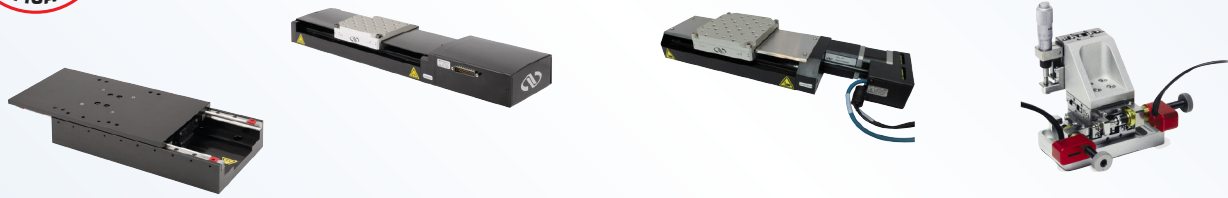


MOTORIZED LINEAR STAGES
MOTORIZED VERTICAL STAGES
MOTORIZED ROTATION STAGES
MOTORIZED LINEAR ACTUATORS
HEXAPODS
CONTROLLERS AND DRIVERS
MOTORIZED OPTICAL MOUNTS
BEAM MANAGEMENT
SPECIAL COLLECTIONS



Motorized Linear Stage Selection Guide



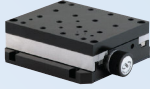






Motorized Linear Stages from Newport and New Focus are designed and built with over 50 years of experience in providing solutions to many markets including research and academia, industrial, semiconductor, aerospace and defense. Starting from the XM family of direct drive ultra-precision stages to the compact Agilis piezomotor linear stage, there are over 200 models of stages to choose from. Many more linear positioning solutions can be created by matching our popular manual stages with the wide selection of compatible motorized actuators.

Linear motorized stages can be selected based on Travel, Minimum Incremental Motion, Repeatability, Accuracy, Speed, etc. To begin, use the selection guides below with more details in the following product family pages.

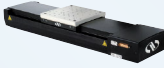
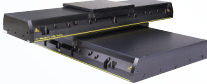
Mid-Range Travel Linear Stage Selection

Series	Travel Range (mm)	Minimum Incremental Motion (μm)	Bi-directional Repeatability (μm)	Accuracy (μm)	Maximum Speed (mm/s)	Centered Load Capacity (Cz)(N)
 XM-S Series Ultra-Precision Linear Motor Stages see page 34	50 - 350	0.001	0.08	1.5 - 3.0	300	100 - 300
 GTS Series High-Precision Linear Stages see page 37	70, 150	0.1	0.2	2.0	50	100
 ILS Series High-Performance Mid-Range Travel Linear Motor Stages see page 39	50 - 300	0.01-1	0.6-2	3-10	100-500	250
 IDL-BL Mid-Travel Industrial Linear Stages see page 45	150, 300	1	2	6-10	300	450
 DL Series Affordable Linear Motor Optimized for Ultrafast Spectroscopy see page 49	125 - 325	0.075	0.3	3-5	500	20N
 FMS Series Linear Metrology Stages see page 54	100 - 300	0.1 - 0.5	3-5.5	6-13	20 - 100	150
 MTN Series Mid-Travel Steel Linear Stages see page 56	100 - 300	0.1-0.6	3-5.5	5-6	40-100	1000
 UTS Series Mid-Travel Steel Linear Stages see page 58	50 - 150	0.3	3.5 - 6.0	4.5 - 8.0	20-40	100 - 200
 FCL Series Intelligent Stepper Motor Linear Stages see page 62	50 - 200	0.15	5-5.5	4-8	20	250
 One-XY Integrated XY Linear Stages see page 64	50 - 290	0.05	0.16-0.2	1-6	200	100 - 350

Miniature Linear Stage Selection

Series		Travel Range (mm)	Minimum Incremental Motion(μm)	Bi-directional Repeatability (μm)	Accuracy (μm)	Maximum Speed (mm/s)	Centered Load Capacity (Cz)(N)
	VP-25X Precision Compact Linear Stages see page 51	25	0.01 - 0.1	0.14 - 0.2	2.0	25	40 - 60
	MFA Series Miniature Steel Linear Stages see page 60	25	0.1	1.5	6.0	1 - 2.5	50
	NPX Series NanoPositioning Linear Stages see page 66	0.1 - 0.4	0.0002 - 0.008	NA	NA	NA	16-110
	Agilis™ Series Piezo Motor Driven Linear Stages see page 67	12, 27	0.05	NA	NA	0.5	3
	Multi-Axis Kinematic Alignment Stages see page 69	3	<30 nm	NA	NA	NA	NA
	Linear Stages with Integrated Picomotors see page 70-76	10 - 25	< 0.3	NA	Depends on actuators and stages used		
	Picolis Integrated Picomotor Linear Stage see page 77	15	<30 nm	NA	Depends on actuators and stages used		

Long-Range Travel Linear Stage Selection

Series		Travel Range (mm)	Minimum Incremental Motion(μm)	Bi-directional Repeatability (μm)	Accuracy (μm)	Maximum Speed (mm/s)	Centered Load Capacity (Cz)(N)
	IMS Series High-Performance Long-Travel Linear Stages see page 42	300 - 1200	0.02 - 1.25	0.5 - 2.5	8-30	100 - 1000	600
	IDL-LM Series Industrial Linear Stages see page 47	300 - 1200	0.05-1	1.2-2	4-10	2000	450-2000

MOTORIZED LINEAR STAGES
MOTORIZED VERTICAL STAGES
MOTORIZED ROTATION STAGES
MOTORIZED LINEAR ACTUATORS
HEXAPODS
CONTROLLERS AND DRIVERS
MOTORIZED OPTICAL MOUNTS
BEAM MANAGEMENT
SPECIAL COLLECTIONS

MOTORIZED LINEAR STAGES
MOTORIZED VERTICAL STAGES
MOTORIZED ROTATION STAGES
MOTORIZED LINEAR ACTUATORS
HEXAPODS
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MOTORIZED OPTICAL MOUNTS
BEAM MANAGEMENT
SPECIAL COLLECTIONS

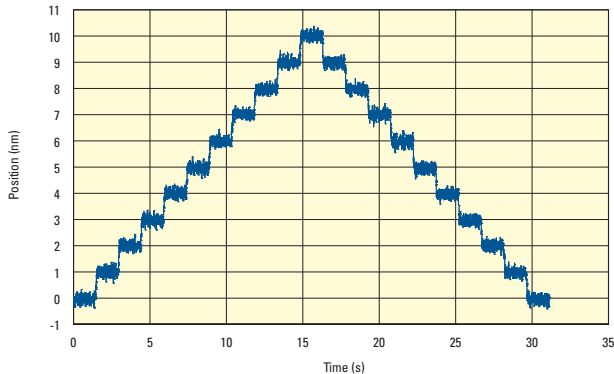
XM-S Series

Ultra-Precision Linear Motor Stages

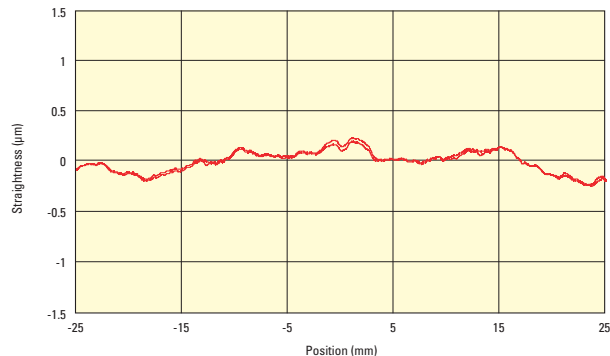


- Ultra-high Performance with 1 nm Minimum Incremental Motion
- Non-contact, direct-drive system for ultra-precision, high dynamics & reliability
- Sub-nm, high precision glass scale encoder with 80 nm repeatability
- Extra-large, ironless, high-efficiency linear motor minimizes heat generation
- Ultra-quiet anti-creep crossed roller bearings assure ripple-free motion
- Optional granite bases ensures ultra flat mounting conditions for optimal performance

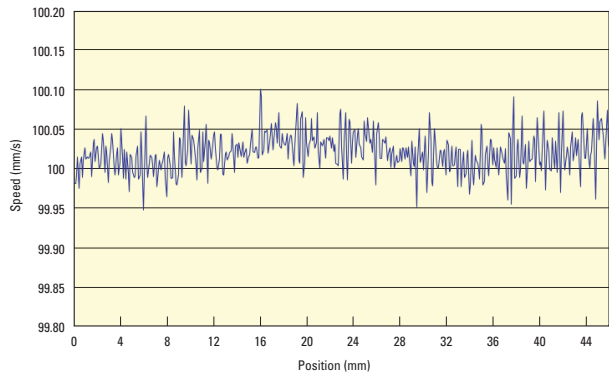
The XM-S Series of Ultra-Performance Linear Stages deliver world-leading dynamic performance capable of consistent, reliable motion to 1 nm. Innovative and compact; XM stages provide robust, repeatable motion with outstanding accuracy on the most complex trajectories. Featuring precision engineered components and design that minimizes both wear and motor heating, XM-S performance maximizes your motion investment for the long-term. XM-S stages are stackable with other Newport stages to address multi-axis application needs. For critical positioning applications, micropositioning calibration service is available to improve the on-axis accuracy of XM-S stages to 1 μm per 100 mm travel, using an error mapping compensation feature of XPS motion controllers. Applications include laser machining, semiconductor wafer process, sensor test and calibration, ultra-precision assembly and more. A test certificate is provided with XM stages at no additional charge.



Ultra-high performance XM-S Stages are capable of 1 nm incremental motion in a controlled environment using an XPS-D controller and an XPS-DRV11 driver.



XM-S stages deliver ripple-free motion as required by many precision scanning and wafer inspection processes. Shown is the straightness of an XMS50-S during one forward and return cycle, measured with an interferometer.



XM-S stages provide exceptional speed stability in continuous scanning or laser machining applications. Shown is the speed of an XMS50-S gathered at a rate of 1 kHz using an interferometer.



Accuracy of a XMS50-S stage after linear error correction. The data was taken dynamically at a rate of 10 kHz while the stage was moving at a speed of 100 mm/s. Both the encoder and the interferometer positions were acquired by an XPS motion controller with a latency of less than 50 ns between the different signals.

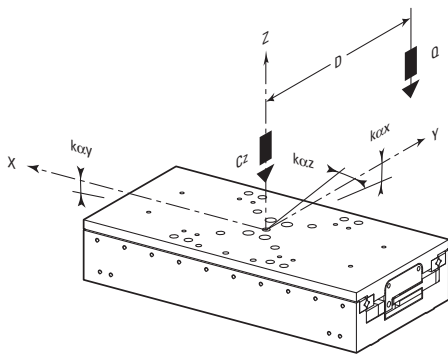
Specifications

	XMS50-S	XMS100-S	XMS160-S	XML210-S	XML350-S
Travel Range	50 mm	100 mm	160 mm	210 mm	350 mm
Maximum Speed ¹	300 mm/s				
Centered Load Capacity	100 N			300 N	
Accuracy, Typical	±0.2 μm	±0.3 μm	±0.5 μm		
Minimum Incremental Motion ²	0.001 μm				
Bi-directional Repeatability, Typical	±0.030 μm			±0.032 μm	±0.035 μm
Continuous Motor Force ³	25 N			50 N	
Peak Motor Force	100 N			240 N	
Yaw, Typical	±10 μrad				
Pitch, Typical	±10 μrad	±12 μrad		±15 μrad	±20 μrad
Flatness Typical (Guaranteed) ⁴	±0.37 (±0.75) μm			±0.75 (±1.50) μm	
Straightness Typical (Guaranteed) ⁵	±0.37 (±0.75) μm			±0.75 (±1.50) μm	
Origin Repeatability	±0.025 μm				
Cable Length	5 m				
MTBF	20,000 h (25% load, 30% duty cycle)				
CE	Compliant				
Weight.	2.5 kg	3.5 kg	4.5 kg	13 kg	22 kg

1. Maximum speed is driver dependent. Contact Newport for additional information.
2. MIM depends on driver type and environment, refer to data sheet for more information.
3. Continuous motor force is driver dependent. Contact Newport for additional information.
4. Middle 80% of travel. To obtain arcsec units, divide the μrad value by 4.8.
5. Middle 80% of travel.

Load Characteristics

Model	XMS50-S	XMS100-S	XMS160-S	XML210-S	XML350-S
Cz, Normal centered load capacity (N)		100		300	
Kαx, Compliance in roll (μrad/Nm)	3.5	2.0	1.5	0.5	0.1
Kαy, Compliance in pitch (μrad/Nm)	6.0	2.5	2.0	2.0	0.7
Kαz, Compliance in yaw (μrad/Nm)	8.0	3.5	2.0	1.0	0.2
a, Construction Parameter	109	109	109	155	155



Q	Off-center load, $Q \leq Cz / (1 + D/a)$
D	Cantilever distance in mm
Cz	Normal centered load capacity on bearings



A typical assembly using XML210-S, XMS50-S and GTS30V

MOTORIZED
LINEAR STAGES

Ordering Information

Model	Description
XMS50-S	Ultra-Precision Linear Motor Stage, 50 mm Travel, XMS Series
XMS100-S	Ultra-Precision Linear Motor Stage, 100 mm Travel, XMS Series
XMS160-S	Ultra-Precision Linear Motor Stage, 160 mm Travel, XMS Series
XML210-S	Ultra-Precision Linear Motor Stage, 210 mm Travel, XML Series
XML350-S	Ultra-Precision Linear Motor Stage, 350 mm Travel, XML Series
GB50	Granite Base for XMS50
GB100	Granite Base for XMS100
GB160	Granite Base for XMS160
GB210	Granite Base for XML210
GB350	Granite Base for XML350

MOTORIZED
VERTICAL STAGES

MOTORIZED
ROTATION STAGES

MOTORIZED
LINEAR ACTUATORS

HEXAPODS

CONTROLLERS
AND DRIVERS

MOTORIZED
OPTICAL MOUNTS

BEAM
MANAGEMENT

SPECIAL
COLLECTIONS

Recommended Motion Controllers

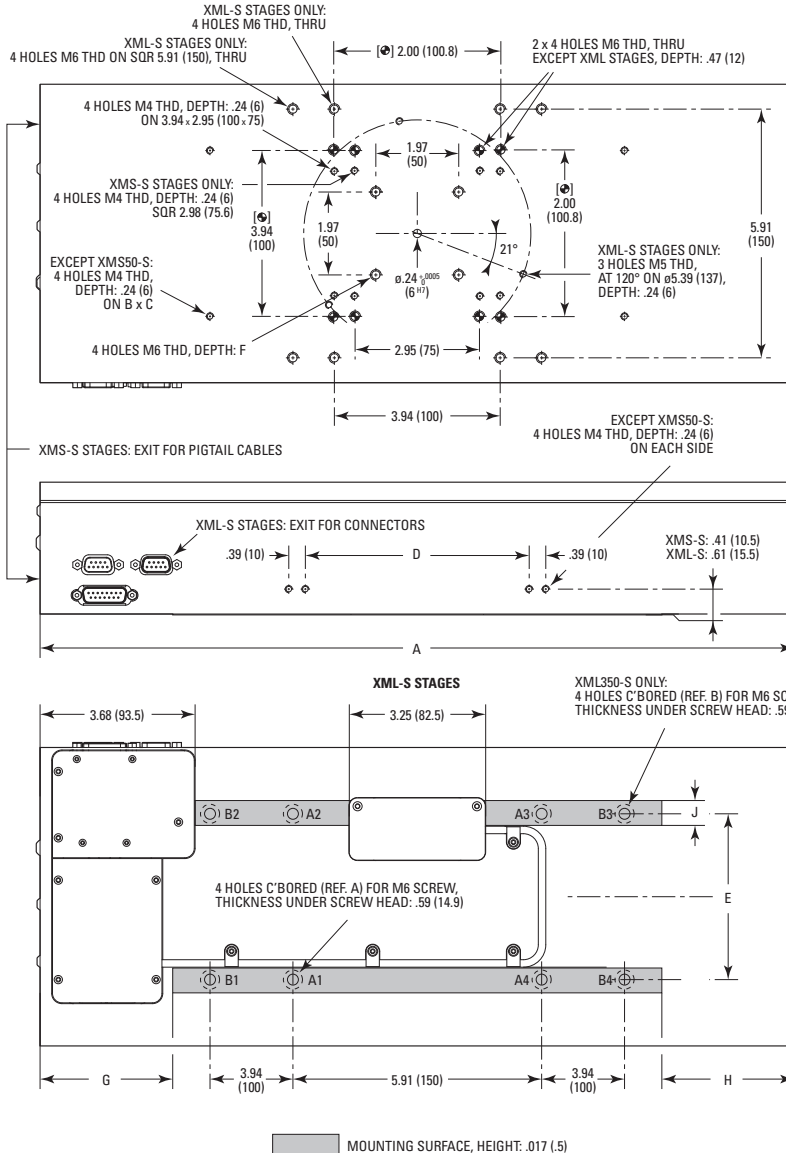
XPS-RL see page 153

XPS-D see page 148

Driver cards and cable kits to be ordered separately. Please refer to compatibility charts on pages 146 and 151.

