

Precision Vertical Linear Stages

UZ SERIES



The all-steel construction, UZ Series of vertical stages offers two model options: the UZS and the UZM. The UZS is the most compact design and the most economical alternative to other vertical stages, while the UZM is capable of carrying high loads with sub-micron MIM, maintaining excellent position stability.

High Load Applications: UZM

Due to its steel construction and sturdy components, the UZM family is able to carry up to 30 kg loads, such as an MTN100CC linear stage plus an extra 22 kg for the sample.

High-resolution Vertical Motion

In order to ensure consistent operation under high loads, all UZM160 versions are equipped with a precision leadscrew and a 2,000 cts/rev rotary encoder, producing sub-micron MIM performance.

All Steel Construction

A full steel body allows for a more compact design with exceptional stiffness-to-weight ratio, greater thermal stability and high load capacity.

Plug and Play - ESP compatible

The UZ is an ESP-compatible stage. When connected to a Newport controller, it is quickly recognized and its operating parameters are configured without the need for user input. This Plug and Play feature is not only transparent to the use, but it also ensures the safe operation of the stage.

Economical Choice

When compared to the other compact vertical linear stages with unobstructed load access, the UZS is the lowest in price.



UZM Stage

- All steel for high stiffness, thermal stability, repeatable positioning and durability
- Screw mounted rotary encoder produces sub-micron MIM
- Unobstructed access to moving platform from any direction
- Plug and Play - ESP compatible



UZS Stages

Metrology Report Included at No Additional Cost

Newport guarantees specification values which are measured and recorded following ASME B5.57 and ISO 230-2 standards. The typical performance values are two times better than the guaranteed.

Most Compact Design: UZS

With a height of less than 40 mm and footprint of about 261 x 81 mm, the UZS family highlights a small footprint and lowest profile out of any vertical stage. The lower-profile platform design also allows for unobstructed access to the load from any direction.

UZ SERIES

DESIGN DETAILS

UZS80 Stages

Base Material	Stainless Steel
Bearings	Linear ball bearings
Drive Mechanism	2-wedge design with Transmission ratio of 4:1, Backlash-compensated leadscrew
Drive Screw Pitch	0.8 mm
Feedback	UZS80CC: Screw mounted rotary encoder, 4,000 cts/rev, index pulse UZS80PP: None
Limit Switches	Optical
Origin	Optical, at center of travel
Cable	3 m long cable included

UZM160 Stages

Base Material	Steel
Bearings	Linear ball bearings
Drive Mechanism	2-wedge design with transmission ratio of 4:1, Backlash-compensated leadscrew
Drive Screw Pitch	4 mm
Reduction Gear	10:1 ⁽¹⁾
Feedback	Screw mounted rotary encoder, 2,000 cts/rev, index pulse
Limit Switches	Mechanical
Origin	Optical, at center of travel
Cable Length	3 m (included)
Vacuum Compatibility	On request, vacuum compatible version of UZM160PE.05 available up to 10 ⁻⁶ hPa

¹⁾ Additional motor mounted gear on some drive options.

SPECIFICATIONS

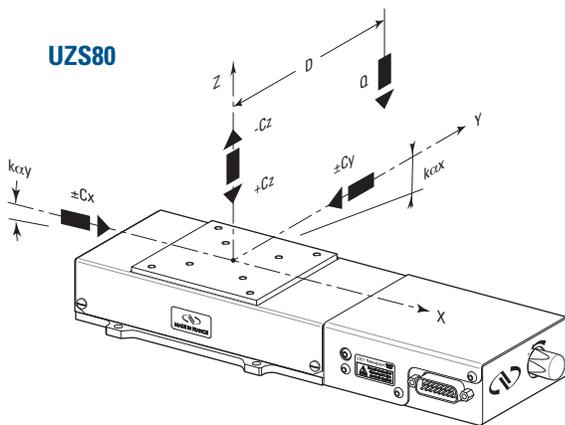
	UZS80CC	UZS80PP
Travel Range (mm)	4.5	
Minimum Incremental Motion (μm)	0.2	
Uni-directional Repeatability, Typical (Guaranteed) ⁽¹⁾ (μm)	1.4	
Bi-directional Repeatability, Typical (Guaranteed) ⁽¹⁾ (μm)	±0.4 (±1.7)	±0.5 (±2.2)
Accuracy, Typical (Guaranteed) ⁽¹⁾ (μm)	±0.35 (±1.5)	±0.35 (±2.0)
Maximum Speed (mm/s)	4	2
Pitch, Typical (Guaranteed) ⁽¹⁾⁽²⁾ (μrad)	150 or ± 75	
Yaw, Typical (Guaranteed) ⁽¹⁾⁽²⁾ (μrad)	200 or ± 100	

