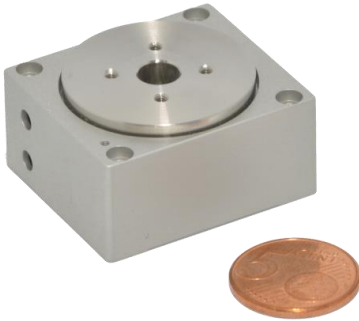


XRT-U series

Compact rotation stage with a small error motion



The XRT-U is a compact and precise rotation stage driven by an ultrasonic piezo motor. Xeryon's ultrasonic piezo motor ensures you high speeds, long lifetime and noiseless operation. This makes the XRT-U a state-of-the-art rotary stage for a broad range of precision positioning applications or metrology applications such as micro-CT, optical microscopy, electron microscopy (vacuum and non-magnetic). The precision ball bearings allow you to achieve error motion values close to air bearing stages, but in a smaller volume and at a lower cost. The XRT-U is available in two sizes and with different options. Stacking onto a Xeryon linear stage is easily done with available interface plates.

Key features

drive principle	patented Crossfixx™ ultrasonic piezo technology
bearings	precision ball bearings
lifetime	> 1 million rev.
control principle	closed-loop position control

Product code information

stage type	approx. rotor diameter (mm)	encoder resolution (μrad)	optional	
			vacuum compatibility (10 ⁻⁶ mbar)	non-magnetic full ceramic bearings
XRT-U	30	-109	-HV	-NM
	40	-73		
		-3		

Environmental compatibility

temperature range	-20°C to +50°C
humidity range	20% to 90% RH (non-condensing)
heat dissipation (motor only)	< 1 W
mounting surface flatness	< 5 μm

Motion performance

		XRT-U 30-109	XRT-U 40-73	XRT-U 40-3	unit	tolerance	
encoder	type	optical, incremental					
	counts per rev.	57600	86400	1800000			
	resolution	109	73	3.49	μrad		
		22.5	15	0.72	arcsec		
		6250	4167	200	μ°		
index	1 per rev.						
accuracy	± 0.017		± 0.013		%	typ.	
closed-loop	positioning	resolution	125	75	25	μrad	typ.
		= min. step size	25	15	5	arcsec	
		= min. incremental motion (MIM)	7100	4300	1400	μ°	
	bidir. repeatability	± 250	± 150	± 50	μrad	typ.	
		± 50	± 30	± 10	arcsec		
		± 14200	± 8600	± 2800	μ°		
	speed	max. speed	720			%/s	typ.
		min. speed	0.008			%/s	typ.
		stability	1			%	typ.
		point-to-point positioning time for a 1° step*	0 kgmm ² inertia	300			msec
	10 kgmm ² inertia	500			msec		
error motion (p-p)	radial at 7 mm above top surface	1			μm	max.	
	axial in centre	0.5			μm	max.	
	tilt (wobble)	50			μrad	max.	

* settling within bidirectional repeatability range

Note: a detailed description of the technical terms used in this datasheet can be found on the Terminology page of our website.

Mechanical properties

		XRT-U 30-109	XRT-U 40-73	XRT-U 40-3	unit	tolerance
dimensions		40 x 35 x 21	50 x 46 x 21		mm	± 0.1
aperture		7	12.7	7	mm	± 0.1
mass (w/o connector)		82	130		g	± 5%
load capacity (payload limitation)	inertia	100	200		kgmm ²	max.
	mass*	0.5	1		kg	
load capacity (bearing force limitation)	axial	25	35		N	max.
	radial	25	35		N	
	tilt	0.15	0.2		Nm	
holding torque		7	10		mNm	min.
driving torque		14	20		mNm	min.
stage material	rotor housing	stainless steel AISI316 anodised aluminium				
cable length**		1.5			m	± 0.1
connector (stage to controller)		1x 15-pin D-sub HD male				

