

# PIFOC® Objective Scanning System 400 µm

HIGH- DYNAMICS PIEZO DRIVE FOR SUB- NANOMETER RESOLUTION



## PD72Z2x/4x

- + Complete system with digital controller, software and thread adapter
- + Travel ranges to 400 µm
- + Scans and positions objectives with sub-nanometer resolution
- + Frictionless, high- precision flexure guiding system
- + Direct metrology with capacitive sensors

## PIFOC® Objective Scanning System with Digital Controller and Software

Clear aperture up to Ø 29 mm. QuickLock adapter for easy attachment

## Direct Metrology with Capacitive Sensors, Digital Controller

For highest linearity and stability. All control parameters can be set and optimized by software

## Interfaces

USB, RS-232 and analog

## User Software and Functions

PIMikroMove, PI General Command Set (GCS). Drivers for LabVIEW, shared libraries for Windows and Linux. Compatible with µManager, MetaMorph, MATLAB

## Fields of Application

Microscopy, confocal microscopy, 3- D imaging, screening, autofocus systems, surface analysis, wafer inspection, multi- photon microscopy

## Specifications

	PD72Z2CAA / PD72Z2CAQ	PD72Z4CAA / PD72Z4CAQ	Units	Tolerance
Active axes	Z	Z		
<b>Motion and positioning</b>				
Integrated sensor	Capacitive	Capacitive		
Closed- loop travel	250	400	µm	
Closed- loop resolution	1.5	2.5	nm	typ.
Linearity, closed- loop	0.06	0.06	%	typ.
Repeatability	±5	±5	nm	typ.
Runout $\theta_x$	6	10	µrad	typ.
Runout $\theta_y$	45	45	µrad	typ.
Crosstalk in X	20	60	nm	typ.
Crosstalk in Y	40	60	nm	typ.
Settling time (0.5 µm step with 5 % accuracy, 150 g)	15	20	ms	typ.
<b>Mechanical properties</b>				
Stiffness in motion direction	0.17	0.12	N/µm	±20 %
Unloaded resonant frequency	330	230	Hz	±20 %
Resonant frequency @ 150 g	140	120	Hz	±20 %
Push / pull force capacity in motion direction	100 / 20	100 / 20	N	max.
<b>Drive properties</b>				
Piezo ceramics	PICMA® P-885	PICMA® P-885		
<b>Miscellaneous</b>				

Operating temperature range	10 to 50	10 to 50	°C
Material	Aluminum	Aluminum	
Mass	0.23	0.23	kg ±5%
Cable length	1.5	1.5	m
<b>Piezo controller</b>	E-709 (included in delivery)		
Communication interfaces	USB, RS-232		
I/ O Connector	HD- Sub- D 26- pin 1 analog input 0 to 10 V 1 sensor monitor 0 to 10 V 1 digital input (LVTTTL, programmable) 5 digital outputs (LVTTTL, 3 predefined, 2 programmable)		
Command set	PI General Command Set (GCS)		
User software	PIMikroMove		
Software drivers	LabVIEW drivers, shared libraries for Windows and Linux		
Supported functionality	Wave generator, data recorder, auto zero, trigger I/ O, MATLAB, MetaMorph, µManager		
Controller dimensions	160 mm × 96 mm × 33 mm		

## Order Information

### PD72Z2CAA

Fast PIFOC® Piezo Nanofocusing Z Drive, 250 µm, Capacitive Sensor, M32 Large Aperture QuickLock Thread Adapters, Digital Controller with USB, RS-232

### PD72Z2CAQ

Fast PIFOC® Piezo Nanofocusing Z Drive, 250 µm, Capacitive Sensor, M25 QuickLock Thread Adapters, Digital Controller with USB, RS-232

### PD72Z4CAA

Fast PIFOC® Piezo Nanofocusing Z Drive, 400 µm, Capacitive Sensor, M32 Large Aperture QuickLock Thread Adapters, Digital Controller with USB, RS-232

### PD72Z4CAQ

Fast PIFOC® Piezo Nanofocusing Z Drive, 400 µm, Capacitive Sensor, M25 QuickLock Thread Adapters, Digital Controller with USB, RS-232