	UZM160
Travel Range (mm)	9
Minimum Incremental Motion (μm)	0.2
Uni-directional Repeatability, Typical ⁽¹⁾ (μm)	0.25
Bi-directional Repeatability, Typical ⁽¹⁾ (μm)	2.75
Accuracy, Typical ⁽¹⁾ (μm)	±4
Maximum Speed (mm/s)	UZM160CC.05 & UZM160PP.05: 1 UZM160PE.05: 0.1
Pitch, Typical ⁽¹⁾⁽²⁾ (μrad)	±50
Yaw, Typical ⁽¹⁾⁽²⁾ (μrad)	±100

¹⁾ For the definition of Typical and Guaranteed specifications see "Motion Basics Terminology & Standards" Tutorial at www.newport.com

²⁾ To obtain arcsec units, divide μrad value by 4.8.

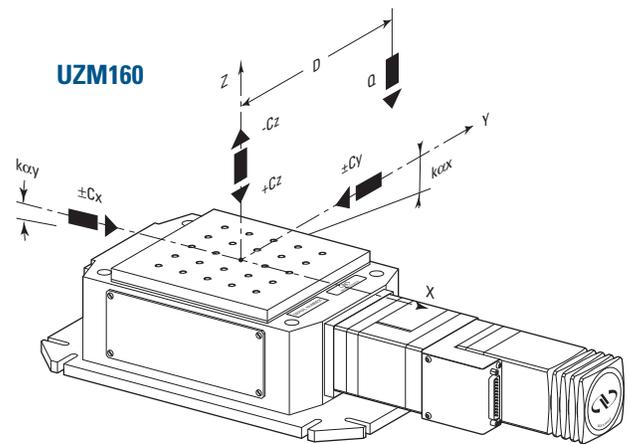
LOAD CHARACTERISTICS AND STIFFNESS



Cz,	Normal centered load capacity	±30 N
-Cx, +Cx,	Axial load capacity	±150 N
Kcx,	Compliance in roll	100 μrad/Nm
Kcy,	Compliance in pitch	100 μrad/Nm
Q x D,	Maximum torque	0.75 Nm

Where Q = Off-center load (N)

D = Cantilever distance (m)



Cz,	Normal centered load capacity	-200 N; +300 N
-Cx, +Cx,	Axial load capacity	±200 N
Kcx,	Compliance in roll	0.13 μrad/Nm
Kcy,	Compliance in pitch	0.65 μrad/Nm
Q x D,	Maximum torque	20 Nm

