Ultra Precision Rotation Stages



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5.154 Ultra Precision Rotation Stage UPR-270

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FACTS

Load characteristics	Fx(N)	Fz(N)	Mz _(Nm)	Mz Peak _(Nm)	k÷x(µrad/Nm)
TM-050	200	400	4.5	10	8





KEY FEATURES

- High-precision bearings
- Torque motor
- Uni-directional repeatability down to 0.00007 °
- Flatness and eccentricity ± 1 μm
- Wobble ± 15 µrad
- Maximum speed 360 °/sec
- Load capacity up to 40 kg (center mounted on top of the platform)
- Integrated inductive reference switch
- Free center hole 60 mm diameter
- Integrated angular scale
- Optionally double head system for higher accuracy



The UPR-270 ultra-precision rotation stages are mainly utilized in the field of semiconductor technology, for positioning systems of laser treatment, robotics and synchrotron applications and high load applications. All UPR rotation stages are directly driven by a torque motor, eliminating the need for mechanical transmissions. This results in better positioning accuracies, higher acceleration and speed. Calibrated paired angular ball bearings guarantee a high central load capacity without breakdown torque. The UPR rotation stages are equipped with a high resolution angular scale and with an inductive reference switch.

TECHNICAL DATA

T (%)	260 andlass					
Travet range ()	36U, endless					
Flatness (Bearings) (µm)	±	1				
Eccentricity (Bearings) (µm)	±.	2.5				
Wobble (Bearings) (µrad)	±	15				
Weight (kg)	29					
Motor	TM-050					
Linear scale		AE-015				
Speed max. (°/sec)	360					
Resolution calculated (°)	0.00001					
Resolution typical (°)	0.00005					
Bi-directional Repeatability (°)	± 0.0001					
Uni-directional Repeatability (°)	0.00007					
Nominal Current (A)	2					
Accuracy	on request					
Velocity range (°/sec)	0.001 360					
Material	Aluminum, black anodized / stainless steel (rotary platform)					

Note: FS = full step, RE = rotary encoder

More info: Detailed information concerning motors and encoders, see appendix.

Ultra Precision Rotation Stage UPR-270 5.155





5.158 Ultra Precision Rotation Stage UPR-160

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Load characteristics	Fx(N)	Fz _(N)	Mz _(Nm)	Mz Peak _{(Nm})	^{k÷x} (µrad/Nm)
TM-010	100	200	0.5	2	16





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TECHNICAL DATA

Travel range (°)	360, endless					
Flatness (Bearings) (µm)	±	1				
Eccentricity (Bearings) (µm)	±	3				
Wobble (Bearings) (µrad)	± 2	25				
Weight (kg)	6	6				
Motor	TM-010					
Linear scale		AE-051				
Speed max. (°/sec)	360					
Resolution calculated (°)		0.00002				
Resolution typical (°)		0.00008				
Bi-directional Repeatability (°)		± 0.0001				
Uni-directional Repeatability (°)		0.0008				
Nominal Current (A)	2.4					
Accuracy	on	on request				
Velocity range (°/sec)	0.0	0.001 360				
Material	Aluminum, black anodized /	Aluminum, black anodized / stainless steel (rotary platform)				

Note: FS = full step, RE = rotary encoder

More info: Detailed information concerning motors and encoders, see appendix.

KEY FEATURES

ACTE

- High-precision bearings
- Torque motor
- Uni-directional repeatability down to 0.00008 °
- Flatness and eccentricity ± 3 μm
- Wobble ± 25 µrad
- Maximum speed 360 °/sec
- Load capacity up to 20 kg (center mounted, on top of the platform)
- Integrated inductive reference switch
- Free center hole 35 mm diameter
- Integrated angular scale



Ultra Precision Rotation Stage UPR-160 5.159





5.162 Ultra Precision Rotation Stage UPR-120

Load characteristics	Fx(N)	Fz _(N)	Mz _(Nm)	Mz Peak _{(Nm})	^{k÷x} (µrad/Nm)
TM-012	100	200	0.5	2	16



