piezosystemjena
incredibly precise

high-speed piezo translation stages

nanoX 200 line

- **240µm range of motion**
- **highest dynamical performance**
- **excellent guidance accuracy**
- **0.4 nm resolution**
- **Ø 3mm central aperture**

applications:

- machine tools
- laser optics
- life science
- scanning systems

fig.: nanoX 200 SG

Concept

The one-axis linear positioning stages nanoX 200 are a development within the ultra-fast nanoX® - line. Due to FEA - optimization these stages achieve the highest dynamical performance and excellent guiding accuracy even under high loads.
The sophisticated monolithic guidance design of the solid flexure hinges means the trajectory is free from mechanical play and friction - a feature of all psj-stages.
Also, the systems are temper-ature compensated – while changing the environmental temperature the stage keeps its position.
Vacuum and cryogenic versions are available on demand as well as body material variations of invar, superinvar, aluminum or titanium.
An optional external sensor preamplifier (version “extern” / “digital”) offers independence from cable length.

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Specials

The highest positioning accuracy, stability, linearity and reproducibility are achieved in closed loop operation when used in combination with the high resolution capacitive direct measuring feedback system from ***piezosystem jena***.
The digital amplifier/controller from piezosystem jena allows additional feature in-situ and dynamical set up of PID-parameters, slew rate and notch filter band width. The mechanical resonance can be found using the built in wobble generator. The notch filter set up eliminates undesired frequencies from the output voltage, such as the stage’s resonant frequency.
So you easy can adapt the set up depending on the current load scenario and optimize the performance of the system.
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Mounting/Installation

Piezo actuators generate a pressure force to effect the resulting motion based on a solid state phenomena. The resolution is only limited by the noise of the amplifier and metrology. Such devices are neither affected by magnetic fields nor do they produce them. In cryogenic environments they function down to almost zero Kelvin. There is an associated decrease in the extension behavior. In vacuum conditions piezo actuators can be used at pressure below 10Pa. They should not be operated in the pressure range from 10Pa to 10kPa due to the greatly reduced dielectric breakdown strength of air.
The raster tapped and thru holes allow easy integration of the stage into any application or mechanical setup.

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technical data:

series nanoX		unit	nanoX 200	nanoX 200 SG	nanoX 200 CAP
part no.		-	T-106-20	T-106-21	T-106-26
axis		-	X		
motion open loop (±10%)*		µm	240	240	
motion closed loop (±0,2%)*		µm	-	200	
capacitance (±20%)**		µF	2x2.6		
integrated measurement system		-	-	strain gage	capacitive
resolution*** open loop		nm	0.4		
closed loop		nm	-	4	1
typ. repeatability		nm	-	50	10
typ. non-linearity		%	-	0.1	0.02
resonant frequency		Hz	700		
additional load = 50g		Hz	600		
additional load = 100g		Hz	400		
additional load = 300g		Hz	250		
stiffness		N/µm	1.1		
max. push/pull force open loop		N	100 / 100		
max. push/pull force closed loop ****		N	-	100/100	
max. load		N	100		
lateral force limit		N	100		
rotational error	x/y/z	µrad	5 / 5 / 5		
voltage range		V	-20 ... +130		
connector	voltage	-	ODU series L 3pol.		
	sensor	-	-	LEMO 0S.304	LEMO 0S.650
cable length		m	1	1.2	1.6
min. bend radius of cable		mm	>15		
material		-	stainless steel / aluminum		
dimensions (l x w x h)		mm	52 x 52 x 22		52 x 70 x 22
central aperture		mm	Ø3		
weight		g	175	190	300

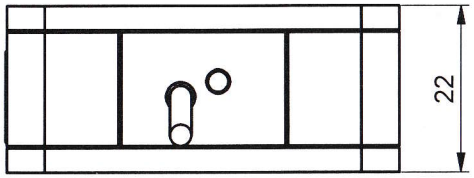
* typical value measured with 30V300 nanoX amplifier
** typical value for small electrical field strength
***The resolution is only limited by the noise of the power amplifier and metrology.
****max. force, with which the system operates in closed loop within the specification

recommended configurations:

