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# P-280

## Modular Piezo Flexure Nanopositioning Stages



P-280 Flexure NanoPositioners

- Frictionless Precision Flexure Guiding System
- Very Compact
- Low Cost
- Travel to 100  $\mu\text{m}$
- XY and XYZ Combinations

P-280 Piezo flexure stages are compact and cost effective positioners and scanners. They are available in three different sizes, with displacements of 30, 50 and 100  $\mu\text{m}$ . P-280 stages can be mounted in either a vertical or horizontal position, to easily adapt to specific mounting requirements.

### Working Principle

P-280 positioners are equipped with high-voltage piezoelectric contraction strip actuators integrated into a flexure guiding system. The force exerted by the piezo moves a flexure parallelogram. The wire-EDM-cut

flexures are FEA modeled for zero stiction/friction and ultra-high resolution.

P-280 flexure stages can be combined to form XY and XYZ combinations (see page 2-31). Cable mounting positions can

### Technical Data

Models	P-280.10	P-280.20	P-280.30	Units	Notes see p. 2-84
Active axes	X	X	X		
Open-loop travel @ 0 to -1000 V	30	50	100	$\mu\text{m} \pm 20\%$	A4
* Open-loop resolution	0.3	0.5	1	nm	C0
Stiffness	1.4	1.3	0.5	N/ $\mu\text{m} \pm 20\%$	D1
Push/pull force capacity (in operating direction)	50/50	50/50	50/50	N	D3
Max. ( $\pm$ ) normal load	50	50	50	N	D4
Tilt ( $\theta_y, \theta_z$ ) (typ.)	3	7	9	$\mu\text{rad}$	E1
Lateral runout (Z) (typ.)	0.3	0.6	1.4	$\mu\text{m}$	E2
Electrical capacitance	20	27	70	nF $\pm 20\%$	F1
** Dynamic operating current coefficient (DOCC)	0.83	0.68	0.88	$\mu\text{A} / (\text{Hz } 3 \mu\text{m})$	F2
Unloaded resonant frequency	2200	1300	660	Hz $\pm 20\%$	G2
Operating temperature range	- 40 to 80	- 40 to 80	- 40 to 80	$^{\circ}\text{C}$	H2
Voltage connection	VH	VH	VH		J1
Weight (with cables)	37	56	92	g $\pm 5\%$	
Body material	Al	Al	Al		L
Recommended Amplifier/ Controller (codes explained p. 2-17)	B, I	B, I	B, I		

\* For further information see p. 2-8. Resolution of PI piezo nanopositioners is not limited by friction or stiction. The value given is noise equivalent motion with E-507 amplifier.

\*\* Dynamic Operating Current Coefficient in  $\mu\text{A}$  per Hz and  $\mu\text{m}$ . Example (P-280.30): Sinusoidal scan of 30  $\mu\text{m}$  at 10 Hz requires approximately 0.26 mA drive current.

be specified (either A, B or C, see drawing) to suit your application. If not specified, the stages are delivered with cable position A. A spacer plate for ease of mounting is provided with the stages.

### Notes

See the "Piezo Drivers & Nanopositioning Controllers" section, p. 6-8 *ff.* for our comprehensive line of low-noise control electronics. See the "Selection Guide" on p. 2-14 *ff.* for comparison with other nanopositioning systems.

### Ordering Information

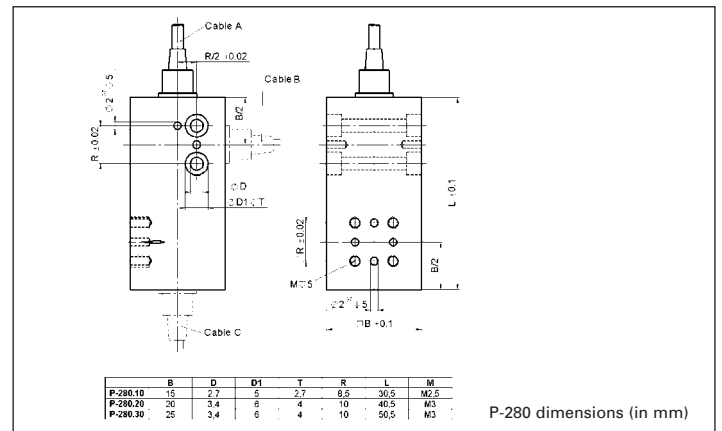
**P-280.10\***  
Piezo Flexure Stage, 30  $\mu\text{m}$

**P-280.20\***  
Piezo Flexure Stage, 50  $\mu\text{m}$

**P-280.30\***  
Piezo Flexure Stage, 100  $\mu\text{m}$

\* = A, B or C depending on cable-position

**Ask about custom designs!**





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