



1 - Application

This Sample holder is dedicated to vacuum applications which need accurate multi-axis positioning for different applications, optical systems, target holders...

2 - Description

The sample holder is a 5 axis positioning system which integrates 3 translation and 2 rotation stages :

- 2 horizontal stages XY
- 1 vertical translation stage Z
- 1 rotation RZ stage
- 1 goniometer RY stage

Its compact design and the selected bearing technologies (pre-stressed ball and roller bearings) provide a high stiffness and therefore excellent stability.

The movements are irreversible: precision screw-nut system for translations and worm gear for rotations; the position is maintained without power supply.

The selected components and materials are compatible with under high vacuum (10⁻⁶ mbar) application with high outgassing constraints. Structural parts are made of aluminum and stainless steel, the target holder integrates specific grease compatible with UHV, peek connectors, Kapton wires and motors prepared for the specified vacuum level...

The motors design makes it possible to release sufficient margins to reduce the supply current of the motors and limit the heating under vacuum.

3 – Technical specifications

CHARACTERISTICS	SPECIFICATIONS
Stepper motors	24 to 48V / nominal current 0.8A RMS
2 EOT switches per axis	NC
Max load	10kg
TX TY TRANSLATIONS	
Stroke	20mm
Resolution	< 1µm (4 motor steps)
Repeatability	< 3µm
Speed	0.23mm/s
Z TRANSLATION	
Stroke	20mm
Resolution	< 1µm (36 motor steps)
Repeatability	< 3µm
Speed	0.1mm/s
RZ ROTATION RZ	
Stroke	340°
Resolution	< 0.001° (6 motor steps)
Repeatability	< 0.003°
Speed	0.16°/s
RY ROTATION RY	
Stroke	10°
Resolution	< 0.001° (5 motor steps)
Repeatability	< 0.003°
Speed	0.18°/s

4- Dimensions (mm)