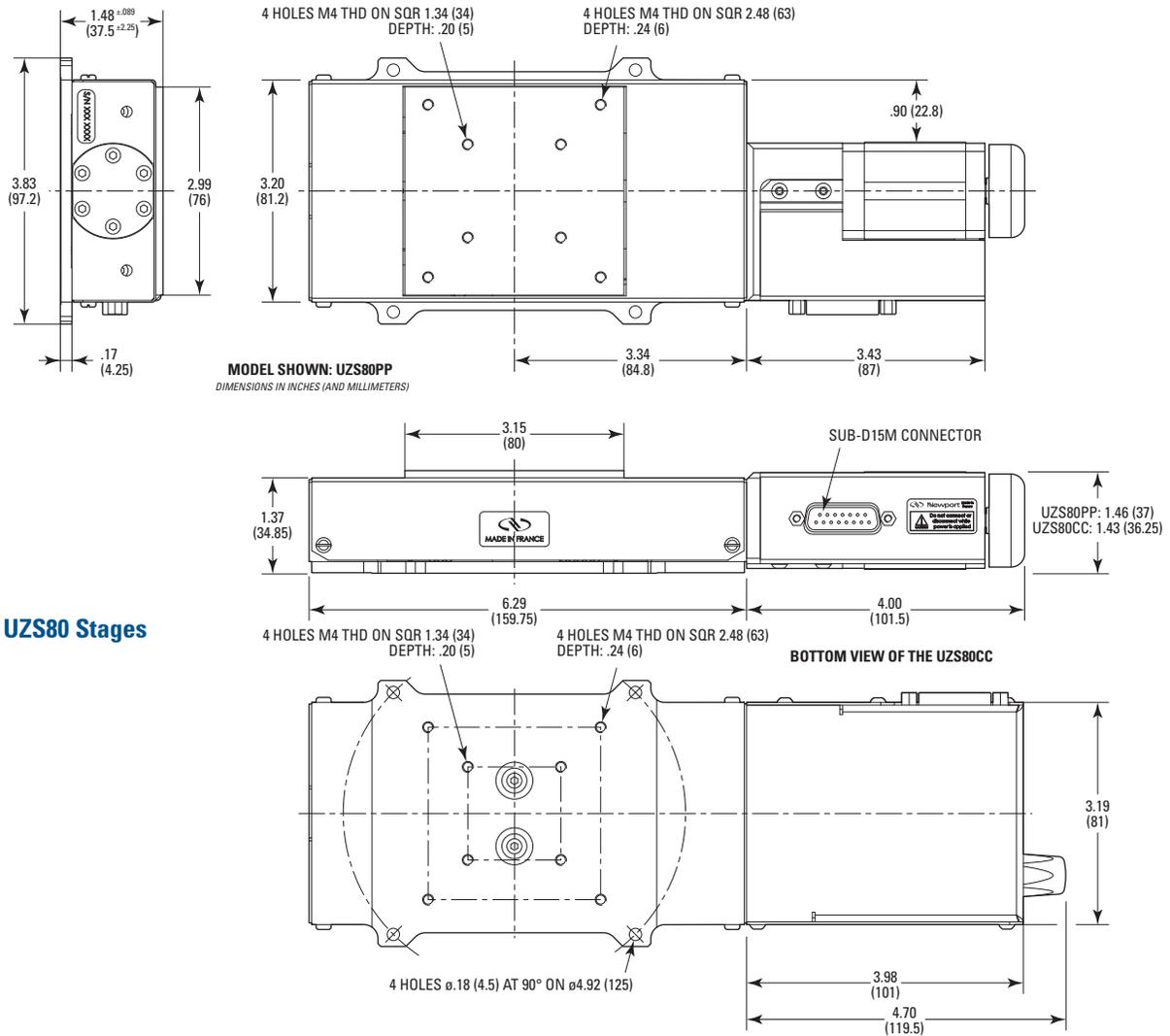
Where Q = Off-center load (N)

D = Cantilever distance (m)

RECOMMENDED CONTROLLERS/DRIVERS

Model	Description
XPS-D	1- to 8-axis universal high-performance motion controller/driver
XPS-DRV11	Universal digital driver card for stepper, DC and direct motors
XPS-RL	1- to 4-axis universal high-performance motion controller/driver
XPS-DRV01	PWM drive module for DC brush and stepper motors, 3 A/43 V max.
ESP301	1- to 3-axis motion controller/driver
SMC100CC	Single-axis DC motor controller/driver
SMC100PP	Single-axis stepper motor controller/driver