CAD See our website for CAD files

The flatness of the surface is a major factor in the positioning accuracy and repeatability of a motion system. Polished granite plates are among the flattest, commercially available surfaces. Granite's tight flatness tolerance and extreme hardness make it logical option to complement Newport's Ultra-Precision Linear Motor XM-S series stage. The GB series granite base plates feature 3 point mounting, to make-up for non-flat tables. Edge handles facilitate handling and locating the base plate on the work surface.

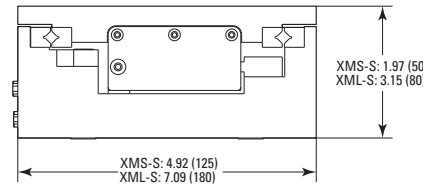


DIMENSIONS IN INCHES (AND MILLIMETERS)

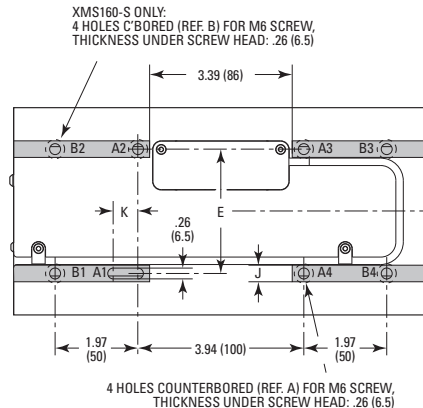
	A	B	C	D	E
XMS50-S	4.92 (125)	-	-	-	2.95 (75)
XMS100-S	7.28 (185)	6.10 (155)	1.77 (45)	5.31 (135)	2.98 (75.6)
XMS160-S	9.84 (250)	7.28 (185)	1.77 (45)	7.87 (200)	2.98 (75.6)
XML210-S	13.98 (355)	9.84 (250)	3.94 (100)	5.31 (135)	3.97 (100)
XML350-S	21.85 (555)	9.84 (250)	3.94 (100)	13.19 (335)	3.97 (100)

	F	G	H	J	K
XMS50-S	.28 (7)	-	-	.39 (10)	.28 (7)
XMS100-S	.28 (7)	-	-	.39 (10)	.59 (15)
XMS160-S	.28 (7)	-	-	.39 (10)	.59 (15)
XML210-S	.47 (12)	2.91 (74)	2.66 (67.5)	.59 (15)	-
XML350-S	.47 (12)	3.15 (80)	3.15 (80)	.59 (15)	-

XMS-S & XML-S STAGE CONNECTORS:
SUB-D9M FOR MOTOR
SUB-D9F FOR END-OF-RUNS & THERMISTANCE
SUB-D15M FOR ENCODER



XMS-S STAGES



GTS Series

High-Precision Linear Stages



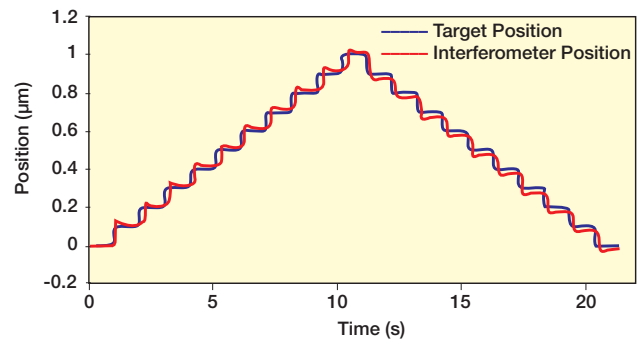
- Ultra-quiet, anti-creep crossed roller bearings for outstanding straightness and flatness without cage migration
- Integrated encoder with exceptional 100 nm MIM, which ensures highly repeatable and accurate motion
- Low friction ball screw drive minimizes stick and slip effects
- Long-term strength and stability
- Plug and Play - ESP compatible



The GTS Series combines the straightness and flatness of crossed-roller bearing stages with improved accuracy and repeatability of higher-end stages.

Specifications

	GTS70	GTS150
Travel Range	70 mm	150 mm
Maximum Speed	50 mm/s	
Minimum Incremental Motion	0.10 μm	
Centered Load Capacity	100 N	
Axial Load Capacity (+Cx)	25 N	20 N
Inverse Axial Load Capacity (-Cx)	-25 N	-20 N
Accuracy, Typical	$\pm 0.30 \mu\text{m}$	$\pm 0.50 \mu\text{m}$
Accuracy, Guaranteed	$\pm 1.0 \mu\text{m}$	$\pm 1.0 \mu\text{m}$
Bi-directional Repeatability, Typical	$\pm 0.10 \mu\text{m}$	$\pm 0.10 \mu\text{m}$
Pitch, Typical	$\pm 15 \mu\text{rad}$	$\pm 30 \mu\text{rad}$
Yaw, Typical	$\pm 15 \mu\text{rad}$	$\pm 25 \mu\text{rad}$
Origin Repeatability	$\pm 0.05 \mu\text{m}$	
Cable Length	3 m	
Weight	2.7 kg	3.6 kg
MTBF	20,000 h (25% load, 30% duty cycle)	
CE	Compliant	

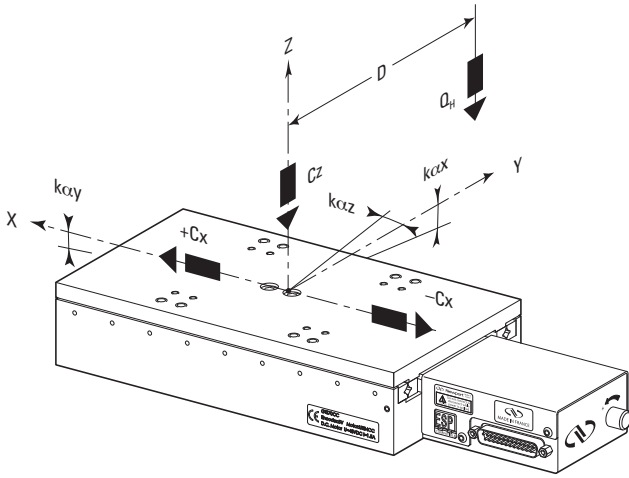


GTS stages deliver 100 nm motion sensitivity with high reliability and stability.



A typical assembly with a GTS150, a GTS70 linear stage and a URS100 rotation stage.

Load Characteristics and Stiffness



Model	GTS70	GTS150
Cz, Normal centered load capacity	100 N	
-Cx, +Cx, Axial load capacity	25 N	20 N
K α_x , Compliance in roll	10 μ rad/Nm	5 μ rad/Nm
K α_y , Compliance in pitch	10 μ rad/Nm	5 μ rad/Nm
K α_z , Compliance in yaw	10 μ rad/Nm	5 μ rad/Nm
Q, Off-center load	$Q \leq C_z / (1 + D / 100)$	
Where D = Cantilever distance in mm		

Ordering Information

Model	Description
GTS70	High Precision Linear Stage, 70 mm Travel, GTS Series
GTS150	High Precision Linear Stage, 150 mm Travel, GTS Series

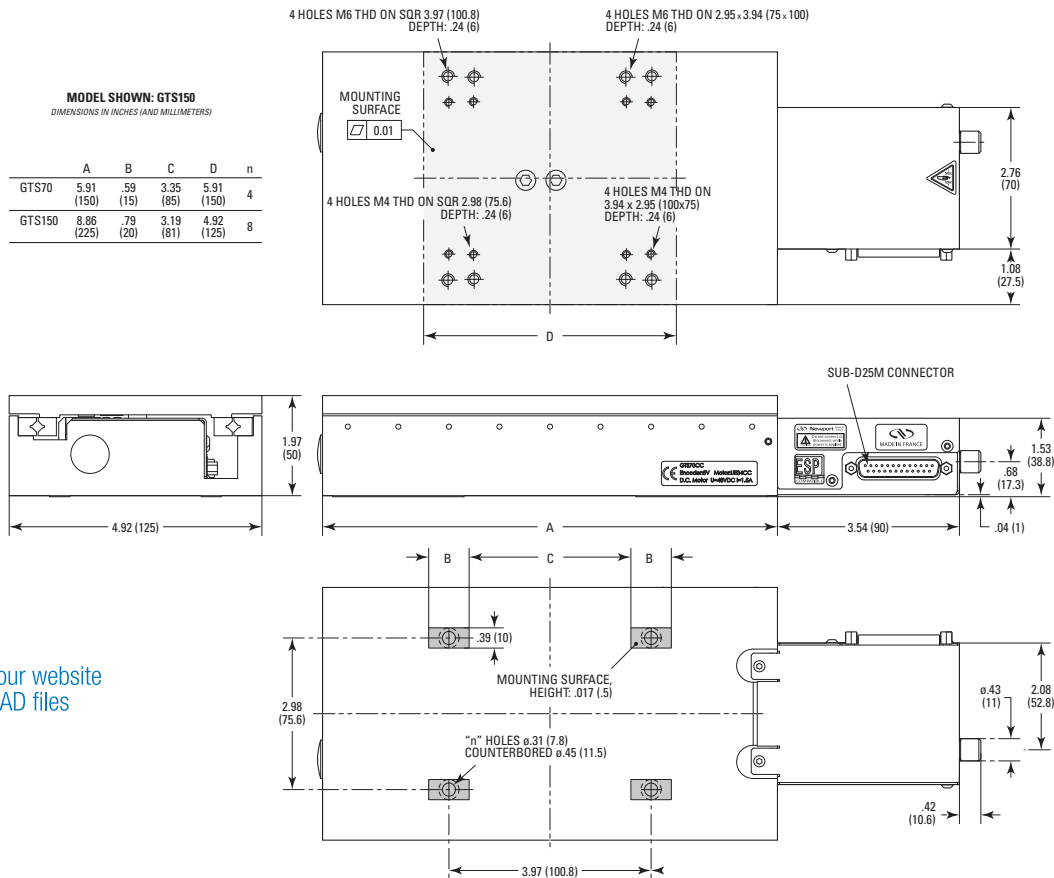
Recommended Motion Controllers

XPS-RL see page 153
XPS-D see page 148
ESP301 see page 157
SMC100CC see page 159

The GTS30V is compatible with both the GTS70 and GTS150.

Driver cards to be ordered separately. Please refer to Stage to Controller compatibility chart on page 146. Motor cables are included.

Dimensions



CAD See our website for CAD files

MOTORIZED LINEAR STAGES
MOTORIZED VERTICAL STAGES
MOTORIZED ROTATION STAGES
MOTORIZED LINEAR ACTUATORS
HEXAPODS
CONTROLLERS AND DRIVERS
MOTORIZED OPTICAL MOUNTS
BEAM MANAGEMENT
SPECIAL COLLECTIONS

ILS Series

High-Performance Mid-Range Travel Linear Stages



scan QR code
to watch video

- Stiff, FEM optimized extruded aluminum body prevents thermal bending effects
- Precision recirculating ball bearing slides provide accurate linear motion without ball cage migration
- 50-300mm of travel
- Ideal for extended use in light industrial applications
- Plug and Play - ESP compatible



The ILS Series is a robust line of sub-micron resolution linear stages, constructed with a light, stiff aluminum body and reliable components capable of high-duty cycle applications.

Specifications

	ILS100LM-S	ILS200LM-S	ILS300LM-S
Travel Range	100 mm	200 mm	300 mm
Accuracy, Guaranteed	±1.5 μm	±2.0 μm	±2.5 μm
Accuracy, Typical	±0.5 μm	±1.0 μm	±1.2 μm
Pitch, Guaranteed	±110 μrad	±135 μrad	±150 μrad
Yaw, Guaranteed	±100 μrad	±125 μrad	±150 μrad
Maximum Speed	500 mm/s		
Minimum Incremental Motion	0.010 μm		
Continuous Motor Force	20 N		
Peak Motor Force	72 N		
Centered Load Capacity	250 N		
Bi-directional Repeatability, Guaranteed	±0.30 μm		
Bi-directional Repeatability, Typical	±0.12 μm		
Pitch, Typical	±20 μrad	±40 μrad	
Yaw, Typical	±15 μrad	±25 μrad	
Thread Type 1	43834		
Weight	2.9 kg	3.7 kg	4.5 kg
CE	Compliant		

Dynamic Specifications (LM Models)

Model	(M-)ILS100LM-S	(M-)ILS200LM-S	(M-)ILS300LM-S
Maximum Acceleration, No Load (m/s ²)	20		
Max. Force (Cont.) (N)	15		
Max Force (Peak) 4 s (N)	30		

For the definition of specifications, visit Newport.com in the Motion Basics and Standards.