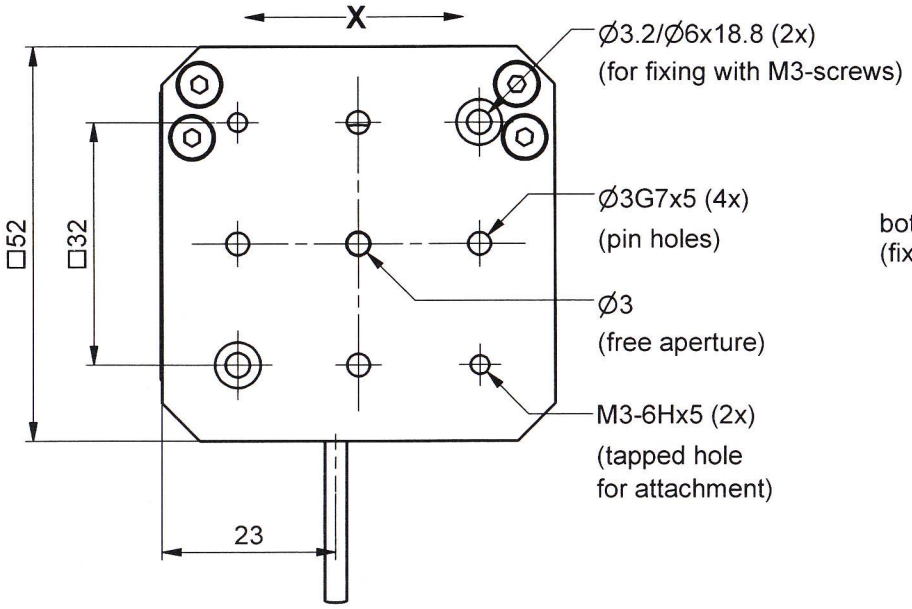
actuator	**nanoX 200**	T-106-20
amplifier/controller	**30V300 nanoX**	E-468-011
actuator	**nanoX 200 SG**	T-106-21
amplifier/controller	**ENV 40 SG nanoX**	E-248-100
power supply unit	**ENT 40/20**	E-103-13
PC-interface	**EDA 4**	E-202-40
casing for all modules	**42 TE**	E-103-97
actuator	**nanoX 200 CAP digital**	T-106-26D
amplifier/controller	**EVD 50 CL**	E-720-300
casing for d-Drive		E-751-000

