piezosystemjena
incredibly precise

special systems • rotary piezo stage

ROTOR 10

- **rotary stroke up to 11mrad**
- **high planer behavior**
- **central well defined axis of rotation**
- **0.2/0.02µrad resolution**
- **Ø 3mm central aperture**
- **integrated temperature compensation**

applications:
- fiber alignment
- material sciences/crystallography
- beam alignment

fig.:ROTOR 10

Concept

The ROTOR 10 and ROTOR 10 SG are one axis high precision rotary stages. They provide a long steering and scanning range of up to 11mrad. The well defined axis of rotation is located centrically. An incorporated free aperture allows axial beam applications as well.
Due to FEA-optimization of these stages you can meet the highest dynamical performance and high planar guiding accuracy. This is accomplished even with high mass loads in a compact package. Our optimization also incorporates excellent temperature compensation properties for the stage.
The sophisticated monolithic guidance design of the solid flexure hinges means the trajectory is free of mechanical play and friction - a feature provided by all ***piezosystem jena***-stages.

Specials

Based on a solid-state phenomena piezo actuators generate the pressure forces to effect the leverage geared motion. The ceramic's extension follows nearly linearly to the applied electric field, but hysteresis and creep still exist. Piezoelectric geared devices are neither affected by magnetic fields nor do they produce any. In a cryogenic environment they function down to almost zero Kelvin associated with linear decreasing extension behavior. In vacuum conditions piezo actuators can be used at pressures below 1 Pa. Due to the mightily reduced dielectric breakdown strength of air they should not be operated in the pressure range from 1 Pa to 10 kPa.
To avoid creep and hysteresis the ROTOR 10SG is equipped with a high resolution strain gage measurement system. In combination with the ***piezosystem jena*** -controller in closed loop operation high stability, linearity, repeatability and accuracy are achieved.

Mounting/Installation

The compact design with the raster pin and drill holes for mounting allows an easy integration of the ROTOR 10/10SG in your existing system.
Vacuum and cryogenic performances are available on demand. We also offer body material variations such as invar, superinvar, aluminum and titanium.

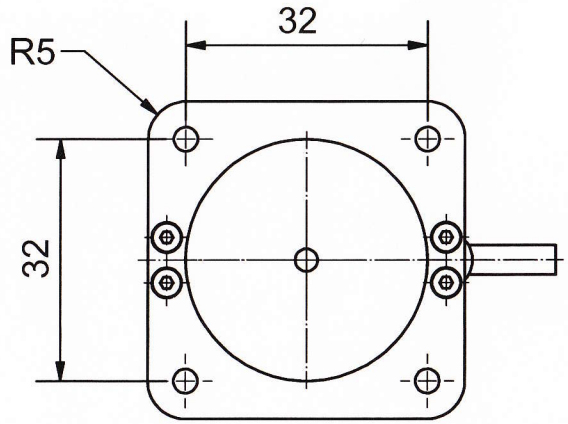
technical data:

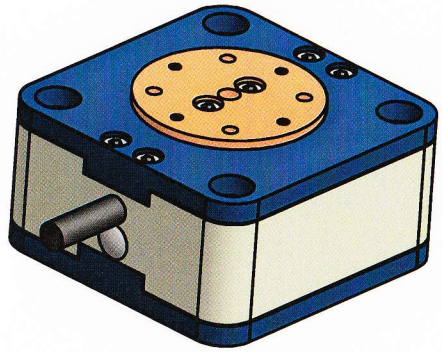
series ROTOR		unit	ROTOR 10	ROTOR 10 SG
part no.		-	K-810-00	K-810-01
axis		-	θz	
motion open loop (±10%)*		mrad	11	
motion closed loop (±0.2%)*		mrad	-	9
capacitance (±20%)**		µF	2.8	
integrated measurement system		-	-	strain gage
resolution*** open loop		µrad	0.02	0.02
closed loop		µrad	-	0.2
typ. non-linearity		%	-	0.5
resonant frequency		Hz	500	
additional = 50g		Hz	250	
additional = 100g		Hz	200	
additional = 300g		Hz	100	
stiffness		Nm/µrad	0.06	
typ. repeatability****		µrad	-	20
max. load		N	>50	
rotational error	θx, θy	µrad	35/35	
voltage range		V	-20…+130	
connector*****	voltage	-	ODU 3 pin	
	sensor	-	-	LEMO 0S.304
cable length		m	1	1.2
min. bend radius of cable		mm	>15	
material		-	stainless steel / anodized aluminum	
dimensions (l x w x h)		mm	42 x 42 x 23	
central aperture		mm	Ø3	
weight		g	125	140