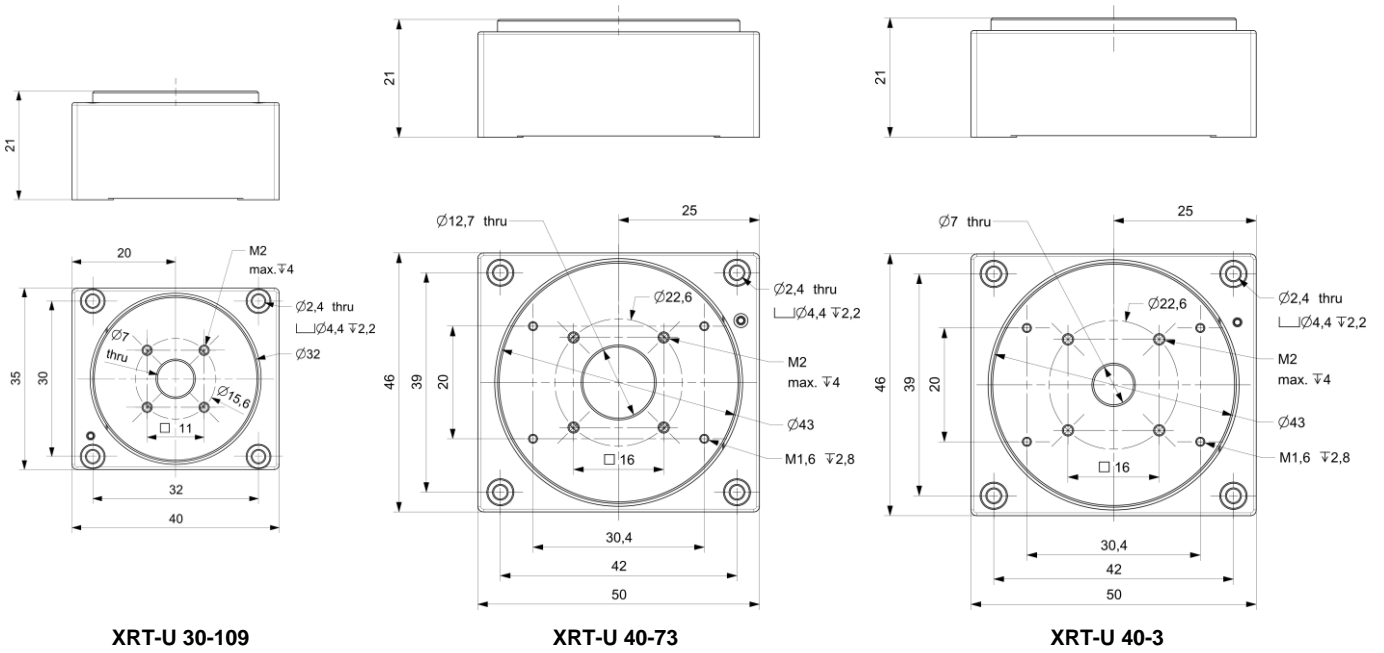
* assuming a solid cylindrical payload of dia. 40 mm

** extension cables available or shorter cable on request

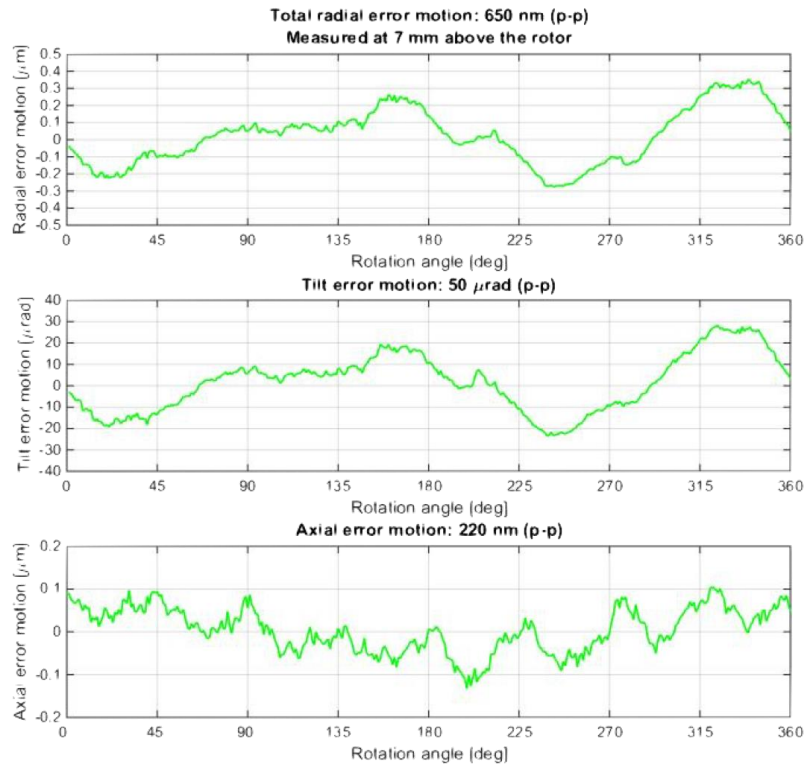
Controller/software

The XRT-U series rotation stages are compatible with all Xeryon controllers.
 Controlling of the stage is done with an easy-to-use Windows interface or via a LabVIEW driver.
 C++ and Python libraries available.

Drawings



Measurement data



Typical measurement of the error motion of an XRT-U 30 rotation stage.

Last updated: 09/09/2019. All specifications are subject to change without prior notice.