	ILS100CC	ILS150CC	ILS200CC	ILS250CC	ILS50CC	ILS100HA	ILS150HA	ILS200HA	ILS250HA	ILS50HA
Travel Range	100 mm	150 mm	200 mm	250 mm	50 mm	100 mm	150 mm	200 mm	250 mm	50 mm
Maximum Speed	100 mm/s									
Minimum Incremental Motion	1.0 μm					0.30 μm				
Centered Load Capacity	250 N									
Axial Load Capacity (+Cx)	40 N									
Inverse Axial Load Capacity (-Cx)	-40 N									
Accuracy, Typical	±0.8 μm	±1.5 μm	±1.2 μm	±1.7 μm	±0.6 μm	±0.6 μm	±1.2 μm	±0.8 μm	±1.5 μm	±0.3 μm
Accuracy, Guaranteed	±2.0 μm	±2.5 μm	±3.7 μm	±5.0 μm	±1.5 μm	±1.5 μm	±2.0 μm	±3.0 μm	±3.75 μm	±2.0 μm
Uni-directional Repeatability, Typical	±0.20 μm	±0.25 μm		±0.35 μm		±0.08 μm				±0.10 μm
Bi-directional Repeatability, Typical	±0.40 μm		±0.45 μm		±0.60 μm	±0.10 μm		±0.15 μm		
Uni-directional Repeatability, Guaranteed	±0.50 μm					±0.08 μm			±0.10 μm	±0.08 μm
Bi-directional Repeatability, Guaranteed ¹	±1.0 μm					±0.10 μm	±0.15 μm			±0.10 μm
Pitch, Typical	±20 μrad	±37 μrad		±42 μrad	±15 μrad	±25 μrad	±50 μrad	±35 μrad	±45 μrad	±17 μrad
Yaw, Typical	±17 μrad	±20 μrad	±25 μrad		±12 μrad	±17 μrad	±25 μrad		±30 μrad	±7 μrad
Yaw, Guaranteed	±37 μrad	±65 μrad	±80 μrad	±95 μrad	±25 μrad	±37 μrad	±65 μrad	±80 μrad	±95 μrad	±25 μrad
Origin Repeatability	±0.5 μm					±0.1 μm				
Cable Length	3 m									
Weight	4.5 kg	4.8 kg	5.1 kg	5.4 kg	4.2 kg	4.5 kg	4.8 kg	5.1 kg	5.4 kg	4.2 kg
MTBF	20,000 h (25% load, 30% duty cycle)									
CE	Compliant									

Ordering Information

Model	Series	Travel (mm)	Drive
M-	ILS	50 100 150 200 250 300 ⁽¹⁾	CC CCL HA PP LM ⁽²⁾

*Example:
The ILS150HA is an ILS stage with 150 mm travel, a DC motor drive with linear encoder, in English version.*

¹⁾ Only for LM drive version.

²⁾ 100, 200 and 300 mm travels only.

- M-: For metric version
- CC: DC motor
- CCL: DC motor for SMC100CC controller
- HA: DC motor with linear encoder
- PP: Stepper motor
- LM: Linear motor

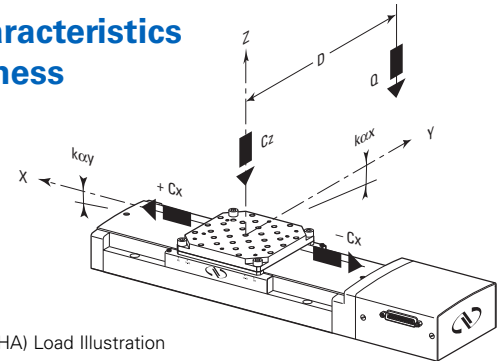
Recommended Motion Controllers

XPS-RL	see page 153
XPS-D	see page 148
ESP301	see page 157
SMC100	see page 159
	ILSCCL and ILSPP only

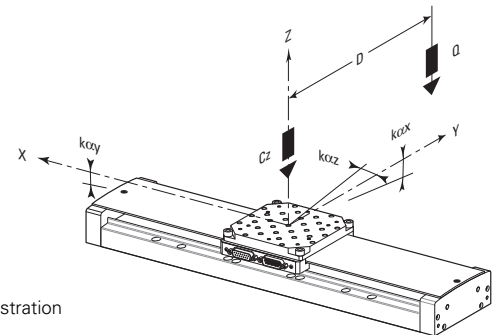
Driver cards to be ordered separately. Please refer to Stage to Controller compatibility chart on page 146. Motor cables are included for the PP and CC versions only.

Order cable kits for -LM stages based on the driver card and XPS controller.

Load Characteristics and Stiffness



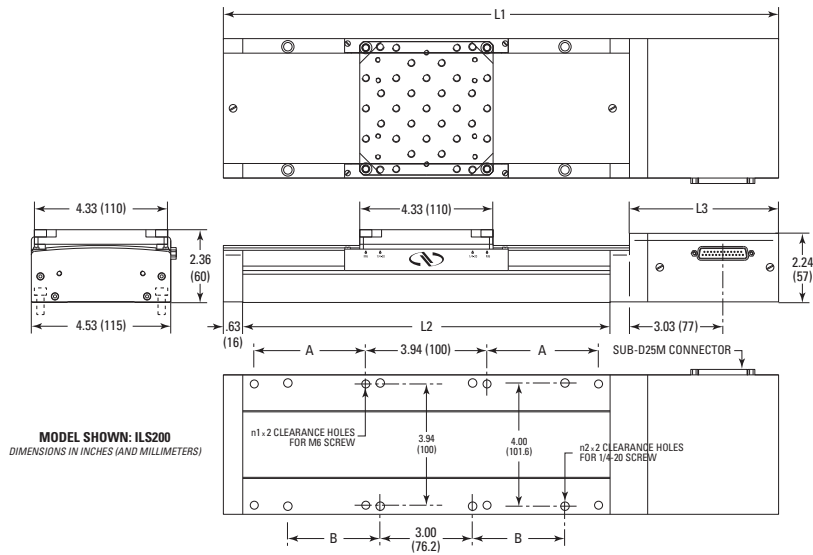
ILS (PP, CC, CCL, HA) Load Illustration



ILS-LM-S Load Illustration

	ILS	ILS-LM-S
C _z , Normal center load capacity on bearings	250 N	
+C _x /-C _x , Direct/Inverse load capacity on X axis	<40 N	-
k _{cx} , Compliance in roll	15 μrad/N.m	
k _{cy} , Compliance in pitch	10 μrad/N.m	
k _{cz} , Compliance in yaw	10 μrad/N.m	
Q, Off-center load	Q ≤ C _z / (1 + D/60)	
D, Cantilever distance in mm		

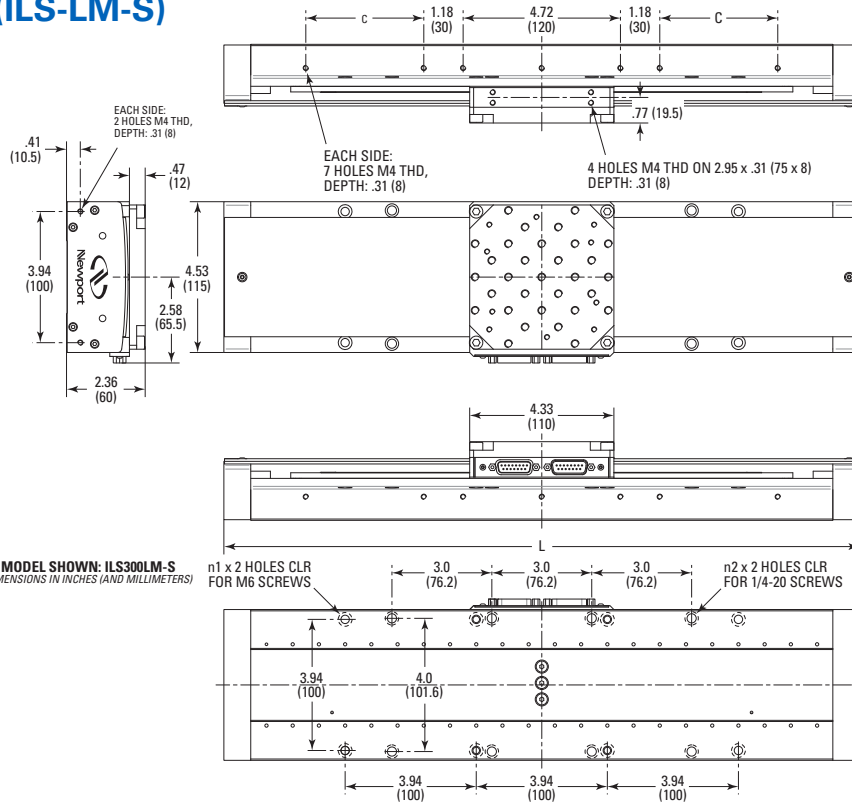
Dimensions (ILS PP, CC, CCL and HA)



MODEL SHOWN: ILS200
DIMENSIONS IN INCHES (AND MILLIMETERS)

Model (Metric)	Dimensions for CC, CCL and PP						Dimensions for HA		
	A	n ₁	B	n ₂	L2	L1	L3	L1	L3
ILS50 (M-ILS50)		2		2	7.99 (203)	14.09 (358)	4.84 (123)	15.5 (394)	6.3 (159)
ILS100 (M-ILS100)		2		2	9.96 (253)	16.14 (408)	4.92 (125)	17.5 (444)	6.3 (159)
ILS150 (M-ILS150)		2	3 in.	4	11.93 (303)	18.11 (458)	4.92 (125)	19.4 (494)	6.3 (159)
ILS200 (M-ILS200)	100 mm	4	3 in.	4	13.90 (353)	20.08 (508)	4.92 (125)	21.4 (544)	6.3 (159)
ILS250 (M-ILS250)	100 mm	4	3 in.	4	15.87 (403)	22.06 (558)	4.2 (125)	23.4 (594)	6.3 (159)

Dimensions (ILS-LM-S)



MODEL SHOWN: ILS300LM-S
DIMENSIONS IN INCHES (AND MILLIMETERS)

MODEL (METRIC)	n ₁	n ₂	C	TRAVEL	L
(M-ILS100LM-S)	2	2	1.08 (27.5)	3.94 (100)	11.22 (285)
(M-ILS200LM-S)	4	4	2.76 (70)	7.87 (200)	15.16 (385)
(M-ILS300LM-S)	4	4	3.54 (90)	11.8 (300)	19.09 (485)

CAD See our website
for CAD files

MOTORIZED LINEAR STAGES
MOTORIZED VERTICAL STAGES
MOTORIZED ROTATION STAGES
MOTORIZED LINEAR ACTUATORS
HEXAPODS
CONTROLLERS AND DRIVERS
MOTORIZED OPTICAL MOUNTS
BEAM MANAGEMENT
SPECIAL COLLECTIONS

IMS Series High-Performance Long-Travel Linear Stages



- Single axis or gantry configurations up to 1200 mm travel
- High stiffness, FEM optimized extruded aluminum body avoids thermal bending effects
- Precision recirculating ball bearing slides provide accurate linear motion without ball cage migration
- Preloaded, backlash-free ballscrew drive allows rapid movement with short step and settling time
- LM version for non-contact drive system with high dynamic response and high reliability in a small footprint

The IMS-S Series linear stage complements the ILS Series by providing longer linear travel ranging from 300 to 1200 mm. The IMS-S stages feature a robust design and high performance at low cost, making them cost-effective solutions for precision industrial and laboratory applications. Features include: recirculating ball bearing slides to provide excellent payload capabilities and long life; FEM-optimized extruded aluminum body to avoid bending effects or deflection under load. The IMS series are available in ball screw and linear motor drive versions. The preloaded, backlash-free ballscrew version provides rapid motion with fast, step and settling times. For PP and CC models, position measurements are read with a 4000 pts/rev. encoder mounted directly on the screw. The CCHA model features an integral linear scale providing 0.1 μm resolution feedback. The linear motor version IMS-LM series employs a centered, high efficiency 3-phase synchronous ironless, linear motor as driving element, providing high speed, high acceleration and high system responsiveness. The IMS series stages are ideal for many precision industrial applications such as semiconductor wafer inspection, micro-electronics test and assembly, pick and place, DNA sequencing or laser machining. The IMS-LM-SA version with 4-pt mounting is ideal for delay lines and other applications on non-flat mounting surfaces.

Ordering Information

Model	Series	Travel (mm)	Drive	4-Point Mounting
M-	IMS	300	CC CCHA PP LM	-SA ⁽²⁾
		400		
		500		
		600		
		800 ⁽¹⁾		
		1000 ⁽¹⁾		
		1200 ⁽¹⁾		

*Example:
The M-IMS800LM-SA-S is a metric version of IMS stage with 800 mm travel, a linear motor drive and 4-point mounting.*

¹⁾ Only for LM drive version.
²⁾ 800, 1000 and 1200 mm travels available.

- M-: For metric version
- CC: DC motor with rotary encoder
- CCHA: DC motor with linear encoder
- PP: Stepper motor with rotary encoder
- LM-S: Linear motor
- SA: 4-point mounting

Dynamic Specifications (LM Models)

Maximum Speed (mm/s), No Load	500
Maximum Acceleration (m/s ²), No Load	26
Max. Force (Cont.) (N)	100
Max Force (Peak) (N)	140

For the definition of specifications, visit Newport.com for the Motion Basics and Standards.

Recommended Motion Controllers

XPS-RL see page 153

XPS-D see page 148

ESP301 see page 157

IMS-PP Only

Driver cards to be ordered separately. Please refer to Stage to Controller compatibility chart on page 146.

Motor cables are included with the CC and PP versions only.

Order cable kits with the -LM stages based on the driver card and XPS controller.

MOTORIZED LINEAR STAGES
MOTORIZED VERTICAL STAGES
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HEXAPODS
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BEAM MANAGEMENT
SPECIAL COLLECTIONS

Specifications

	IMS300LM-S	IMS400LM-S	IMS500LM-S	IMS600LM-S	IMS1000LM-S	IMS800LM-S	IMS1200LM-S
Travel Range	300 mm	400 mm	500 mm	600 mm	1000 mm	800 mm	1200 mm
Maximum Speed ¹	1000 mm/s						
Minimum Incremental Motion	0.020 μ m						
Continuous Motor Force	100 N						
Peak Motor Force	210 N						
Centered Load Capacity	600 N						
Accuracy, Typical	$\pm 1.7 \mu$ m	$\pm 2.0 \mu$ m	$\pm 2.5 \mu$ m	$\pm 3.0 \mu$ m	$\pm 4.0 \mu$ m		$\pm 5.0 \mu$ m
Accuracy, Guaranteed	$\pm 4.5 \mu$ m			$\pm 5.5 \mu$ m	$\pm 7.5 \mu$ m	$\pm 9.0 \mu$ m	
Bi-directional repeatability, Typical	$\pm 0.08 \mu$ m	$\pm 0.08 \mu$ m	$\pm 0.09 \mu$ m	$\pm 0.09 \mu$ m	$\pm 0.10 \mu$ m	$\pm 0.12 \mu$ m	$\pm 0.13 \mu$ m
Bi-directional Repeatability, Guaranteed	$\pm 0.25 \mu$ m				$\pm 0.50 \mu$ m		
Pitch, Typical	$\pm 37 \mu$ rad			$\pm 50 \mu$ rad	$\pm 112 \mu$ rad	$\pm 100 \mu$ rad	$\pm 125 \mu$ rad
Pitch, Guaranteed	$\pm 75 \mu$ rad			$\pm 125 \mu$ rad	$\pm 225 \mu$ rad	$\pm 200 \mu$ rad	$\pm 250 \mu$ rad
Yaw, Typical	$\pm 25 \mu$ rad			$\pm 30 \mu$ rad	$\pm 40 \mu$ rad		
Yaw, Guaranteed	$\pm 50 \mu$ rad	$\pm 75 \mu$ rad	$\pm 75 \mu$ rad	$\pm 75 \mu$ rad	$\pm 150 \mu$ rad		
Origin Repeatability	$\pm 0.05 \mu$ m						
Cable Length	5 m						
Weight	17 kg	19 kg	21 kg	23 kg	28 kg	24 kg	32 kg
MTBF	20,000 h (25% load, 30% duty cycle)						

Also available in a stepper motor IMS-PP version.

