piezosystemjena
incredibly precise

multi dimensional translation stage

PXY 201

- **wide range of sub-nm step motion**
- **integrated capacitive direct metrology**
- **excellent trajectory trueness**
- **30x30 mm² clearance**
- **high load capability**
- **internal damping system**
- **advanced reliability and robustness**

applications:
- nanopositioning
- micro scanning
- scanning microscopy
- surface analysis
- metrology and alignment

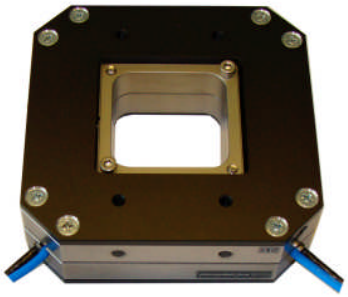

fig.: PXY 201 CAP

Concept

piezosystemjena introduces an XY plane nanopositioning and microscanning stage featuring a wide center clearance.

Its offered travel and scanning range is controlled by a direct measuring high resolution metrology.

Outstanding trajectory trueness even at higher loads and appropriate stiffness are major advantages.

Vacuum and cryogenic performances are available on demand as well, body material variations of invar, superinvar, aluminum or titanium too.

Specials

The PXY 201 CAP and PXY 201 CAP DIG are equipped with an integrated direct measuring high resolution capacitive feedback sensor. In combination with the complementary amplifier/ controller from ***piezosystem jena*** any creep and hysteresis are avoided. Furthermore supreme position stability, linearity, repeatability and accuracy are achieved. ***piezosystemjena*** digital amplifier/controllers in closed loop operation additionally feature in-situ and dynamic set up of PID parameters, slew rate and notch-filter bandwidth. So you can match the electrical parameters depending on the current load scenario and, through trial and error, optimize the performance during system operation.
Because of the frame design of the guidance the stage is very robust against high loads and lateral mishandling too.

Mounting/Installation

The center symmetric tapped hole raster within bottom and top plate allows easy mounting of the nanopositioning and microscanning stage to the ground and parts on it. Its robustness causes no need of additional mounting tools.

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Technical Data:

series		unit	PXY 201	PXY 201 CAP	PXY 201 CAP DIG
part. no.		-	**T-228-00**	**T-228-06**	**T-228-06D**
axis		-	X, Y	X, Y	X, Y
motion open loop (±10%)*		µm	250	250	250
motion closed loop (±0,2%)*		µm	200	200	200
capacitance (±20%)**		µF	2 x 3.5	2 x 3.5	2 x 3.5
feedback sensor		-	-	capacitive	capacitive
resolution***		nm	0.35	1	1
free aperture		mm²	30 x 30	30 x 30	30 x 30
typ. repeatability		nm	-	±10	±10
typ. nonlinearity		%	-	0.02	0.02
max. load		N	100	100	100
push/pull force capacity		N	100 / 20	10 / 10	10 / 10
resonant frequency (X/Y/Z)		Hz	220 / 170 / 1000	220 / 170 / 1000	220 / 170 / 1000
additional load = 50g		Hz	165 / 135	165 / 135	165 / 135
additional load = 100g		Hz	145 / 120	145 / 120	145 / 120
additional load = 300g		Hz	110 / 100	110 / 100	110 / 100
stiffness		N/µm	0.35 / 0.35 / 5.0	0.35 / 0.35 / 5.0	0.35 / 0.35 / 5.0
rotational error	roll	µrad	3	3	3
	pitch	µrad	3	3	3
	yaw	µrad	3	3	3
dimensions (l x w x h)		mm³	3	3	3
voltage range		V	-20…130	-20…130	-20…130
connector	voltage	-	LEMO	LEMO	D-sub
	sensor	-	-	LEMO	D-sub
temperature range		°C	-20 … +80		
material		-	stainless steel/aluminum		
weight		g	300	370	370

* 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.

recommended configurations:

actuator	**PXY 201**	T-228-00
amplifier / controller	**NV 40/3**	E-101-20
actuator	**PXY 201 CAP DIG**	T-228-06D
amplifier / controller	**NV 40/3 CLE**	E-101-23
actuator	**PXY 201 CAP**	T-228-06
amplifier / controller	**ENT 40/20 (230V / 115V)**	E-103-13/E-103-14
	2 x ENV 40 CAP	E-103-60
casing	**63 TE housing 19“**	E-103-90
actuator	**PXY 201 CAP DIG**	T-128-06D
amplifier / controller	**2 x 30DV50**	E-754-300

Please pay attention to our “notes for mounting”, which are available as download on our homepage.