KEY FEATURES

ACTE

- High-precision bearings
- Torque motor
- Uni-directional repeatability down to 0.00008 °
- Flatness and eccentricity ± 3 μm
- Wobble ± 25 µrad
- Maximum speed 360 °/sec
- Load capacity up to 20 kg (center mounted, on top of the platform)
- Integrated optical reference switch
- Free center hole 35 mm diameter
- Integrated angular scale

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Optionally double head system for higher accuracy



The UPR-120 ultra-precision rotation stage was developed for fast and accurate

TECHNICAL DATA

Travel range (°)	360, endless					
Flatness (Bearings) (µm)	±1					
Eccentricity (Bearings) (µm)		±3				
Wobble (Bearings) (µrad)	-	± 25				
Weight (kg)		6				
Motor	TM-012					
Linear scale		AE-053				
Speed max. (°/sec)	360					
Resolution calculated (°)	0.00002	0.00002				
Resolution typical (°)	0.00008	0.00008				
Bi-directional Repeatability (°)	± 0.0001 ± 0.0001					
Uni-directional Repeatability (°)	0.00008 0.00008					
Nominal Current (A)	2.4					
Accuracy	on request					
Velocity range (°/sec)	0.001 360					
Material	Aluminum, black anodized / stainless steel (rotary platform)					

Note: FS = full step, RE = rotary encoder

More info: Detailed information concerning motors and encoders, see appendix.

Error and technical modifications are subject to change

positioning applications. This stage is mainly used in the field of semiconductor technology, for positioning of laser treatment systems, robotics and synchrotron applications. All rotation stages from the UPR series are directly driven by a torque motor, eliminating the need for mechanical transmissions. This results in better positioning accuracy, higher acceleration and speed. Calibrated cross roller bearings guarantee a high central load capacity without breakdown torque. The UPR-120 rotation stages are equipped with a high resolution angular scale and with a contactless limit switch.

Ultra Precision Rotation Stage UPR-120 5.163





5.166 Ultra Precision Rotation Stage UPR-100



FACTS						
Load characteristics	Fx(N)	Fz _(N)	Mx _(Nm)	Mz _(Nm)	Mz Peak _(Nm)	^{k÷x} (µrad/Nm)
TM-030	15	20	5	0.25	0.5	80



The UPR-100 ultra-precision rotation stages are mainly utilized in the field of semiconductor technology, for positioning of laser treatment systems, robotics and synchrotron applications. All rotation stages from the UPR series are directly driven by a torque motor, eliminating the need for mechanical transmissions. This results in better positioning accuracies, higher acceleration and speed. Calibrated paired angular ball bearings guarantee a high central load capacity. The UPR-100 rotation stages are equipped with a high resolution angular scale and with hall limit switches.

TECHNICAL DATA

Travel range (°)	360, endless					
Flatness (Bearings) (µm)	±1					
Eccentricity (Bearings) (µm)		± 3.5				
Wobble (Bearings) (µrad)		± 25				
Weight (kg)	1.2					
Motor	TM-030					
Linear scale		AE-080				
Speed max. (°/sec)	360					
Resolution calculated (°)		0.00002				
Resolution typical (°)	0.0008					
Bi-directional Repeatability (°)	± 0.0001					
Uni-directional Repeatability (°)	0.0008					
Nominal Current (A)	1.2					
Accuracy		on request				
Velocity range (°/sec)	0.002 360					
Material	Alumin	Aluminum, black anodized				

Note: FS = full step, RE = rotary encoder

More info: Detailed information concerning motors and encoders, see appendix.



KEY FEATURES

- High-precision bearings
- Torque motor
- Uni-directional repeatability down to 0.00008 °
- Flatness and eccentricity ± 2.5 μm
- Wobble ± 25 µrad
- Maximum speed 360 °/sec
- Load capacity up to 2 kg (center mounted, on top of the platform)
- Integrated reference mark (encoder index)
- Free center hole 20 mm diameter
- Integrated angular scale



Ultra Precision Rotation Stage UPR-100 5.167





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