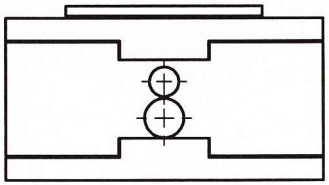
* typical value measured with 30V300 nanoX amplifier
** typical value for small electrical field strength
*** The resolution is only limited by the noise of the power amplifier and metrology.
**** valid for centrically mounted loads <10g

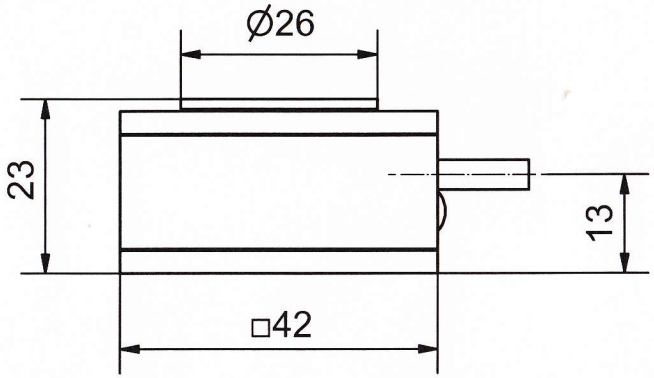
*****additional variations**

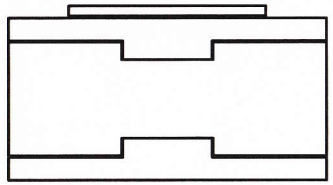
Product name	Description	Specials	Part. No.
ROTOR 10 SG **D**igital	Version for digital controller series d-Drive and 30DV50 in combination with additional functionalities: Interchangeability, ASI, ASC	Connector Sub-D 15	K-810-01**D**
ROTOR 10 SG **E**xtern	Version with sensor pre-amplifier for the use with nanoX CLE amplififer units and with the additional functionalities: Interchangeability, ASI	Connector sensor ODU 4pin	K-810-01**E**
ROTOR 10 Vacuum	Compatible for vacuum application down to 10^-7hPa	60cm cable length vacuum side; 2m cable length air side	K-810-02

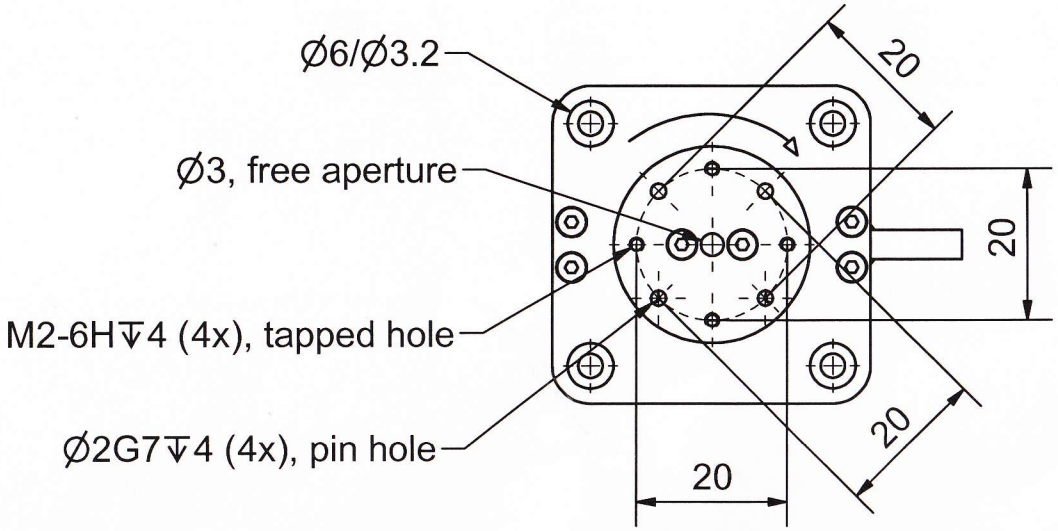












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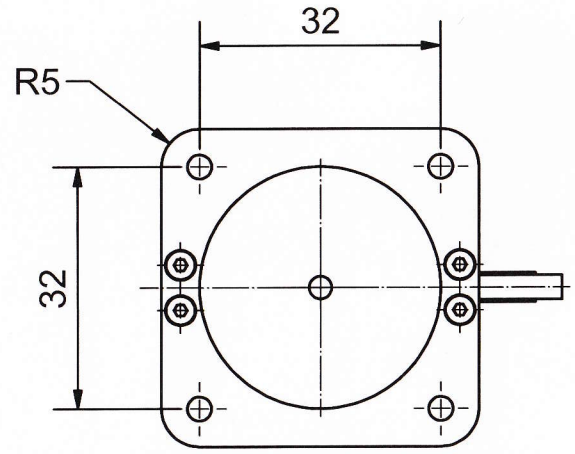

