

BEAMLINE COMPONENTS

MIRROR-HOLDER GONIOMETER TYPE

Purpose

The goniometer mirror-holder system is a precision mechanical device designed for mirrors from 600 mm to 1400 mm, equipped with cooling system and bender when necessary, and for high vacuum requirements. It provides up to five degrees of freedom for both vertical and horizontal deflecting mirrors.

The main advantages of this system, compared to the tripod one, are an easier tuning, a **greater rigidity**, no inside vacuum motors or friction part and an in-air survey of mirror position.

Design features

Movements

The basic principle consists in a **modular design** with :

- three axis goniometer
- two translation stages (vertical and transversal) using linear stages.

These mechanisms, fixed on an heavy girder, are in air

Each axis is motorised by air step-motors and equipped with high precision end switches.

Vessel

The vacuum vessel consists in :

- a base plate, equipped with bellows in its lower part which suppress any mechanical coupling with the mirror
- a rectangular chamber, equipped with all the necessary flanges and electrical feedthrough
- aluminium wire seal.

Key features

Mechanical performances

Movement	Range	Repeatability (tested value)	Sensitivity (one step motor)
Horizontal translation	± 5 mm	1 μ m	0.2 μ m
Vertical translation	± 50 mm	1 μ m	0.2 μ m
Rotation on vertical axis	± 17 mrad	3 μ rad	0.5 μ rad
Rotation on horizontal axis (// beam)	± 17 mrad	3 μ rad	0.5 μ rad
Rotation on horizontal axis (\perp beam)	± 17 mrad	3 μ rad	0.5 μ rad

Load capacity	150 kg
Vacuum performances	pressure < 5.10^{-9} mbar
Vacuum bake-out	up to 150°C
Girder	high rigidity steel structure with three adjustable supporting feet.

Option

- Commutation of mirrors stripes, with range up to 50 mm, can be adapted to the mirror-holder
- Two or three fixed positions
- Repeatability : 2 μ m.

Factory test

According to our quality plan, each component is fully tested in factory.

The tests include :

- vacuum limit test after baking
- RGA
- movement control .



IRELEC is specialised in the supply of :

- components for beamlines (mirror-holders, bending systems, mirrors, control systems, ...) and complete beamlines
- scientific equipment

IRELEC reserves the right to change these specifications without prior advice in the scope of the improvement of the product

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