1. Maximum speed is reduced to 100 mm/sec for -PP versions.
2. Also available in a metric -M version.

	IMS300CC	IMS400CC	IMS500CC	IMS600CC	IMS300CCHA	IMS400CCHA	IMS500CCHA	IMS600CCHA
Travel Range	300 mm	400 mm	500 mm	600 mm	300 mm	400 mm	500 mm	600 mm
Maximum Speed ¹	200 mm/s							
Minimum Incremental Motion	1.25 μ m				0.20 μ m			
Centered Load Capacity	600 N							
Axial Load Capacity (+Cx)	30 N							
Inverse Axial Load Capacity (-Cx)	-30 N							
Accuracy, Typical	$\pm 2.5 \mu$ m		$\pm 3.0 \mu$ m	$\pm 4.0 \mu$ m	$\pm 2.0 \mu$ m		$\pm 2.5 \mu$ m	$\pm 3.5 \mu$ m
Accuracy, Guaranteed	$\pm 5.0 \mu$ m		$\pm 6.0 \mu$ m	$\pm 9.0 \mu$ m	$\pm 4.0 \mu$ m		$\pm 5.0 \mu$ m	$\pm 6.5 \mu$ m
Uni-directional Repeatability, Typical	$\pm 0.45 \mu$ m	$\pm 0.50 \mu$ m		$\pm 0.50 \mu$ m	$\pm 0.12 \mu$ m			
Bi-directional Repeatability, Typical	$\pm 0.70 \mu$ m	$\pm 0.75 \mu$ m	$\pm 0.75 \mu$ m	$\pm 0.75 \mu$ m	$\pm 0.20 \mu$ m	$\pm 0.20 \mu$ m	$\pm 0.20 \mu$ m	$\pm 0.20 \mu$ m
Bi-directional repeatability, Guaranteed	$\pm 1.25 \mu$ m				$\pm 0.50 \mu$ m			
Uni-directional Repeatability, Guaranteed	$\pm 0.65 \mu$ m				$\pm 0.25 \mu$ m			
Pitch, Typical	$\pm 37 \mu$ rad			$\pm 50 \mu$ rad	$\pm 37 \mu$ rad			$\pm 50 \mu$ rad
Pitch, Guaranteed	$\pm 75 \mu$ rad			$\pm 125 \mu$ rad	$\pm 75 \mu$ rad			$\pm 125 \mu$ rad
Yaw, Typical	$\pm 15 \mu$ rad		$\pm 25 \mu$ rad	$\pm 30 \mu$ rad	$\pm 25 \mu$ rad	$\pm 15 \mu$ rad	$\pm 25 \mu$ rad	$\pm 30 \mu$ rad
Yaw, Guaranteed	$\pm 50 \mu$ rad	$\pm 75 \mu$ rad			$\pm 50 \mu$ rad	$\pm 75 \mu$ rad		
Limit Switches	Optical							
Origin Repeatability	$\pm 0.5 \mu$ m				$\pm 0.1 \mu$ m			
Cable Length	5 m							
Weight	17 kg	18.7 kg	20.3 kg	22 kg	17 kg	18.7 kg	20.3 kg	22 kg
MTBF	20,000 h (25% load, 30% duty cycle)							

Also available in a stepper motor IMS-PP version.

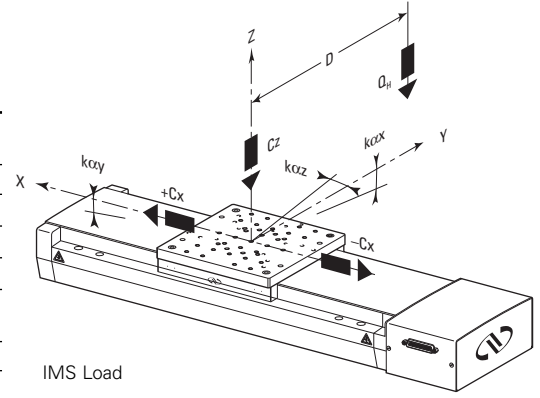
1. Maximum speed is reduced to 100 mm/sec for -PP versions.
2. Also available in a metric -M version

MOTORIZED
LINEAR STAGES

Load Characteristics and Stiffness

	IMS (CC, PP, CCHA)	IMS-LM-S	IMS-LM-SA-S
Cz, Normal centered load capacity-	600 N		100 N
-Cx, +Cx, Axial load capacity	<30 N	-	-
k _{cx} , Compliance in roll	1 μrad/N.m		2 μrad/N.m
k _{cy} , Compliance in pitch	0.2 μrad/N.m		2 μrad/N.m
k _{cz} , Compliance in yaw	1 μrad/N.m		1 μrad/N.m
Q, Off-center load	Q _H , Q _V ≤ Cz / (1 + D/90) and Q _V must be ≤ Cx	Q _H , Q _V ≤ Cz / (1 + D/90) and Q _V must be ≤ Cx	

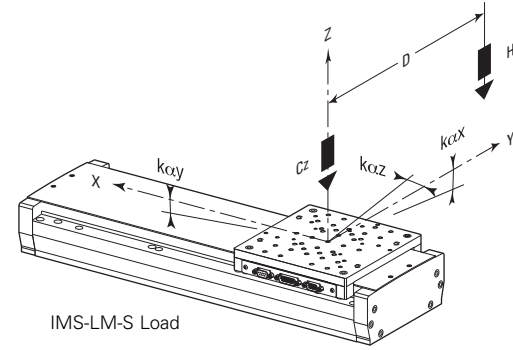
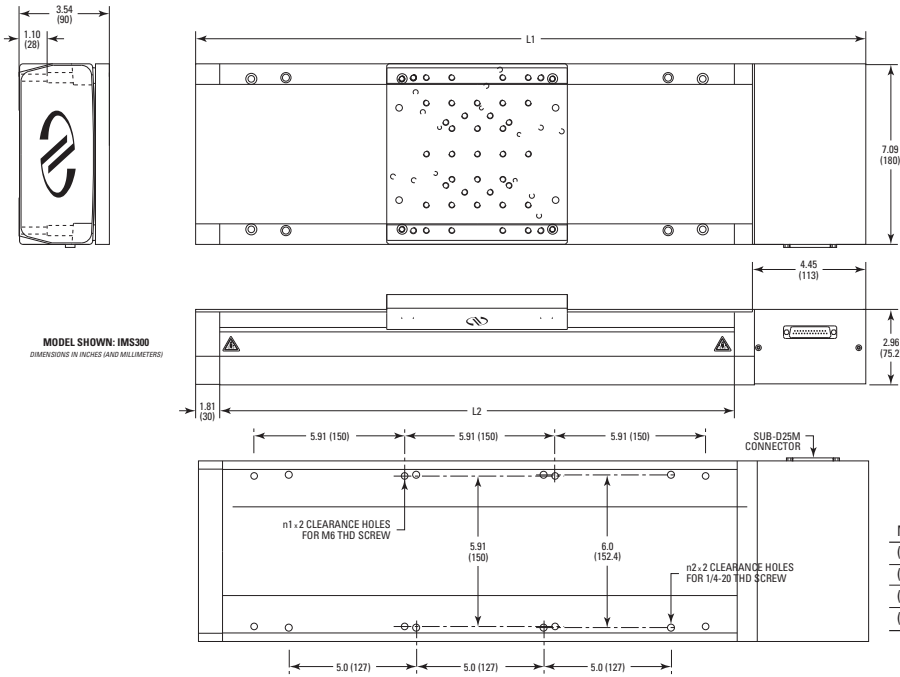
D, cantilever distance in mm between the center of the mass of the load and the bearings center.



IMS Load

MOTORIZED
VERTICAL STAGES

Dimensions (IMS PP, CC, CCHA)



IMS-LM-S Load

MOTORIZED
ROTATION STAGES

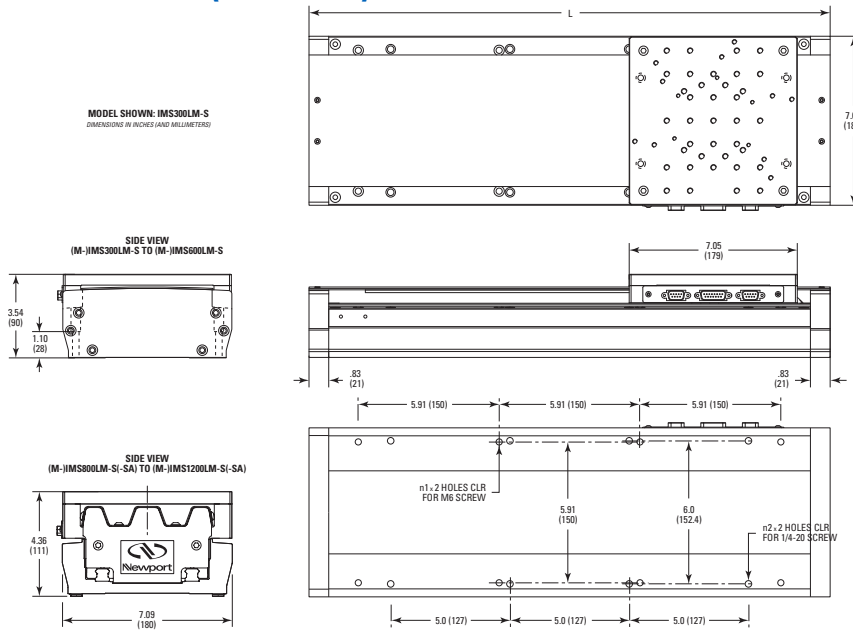
MOTORIZED
LINEAR ACTUATORS

HEXAPODS

MODEL (METRIC)	n1	n2	TRAVEL	L1	L2
(M-)IMS300LM-S	4	4	11.81 (300)	26.30 (668)	20.20 (513)
(M-)IMS400LM-S	4	4	15.75 (400)	30.24 (768)	24.13 (613)
(M-)IMS500LM-S	4	6	19.69 (500)	34.17 (868)	28.07 (713)
(M-)IMS600LM-S	6	6	23.62 (600)	38.11 (968)	32.01 (813)

CONTROLLERS
AND DRIVERS

Dimensions (IMS-LM)



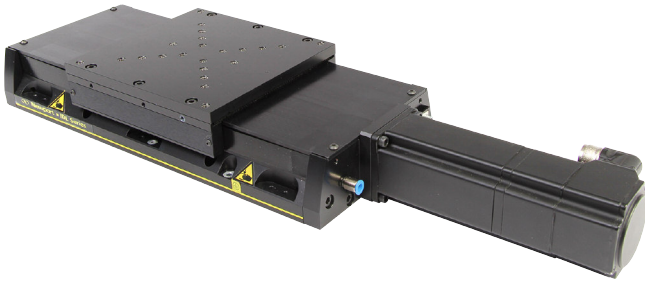
MODEL (METRIC)	n1	n2	TRAVEL	L
(M-)IMS300LM-S	4	4	11.81 (300)	21.85 (555)
(M-)IMS400LM-S	4	4	15.75 (400)	25.79 (655)
(M-)IMS500LM-S	4	6	19.69 (500)	29.72 (755)
(M-)IMS600LM-S	6	6	23.62 (600)	33.66 (855)
(M-)IMS800LM-S	6	-	31.49 (800)	44.48 (1130)
(M-)IMS1000LM-S	7	-	39.36 (1000)	52.35 (1330)
(M-)IMS1200LM-S	8	-	47.23 (1200)	60.22 (1530)
(M-)IMS800LM-SA-S	4 HOLES ON 28 x 6 (600 x 150)		31.49 (800)	44.48 (1130)
(M-)IMS1000LM-SA-S	4 HOLES ON 28 x 6 (750 x 150)		39.36 (1000)	52.35 (1330)
(M-)IMS1200LM-SA-S	4 HOLES ON 34 x 6 (900 x 150)		47.23 (1200)	60.22 (1530)

MOTORIZED
OPTICAL MOUNTS

BEAM
MANAGEMENT

SPECIAL
COLLECTIONS

IDL-BL Mid-Travel Industrial Linear Stages



- Choose between 150 or 300mm travel
- High efficiency, brushless DC torque motor for speeds up to 300 mm/s
- Designed for easy direct mounting of XY or XYZ configurations on English or Metric tables
- Compatible with many industrial controllers
- Brake version available

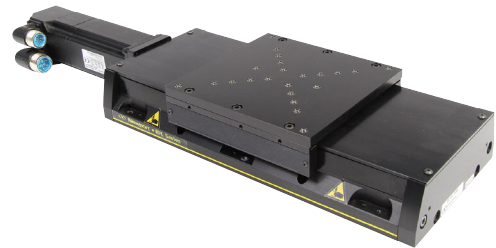
Ordering Information

Model	Description
IDL165-150BL	Industrial linear stage with brushless DC motor, 150 mm travel
IDL165-150BLBK	Industrial linear stage with brushless DC motor and brake, 150 mm travel
IDL165-300BL	Industrial linear stage with brushless DC motor, 300 mm travel
IDL165-300BLBK	Industrial linear stage with brushless DC motor, 300 mm travel

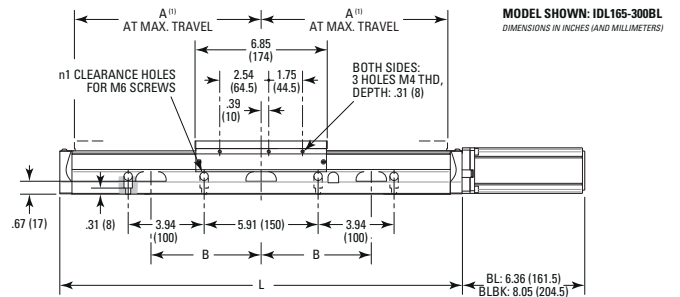
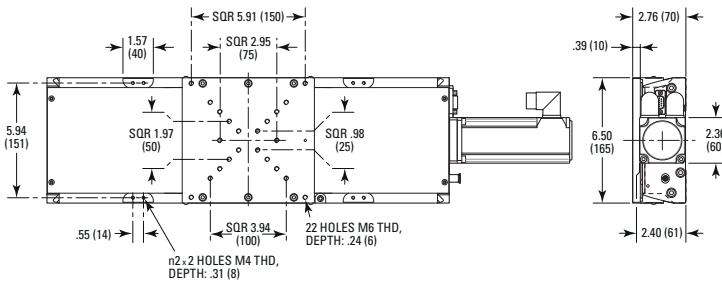
Controllers

Model
 XPS-Dx
 XPS-DRV11

Contact Newport for more information about compatibility with the XPS controllers.