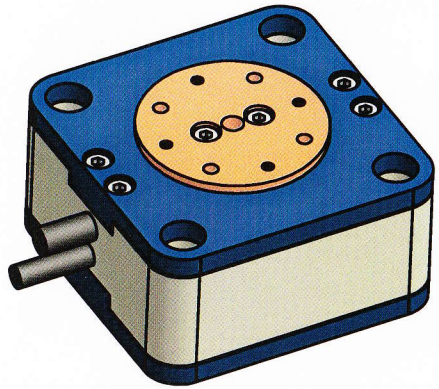

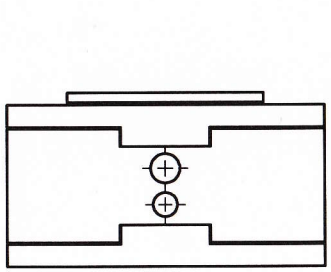

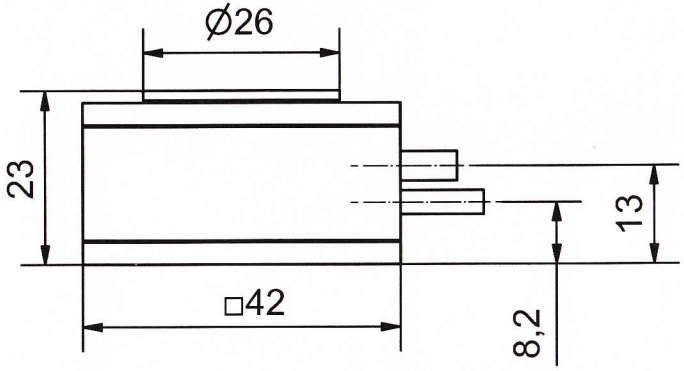

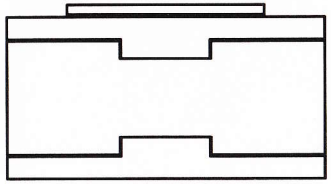

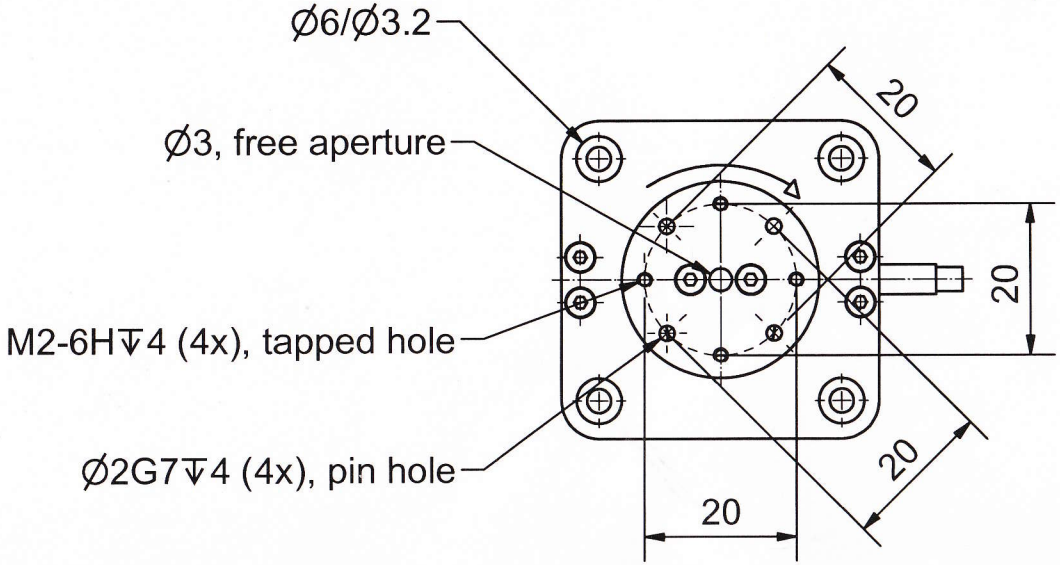

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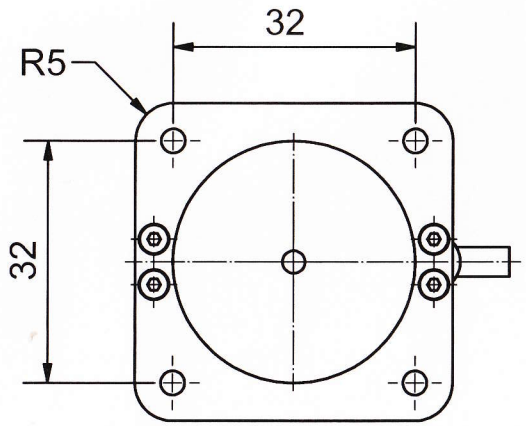