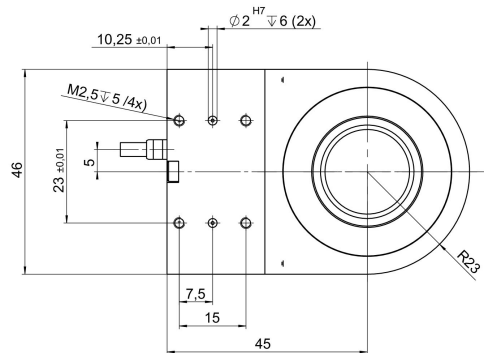
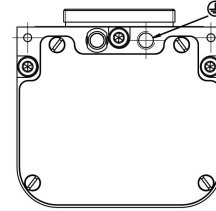
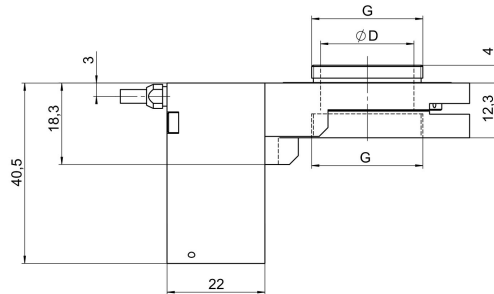
## Controllers / Drivers / Amplifiers

[E-709 Compact and Cost- Optimized Digital Piezo Controller](#)

## Related Products

[P-725 PIFOC® Long- Travel Objective Scanner](#)

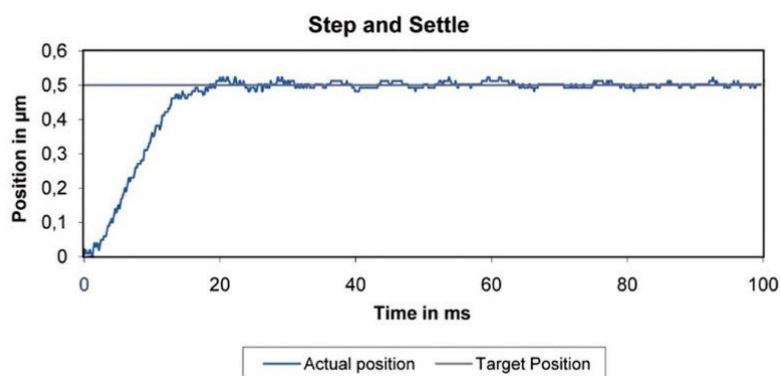
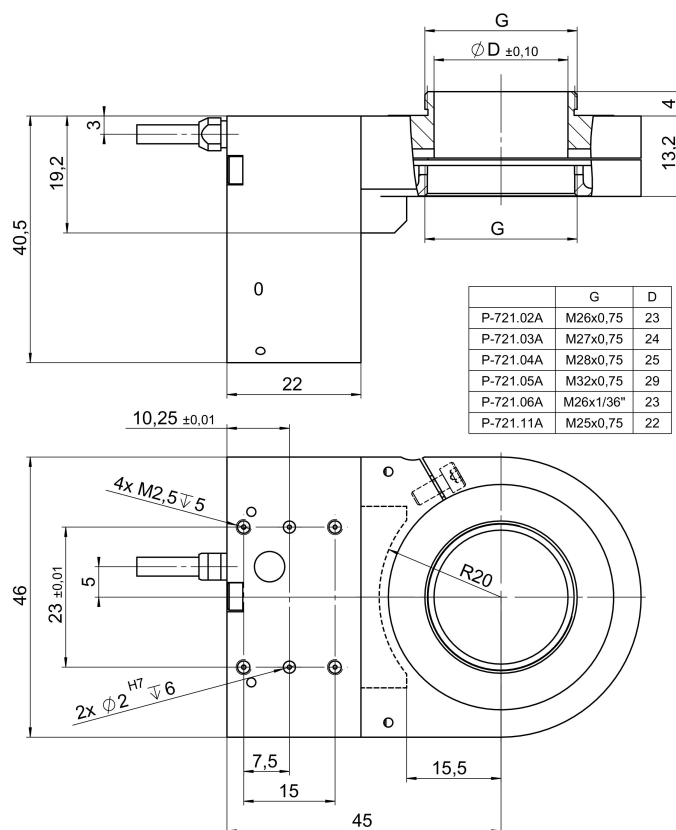
## Drawings / Images



	G	D
P-721.02Q	M26x0,75	21
P-721.03Q	M27x0,75	21
P-721.04Q	M28x0,75	21
P-721.05Q	M32x0,75	21
P-721.06Q	M26x1/36"	21
P-721.08Q	M19x0,75	14
P-721.11Q	M25x0,75	21
P-721.12Q	W0,8x1/36"	14

PD72ZxCAQ with  
M25- QuickLock  
adapter, dimensions in  
mm

PD72ZxCAA with M32-QuickLock thread adapter with large aperture, dimensions in mm



20 ms settling time with 150 g objective (PD72Z4CAQ system, measured with laser interferometer)