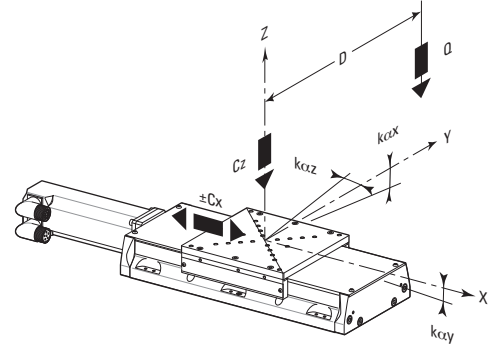
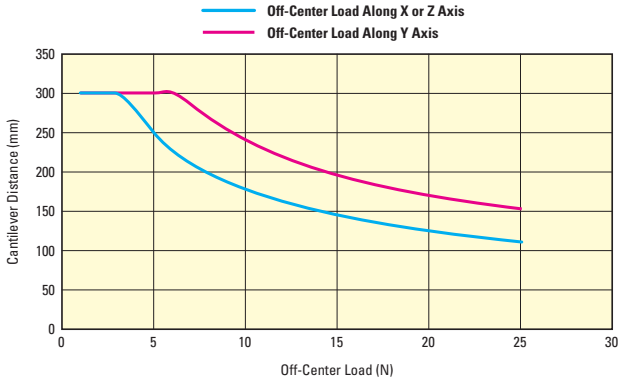
Dimensions



MODEL	TRAVEL	L	A ⁽¹⁾	n1	B	n2
IDL165-150BL	7.87 (200)	14.94 (379.5)	6.71 (170.3)	4	5.71 (145)	6
IDL165-300BL	11.81 (300)	20.85 (529.5)	9.66 (245.3)	8	5.71 (145)	6

⁽¹⁾ INCLUDING OVER-TRAVEL ALLOWED BY THE HARD STOP.

MOTORIZED LINEAR STAGES
 MOTORIZED VERTICAL STAGES
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 BEAM MANAGEMENT
 SPECIAL COLLECTIONS



C_z , Normal center load capacity on bearings	450 N
$\pm C_x$, Continuous axial load capacity	250 N
k_{cxz} , Angular stiffness (Roll)	0.3 $\mu\text{rad/Nm}$
k_{cy} , Angular stiffness (Pitch)	0.4 $\mu\text{rad/Nm}$

Specifications

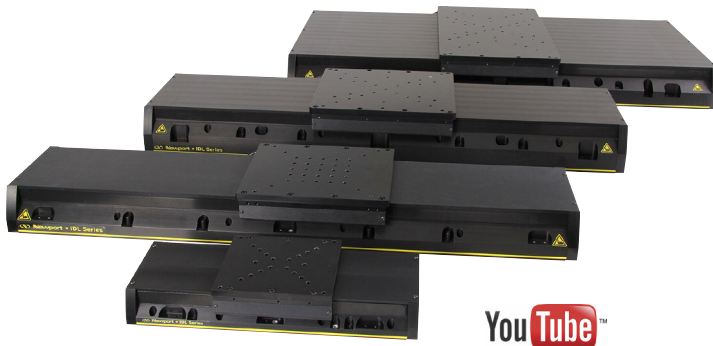
	IDL165-150BL	IDL165-150BLBK	IDL165-300BL	IDL165-300BLBK
Travel Range	150 mm		300 mm	
Maximum Speed	300 mm/sec			
Minimum Incremental Motion ¹	1.0 μm			
Accuracy, Guaranteed	$\pm 3.0 \mu\text{m}$		$\pm 5.0 \mu\text{m}$	
Bi-directional Repeatability, Guaranteed	$\pm 1.0 \mu\text{m}$			
Centered Load Capacity	450 N			
Axial Load Capacity (+Cx)	250 N			
Inverse Axial Load Capacity (-Cx)	-250 N			
Pitch, Guaranteed	$\pm 35 \mu\text{rad}$			
Yaw, Guaranteed	$\pm 25 \mu\text{rad}$			
Origin Repeatability	$\pm 0.5 \mu\text{m}$		$\pm 0.1 \mu\text{m}$	$\pm 0.5 \mu\text{m}$
Cable Length	4.5 m			
Weight	11.1 kg	9.8 kg	11.1 kg	11.6 kg
MTBF	20,000 h (25% load, 30% duty cycle)			
CE	Compliant			

¹ Driver Dependent



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to watch video

IDL Long-Travel Industrial Linear Stages



- Built for industrial environments with debris protection, high throughput & reliability
- High-efficiency, non-contact, ironless linear motor for fast motion & speed stability
- Designed for easy direct mounting of XY configurations on English or Metric tables
- Various sizes capable of high load capacities to fit different applications
- Compatible with many industrial controllers
- Quick and reliable delivery based on customers' production needs

The long-travel IDL industrial-grade linear stages boasts the highest load capacity and speed of all linear motor stages with a wide variety of sizes and travels to choose from, making it well-suited for demanding production environments. With IP50 level dust protection, the IDL stages protect themselves in these environments with its protective side-bands, hard cover, and air purge. They are driven with a high-efficiency, non-contact, and ironless linear motor. The linear motor ensures zero cogging for ultra-smooth velocity control and less heat generation. The design of the stage allows for various widths, travel range, and load capacities to fit numerous applications. Given the variety, these stages are directly stackable with each other; minimizing design and assembly time.

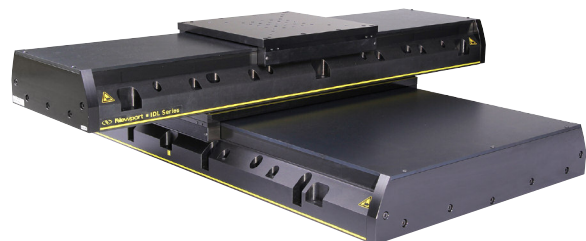
Ordering Information

Model (Metric)	Description
Width: 165 mm	
IDL165-100LM (M-IDL165-100LM)	100 mm Travel, 165 mm Width
IDL165-200LM (M-IDL165-200LM)	200 mm Travel, 165 mm Width
IDL165-300LM (M-IDL165-300LM)	300 mm Travel, 165 mm Width
Width: 225 mm	
IDL225-200LM (M-IDL225-200LM)	200 mm Travel, 225 mm Width
IDL225-300LM (M-IDL225-300LM)	300 mm Travel, 225 mm Width
IDL225-400LM (M-IDL225-400LM)	400 mm Travel, 225 mm Width
IDL225-500LM (M-IDL225-500LM)	500 mm Travel, 225 mm Width
IDL225-1200LM (M-IDL225-1200LM)	1200 mm Travel, 225 mm Width
Width: 280 mm	
IDL280-300LM (M-IDL280-300LM)	300 mm Travel, 280 mm Width
IDL280-400LM (M-IDL280-400LM)	400 mm Travel, 280 mm Width
IDL280-500LM (M-IDL280-500LM)	500 mm Travel, 280 mm Width
IDL280-600LM (M-IDL280-600LM)	600 mm Travel, 280 mm Width
IDL280-700LM (M-IDL280-700LM)	700 mm Travel, 280 mm Width
IDL280-1000LM (M-IDL280-1000LM)	1000 mm Travel, 280 mm Width
IDL280-1200LM (M-IDL280-1200LM)	1200 mm Travel, 280 mm Width
Width: 560 mm	
IDL560-450LM (M-IDL560-450LM)	450 mm Travel, 560 mm Width
IDL560-600LM (M-IDL560-600LM)	600 mm Travel, 560 mm Width
IDL560-750LM (M-IDL560-750LM)	750 mm Travel, 560 mm Width
IDL560-1000LM (M-IDL560-1000LM)	1000 mm Travel, 560 mm Width

Recommended Motion Controller

Model
XPS-Dx (see page 148)
XPS-DRV11 (see page 148) (with IDL165 only)
XPS-EDBL (see page 148)

Contact Newport for more information about compatibility with the XPS controllers.



Specifications for IDL

	165-100LM	165-200LM	165-300LM	225-1000LM	225-1200LM	225-200LM	225-300LM	225-400LM	225-500LM	225-600LM
Travel Range	100 mm	200 mm	300 mm	1000 mm	1200 mm	200 mm	300 mm	400 mm	500 mm	600 mm
Maximum Speed	2000 mm/s									
Minimum Incremental Motion	0.050 μ m									
Maximum Continuous Force	68 N			136 N						
Maximum Peak Force	289 N			278 N						
Centered Load Capacity	450 N			1000 N						
Accuracy, Typical	NA	$\pm 0.8 \mu$ m	$\pm 1.5 \mu$ m	NA	NA	NA	$\pm 0.9 \mu$ m	NA	NA	$\pm 1.2 \mu$ m
Accuracy, Guaranteed	$\pm 2.0 \mu$ m	$\pm 2.0 \mu$ m	$\pm 2.0 \mu$ m	$\pm 4.3 \mu$ m	$\pm 5.0 \mu$ m	$\pm 2.0 \mu$ m	$\pm 2.0 \mu$ m	$\pm 2.3 \mu$ m	$\pm 2.7 \mu$ m	$\pm 3.0 \mu$ m
Bi-directional Repeatability, Typical	$\pm 0.10 \mu$ m									
Bi-directional Repeatability, Guaranteed	$\pm 0.75 \mu$ m									
Pitch Typical	NA	NA	NA	NA	NA	$\pm 18 \mu$ rad	$\pm 18 \mu$ rad	NA	NA	$\pm 35 \mu$ rad
Pitch, Guaranteed	$\pm 15 \mu$ rad	$\pm 23 \mu$ rad	$\pm 30 \mu$ rad	$\pm 55 \mu$ rad	$\pm 65 \mu$ rad	$\pm 20 \mu$ rad	$\pm 25 \mu$ rad	$\pm 30 \mu$ rad	$\pm 35 \mu$ rad	$\pm 40 \mu$ rad
Compliance in Pitch.	0.4 μ rad/Nm			0.55 μ rad/Nm						
Yaw Typical	NA	NA	NA	NA	NA	NA		NA	NA	$\pm 15 \mu$ rad
Yaw, Guaranteed	$\pm 15 \mu$ rad	$\pm 20 \mu$ rad	$\pm 40 \mu$ rad			$\pm 20 \mu$ rad	$\pm 25 \mu$ rad	$\pm 30 \mu$ rad		
Compliance in Yaw	0.4 μ rad/Nm			0.3 μ rad/Nm						
Compliance in Roll	0.3 μ rad/Nm			0.7 μ rad/Nm						
Origin Repeatability	$\pm 0.1 \mu$ m									
Cable Length	4.5 m			5 m						
Width	165 mm			225 mm						
Weight	8.7 kg	10 kg	12 kg	45 kg	56 kg	25 kg	26.5 kg	31.9 kg	33.8 kg	35.8 kg
MTBF	20,000 h (25% load, 30% duty cycle)									
CE	Compliant									

	280-1000LM	280-1200LM	280-300LM	280-400LM	280-500LM	280-600LM	280-700LM	560-1000LM	560-450LM	560-600LM	560-750LM
Travel Range	1000 mm	1200 mm	300 mm	400 mm	500 mm	600 mm	700 mm	1000 mm	450 mm	600 mm	750 mm
Maximum Speed	2000 mm/s										
Minimum Incremental Motion	0.050 μ m										
Maximum Continuous Force	265 N						472 N				
Maximum Peak Force	1248 N						2830 N				
Centered Load Capacity	1500 N						2000 N				
Accuracy, Typical	NA	NA	$\pm 0.7 \mu$ m	NA	NA	$\pm 1.3 \mu$ m	NA	NA	NA	$\pm 1.5 \mu$ m	NA
Accuracy, Guaranteed	$\pm 4.3 \mu$ m	$\pm 5.0 \mu$ m	$\pm 2.0 \mu$ m	$\pm 2.3 \mu$ m	$\pm 2.7 \mu$ m	$\pm 3.0 \mu$ m	$\pm 3.3 \mu$ m	$\pm 4.3 \mu$ m	$\pm 2.5 \mu$ m	$\pm 3.0 \mu$ m	$\pm 3.5 \mu$ m
Bi-directional Repeatability, Typical	$\pm 0.10 \mu$ m										
Bi-directional Repeatability, Guaranteed	$\pm 0.75 \mu$ m										
Pitch Typical	NA	NA	$\pm 21 \mu$ rad	NA	NA	$\pm 20 \mu$ rad	NA	NA	NA	NA	NA
Pitch, Guaranteed	$\pm 55 \mu$ rad	$\pm 60 \mu$ rad	$\pm 25 \mu$ rad	$\pm 30 \mu$ rad	$\pm 35 \mu$ rad	$\pm 40 \mu$ rad	$\pm 45 \mu$ rad	$\pm 55 \mu$ rad	$\pm 33 \mu$ rad	$\pm 40 \mu$ rad	$\pm 45 \mu$ rad
Compliance in Pitch.	0.3 μ rad/Nm						0.37 μ rad/Nm				
Yaw Typical	NA	NA	$\pm 15 \mu$ rad	NA	NA	$\pm 14 \mu$ rad	NA	NA	NA	NA	NA
Yaw, Guaranteed	$\pm 40 \mu$ rad		$\pm 25 \mu$ rad	$\pm 30 \mu$ rad				$\pm 40 \mu$ rad	$\pm 30 \mu$ rad		
Compliance in Yaw	0.2 μ rad/Nm						0.1 μ rad/Nm				
Compliance in Roll	0.3 μ rad/Nm						0.12 μ rad/Nm				
Origin Repeatability	$\pm 0.1 \mu$ m										
Cable Length	5 m										
Thread Type	M6										
Width	280 mm						560 mm				
Weight	82.5 kg	94 kg	48 kg	55.1 kg	59.7 kg	65 kg	69.5 kg	159 kg	114 kg	124 kg	142 kg
MTBF	20,000 h (25% load, 30% duty cycle)										

DL Series

Optical Delay Line Motorized Stages



scan QR code
to watch video



- Very affordable
- Excellent delay sensitivity and bi-directional repeatability
- Low angular deviation where it counts (pitch)
- Small footprint
- No moving cables

The Delay Line family of affordable linear motor driven stages is optimized for ultrafast spectroscopy applications that require repeatable and precise delays (0.5fs). 3 travel versions and 7 beam kits are available. Delays can be as long as 8.7ns with the 325mm travel version and a 4-pass beam kit. The controller is included with the stage and a user-friendly GUI can be downloaded from the DL family page – making setup quick and easy.

