



Full-scale model (3D metal printing)



Mechanism DMU view

2-AXIS SCANNING MECHANISM – Ø25mm LIGHT BEAM

1 - Application

The scanner mechanism is specifically designed to comply with spatial applications specifications:

- Dimensioning in respect with ECSS standards
- Vacuum compatibility : 1.10^{-7} mbar
- Martian dust protection
- Operational temperature range : -40°C / +20°C (qualification level)
- Vibration and shock environment : sinus 20g - random 8g RMS - shock 1000g

2 - Description

Kinematic architecture:

- The elevation axis is mounted on the azimuth axis.
- The beam passes through the center of the azimuth mechanism.

Azimuth movement: +/- 45° (functional raster stroke)

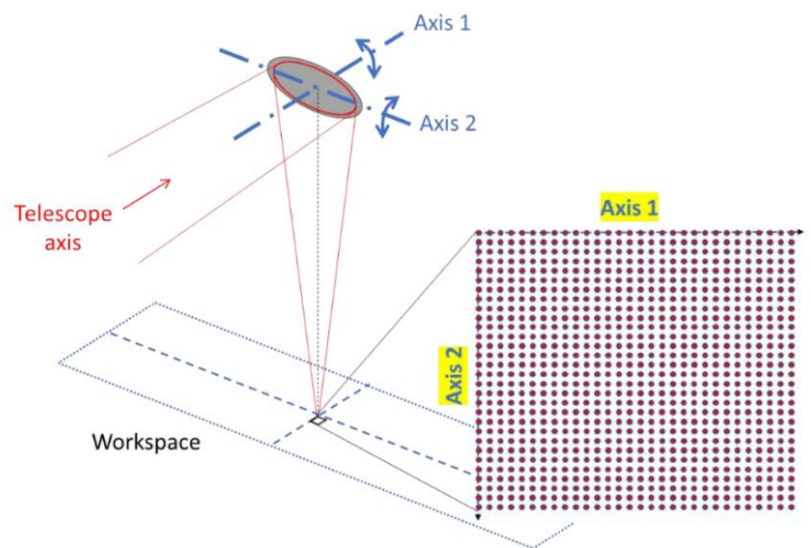
A hollow axis is guided in rotation by a bearing assembly housed in a frame interfaced with the instrument. The axis is rotated by a stepper motor gearbox combined with a spur gear stage.

Elevation movement: +/- 5°.

The elevation mechanism is mounted on the azimuth part. The mirror's axis of rotation is guided by flexible pivots integrated into the hollow shaft. Rotational movement is obtained by a stepper motor gearbox combined with a worm and wheel pair.

Main functions

- **POURSUIITE mode:** point the laser beam at the area to be scanned
- **RASTER mode:** perform a 2-axis scan according to a predefined grid
- **STACKING mode:** place mechanism in stand-by configuration

**3 – Technical Data**

CHARACTERISTICS	SPECIFICATIONS
Azimuth science stroke	+/- 45°
Elevation science stroke	+/- 5°
Absolute accuracy (during pursuit mode)	+/- 5 mrad
Relative accuracy (during raster mode)	+/- 0.1 mrad
Repeatability of relative accuracy	+/- 0.02 mrad
Pointing stability (during raster mode)	<0.02 mrad
Max velocity :	5 °/s
Size (L x l x H) :	50 x 50 x 94 mm
Weight :	150 g
Materials :	Aluminum alloys/ Stainless steel
Electronic controller parameters:	Stepper motor driver
Tension / Current	20V to 48V / 0.1A RMS
Driving mode	Full step or microstep (2 phases ON)
Driving frequency	100 to 1000 full steps/s
Environment :	
Vacuum	1.10-7mbar

Temperature (qualification)	OP : -40°C / 20°C NOP : -125°C / 60°C
Vibrations	Sinus 20g - Random 9g RMS
Shocks	1000g

Variant and options :

Specific design possible on demand:

- Mirror dimensions
- Environment (temperature, vibrations...)
- Encoder / limit switches
- ...

4- Dimensions (mm)