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

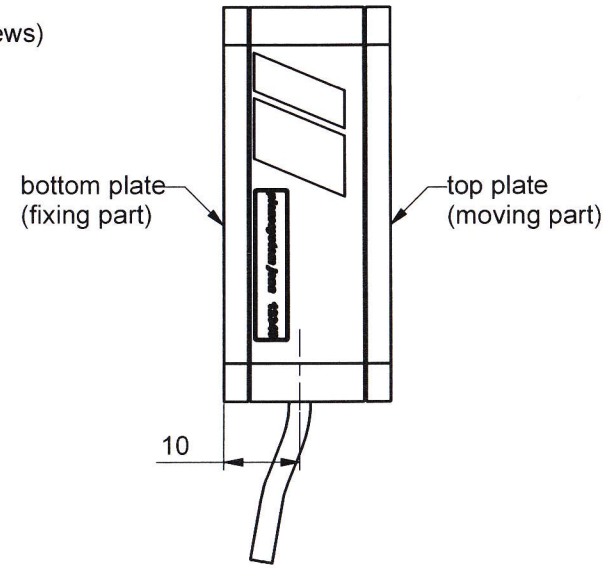
front view



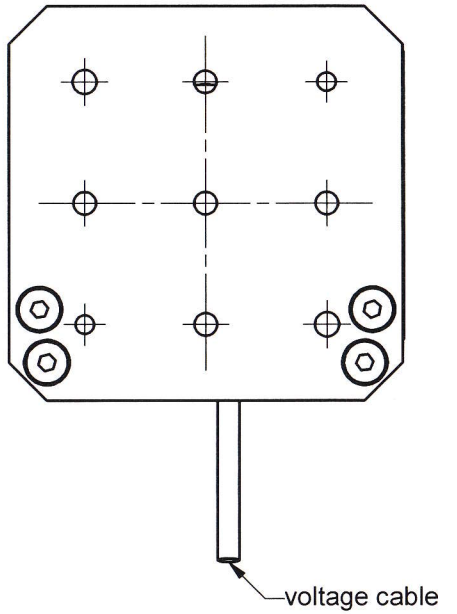
top view



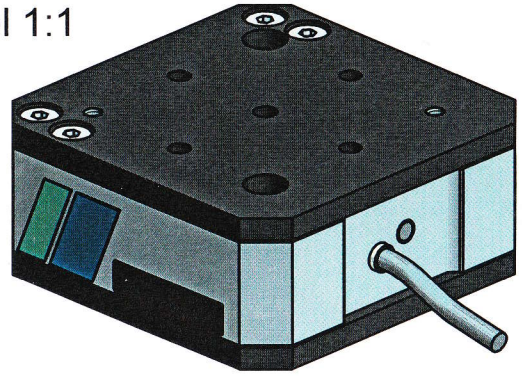
side view



bottom view



model 1:1



ORIGINAL

standard cable length 1m

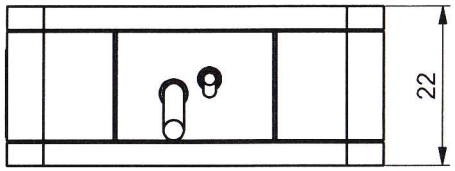
unit [mm]

pin hole tolerance ± 0.02

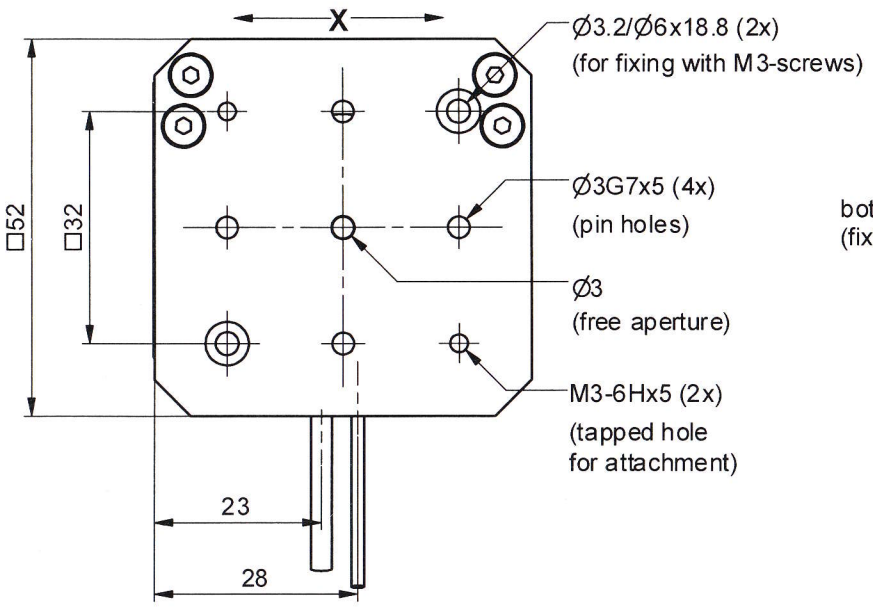
tapped hole tolerance ± 0.05

part.-no.		part.-name
T-106-20		nanoX 200
file name		OK: date/sign.
PT10620	rev.01	10. AUG. 2011
	scale	customers drawing
	1:1	***piezosystem jena***

