

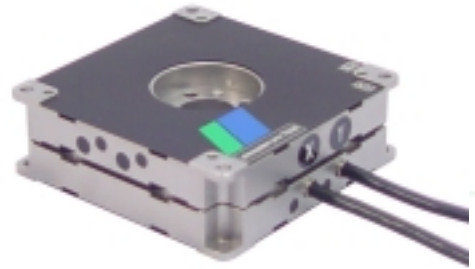
nanoSXY 120

ultra fast xy piezo positioning stage

- ◆ *120microns range of motion in XY*
- ◆ *sub-nm-resolution*
- ◆ *excellent guidance accuracy*
- ◆ *12.5mm free clearance aperture*
- ◆ *high z-axes stiffness for high load capability*
- ◆ *flat design*
- ◆ *compact package*

application:

- high precision positioning with sub-nm accuracy for application in the field of scanning, microscopy, metrology and alignment



pic: nanoSXY120

Design

piezosystem jena now complete the new nanoX stage series with an XY two axes stage design nanoSXY. The nanoSXY series offers a long travel scanning range, combined with a centrally free aperture of 12.5mm. Dynamic performance with a high load capacity and supreme stiffness are major advantages when compared with other systems available on the market. The FEA designed actuating system based on flexure hinges guarantees excellent guidance accuracy without parasitic motion. The durability of the nanoSXY makes this series of stages an excellent choice for permanent use in industrial applications.

Specials

The sophisticated gear design of the series nanoSX and nanoX® developed by **piezosystem jena** with bi-directional actuation design features an active push/pull-force. Basic feature of these high performance piezo actuators is the very high stiffness and the resonance frequency. So even high loads can be moved in a highly dynamic manner. The overshooting behavior is actively minimized by controllable set and reset-forces. Defined positions can be approached with nanometer accuracy even with full load when the actuator is equipped with a measurement system. This is a very substantial criteria especially for high speed scanning applications. The bi-directional gear design makes the system very robust and makes it non-sensitive against external forces.