Specifications

	DL125	DL225	DL325
Travel Range	125 mm	225 mm	325 mm
Maximum Speed	500 mm/s		
Minimum Incremental Motion	0.075 μm		
Maximum Acceleration	7,500 mm/s ²		
Accuracy, Guaranteed	$\pm 1.5 \mu\text{m}$	$\pm 2.0 \mu\text{m}$	$\pm 2.5 \mu\text{m}$
Bi-directional Repeatability, Guaranteed	$\pm 0.15 \mu\text{m}$		
Pitch, Typical	$\pm 60 \mu\text{rad}$		$\pm 90 \mu\text{rad}$
Pitch, Guaranteed	$\pm 100 \mu\text{rad}$		$\pm 150 \mu\text{rad}$
Yaw, Typical	$\pm 30 \mu\text{rad}$	$\pm 40 \mu\text{rad}$	$\pm 50 \mu\text{rad}$
Yaw, Guaranteed	$\pm 60 \mu\text{rad}$	$\pm 90 \mu\text{rad}$	$\pm 120 \mu\text{rad}$
Origin Repeatability	0.4 μm		
Cable Length	3 m		
Weight	2.8 kg	3.8 kg	4.8 kg
MTBF	20,000 hours		
CE	Compliant		

Ordering Information

Model	Description
DL125	Delay Line Stage and Controller, 125 mm Travel
DL225	Delay Line Stage and Controller, 225 mm Travel
DL325	Delay Line Stage and Controller, 325 mm Travel

Recommended Accessory

Model	Description
DL-PS	Power Supply, Delay Line Stages

MOTORIZED
LINEAR STAGES

MOTORIZED
VERTICAL STAGES

MOTORIZED
ROTATION STAGES

MOTORIZED
LINEAR ACTUATORS

HEXAPODS

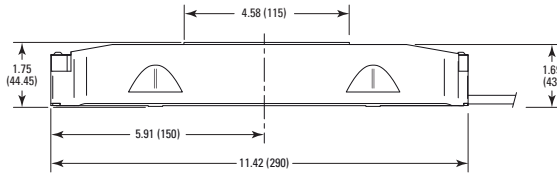
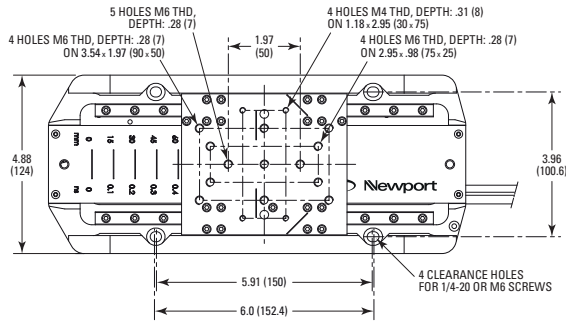
CONTROLLERS
AND DRIVERS

MOTORIZED
OPTICAL MOUNTS

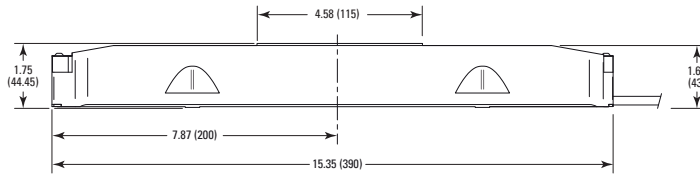
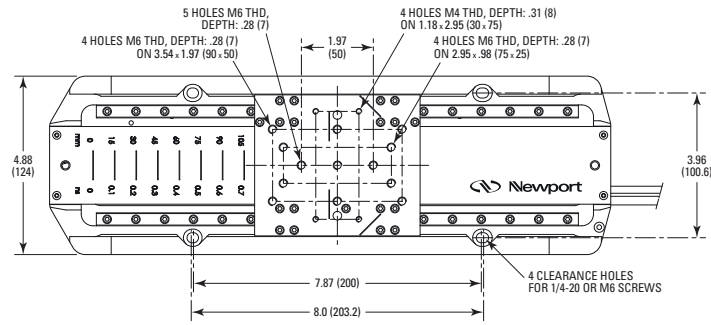
BEAM
MANAGEMENT

SPECIAL
COLLECTIONS

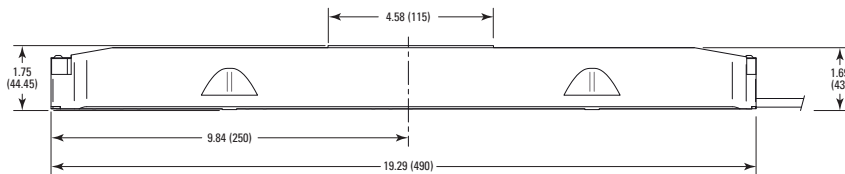
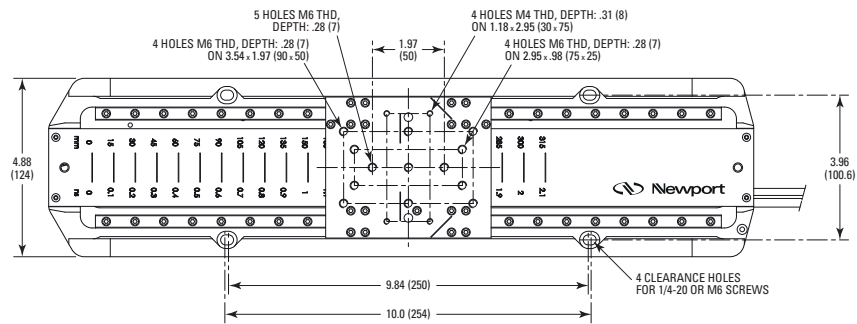
DLS125 STAGE



DLS225 STAGE

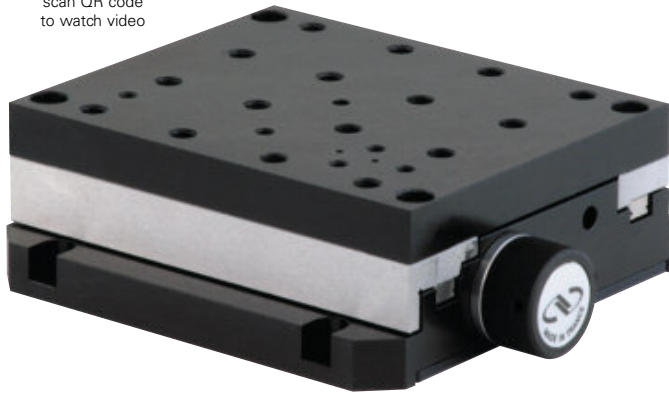


DLS325 STAGE





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to watch video



VP-25X

Precision Compact Linear Stages

- Easy XY and XYZ configuration
- Highly sensitive 10nm Minimum Incremental Motion
- Low-profile, compact, and lightweight
- Convenient manual adjustment knob
- Built-in linear encoder for highly repeatable and precise motion
- Plug and Play - ESP compatible



The VP-25X Series linear stage provides high-precision positioning performance in an ultra-compact form factor. A low friction ball screw drive provides robust, reliable performance with excellent thrust and minimal heat induced position drift. Combined with excellent minimum incremental motion of 10nm and travel of 25mm, the VP-25X is ideal for applications requiring fine manipulation of small parts. Featuring a manual adjustment knob, VP-25X stages are versatile enough to handle automated and non-automated tasks alike. Typical applications include fiber alignment, micro-assembly, and micro-machining. Available in VP-25XA and the finer MIM, VP-25XL models.

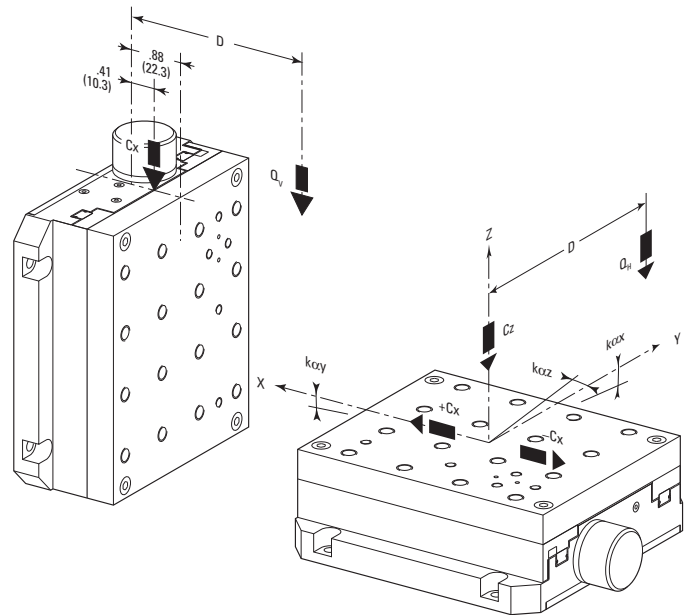
Specifications

	VP-25XA	VP-25XA-XYZL ¹	VP-25XL	VP-25XL-XYZL ²
Accuracy, Guaranteed	±1.0 μm	±1.0 μm	±1.0 μm	±1.0 μm
Accuracy, Typical	±0.4 μm	±0.4 μm	±0.5 μm	±0.5 μm
Axial Load Capacity (+Cx)	40 N	40 N	40 N	40 N
Bi-directional Repeatability, Guaranteed	±0.10 μm	±0.10 μm	±0.07 μm	±0.07 μm
Bi-directional Repeatability, Typical	±0.06 μm	±0.06 μm	±0.05 μm	±0.05 μm
Cable Length	1.5 m	1.5 m	3 m	3 m
Centered Load Capacity	60 N	35 N	60 N	35 N
Inverse Axial Load Capacity (-Cx)	-40 N	-40 N	-40 N	-40 N
Maximum Speed	25 mm/s	25 mm/s	25 mm/s	25 mm/s
Minimum Incremental Motion	0.10 μm	0.10 μm	0.010 μm	0.010 μm
Motorized Axes	X	XYZ - Left Handed	X	XYZ - Left Handed
Pitch, Guaranteed	±50 μrad	±50 μrad	±50 μrad	±50 μrad
Pitch, Typical	±22 μrad	±22 μrad	±20 μrad	±20 μrad
Travel Range	25 mm	25 mm	25 mm	25 mm
Weight	1.5 kg	5 kg	1.5 kg	5 kg
Yaw, Guaranteed	±50 μrad	±50 μrad	±50 μrad	±50 μrad
Yaw, Typical	±17 μrad	±17 μrad	±20 μrad	±20 μrad

1. Select version ending in "R" for right handed configuration
2. Select version ending in "R" for right handed configuration
3. M- versions have metric threaded mounting holes

For the definition of specifications, visit Newport.com's section on **Motion Basics and Standards**.

Load Characteristics and Stiffness



Cz, Normal centered load capacity	60 N
+Cx, -Cx, Axial load capacity	40 N
k _x , Compliance in roll	20 μrad/N.m
k _{cy} , Compliance in pitch	20 μrad/N.m
k _{cz} , Compliance in yaw	30 μrad/N.m
Q _v , Off-center load	$Q_H, Q_V \leq C_z / (1+D/30)$
Where D = Cantilever distance in mm between the center of the mass of the load and the bearings center	
Distance between top surface and bearings center	22.3 mm

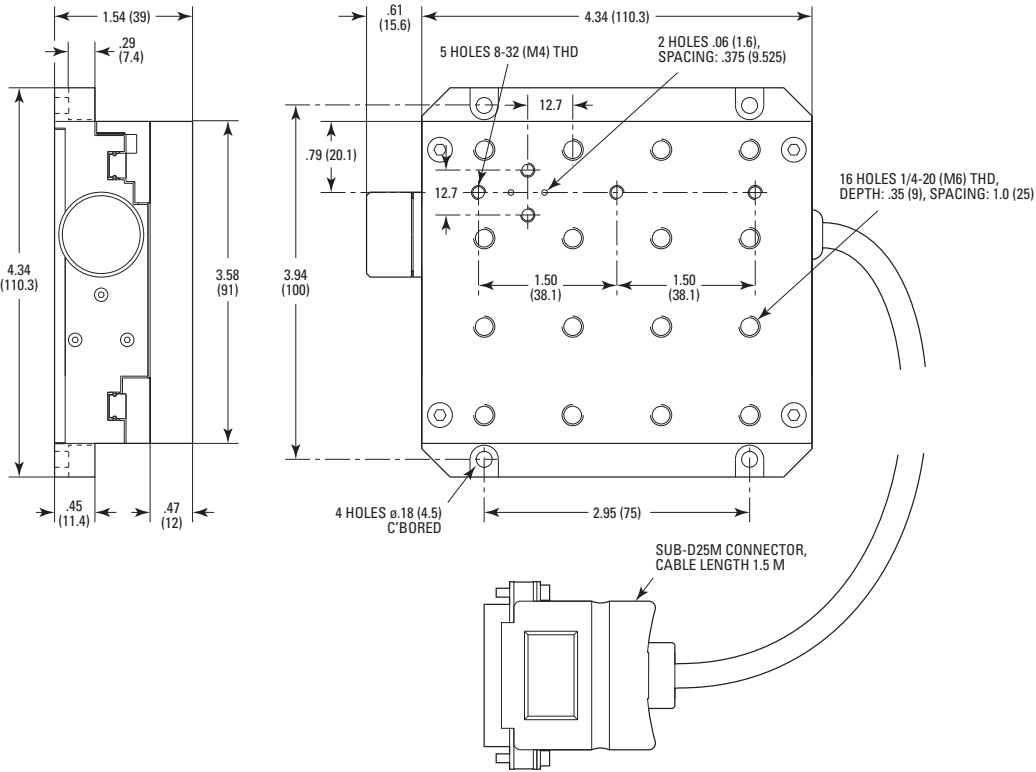
MOTORIZED LINEAR STAGES
MOTORIZED VERTICAL STAGES
MOTORIZED ROTATION STAGES
MOTORIZED LINEAR ACTUATORS
HEXAPODS
CONTROLLERS AND DRIVERS
MOTORIZED OPTICAL MOUNTS
BEAM MANAGEMENT
SPECIAL COLLECTIONS

Ordering Information

Model (Metric)	Description
VP-25XA (M-VP-25XA)	Precision Compact Linear Stage, 25 mm, 0.1 μm, DC Servo w/Tach
VP-25XL (M-VP-25XL)	Precision Compact Linear Stage, 25 mm, 0.005 μm, DC Servo w/Tach
VP-BK (M-VP-BK)	Multi-Axis Bracket for M-VP-25X Linear Stages, Metric
VP-25XA-XYZL (M-VP-25XA-XYZL)	Compact XYZ Stage Stack, Left-handed, M-VP-25XA Stages with Bracket, Metric
VP-25XA-XYZR (M-VP-25XA-XYZR)	Compact XYZ Stage Stack, Right-handed, M-VP-25XA Stages with Bracket, Metric
VP-25XL-XYZL (M-VP-25XL-XYZL)	Compact XYZ Stage Stack, Left-handed, M-VP-25XL Stages with Bracket, Metric
VP-25XL-XYZR (M-VP-25XL-XYZR)	Compact XYZ Stage Stack, Right-handed, M-VP-25XL Stages with Bracket, Metric
VP-BP	Universal Base Plate
VP-BC	Base Clamp Set, VP Series Stages, Set of Four
Dovetail rail for ULTRAlign™ positioning system:	
562-RAIL-3.7	Length: 3.7 in. (94 mm)
561-RAIL-1	Length: 1 in. (25.4 mm)

Note: XYZ stacks are assembled with ±50 μrad XY orthogonality; ±100 μrad XZ and YZ orthogonality.