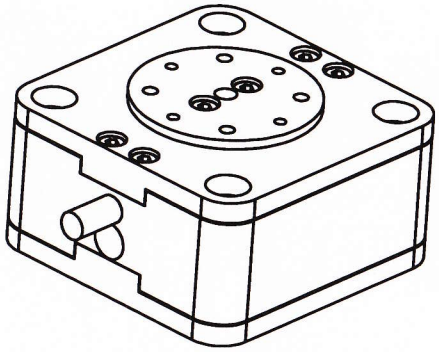

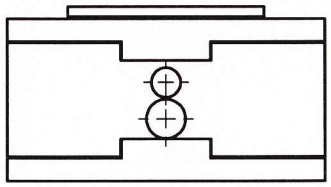

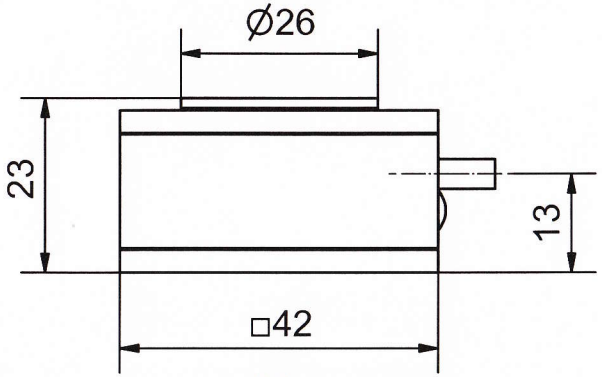

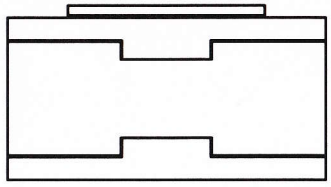

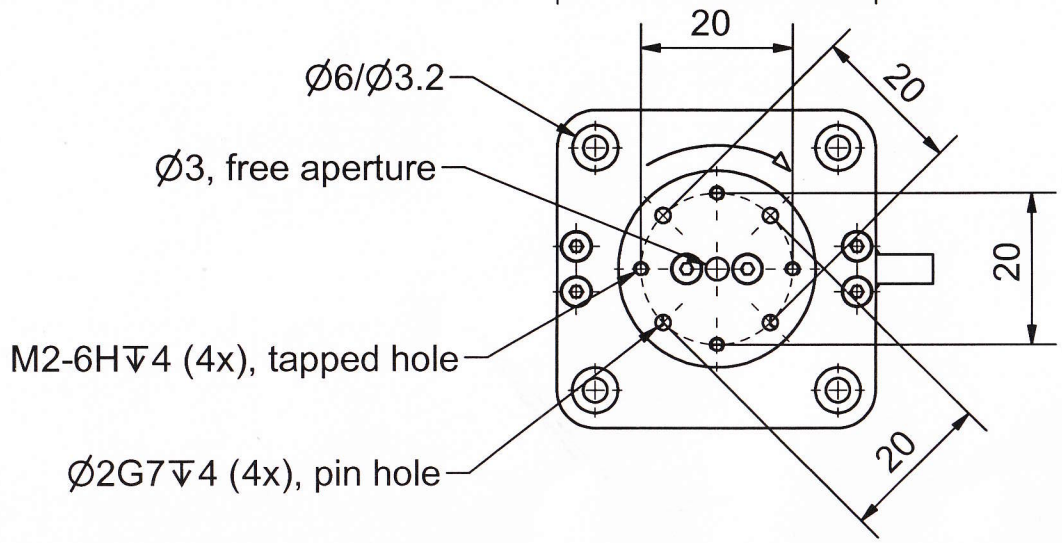

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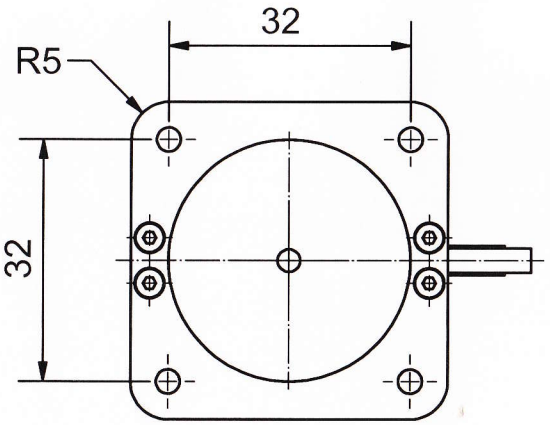

