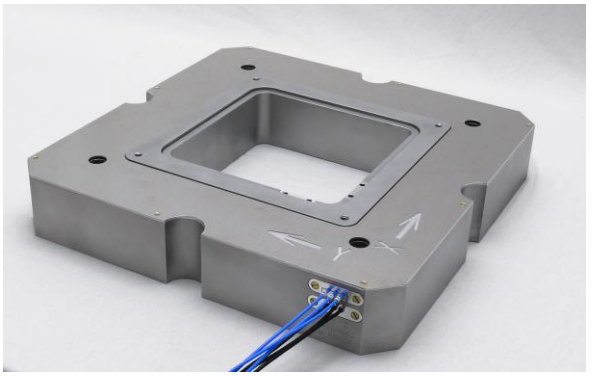
TRITOR 320

Compact 3D translation stage



Concept:

The dimensions of 320 x 320 x 55 mm^3 and the capability to move loads up to 20 kg make the TRITOR 320 one of the most robust piezo driven 3D positioning stages available on the market. The stages can be equipped with integrated feedback sensors for closed loop control. The unique design of the flexure hinges allow for excellent usability with zero friction. High stiffness, in combination with excellent straightness of motion, make the TRITOR series ideal for high precision positioning in the nano meter range of heavy objects such as wafer chucks, bonding tools, and pick and place platforms.

Specials:

Piezoelectrical actuators can act much faster, and with a higher accuracy to a signal change, than any motorized drive available. The resolutions of piezoelectrical actuators are only limited by the signal noise of the control system. Therefore, these systems are an excellent choice for positioning applications in fiber alignment, optics, wafer handling, medical equipment, etc. Each axis can be controlled separately in closed loop mode. An integrated sensor system is an available option that guarantees accuracy in the nano meter range. Dynamic scan applications are a typical utilization of the elements of the TRITOR series. The simultaneous motion, available in X, Y, and Z directions, offers a large degree of freedom during use. All stages of the TRITOR series can be made with special materials for extraordinary applications such as vacuum or cryogenic applications.

Interfaces:

All stages are constructed with a top and a bottom plate. Through holes are used for fixing the stage which is important for all dynamic applications. On the top plate there are several pin holes and threaded holes available for the mounting of external components. The 3D elements are built with reliable piezo stack actuators, with a flexible insulation that is well suited for a high dynamic burden.

Product highlights:

- 3D piezo-stage with 20 kg load capability
- motion range 40/40/320 µm in XYZ
- smallest settling time
- lowest tractor deviation
- 0.8 nm resolution
- 150x150 mm open aperture

Applications:

- automation
- semiconductor
- wafer handling

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Technical data:

3D Nanopositioning stage		unit	TRITOR 320		TRITOR 320 CAP
part no.		-	T-406-70		T-406-76
axis		-	X, Y, Z		
motion in open loop mode (±10%)*		µm	50/50/400		
motion in closed loop mode		µm	-		40/40/320
electrical capacitance (±20%)**		µF	44/44/116		
integrated measurement system		-	-		capacitive
resolution*	**open loop mode**	nm	0.1/0.1/0.8		
	closed loop mode	nm	-		1
resonant frequency	**unloaded**	Hz	250/250/150		
	additional load = 12 kg	Hz	140/140/70		
stiffness		N/ µm	36/36/4.2		
typ. repeatability		nm	-		2/2/14
typ. non-linearity		nm	-		10/10/250
max. pushing force		N	1800/1800/1680		
max. pulling force		N	180/180/168		
max. load forces		N	200		
max. pushing forces (rectangular to motion direction)		N	150		
max. tilting during motion (roll, nick, gier) x/y/z		µrad	8/15/2	4/19/2	40/88/70
voltage range		V	-20...+130		
connector	**signal**	-	LEMO 0S.302/SUB-D		
	sensor	-	-		LEMO 0S.650/SUB-D
cable length		m	1		2
material		-	stainless steel (non-magnetic)/ aluminum		
dimensions (LxWxH)		mm	320 x 320 x 55		
clear aperture		mm	150x150		
weight		g	8000		

* typical value measured with d-Drive controller unit
** typical value for small electrical field strength
*** the resolution is only limited by the noise of the power amplifier and metrology
**** max. forces without changing standard calibration values

Additional Variations:

Product name	Description	Specials	Part. No Suffix.
TRITOR 320 CAP Digital	Version for digital controller series d-Drive and NV40/3 controller in combination with additional functionalities: Interchange ability, ASI	Connector Sub-D 15	T-406-76D
TRITOR 320 Digital	Version for digital controller series d-Drive and NV40/3 controller in combination with additional functionalities: Interchange ability, ASI	Connector Sub-D 15	T-406-70D

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