Dimensions

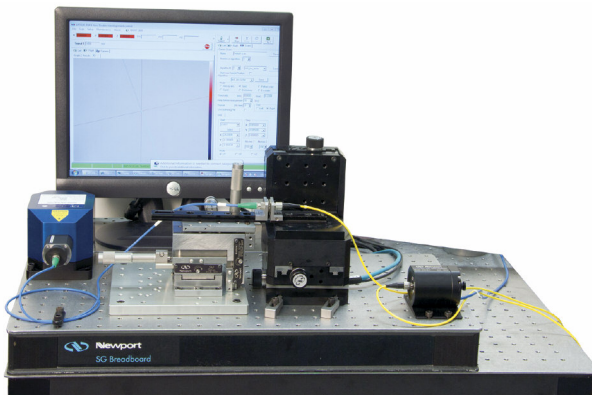


Recommended Motion Controllers

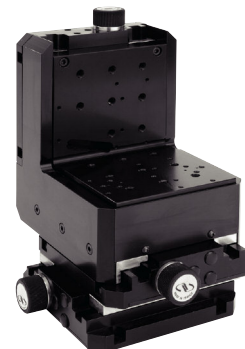
XPS-RL see page 153	
XPS-D see page 148	VP-25XA and VP-25XL
ESP301 see page 157	Only VP-25XA
SMC100CC see page 159	Only VP-25XA

Motor cables are included.

CAD See our website for CAD files

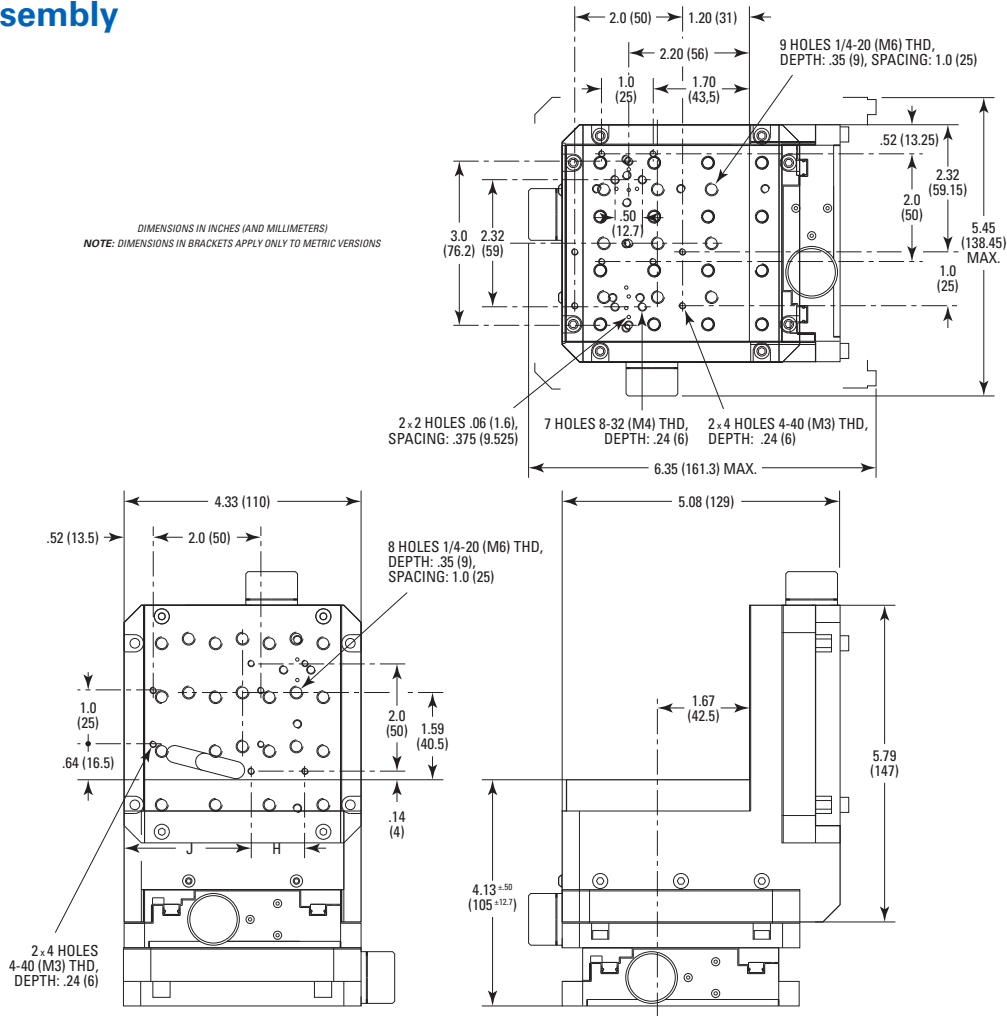


VP25XL-XYZR single-mode fiber alignment setup

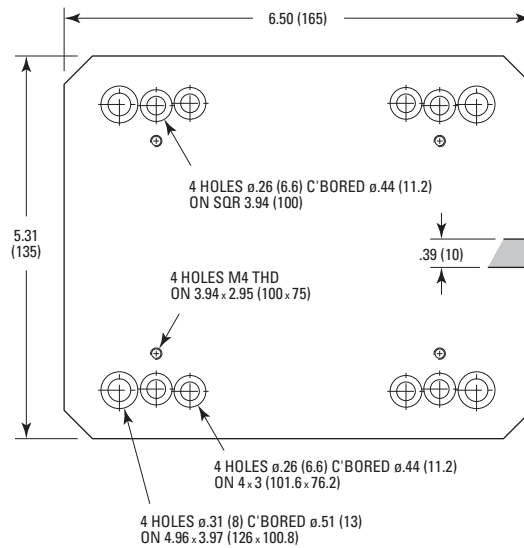


VP-25X stages can easily be assembled into an XYZ configuration with optional VP-BK bracket. Shown here is a left-handed stack, (M-)VP-25X-XYZL.

XYZ Assembly



VP-BP Drawing





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MTN Series

Mid-Travel Steel Linear Stages



- 100kg load and high axial load capacity up to 200N
- All steel construction offers high stiffness and thermal stability
- Backlash-compensated, diamond-corrected leadscrew produces accurate linear motion, even for vertical applications
- Non-migrating ball cage design reliable performance
- Plug and Play - ESP compatible
- Vacuum compatible versions available

The MTN Series linear stages are durable, all-steel construction linear stages with excellent stiffness, load capacity and thermal stability. They are available in DC and Stepper motor versions and are ideal for applications that require moving heavy loads with micron scale precision. Recommended for up to 300 mm travel, MTN stages can bear up to 100 kg with an axial load capacity up to 200 N. Features include: opposing single-row bearing surface, a diamond-corrected lead screw, a matched, precision-lapped nut and a non-migrating ball cage design. The nut design includes anti-backlash preloading and a sophisticated decoupling system ensuring little to no stage movement. The non-migrating ball cage design prevents any drift in vertical applications.

Specifications

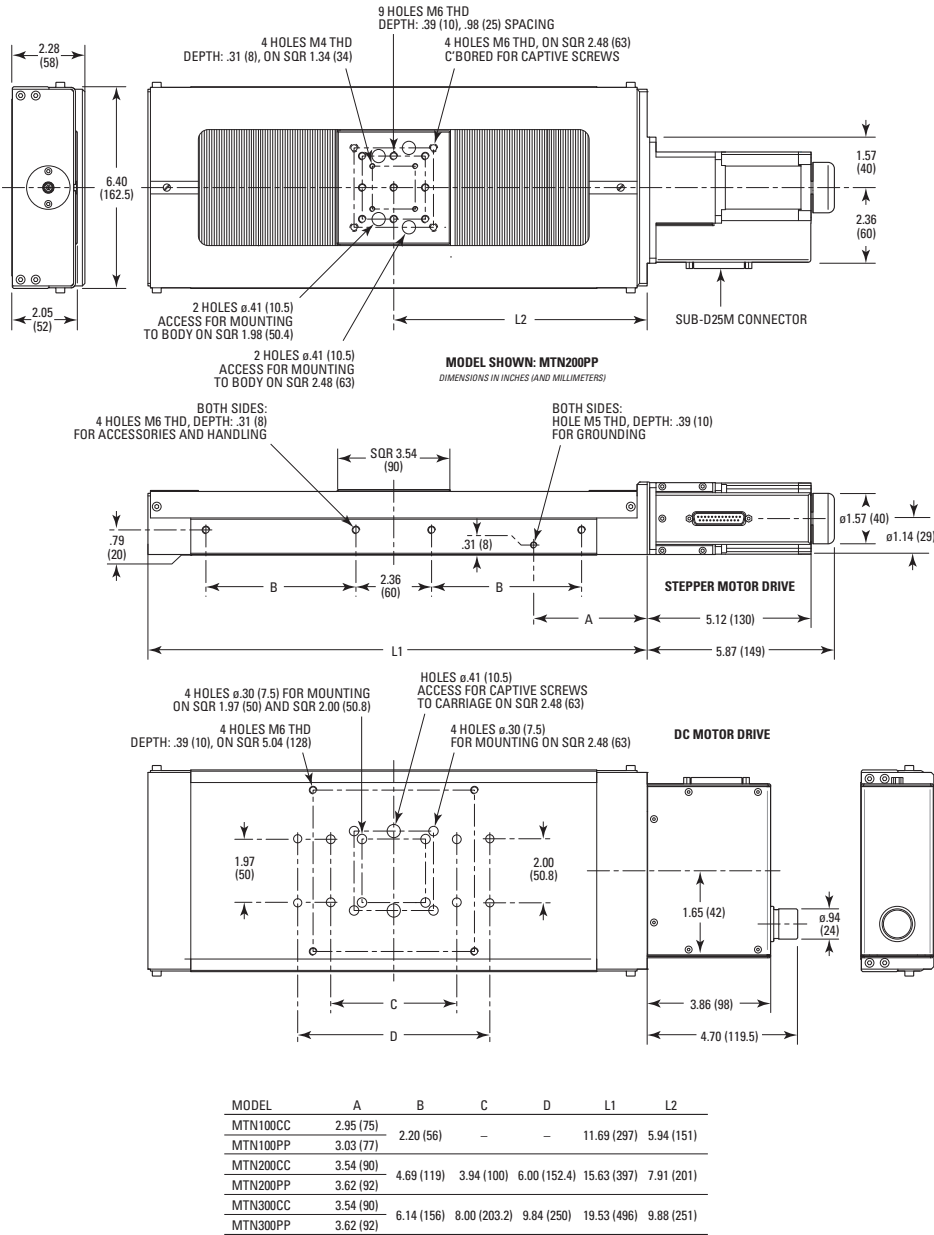
	MTN100CC	MTN200CC	MTN300CC	MTN100PP	MTN200PP	MTN300PP
Travel Range	100 mm	200 mm	300 mm	100 mm	200 mm	300 mm
Maximum Speed	100 mm/s			40 mm/s		
Minimum Incremental Motion	0.60 μm			0.10 μm		
Centered Load Capacity	1000 N					
Axial Load Capacity (+Cx)	200 N					
Inverse Axial Load Capacity (-Cx)	21 N					
Uni-directional Repeatability, Typical	$\pm 0.30 \mu\text{m}$	$\pm 0.50 \mu\text{m}$		$\pm 0.30 \mu\text{m}$	$\pm 0.50 \mu\text{m}$	
Bi-directional Repeatability, Guaranteed	$\pm 1.5 \mu\text{m}$			$\pm 2.75 \mu\text{m}$		
Accuracy, Typical	$\pm 1.5 \mu\text{m}$	$\pm 2.0 \mu\text{m}$	$\pm 2.5 \mu\text{m}$	$\pm 1.5 \mu\text{m}$	$\pm 2.0 \mu\text{m}$	$\pm 2.5 \mu\text{m}$
Accuracy, Guaranteed	$\pm 2.5 \mu\text{m}$		$\pm 3.0 \mu\text{m}$	$\pm 2.5 \mu\text{m}$		$\pm 3.0 \mu\text{m}$
Uni-directional Repeatability, Guaranteed	$\pm 0.75 \mu\text{m}$					
Bi-directional Repeatability, Typical	$\pm 0.75 \mu\text{m}$			$\pm 2.75 \mu\text{m}$		
Pitch, Typical	$\pm 10 \mu\text{rad}$	$\pm 20 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 10 \mu\text{rad}$	$\pm 20 \mu\text{rad}$	$\pm 30 \mu\text{rad}$
Pitch, Guaranteed	$\pm 20 \mu\text{rad}$	$\pm 40 \mu\text{rad}$	$\pm 60 \mu\text{rad}$	$\pm 20 \mu\text{rad}$	$\pm 40 \mu\text{rad}$	$\pm 60 \mu\text{rad}$
Yaw, Typical	$\pm 10 \mu\text{rad}$	$\pm 17 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 10 \mu\text{rad}$	$\pm 17 \mu\text{rad}$	$\pm 30 \mu\text{rad}$
Yaw, Guaranteed	$\pm 17 \mu\text{rad}$	$\pm 35 \mu\text{rad}$	$\pm 53 \mu\text{rad}$	$\pm 17 \mu\text{rad}$	$\pm 35 \mu\text{rad}$	$\pm 53 \mu\text{rad}$
Origin Repeatability	$\pm 0.75 \mu\text{m}$			$\pm 5 \mu\text{m}$		
Cable Length	3 m					
Weight	10 kg	12.3 kg	14.6 kg	10.7 kg	13 kg	15.3 kg
MTBF	20,000 h (25% load, 30% duty cycle)					
CE	Compliant					

1. Also available in a vacuum compatible version MTN-PPV6.
2. Maximum speed is reduced to 20 mm/sec for MTN-PPV6 versions.
3. Axial load capacity is reduced to 100 N for MTN-PPV6 versions.

Ordering Information

Series	Travel (mm)	Drive	
MTN	100	CC PP	<i>Example: The MTN200PP is an MTN stage with 200 mm travel and a stepper motor drive.</i>
	200		
	300		
CC:	DC motor		
PP:	Stepper motor		

Dimensions



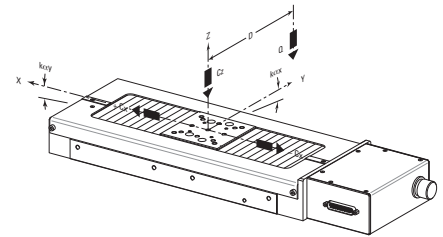
MODEL	A	B	C	D	L1	L2
MTN100CC	2.95 (75)	2.20 (56)	-	-	11.69 (297)	5.94 (151)
MTN100PP	3.03 (77)					
MTN200CC	3.54 (90)	4.69 (119)	3.94 (100)	6.00 (152.4)	15.63 (397)	7.91 (201)
MTN200PP	3.62 (92)					
MTN300CC	3.54 (90)	6.14 (156)	8.00 (203.2)	9.84 (250)	19.53 (496)	9.88 (251)
MTN300PP	3.62 (92)					

Accessories



Use EQ160 Series right-angle brackets for vertical mounting configurations.

