

## XY Piezo Scanner

COST- EFFECTIVE OEM SYSTEM WITH LOW PROFILE



### P-713

- + Ideal for pixel sub- stepping in image enhancement
- + Compact design: 45 mm × 45 mm × 6 mm with clear aperture
- + Very cost- effective design
- + Travel ranges to 20 μm × 20 μm
- + Parallel kinematics for enhanced dynamics and better multi- axis accuracy

### Specifications

	P-713.20L	P-713.2SL	Unit	Tolerance
Active axes	X, Y	X, Y		
<b>Motion and positioning</b>				
Integrated sensor	–	SGS		
Open- loop travel, -20 to 120 V	20	20	μm	min. (20 % / -0 %)
Closed- loop travel	–	15	μm	
Open- loop resolution	0.1	0.1	nm	typ.
Closed- loop resolution	–	1	nm	typ.
Linearity error	–	0.3	%	typ.
Repeatability	–	<4	nm	typ.
Pitch	typ. ±1 max. ±5	typ. ±1 max. ±5	μrad	
Yaw	typ. ±40 max. ±50	typ. ±40 max. ±50	μrad	
<b>Mechanical properties</b>				
Stiffness	0.8	0.8	N/ μm	±20 %
Resonant frequency, no load	2250	2250	Hz	±20 %
Resonant frequency under load	1310 (20 g) 1020 (50 g) 460 (100 g)	1310 (20 g) 1020 (50 g) 460 (100 g)	Hz	±20 %
Push / pull force capacity in motion direction	5 / 5	5 / 5	N	max.
Load capacity	2	2	N	max.
<b>Drive properties</b>				
Ceramic type	PICMA® P-882	PICMA® P-882		
Electrical capacitance in X, Y	0.31	0.31	μF	±20 %
Dynamic operating current coefficient in X, Y	2.5	2.5	μA / (Hz × μm)	±20 %
<b>Miscellaneous</b>				
Operating temperature range	-20 to 80	-20 to 80	°C	
Material	Stainless steel, ferromagnetic	Stainless steel, ferromagnetic		
Dimensions	45 mm × 45 mm × 6 mm	45 mm × 45 mm × 6 mm		
Mass	0.1	0.1	kg	±5 %
Cable length	1.5	1.5	m	±10 mm
Sensor connection	–	LEMO		
Voltage connection	LEMO	LEMO		

The resolution of PI piezo nanopositioners is not limited by friction or stiction. Value is given noise equivalent motion with [E-503 amplifier](#).  
Dynamic Operating Current Coefficient in  $\mu\text{A}$  per Hz and  $\mu\text{m}$ . Example: Sinusoidal scan of  $10\ \mu\text{m}$  at 100 Hz requires approximately 2.5 mA drive current.

## Recommended controller / amplifier

Single-channel (1 per axis): E-610 servo-controller / amplifier, E-625 servo-controller, bench-top, E-621 controller module  
Multi-channel: E-500 modular piezo controller system with E-503 amplifier module (three channels) or E-505 (1 per axis, high-power) and E-509 controller

## Order Information

### P-713.20L

Low-Profile OEM XY Nanoscanner,  $20\ \mu\text{m} \times 20\ \mu\text{m}$ , Open-Loop, LEMO Connector(s)

### P-713.2SL

Low-Profile OEM XY Nanoscanner,  $15\ \mu\text{m} \times 15\ \mu\text{m}$ , SGS Sensor, LEMO Connector(s)

## Controllers / Drivers / Amplifiers

[E-610 Piezo Amplifier / Controller](#)

[E-621 Piezo Servo-Controller & Driver](#)

[E-625 Piezo Servo-Controller & Driver](#)

[E-500 • E-501 Modular Piezo Controller](#)

[E-505 Piezo Amplifier Module](#)

