

## microTRITOR / miniTRITOR

### Compact 3-D translation stages

#### Concept:

With the microTRITOR and miniTRITOR series, **piezosystem jena** offers 3D nanopositioning stages of the smallest size available. The dimensions of 15x15x15 mm<sup>3</sup> and a motion range of 9 µm per axis make the microTRITOR the smallest 3D stage available on the market. The unique design of the flexure hinges allows for excellent usability with zero friction.

The miniTRITOR has dimensions of 19x19x16 mm<sup>3</sup> and can achieve a stroke of 38 µm per axis. The hinge flexure design provides completely frictionless motion without any mechanical play. The high stiffness, in combination with excellent straightness of motion, make the TRITOR series ideal for high precision positioning in the nano meter range for optics, laser-technique, and any other type of high resolution positioning applications.

#### Specials:

These stages are only built in an open loop version, without a high resolution feedback sensor and are therefore ideally suited for applications where speed and response time are essential. Piezo electrical actuators can act much faster, and with a higher accuracy to signal change, than any motorized drive available. The resolutions of piezo electrical actuators are only limited by the signal noise of the control system. This makes these systems an excellent choice for positioning applications in fiber alignment, optics, wafer handling, medical equipment, etc. Dynamic scan applications are a typical utilization for 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 stage in 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. Thorough holes are used for fixing the stage which is important for all dynamic applications. On the top plate there are several pinholes and threaded holes available for mounting external components. The 3D elements are built with reliable piezo stack actuators with a flexible insulation that is well suited for high dynamic burden.



Image: microTRITOR

#### Product highlights:

- 3D nanopositioning stage
- compact design
- flexure hinge design without mechanical play
- motion range up to 38 µm
- ultra precise translation based on FEA-optimized parallelogram design
- highest positioning resolution

#### Applications:

- AFM and SFM microscopy
- fiber alignment
- beam steering/ optical technology
- CRYO-positioning tools

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### Technical data:

series TRITOR	unit	microTRITOR	miniTRITOR
<b>part no.</b>	-	T-400-00	T-401-00
<b>axis</b>	-	X, Y, Z	X, Y, Z
<b>motion (<math>\pm 10\%</math>)*</b>	$\mu\text{m}$	9	38
<b>electrical capacitance per axis (<math>\pm 20\%</math>)**</b>	$\mu\text{F}$	0.07	0.16
<b>integrated measurement system</b>	-	-	-
<b>resolution***</b>	nm	0.02	0.07
<b>resonant frequency x/y/z</b>	Hz	2100/2230/2290	540/600/500
<b>stiffness</b>	N/ $\mu\text{m}$	1.0	0.5
<b>max. force generation x/y/z</b>	N	1/1/1 10/10/10	1/1/1 9/9/9
<b>pull</b>			
<b>push</b>			
<b>voltage range</b>	V	-20...+130	
<b>connector</b>	-	LEMO 05.302	
<b>cable length</b>	m	1.2	1.2
<b>material</b>	-	stainless steel/ aluminum	
<b>dimensions (LxWxH)</b>	mm	15 x 15 x 15	19 x 19 x 16
<b>weight</b>	g	12	57

\* typical value measured with NV 40/3 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.
microTRITOR Vacuum	Compatible for vacuum application down to $10^{-7}$ hPa	60 cm cable length vacuum side; 2 m cable length air side	T-400-02
miniTRITOR Vacuum			T-401-02

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