



Three-Axis Goniometer for UHV (Slimline)



Three-Axis Goniometer for UHV (Slimline)

THIS is a new ultra high vacuum (UHV) compatible goniometer for applications which require accurate angular alignment of a target with a particle beam and detector, as, for instance, encountered in Rutherford backscattering spectroscopy and channelling, low-energy ion scattering (ion scattering spectroscopy) and atom beam scattering. The instrument facilitates rotation of a target about three perpendicular axes with an angular reproducibility of better than 0.05° . It is shown mounted onto a high precision *xyz* translator which adds three target translation. All six drives can be converted for stepper motor drive. The instrument is a completely redesigned version of our original 3-axis goniometer introduced over a decade ago which has proven its long term reliability. Arrangements have been made on the specimen mount for the mounting of a detachable or fixed target holder. The detachable holders may be transferred under vacuum from an insert chamber in which six samples can be vacuum-loaded at any time. The goniometer, target insert chamber with carousel and transfer system, can be obtained as an add-on package to most existing scattering chambers.

Features available

- rotation about three independent perpendicular axes
- can be mounted onto a precision *xyz* translator
- angular reproducibility better than 0.05°
- sample transfer system (used without cooling)
- sample heating
- cooling down to -100°C
- flange sizes and flange to target centre adjustable to suit customer requirements
- all axes can be converted for stepping motor drive

Specification

- fully UHV compatible incorporating stainless steel bellows, bearings and internal components
- fitted with RMD34 precision rotary drives as standard
- flange to target centre made to customers' requirements, minimum length 300 mm
- specimen movements

horizontal axis (R1)	360°
vertical axis (R2)	360°
tilt (R3)	$\pm 20^\circ$
- calibrations

R1 one-turn handwheel	1.0°
R2 one-turn handwheel	3.6°
R3 one-turn handwheel	1.0°
- minimum side glancing angle 3.0°
- intersection of all three axes to be within a 0.08 mm diameter sphere

Motorization

The goniometer can be automated by fitting stepping motor drive attachments, such as those of our type RMD34. Careful orientation of the motor drives can reduce installation size.