

PXY D12 Piezo Scanner

Piezo XY-Positioner

Concept:

The elements in the PXY D12 series were developed for STM and AFM applications. These systems are optimized for high resonant frequency and high stiffness in both axes.

As an option for applications like AFM microscopy the systems can be equipped with a z-axis stage.

The PZ D12 element provides a motion of 8 μ m or 20 μ m in z-direction. Equipped with a special adapter, it can be mounted directly onto the PXY D12 element. The PZ D12 elements has a superior resonant frequency of more than 3 kHz.

Specials:

For special applications, the elements can be optimized for minimum z-motion of less than 30nm while moving in the x- and y- direction (part no. S-605-11).

The elements in the PXY D12 series can be equipped with an integrated measurement system. As a result, the effects of creep and hysteresis will be overcome.

Also, the systems may be specially prepared for vacuum and/or cryogenic applications.

Mounting:

For stage mounting there are 4 through holes and 2 pin holes available. Another 2 tapped holes are available to mount components.

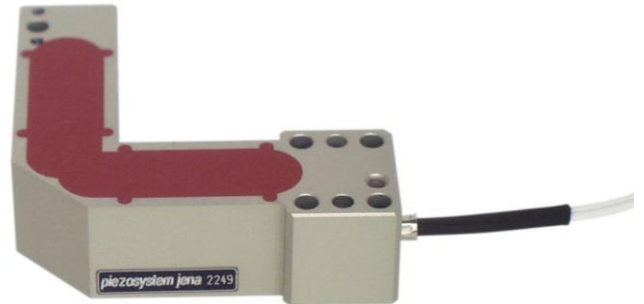


Image: PXY 80 D12

Product Highlights:

- high resolution XY positioning
- up to 200 μ m motion range in XY
- optimized for minimum z motion
- high dynamic range
- with z-axis actuator extension for XYZ-Scanner systems
- option: high resolution feedback sensors

Applications:

- Scanning systems
- STM and AFM microscopy
- wafer handling
- electronics & robotics

PXY D12 Piezo Scanner

Technical Data:

| series PXY D12 + z-axis extension PZ D12 | unit | PXY 40D12 | PXY 80 D12 | PXY 200 D12 | PZ 8 D12 | PZ 20 D12 |
|---|------------------|------------|------------------|-----------------|----------------|------------|
| part no | - | S-605-37 | S-605-10 | S-605-20 | S-605-60 | S-605-63 |
| axes | - | x, y | x, y | x, y | z | z |
| motion open loop ($\pm 10\%$)* | μm | 40 | 80 | 200 | 8 | 20 |
| electrical capacitance ($\pm 20\%$ **) | μF | 0.7 | 1.7 | 2.6 | 0.7 | 0.7 |
| resolution open loop*** | nm | 0.08 | 0.16 | 0.4 | 0.02 | 0.04 |
| resonant frequency | x/y z | Hz Hz | 1100 / 1300 - | 900 / 1200 - | 400 / 600 - | - 3000 |
| stiffness (per axis) | N/ μm | 1.5 / 1.8 | 0.8 / 0.55 | 0.3 / 0.2 | 4.7 | 3.3 |
| max. push force (per axis) | N | 60/72 | 64/44 | 60/40 | 37.6 | 66 |
| max. pull force (per axis) | N | 6/7 | 6/4 | 6/4 | 4 | 7 |
| voltage range | | | | -20 ... +130 | | |
| connector**** | voltage | - | | LEMO 0S.302 | | |
| cable length | m | | | 1.0 | | |
| min. bend radius of cable | mm | | | >15 | | |
| material | - | | | stainless steel | | |
| dimensions (l x w x h) | mm | 54x53.5x20 | 54x53.5x16 | 57.5x64x16 | 21x26x15 | 20.5x26x15 |
| weight | g | 90 | 90 | 160 | 13 | 15 |

| series PXY D12 + z-axis extension PZ D12 with SG feed back sensor | unit | - | PXY 80 D12 SG | PXY 200 D12 SG | PZ 8 D12 SG | PZ 20 D12 SG |
|--|-------------------|--------|------------------|----------------------------|----------------|-----------------|
| part no | - | - | S-605-14 | S-605-21 | S-605-61 | S-605-64 |
| motion open loop ($\pm 10\%$)* per axis | μm | - | 80 | 200 | 8 | 20 |
| motion closed loop ($\pm 0.2\%$)* per axis | μm | - | 65 | 160 | 6.4 | 16 |
| integrated feed back sensors | - | - | | | strain gage | |
| resolution closed loop*** | nm | - | 1.6 | 4 | 0.16 | 0.4 |
| typ. repeatability | nm | - | 16 | 43 | 22 | 7 |
| max. push force (per axis) | x/y | N | - | 64/44 | 60/40 | 37.6 |
| max. pull force (per axis) | x/y | N | - | 6/4 | 6/4 | 4 |
| connector**** | voltage sensor | - - | - - | LEMO 0S.302 LEMO 0S.304 | | |
| cable length | m | - | - | 1.2 | | |
| weight | g | - | 90 | 160 | 30 | 45 |

| series PXY D12 + z-axis extension PZ D12 with CAP feed back sensor | unit | - | PXY 80 D12 CAP | PXY 200 D12 CAP |
|---|-------------------|--------|-------------------|----------------------------|
| part no | - | - | S-605-16 | S-605-26 |
| motion open loop ($\pm 10\%$)* per axis | μm | - | 80 | 200 |
| motion closed loop* per axis | μm | - | 65 | 160 |
| integrated feed back sensors | - | - | | capacitive sensor |
| typ. resolution closed loop*** | nm | - | - | 1 |
| typ. repeatability | nm | - | 15 | 20 |
| max. push force (per axis) | x/y | N | - | 64/44 |
| max. pull force (per axis) | x/y | N | - | 6/4 |
| connector**** | voltage sensor | - - | - | LEMO 0S.302 LEMO 0S.605 |
| cable length | m | - | - | 1.6 |
| dimensions (l x w x h) | mm | - | 64x63.5x22 | 75.5x69x27 |
| weight | g | - | 155 | 225 |

* typical value measured with NV 40/3 amplifier (closed loop: NV 40/3 CLE amplifier)

** typical value for small electrical field strength

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

**** connector valid for standard version only; digital and external versions are supplied with special connector style

Rights reserved to change specifications as progress occurs without notice!

Tel: +49 (3641) 66880 • Fax: +49 (3641) 668866

info@piezोजना.com • <http://www.piezोजना.com>