

ECS3070/NUM(+)

nanoprecise closed loop stepper positioner for linear, horizontal motion with optoelectronic sensor

Technical Specifications

Technology

travel mechanism inertial piezo drive

Size and Dimensions

footprint; height 30 x 70; 9.5 mm
maximum size 30 x 111.6; 9.5 mm
weight (aluminum/stainless steel) 69/129 g

Coarse Positioning Mode

input voltage range 0 .. 60 V
typical actuator capacitance 1.15 μ F @ 300K
travel range (step mode) 40 mm
typical minimum step size 0.05 μ m
maximum drive velocity (@ 45 V) 4.5 mm/s

Fine Positioning Mode

input voltage range 0 .. 60 V
fine positioning range 0 .. 1.6 μ m
fine positioning resolution sub-nm

Materials

positioner body (/RT) aluminum
positioner body (/HV, /UHV) stainless steel
actuator PZT ceramics
connecting wires insulated twisted pair, copper
bearings stainless steel

Load (@ ambient conditions)

mounting orientation: axis horizontal

maximum load 210 N (21kg)
maximum dynamic force along the axis 1 N
/HL/RT - ambient conditions 5 N
/HL/UHV - UHV conditions 3 N

Mounting

from the top 4 through holes dia 2.2 mm, cntrbr. f. M2
from the bottom 8 threads M2.5 x 2.5 mm
load on top 16 threads M2 x 2.3 mm
load at the front L-bracket

Compatibility with Electronics

ECC100 piezo positioning controller all versions

Working Conditions

mounting orientation arbitrary
temperature range (/RT, /HV, /UHV) 0 .. 100 °C
max. bake out temperature (/UHV) 150 °C
minimum pressure (/RT) 1E-4 mbar
minimum pressure (/HV) 1E-8 mbar
minimum pressure (/UHV) 5E-11 mbar

Accuracy of Movement

yaw angle (over 10 mm travel) < 0.1 mrad
pitch angle (over 10 mm travel) < 0.1 mrad
roll angle (over 10 mm travel) < 0.1 mrad

Position Encoder

readout mechanism optoelectronic: /NUM & /NUM+/(U)HV
sensor power (when measuring) /NUM: 300 mW & /NUM+/(U)HV: 50 mW
encoded travel range entire travel
wavelength of illumination 870 nm
sensor resolution 1 nm
repeatability 50 nm
absolute accuracy < 0.01% of travel range

Connectors and Feedthroughs

/RT Versions

all /HV, /UHV Versions

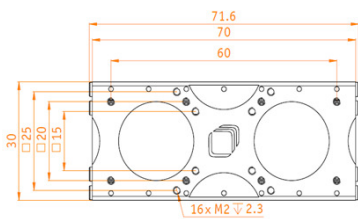
connector type 14-pole connector 15-pin D-Sub connector
50 cm cable with connector 50 cm cable with connector
electrical feedthrough solution --- VFT/HV, VFT/UHV

Article Numbers

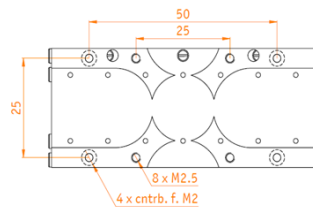
/RT version aluminum 1005663
/HV version stainless steel 1011442
/UHV version stainless steel 1011443
/HL/RT version 1008847
/HL/HV version 1011214
/HL/UHV version 1011215

Technical Drawings

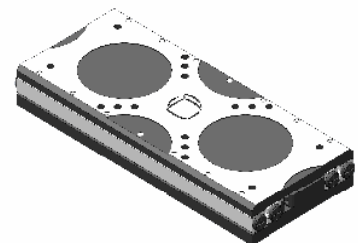
top view



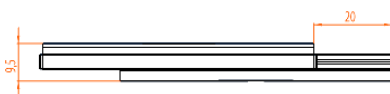
bottom view



3D view



inner position



outer position