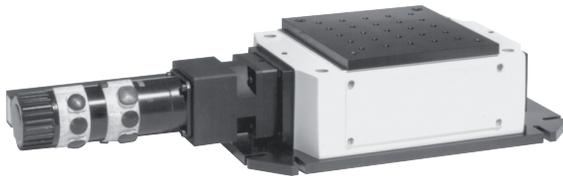
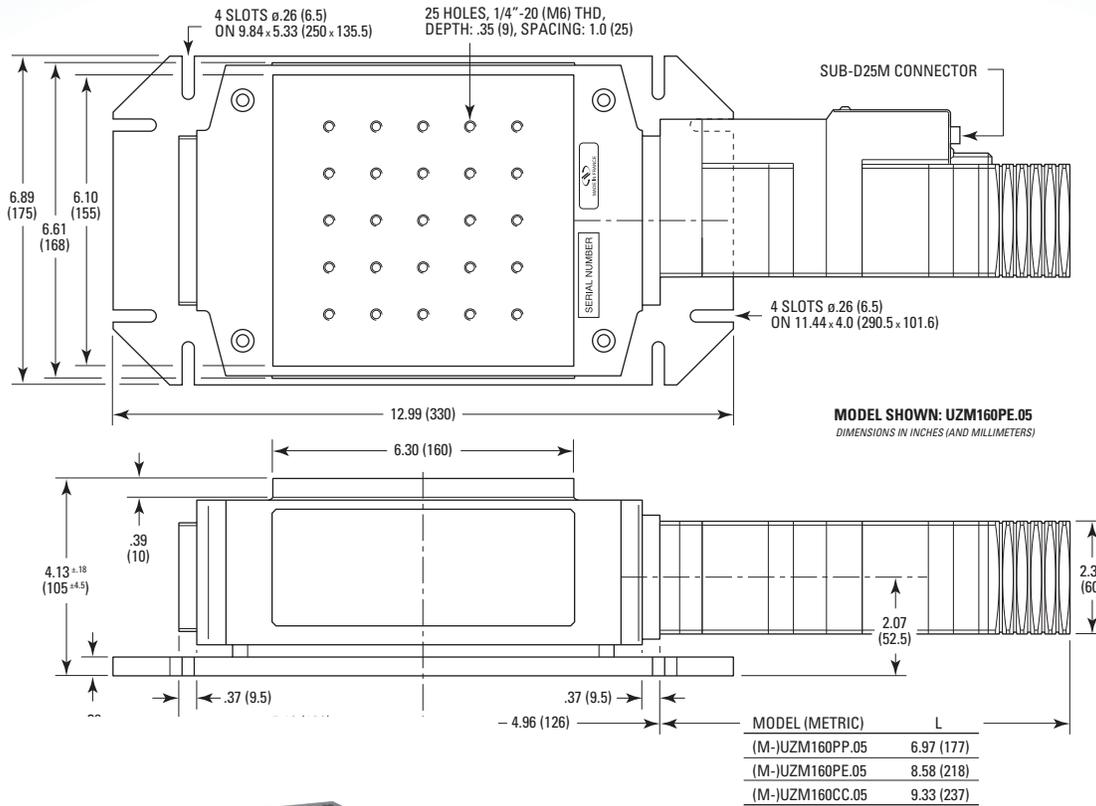
DIMENSIONS



UZS80 Stages



UZM160 Stages



UZM160CC.05



UZM160PP.05

ORDERING INFORMATION

Model	Description
UZS80CC	Vertical Stage, 4.5 mm Travel, DC Drive, 30 N Load, M4 Thread
UZS80PP	Vertical Stage, 4.5 mm Travel, Full Step Drive, 30 N Load, M4 Thread
UZM160CC.05	Vertical Stage, 9 mm Travel, DC Drive, 300 N Load, 1/4"-20 Thread
M-UZM160CC.05	Vertical Stage, 9 mm Travel, DC Drive, 300 N Load, M6 Thread
UZM160PE.05	Vertical Stage, 9 mm Travel, Full Step Drive, 300 N Load, 1/4"-20 Thread
M-UZM160PE.05	Vertical Stage, 9 mm Travel, Full Step Drive, 300 N Load, M6 Thread
UZM160PP.05	Vertical Stage, 9 mm Travel, Micro Step Drive, 300 N Load, 1/4"-20 Thread
M-UZM160PP.05	Vertical Stage, 9 mm Travel, Micro Step Drive, 300 N Load, M6 Thread

ACCESSORIES

Model	Description
M-CAP-M41	Captive Screws, Set of 4, XY Assemblies
M-CAP-M61	Captive Screws, MTN XY Mounting
UTS-TP	Top Plate, UTS Stages with English Holes
M-PBN12	ase Plate, Used with UMR12 Series, MVN120 & UTR120 Series



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