

# ECS3080/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 80; 9.5 mm  
maximum size 30 x 131.6; 9.5 mm  
weight (aluminum/stainless steel) 78/147 g

### Coarse Positioning Mode

input voltage range 0 .. 60 V  
typical actuator capacitance 1.15 µF @ 300K  
travel range (step mode) 50 mm  
typical minimum step size 0.05 µm  
maximum drive velocity (@ 45 V) 4.5 mm/s

### Fine Positioning Mode

input voltage range 0 .. 60 V  
fine positioning range 0 .. 1.6 µm  
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 240 N (24 kg)  
maximum dynamic force along the axis 1 N  
/HL/RT - ambient conditions 5 N  
/HL/UHV - UHV conditions 3 N

### Mounting

from the top 8 through holes dia 2.2 mm, cntrbr. F. M2  
from the bottom 12 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

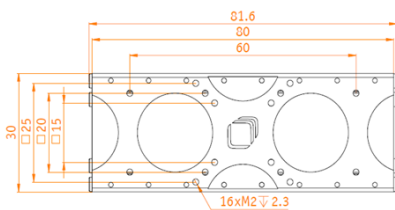
connector type 14-pole connector 15-pin D-Sub connector  
50 cm cable with connector 50 cm cable with connector  
electrical feedthrough solution --- VFT/HV, VFT/UHV

### Article Numbers

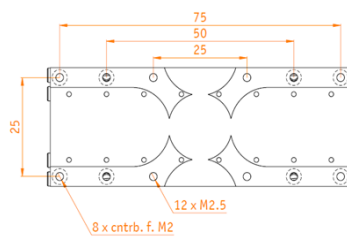
/RT version aluminum 1005664  
/HV version stainless steel 1011444  
/UHV version stainless steel 1011445  
/HL/RT version 1008848  
/HL/HV version 1011218  
/HL/UHV version 1011219

## Technical Drawings

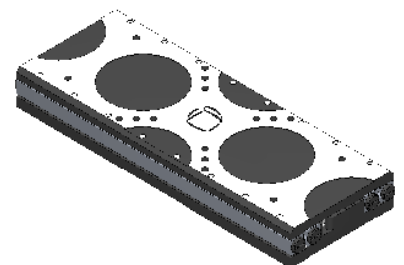
top view



bottom view



3D view



inner position



outer position