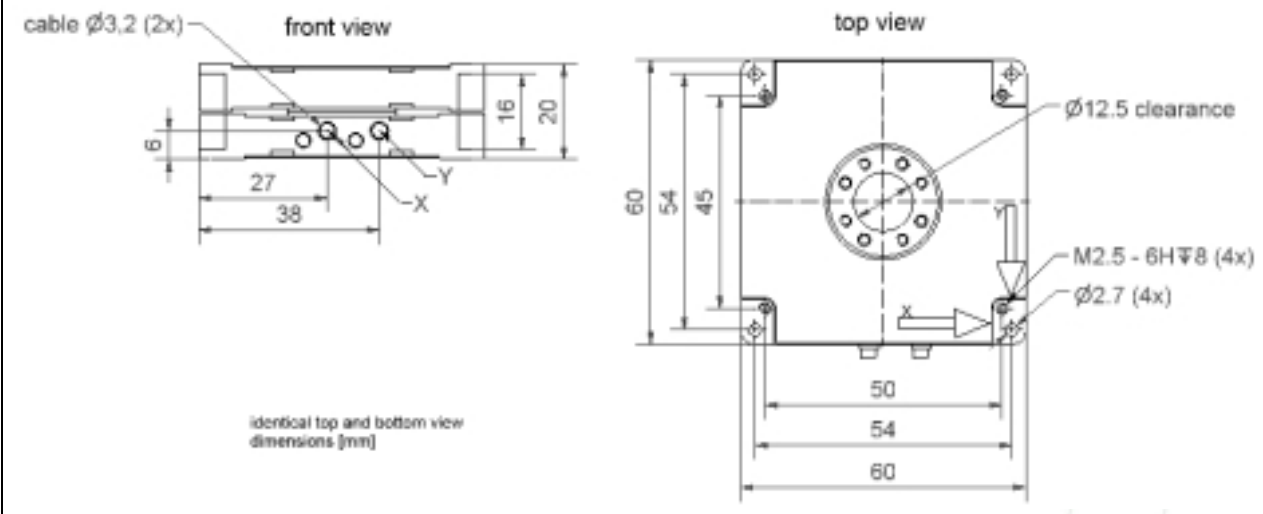
Mounting Instructions

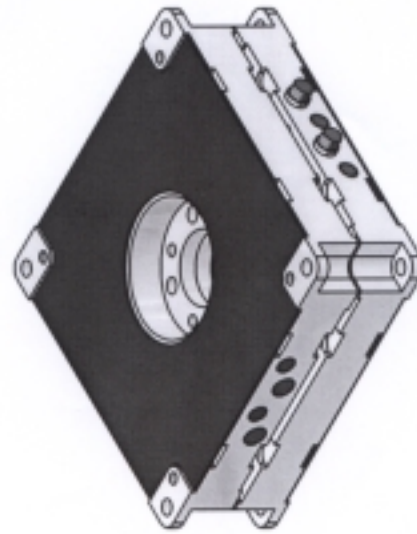
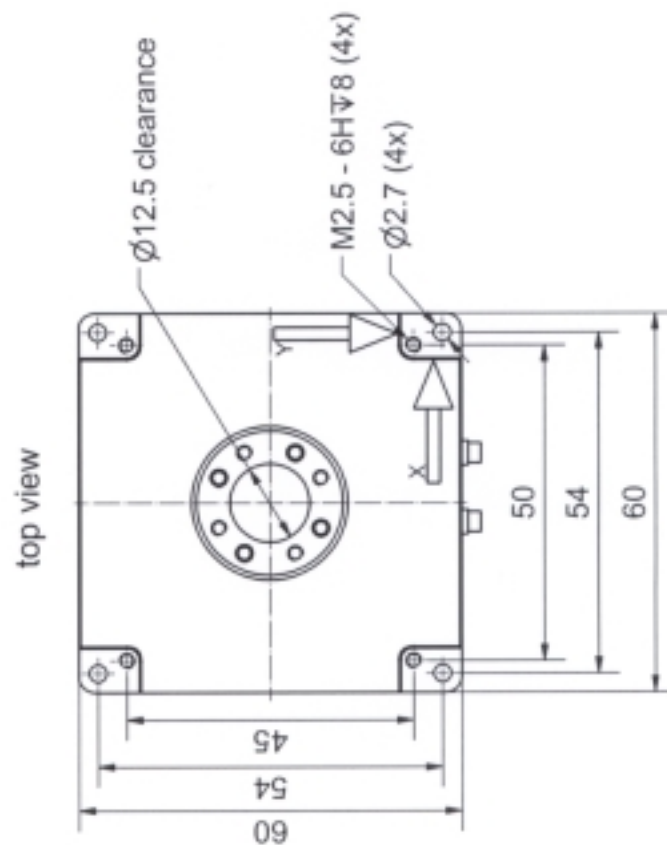
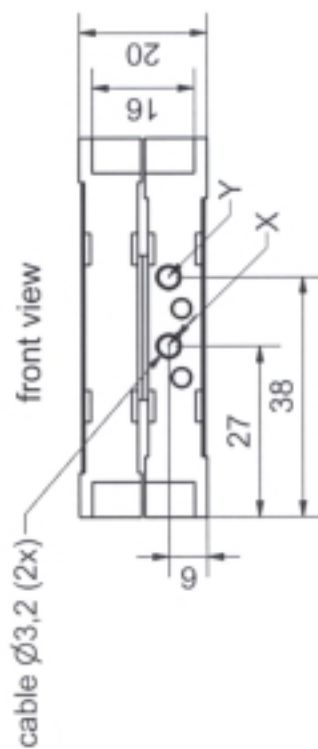
The mounting area is based on 4 threads arranged in raster order. By using of two stages for a XY configuration both stages will be mounted on top of each other. All cable come out on one side only. Because of the high z-axis stiffness the stages are very robust. Vacuum and cryogenic performances are available on demand as well, body material variations of invar, superinvar, aluminum or titanium too.