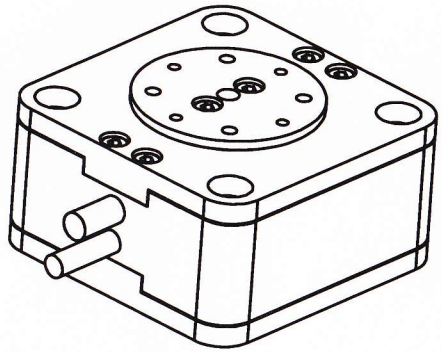

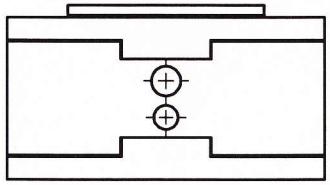

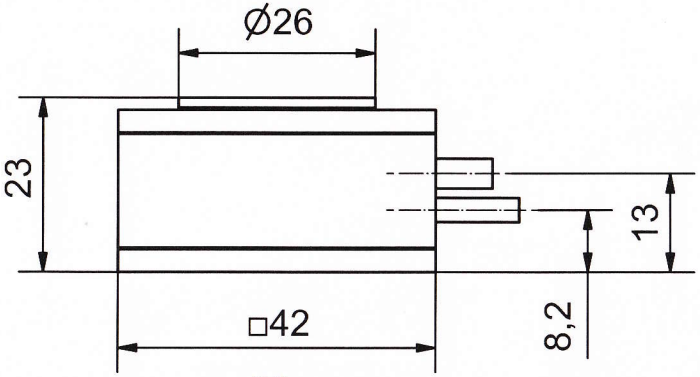

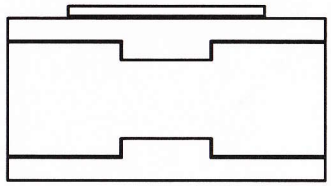

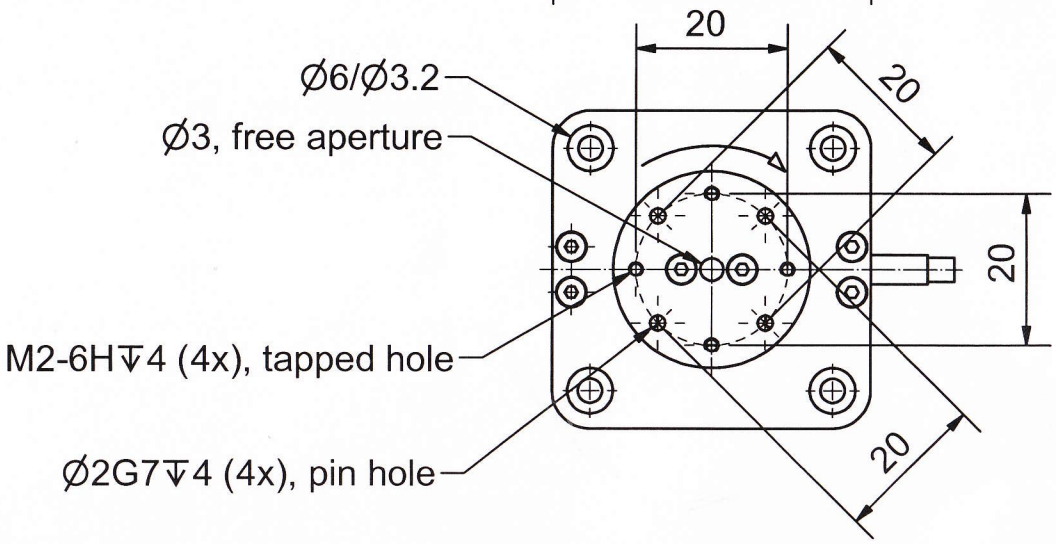

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