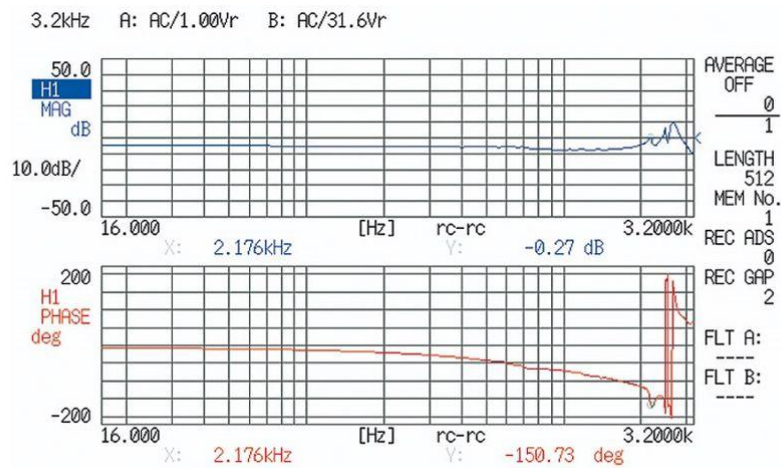
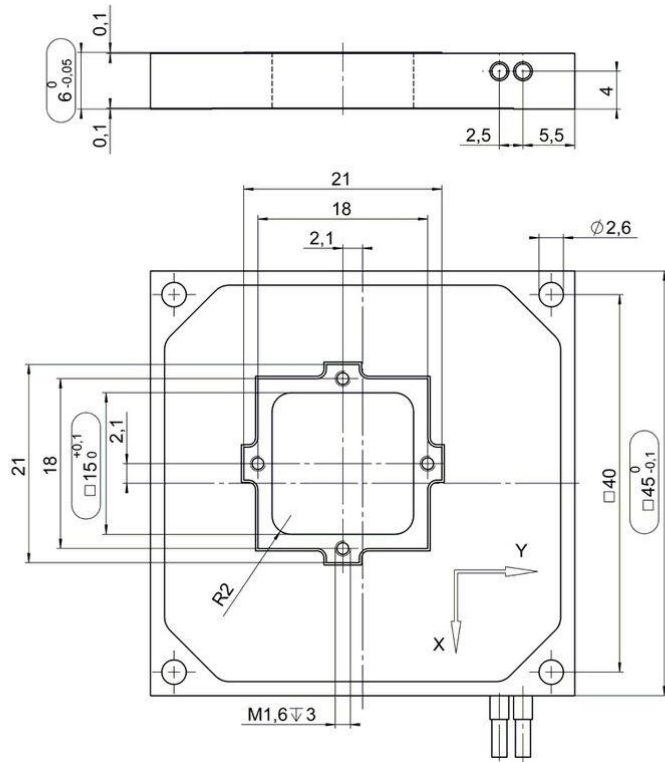
[E-503 Piezo Amplifier Module](#)

[E-509 Signal Conditioner / Piezo Servo Module](#)

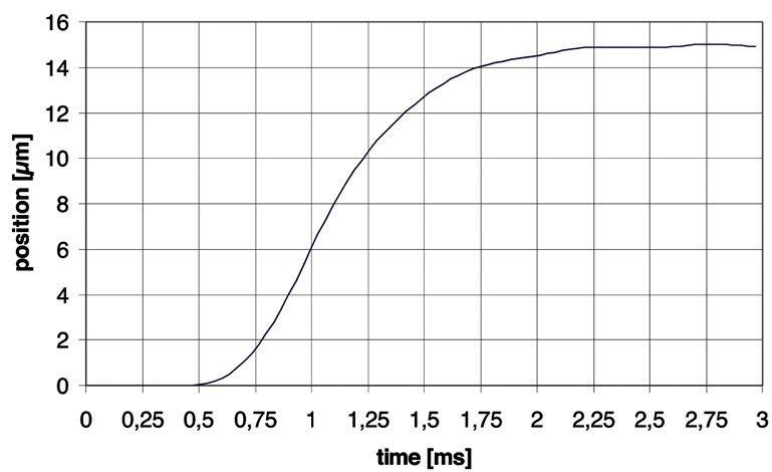
## Related Products

[P-612.2 XY Piezo Nanopositioning System](#)

## Drawings / Images



The resonant frequency of an unloaded P-713 scanner is over 2 kHz



Settling time for the P-713 at 15 µm is in the 2 ms range