

compact one dimensional translation stages

PX 50 CAP

- highly compact design with integrated feedback sensor
- accurate parallel motion by parallelogram design
- high reliability due to solid state hinges
- motion without mechanical play
- high resolution in nm and sub-nm range
- motion up to 50 μm
- precision pin holes

applications:

- fiber positioning, laser optics
- scanning systems
- micromanipulation



fig.: PX 50 CAP

Concept

The PX 50 CAP combines the advantage of a very compact size with the positioning accuracy of a capacitive regulated system. The system offers motion of 50 μm in the x-axis.

The PX 50 CAP is ideally suited for nm-precise positioning of small components such as mirrors and laser diodes, especially with applications requiring longtime stability.

The PX series stages can be easily combined with other mechanical positioning systems.

Specials

Outstanding feature of the PX 50 CAP is its compact design. It has very small dimensions and an integrated capacitive measurement system. Due to FEA-optimization of the stage you meet highest dynamical performance and excellent guiding accuracy.

The PX 50 CAP features a very high positioning accuracy and repeatability. Parallel motion is achieved without mechanical play due to its unique design.

Due to the integrated feedback sensors in connection with the equivalent controller electronics the effects of drift and hysteresis are eliminated. Piezo actuators also function in cryogenic environment, associated with a linear decreasing extension behavior.

Mounting/Installation:

The elements of the series PX consist of actuators integrated in a housing with an internal lever transmission. Since the lever mechanism works in both directions, forces between housing and top plate need to be avoided, as they could damage the stage. The stage is attached by using either the two diagonal tapped holes on the bottom side or the two diagonal through holes from top to bottom. Components can be mounted on the top plate by using the tapped holes on the top side.

Technical Data:

series PX		unit	PX 50 CAP
part no.		-	T-101-06
axis		-	X
motion open loop ($\pm 10\%$)*		μm	50
motion closed loop ($\pm 0.2\%$)*		μm	40
capacitance ($\pm 20\%$)**		μF	1.7
integrated measurement system		-	capacitive
resolution open loop***		nm	0.1
resolution closed loop***		nm	1
typ. repeatability		nm	± 3.5
typ. non-linearity		%	0.016
resonant frequency	unloaded	Hz	785
	additional load = 15g	Hz	680
	additional load = 50g	Hz	430
	additional load = 100g	Hz	230
	additional load = 300g	Hz	138
stiffness		N/ μm	0.4
max. push force		N	20
max. pull force		N	2
rotational error	roll	μrad	1
	pitch	μrad	20
	yaw	μrad	1
voltage range		V	-20 ... +130
connector****	voltage	-	LEMO 0S.302
	sensor	-	LEMO 0S.650
cable length		m	1.6
material		-	stainless steel / aluminum
dimensions (l x w x h)		mm	40 x 40 x 23
weight		g	180

typical value measured with NV 40/1 CLE controller

** typical value for small electrical field strength

*** The resolution is only limited by the noise of the power amplifier and metrology.

**** additional connector configurations

Product name	Description	Specials	Part. No Suffix.
PX 50 CAP Digital	Version for digital controller series d-Drive and 30DV50 in combination with additional functionalities: Interchangeability, ASI, ASC	Connector Sub-D 15	T-101-06D
PZ 400 SG Extern	Version with sensor pre-amplifier for the use with „CLE” amplifier units and with the additional functionalities: Interchangeability, ASI	Connector sensor: ODU 4pin	T-101-06E

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