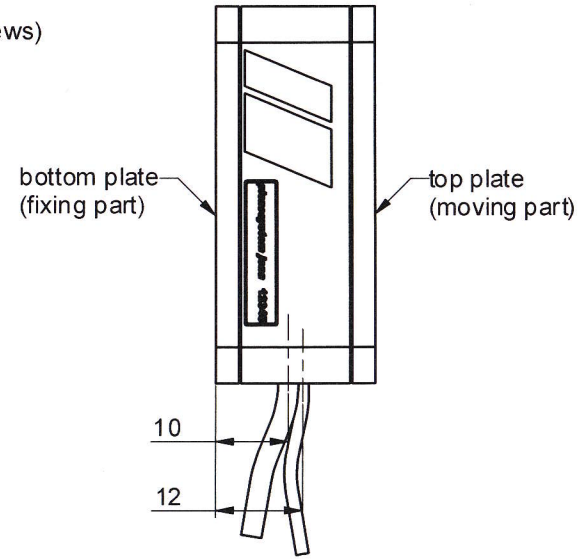
front view



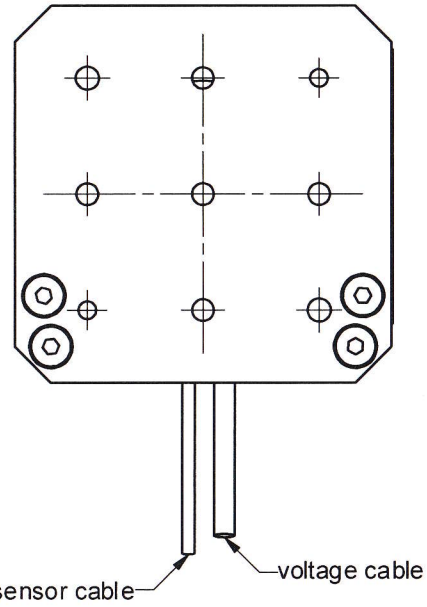
top view



side view



bottom view



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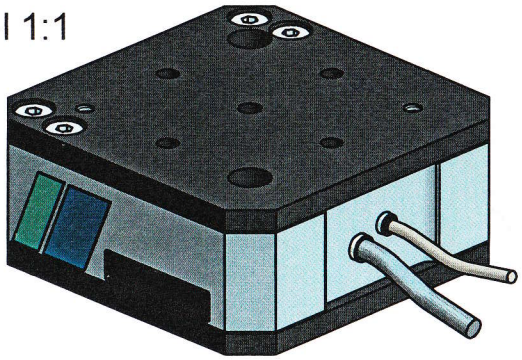


ORIGINAL

standard cable length 1.2m (EXT/DIG 2m)

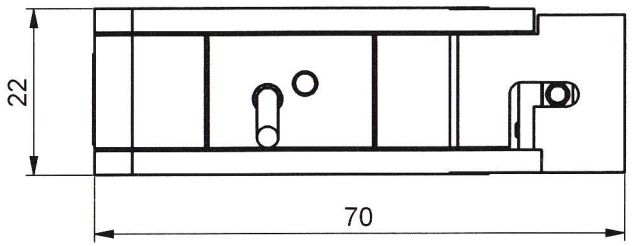
unit [mm]

pin hole tolerance ± 0.02

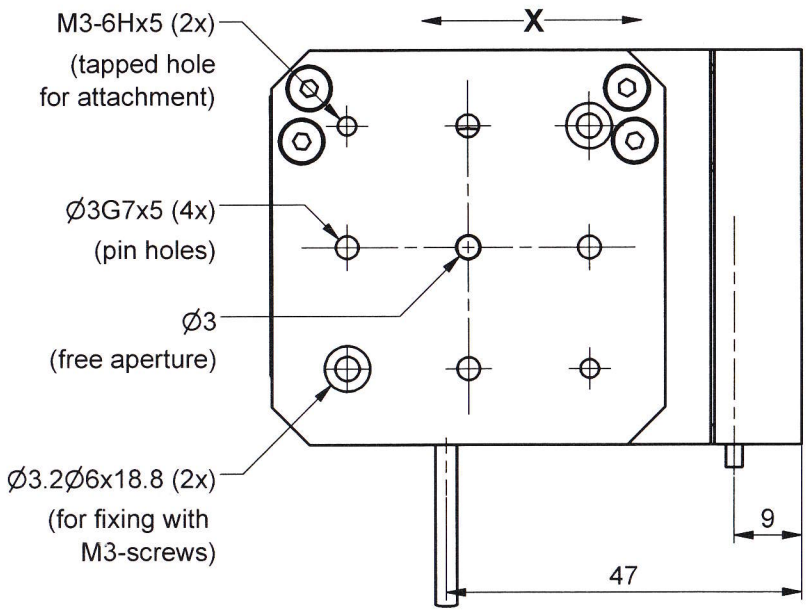
tapped hole tolerance ± 0.05

part.-no.		part.-name
T-106-21		nanoX 200 SG
file name		OK: date/sign.
PT10621	rev.01	16. AUG. 2011
	scale	customers drawing
	1:1	*piezosystem jena*

