

TRITOR 50

Compact 3-D translation stage

Concept:

With the TRITOR series, **piezosystem jena** was the first company to offer 3D piezo-nanopositioning stages worldwide. The dimensions of 55 x 42 x 35 mm³ and the motion range of 50 µm per axis make the TRITOR 50 one of the smallest 3D stages available on the market 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 in the nano meter range for optics, laser-technique, and any other type of high resolution positioning application.

Specials:

Piezo electrical actuators can act much faster, and with a higher accuracy to a signal change, than any motorized drive available. The resolutions of piezo electrical 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. The sensor system works in direct metrology and shows a superior signal noise ratio. 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.



image: TRITOR 50

Product highlights:

- 3D nano positioning stage
- compact design with integrated feedback sensors option
- flexure hinge design without mechanical play
- motion range up to 50 µm
- ultra precise translation based on FEA-optimized parallelogram design
- highest positioning resolution

Applications:

- AFM and SFM microscopy
- fiber alignment
- beam steering/ optical technology
- semiconductor technology

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Technical data:

series TRITOR	unit	TRITOR 50	TRITOR 50 CAP
part no.	-	T-408-00	T-408-06
axes	-	X, Y, Z	
motion in open loop ($\pm 10\%$)*	μm	50	50
motion in closed loop *	μm	-	40
electrical capacitance per axis ($\pm 20\%$)**	μF	1.0	
integrated measurement system	-	-	CAP
resolution***	nm	0.1	1.0
typ. repeatability	nm	-	4
typ. non linearity	%	-	0.01
resonant frequency x/y/z	Hz	345/365/400	
stiffness	N/ μm	0.5/0.5/1	
max. force generation x/y/z	pull push	N	1/2/3 14/16/29
voltage range	V	-20...+130	
connector	voltage sensor	-	LEMO 0S.302 LEMO 0S.605
cable length	m	1.2	2.0
material	-	stainless steel/ aluminum	
dimensions (LxWxH)	mm	55 x 42 x 35	
weight	g	115	215

- * typical value measured with NV 40/3 CLE amplifier
 ** typical value for small electrical field strength
 *** the resolution is only limited by the noise of the power amplifier and metrology

Additional Variations:

Product name	Description	Specials	Part. No Suffix.
TRITOR 50 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-408-06D

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Tel: +49 (3641) 66880 • Fax: +49 (3641) 668866
info@piezोजना.com • <http://www.piezosystem.de>

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