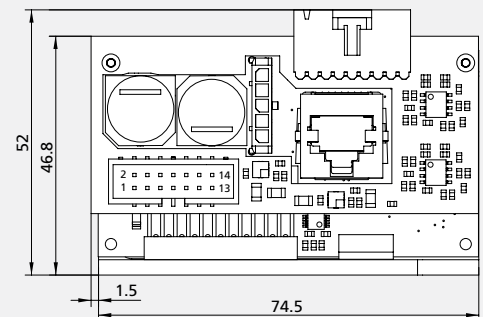
#### microISB (digital dual axis servo-driver)



Length x Width x Height: (106.5 x 56.5 x 25) mm<sup>3</sup>

#### miniSSV \* (analog single axis servo-driver)

with optional extension board for signal-out (e.g. actual position)



Length x Width x Height (with extension board): (76 x 52 x 27.3) mm<sup>3</sup>

Length x Width x Height (without extension board): (74.5 x 46.8 x 27.3) mm<sup>3</sup>

\* Please contact SCANLAB for additional compact servo-driver options.

## Specifications dynAXIS 421

Rotor inertia	0.018 g·cm <sup>2</sup>
Torque constant	1.6 N·mm/A
Coil resistance	1.3 Ω
Coil inductance	55 μH
Max. RMS current	4.2 A
(with scanner housing max. 50 °C)	
Max. peak current <sup>(1)</sup>	17 A
<b>Thermal resistance</b> (coil to case)	2 K/W
<b>Weight</b>	approx. 19 g
without cable	
<b>Inertial load</b>	
Recommended	0.01 g·cm <sup>2</sup>
Maximum	0.05 g·cm <sup>2</sup>
<b>Recommended aperture</b>	3 – 7 mm
<b>Dynamic</b> (with SCANLAB control board)	
Step response time 1% of full scale <sup>(2)</sup>	140 μs

<sup>(1)</sup> short term pulse width: 90 μs

<sup>(2)</sup> settling to 1/1000 of full scale; step response time depends on the tuning and the inertia of the mirror

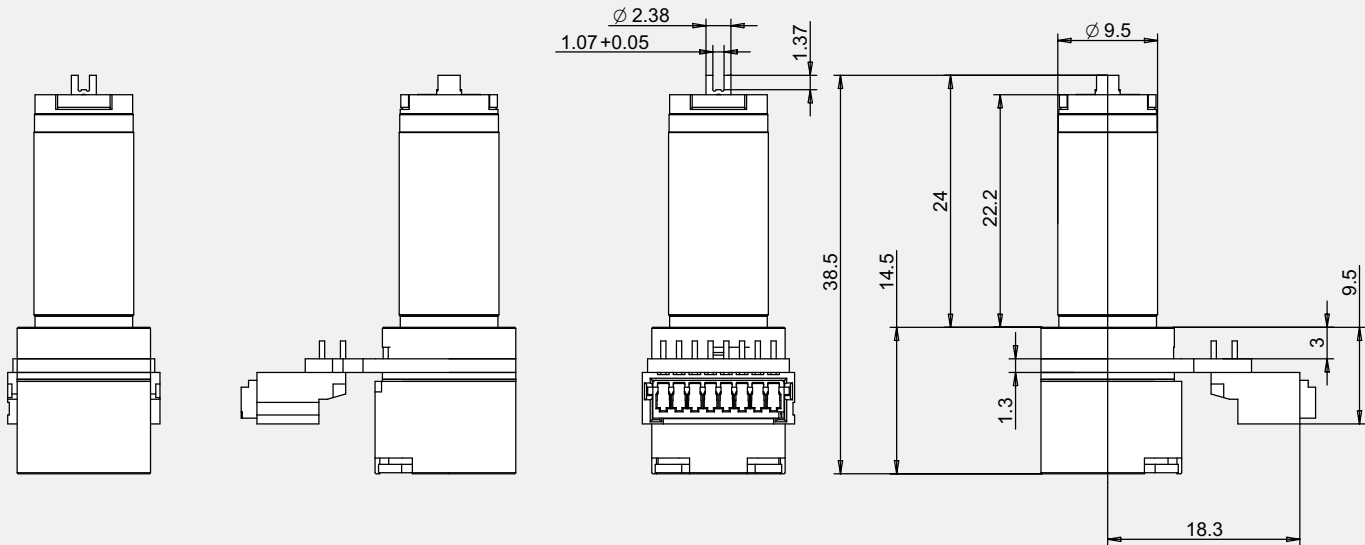
Maximum scan angle	± 17 °
<b>Position detector</b>	
Nonlinearity <sup>(3)</sup>	< 0.1 %
Offset drift	< 15 μrad/K
Gain drift	< 50 ppm/K
Repeatability (RMS)	< 1 μrad
Typical output signal	
- differential mode	- 115 μA/°
- common mode	- 1130 μA
Supply current	20 – 55 mA
<b>Typical cable length</b>	0.5 m (standard) <sup>(4)</sup>
<b>Installation</b>	electrically insulated
<b>Operating temperature</b>	5 – 50 °C non-condensing

(all angles are in mechanical degrees)

<sup>(3)</sup> for scan angles from -11° to +11°

<sup>(4)</sup> other cable lengths on request

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Photos page 2: iStock.