

## compact 2-axis translation stages

### series PXY AP

- variable travel range selection per axis based on VTRselect - concept
- extremely flat design for microscopy
- XY-motion up to 700 x 700  $\mu\text{m}$
- bi-directional actuating nanoX® design for high dynamic range
- central aperture 100 x 100 mm
- integrated feedback sensors
- with series MIPOS XYZ solution

#### applications:

- microscopy / lithography
- nanopositioning and scanning
- materials research
- wafer handling and mask alignment
- semiconductor testing equipment
- biotechnology

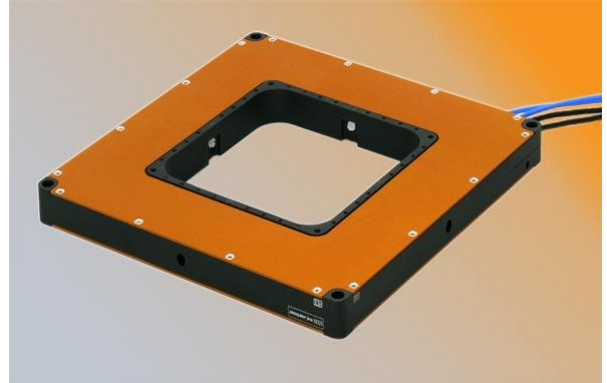


fig.: PXY 500 AP

#### Concept

The series PXY AP is designed as an extremely flat scanning stage with an extra large aperture. Key features are the variable motion generating elements – **VTRselect** concept- which offers flexible motion in the range from 24 $\mu\text{m}$  up to 700 $\mu\text{m}$  for each axis. The required motion per axis can be pre-selected. These systems offer excellent dynamic properties during use, which are needed for certain applications.

To get the best results for high dynamic and high precision scanning applications, the flexure hinges are made with the unique **nanoX®** technology. Setting and resetting forces are generated by two different actuating systems. This provides the user a microsec settling time and a high stiffness even under heavy loads. Overshooting is actively minimized. To avoid crosstalk, the motion is monitored by independent sensor systems in real time.

In combination with the series MIPOS - objective positioning systems for z-axis motion – a XYZ solution with sub-nm accuracy can be offered.

#### Specials

The FEA - optimized parallel kinematics of the actuator guarantee high guidance accuracy without any mechanical play. Based on the load optimized actuating system, the shortest settling time can be achieved. In combination with an integrated high resolution sensor system – the PXY AP “CAP” series – very accurate position stability can be achieved. The sensor system is designed for non-contact direct metrology. High resolution capacitive sensors measure the motion of the moving platform.

This enables the system to operate with outstanding performance during high dynamic scans.

An additional stage insert is available (part no. T-240-99) which can be used to hold 3inch standard slides, Petri dishes, Lab-Tek™-Holder and PH2-Incubators.

Upon request the series PXY AP can be offered in a vacuum compatible version and as well as a cryogenic version. The stage body also can be made of titanium or thermally stable material Invar.

#### Mounting/Installation

The raster tapped and thru holes allow for an easy integration of this stage into any application and mechanical setup. As a piggyback solution, the series of PXY AP stages can be assembled with motorized XY scanning stages with long travel range.

The resolution of the piezo electrical system is only limited by the noise of the applied electronics signal. The piezo amplifier and controller systems from piezosystem jena are especially designed for this.

Piezo electrical actuating systems can operate independent of magnetic fields.

When using under vacuum conditions please note the low insulation behavior of gas by 0.01 hPa up to 100hPa.



### VTRselect

Variable Travel Range selection allows the user to select a combination of different motion ranges for each axis. By selecting the travel range according to the user's required range of motion, the best dynamic properties for each axis can be achieved! The selection of 3 part numbers generates a customized stage configuration

### Ordering procedure

**Step 1:** selection of part 1 - basic stage module according to user's required motion range

**Step 2:** selection of part 2 - y-axis module according to required motion range

**Step 3:** selection of part 3 - sensor / connector module according to piezo controller unit

1. basic stage module with X-axis drive				2. Y-axis drive module		
typ	description	motion <sup>1)</sup>	part.no.	description	motion <sup>1)</sup>	part.no.
Standard				P*Y 00 AP	without Y-axis	T-240-MY
Vacuum						
Standard	PX* 24 AP	24/30µm	T-242-X0	P*Y 24 AP	24/30µm	T-242-MY
Vacuum	PX* 24 AP V	24/30µm	T-242-X2			
Standard	PX* 100 AP	100/120µm	T-244-X0	P*Y 100 AP	100/120µm	T-244-MY
Vacuum	PX* 100 AP V	100/120µm	T-244-X2			
Standard	PX* 200 AP	200/250µm	T-246-X0	P*Y 200 AP	200/250µm	T-246-MY
Vacuum	PX* 200 AP V	200/250µm	T-246-X2			
Standard	PX* 300 AP	300/350µm	T-248-X0	P*Y 300 AP	300/350µm	T-248-MY
Vacuum	PX* 300 AP V	300/350µm	T-248-X2			
Standard	PX* 500 AP	500/700µm	T-250-X0	P*Y 500 AP	500/700µm	T-250-MY
Vacuum	PX* 500 AP V	500/700µm	T-250-X2			

<sup>1)</sup> motion range depends from the chosen feedback option (with or without feedback control)

3. feedback and connector module			
<b>analogue controller system</b>			
	part.no.	connector	
		voltage	sensor
without feedback sensor	T-24M-00	ODU 3pin	—
with feedback sensor	T-24M-06E	ODU 3pin	ODU 4pin
<b>digital controller system</b>			
	part.no.	connector	
		voltage	sensor
without feedback sensor	T-24M-00D	Sub-D15	—
with feedback sensor	T-24M-06D	Sub-D15	