

ANPz51/RES

linear, vertical stepper positioner with resistive encoder for closed loop operation

Technology	
travel mechanism	inertial piezo drive

Size and Dimensions	
footprint; height	15 x 18; 13.5 mm
maximum size (outer position)	15 x 18; 16 mm

Coarse Positioning Mode	
travel (step mode)	2.5 mm
typical minimum step size	25 nm @ 300 K, 10 nm @ 4 K
maximum speed (@ 300 K, no load)	approx. 1 mm/s

Fine Positioning Mode	
scan range	5 µm @ 300 K, 0.8 µm @ 4 K
scan resolution	sub-nm resolution

Materials (non-magnetic)	
positioner body	Titanium (other materials on request)
actuator	PZT ceramics
connecting wires	insulated twisted pair, Cu
weight	13 g

Load	
maximum vertical load	50 g
maximum static forces along the axis	2.5 N
maximum dynamic force along the axis	1.5 N
maximum torque on the axis	10 Ncm

Mounting	
frontside mounting	---
backside mounting	two threads M2 x 4.5 mm
load mounting	four threads M1.6 x 2 mm

Article Numbers			
/RT Version	1003267	/LT Version	1003268
/HV Version	1003269	/LT/HV Version	1003271
/UHV Version	1003270	/LT/UHV Version	1003272

Compatibility with Electronics	
ANC350 piezo controller	all versions

Working Conditions	
mounting orientation	axis vertical
magnetic field range	0 .. 31 T
temperature range (/RT, /HV, /UHV)	0 .. 100 °C
temperature range (/LT, /LT/HV, /LT/UHV)	10 mK .. 300 K
max. bake out temperature (/UHV, /LT/UHV)	150 °C
minimum pressure (/RT, /LT)	1E-4 mbar
minimum pressure (/HV, /LT/HV)	1E-8 mbar
minimum pressure (/UHV, /LT/UHV)	5E-11 mbar

Connectors and Feedthroughs	/RT, /LT Versions	all /HV, /UHV Versions
connector type	2-pole pin plug, ø 0.5 mm, d = 2 mm,	two female conn., for pin ø 1 mm,
connector type	30 cm cable with connector	30 cm cable with connector
electrical feedthrough solution	COC230/LT	COC230/HV, COC230/UHV
encoder connector	additional 3-pole plug	3 additional female connectors

Temperature Dependent Data	@ 300K	@ 4K (only /LT versions)
input voltage range	0 .. +100V	0 .. +100V
typical actuator capacitance	1050 nF	typically 150 nF
typical step size (min .. max)	0.05 .. 3 µm	10 .. 500 nm @ 4 K
fine positioning range	5 µm	0.8 µm

Accuracy of Movement	
repeatability of step sizes	typically 5 % over full range
forward / backward step asymmetry	typically 5 - 10 % depending on load

Position Encoder	
readout mechanism	resistive encoder, potentiometric measurement
sensor power (when measuring)	< 1 mW possible
encoded travel range	full travel
sensor resolution	approx. 200 nm
repeatability	1 - 2 µm
linearity (over full travel)	1%