| technical data | | unit | nanoSXY 120 | nanoSXY 120 CAP |
|--|---------------|------|-------------------|-----------------|
| part no. | | - | T-223-00 | T-223-06 |
| active axes | | - | X,Y | |
| free aperture | | mm | 12.5 | |
| motion open loop* / closed loop | | µm | 120 / - | 120/100 |
| hysteresis open loop* | | % | 15 | |
| integrated feedback sensor | | - | - | kapazitiv |
| resolution** open loop/closed loop | | nm | 0.25 / - | 0.25/1 |
| repeatability**** | | % | - | ±3 |
| electr. capacitance per axis*** | | µF | 1.5 | |
| voltage range | | V | -20..130 | |
| stiffness*** (X/Y/Z) | | N/µm | 0.6 / 0.6 / 2.5 | |
| max. load | | N | 100 | |
| push- / pull force capacity (X/Y/Z) | | N | 65 / 65 / - | 12 / 12 / - |
| resonances*** @ load (X/Y) | 50g | Hz | 350 / 380 | 300 / 320 |
| | 100g | Hz | 280 / 300 | 250 / 280 |
| | 300g | Hz | 165 / 170 | 160 / 105 |
| rotational error (X/Y/Z) | | µrad | 1.5 / 2.5 / 0.5 | |
| connector | power | - | ODU 3pin serial:L | |
| | sensor | - | - | LEMO 0S.605 |
| cable length | | m | 1.0 | 1.6 |
| temperature range | operating | °C | 0..80 | |
| | non operating | °C | -40..120 | |
| material | | - | stainless steel | |
| total mass | | g | 250 | 350 |
| * typical value for open loop @ -20...130V (±10%) | | | | |
| ** measured with amplifier E-103-18 | | | | |
| *** typical for small signal strength | | | | |
| **** typical value for closed loop control measured with amplifier E-278-100 | | | | |

dimensions [mm]

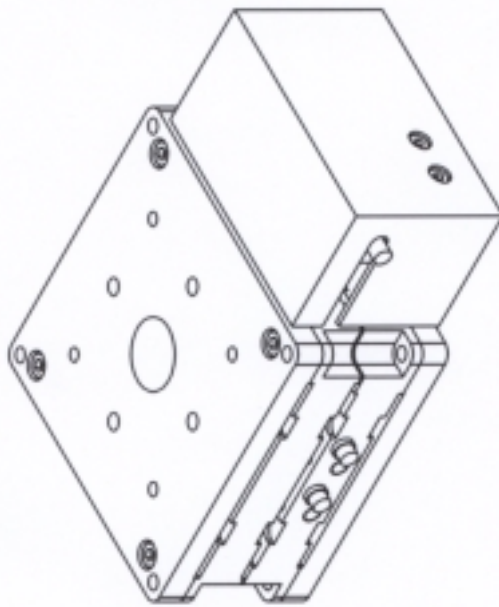




identical top and bottom view
dimensions [mm]

| | | | |
|----------|-----------|------------|--------------------|
| part-no. | part-name | part-name | part-name |
| T-223-00 | file name | nanoSXY120 | OK: date/sign. |
| | | | 3. NOV. 2016 |
| | | | customer's drawing |
| | | | piezosystem jena |
| | | scale | 1:1 |
| | | | |

ORIGINAL



ORIGINAL

identical hole pattern of top and bottom view

| | | | |
|-----------|-----------|--------------------|-------------------|
| part-no. | T-223-06 | part-name | nanoSXY120CAP |
| file name | PT 223 06 | OK: date/size | 0.5.01EL. 7/16/14 |
| | | customer's drawing | piezosystem jena |
| | | scale | 1:1 |