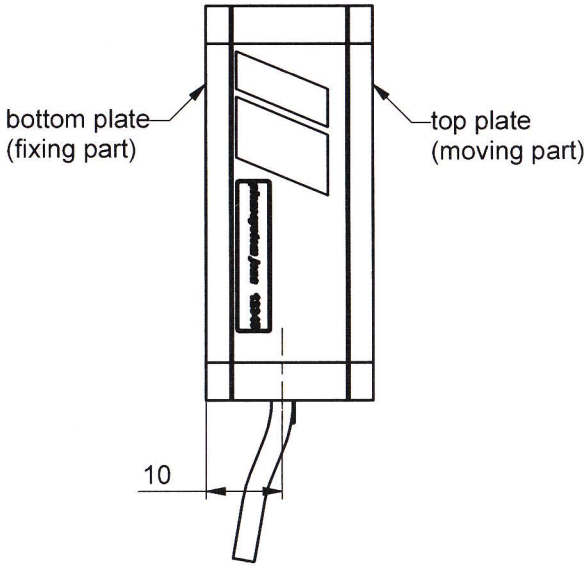
front view



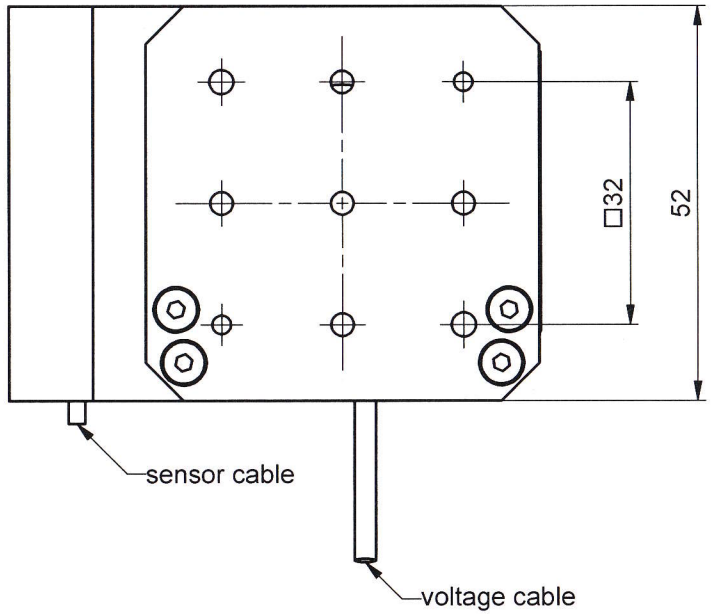
top view



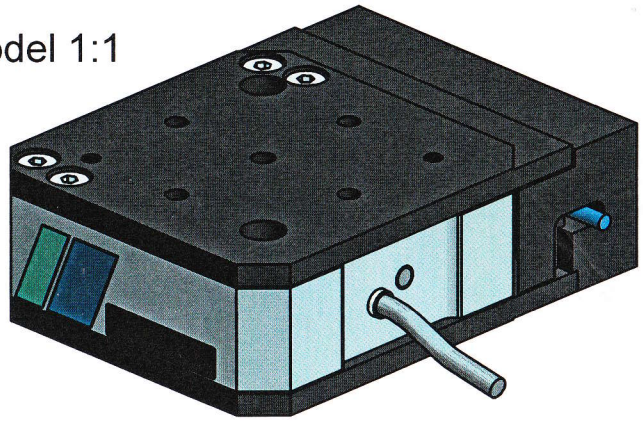
side view



bottom view



model 1:1



ORIGINAL

standard cable length 1.6m (EXT/DIG 2m)

unit [mm]

pin hole tolerance ± 0.02

tapped hole tolerance ± 0.05

part.-no.		part.-name
T-106-26		nanoX 200 CAP
file name		OK: date/sign.
PT10626	rev.01	16. AUG. 2011
	scale	customers drawing
	1:1	*piezosystem jena*