Load Characteristics and Stiffness



Cz, Normal center load capacity on bearings	1000 N
+Cx, Direct load capacity on X axis	200 N
-Cx, Inverse load capacity on X axis	21 N
κ _{αx} , Compliance in roll	5 μrad/Nm
κ _{αy} , Compliance in pitch	10 μrad/Nm
κ _{αz} , Compliance in yaw	7 μrad/Nm
Q, Off-center load	QCz / (1 + D/100)
D, Cantilever distance in mm	

Recommended Motion Controllers

XPS-RL see page 153

XPS-D see page 148

ESP301 see page 157

Motor cables are included.

CAD See our website for CAD files

For the definition of specifications, visit Newport.com section on Motion Basics and Standards.

UTS Series

Mid-Travel Steel Linear Stages



- All-steel construction offers high stiffness and high thermal stability
- Ultra-low profile design with up to 150 mm travel
- Diamond-corrected lead screw with matched nut for high precision positioning
- DC motor and Stepper motor versions
- Plug and Play ESP compatible
- Vacuum compatible versions

The UTS Series linear stages feature low-profile design with all steel construction, ideal for environments where temperature is not very well controlled. They have been engineered for excellent stiffness, thermal stability and load capacity with travel ranges to 150 mm with Minimum Incremental Motion (MIM) of 0.3 μm . The DC motor version features an ultra-high resolution encoder mounted on the lead screw and a reduction belt providing precise incremental motion capability and high dynamic speed control. The stepper motor version is an economical solution for less demanding applications. The high output torque of the stepper motor minimizes the risk of lost steps and provides optimum MIM. All UTS Series Stages feature: a homogenous steel design, a diamond-corrected lead screw, and a precision lapped nut which includes anti-backlash preloading and a sophisticated decoupling system.

Specifications

	UTS100CC	UTS150CC	UTS50CC	UTS100PP	UTS150PP	UTS50PP
Travel Range	100 mm	150 mm	50 mm	100 mm	150 mm	50 mm
Maximum Speed	40 mm/s			20 mm/s		
Minimum Incremental Motion	0.30 μm					
Centered Load Capacity	200 N					
Axial Load Capacity (+Cx)	50 N					
Inverse Axial Load Capacity (-Cx)	-10 N					
Accuracy, Typical	$\pm 1.5 \mu\text{m}$	$\pm 2.0 \mu\text{m}$	$\pm 1.1 \mu\text{m}$	$\pm 1.7 \mu\text{m}$	$\pm 2.0 \mu\text{m}$	$\pm 1.2 \mu\text{m}$
Accuracy, Guaranteed	$\pm 2.75 \mu\text{m}$	$\pm 3.25 \mu\text{m}$	$\pm 2.25 \mu\text{m}$	$\pm 3.5 \mu\text{m}$	$\pm 4.0 \mu\text{m}$	$\pm 2.5 \mu\text{m}$
Uni-directional Repeatability, Guaranteed	$\pm 0.5 \mu\text{m}$					
Bi-directional Repeatability, Guaranteed	$\pm 1.75 \mu\text{m}$			$\pm 3.0 \mu\text{m}$		
Uni-directional Repeatability, Typical	$\pm 0.30 \mu\text{m}$		$\pm 0.20 \mu\text{m}$	$\pm 0.30 \mu\text{m}$		$\pm 0.20 \mu\text{m}$
Bi-directional Repeatability, Typical	$\pm 0.8 \mu\text{m}$		$\pm 0.6 \mu\text{m}$	$\pm 2.3 \mu\text{m}$		$\pm 2.2 \mu\text{m}$
Pitch, Typical	$\pm 25 \mu\text{rad}$		$\pm 17 \mu\text{rad}$	$\pm 25 \mu\text{rad}$		$\pm 17 \mu\text{rad}$
Pitch, Guaranteed	$\pm 50 \mu\text{rad}$	$\pm 60 \mu\text{rad}$	$\pm 37 \mu\text{rad}$	$\pm 55 \mu\text{rad}$	$\pm 60 \mu\text{rad}$	$\pm 37 \mu\text{rad}$
Yaw, Typical	$\pm 20 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 12 \mu\text{rad}$	$\pm 20 \mu\text{rad}$	$\pm 30 \mu\text{rad}$	$\pm 12 \mu\text{rad}$
Yaw, Guaranteed	$\pm 35 \mu\text{rad}$	$\pm 45 \mu\text{rad}$	$\pm 25 \mu\text{rad}$	$\pm 35 \mu\text{rad}$	$\pm 45 \mu\text{rad}$	$\pm 25 \mu\text{rad}$
Origin Repeatability	$\pm 0.5 \mu\text{m}$			$\pm 2.5 \mu\text{m}$		
Cable Length	3 m					
Weight	3.2 kg	3.7 kg	2.8 kg	3.3 kg	3.8 kg	2.9 kg
MTBF	20,000 h (25% load, 10% duty cycle)					
CE	Compliant					

Notes:

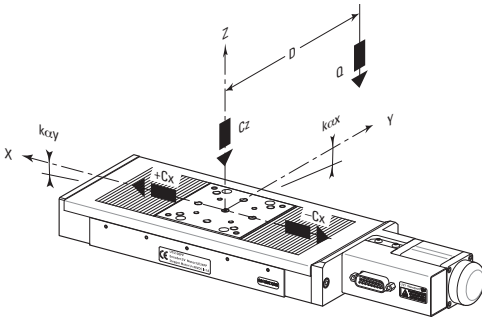
PP Version Available in Vacuum

Max speed is reduced to 10 mm/sec for UTS PPV6 versions

Centered load capacity reduced to 100 N for UTSPPV6 versions

For UTS-CC with axial loads greater than 1 kg, max speed must be reduced to 20 mm/s

Load Characteristics and Stiffness



Cz, Normal centered load capacity	200 N
+Cx, Axial load capacity	50 N
-Cx, Inverse axial load capacity	10 N
Kcα, Compliance in roll	10 μrad/Nm
Kcβ, Compliance in pitch	15 μrad/Nm
Kcγ, Compliance in yaw	15 μrad/Nm
Q, Off-center load	$Q \leq Cz/(1+D/50)$
D, Cantilever distance in mm	

Ordering Information

Model	Travel (mm)	Drive	Vacuum Prep. ⁽¹⁾
UTS	50	CC PP	V6
	100		
	150		

*Example:
The UTS50CC is a UTS stage with 50 mm travel and a DC motor drive.*

¹⁾ Vacuum compatible to 10⁻⁶ hPa. In this case max. speed and load capacity are divided by two.

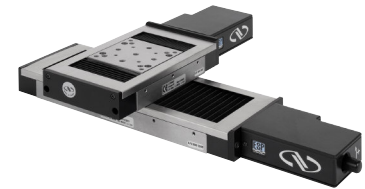
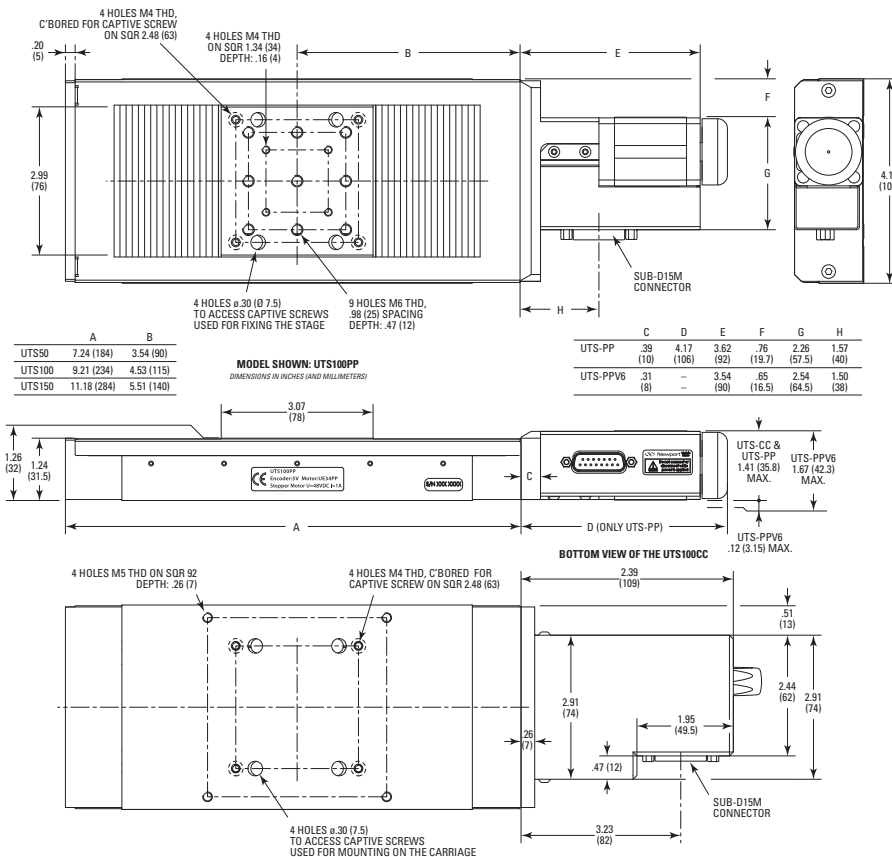
CC: DC motor
PP: Stepper motor

Recommended Motion Controllers

XPS-RL see page 153
XPS-D see page 148
ESP301 see page 157
SMC100CC see page 159

Motor cables are included.

Dimensions



Example of an XY assembly with UTS50CC and UTS150CC



Use the EQ100 Series right-angle brackets for vertical mounting configurations. Mounting brackets are included with the bracket

CAD See our website for CAD files

MOTORIZED LINEAR STAGES
 MOTORIZED VERTICAL STAGES
 MOTORIZED ROTATION STAGES
 MOTORIZED LINEAR ACTUATORS
 HEXAPODS
 CONTROLLERS AND DRIVERS
 MOTORIZED OPTICAL MOUNTS
 BEAM MANAGEMENT
 SPECIAL COLLECTIONS

MFA Series

Miniature Steel Linear Stages



- All steel construction offers high stiffness and thermal stability
- Compact design utilized for space limited applications
- Stiff double-row linear ball bearings
- Vacuum-compatible versions to 10⁻⁶ hPa.
- Plug and Play - ESP compatible
- High-resolution, encoder feedback enables ultra-smooth motion with 100 nm sensitivity

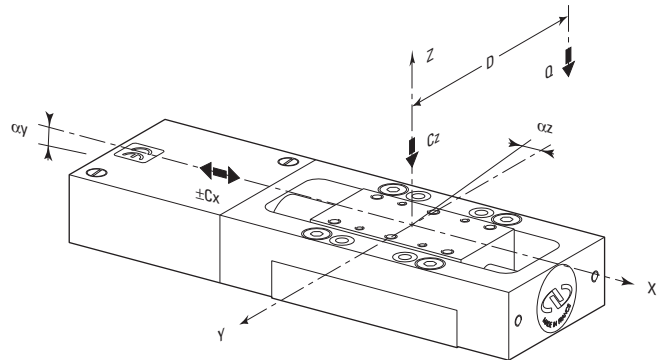
The MFA Series compact all-steel construction linear stages provide precision motion with 0.3 μm Minimum Incremental Motion and excellent stability and stiffness. The MFA-CC DC-motor version features an integrated gear-box and a motor-mounted high resolution rotary encoder. Faster motion with higher reliability and lower backlash makes it ideal for applications requiring small incremental motion with high dynamic speed and good repeatability. The MFA-PP and MFA-PPD stepper motor versions are more economical solutions for less demanding applications. Additional features include: all-steel construction for high stiffness-to-weight ratio and excellent thermal stability; a double-row linear ball bearing design for ultra-smooth motion; and 4 widely spaced mounting holes for base mounting and XY/XYZ configurations. Typical applications for this stage are fiber optic alignment, laser diode research, bio-medical applications and inspection systems.

The CONEX-MFACC is the MFA-CC linear stage with the integrated CONEX-CC controller/driver. The CONEX-CC is a very compact and inexpensive driver for Newport's low power DC servo motor driven devices. For out-of-the box control, the CONEX-CC is preconfigured and delivered with the MFA-CC.

Specifications

	MFA-CC	MFA-CCV6	MFA-PPD
Travel Range	25 mm		
Maximum Speed	2.5 mm/s	1.25 mm/s	1 mm/s
Centered Load Capacity	50 N	25 N	50 N
Axial Load Capacity (+Cx)	10 N	5 N	10 N
Inverse Axial Load Capacity (-Cx)	-10 N	-5 N	-10 N
Minimum Incremental Motion	0.10 μm		
Accuracy, Typical	±0.7 μm	±1.0 μm	±0.9 μm
Accuracy, Guaranteed	±3.0 μm		
Uni-directional Repeatability, Typical	±0.08 μm		±0.12 μm
Uni-directional Repeatability, Guaranteed	±0.15 μm		±0.25 μm
Bi-directional Repeatability, Guaranteed	±0.75 μm	±1.0 μm	±0.75 μm
Bi-directional Repeatability, Typical	±0.15 μm	±0.2 μm	±0.2 μm
Pitch, Typical	±25 μrad		
Pitch, Guaranteed	±100 μrad		
Yaw, Typical	±30 μrad		
Yaw, Guaranteed	±50 μrad		
Origin Repeatability	±2.5 μm		
Cable Length	3 m	1.5 m	3 m
Vacuum Compatibility	N/A	10 ⁻⁶ hPa	N/A
MTBF	10,000 h (25% load, 30% Duty cycle)	10,000 h (25% load, 30% Duty cycle)	
CE	Compliant		

Load Characteristics and Stiffness



Cz, Normal centered load capacity	50 N
-Cx, +Cx, Axial load capacity	10 N
κcx, Compliance in roll	60 μrad/Nm
κcy, Compliance in pitch	10 μrad/Nm
Q, Off-center load	Q ≤ Cz / (1 + D/20)
D, Cantilever distance in mm	

For the definition of specifications, visit Newport.com for the Motion Basics and Standards.

Ordering Information

Model	Description
MFA-CC	Miniature linear stage, DC motor
MFA-PPD	Miniature linear stage, stepper motor, 25-pin D-Sub connector Compatible with SMC100PP, ESP301, and XPS
MFA-CCV6	Vacuum Compatible Miniature Linear Stage, DC Motor
CONEX-MFACC ¹	MFA-CC Linear Stage Integrated with CONEX Controller
MFA-BK	Universal top plate for XZ and XYZ mounting
MFA-TP (M-MFA-TP)	Top Plate, MFA Series Miniature Linear Stage, English Thread
MFA-BP	Universal base plate

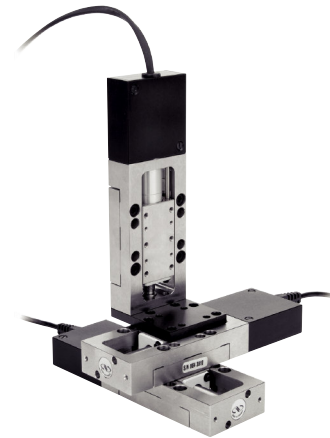
Recommended Motion Controllers

XPS-RL see page 153	Except MFA-PP
XPS-D see page 148	Except MFA-PP
ESP301 see page 157	Except MFA-PP
SMC100CC see page 159	Except MFA-PP and MFA-PPD
SMC100PP see page 159	MFA-PPD only
CONEX-CC see page 161	Included in CONEX-MFACC

Motor cables are included.



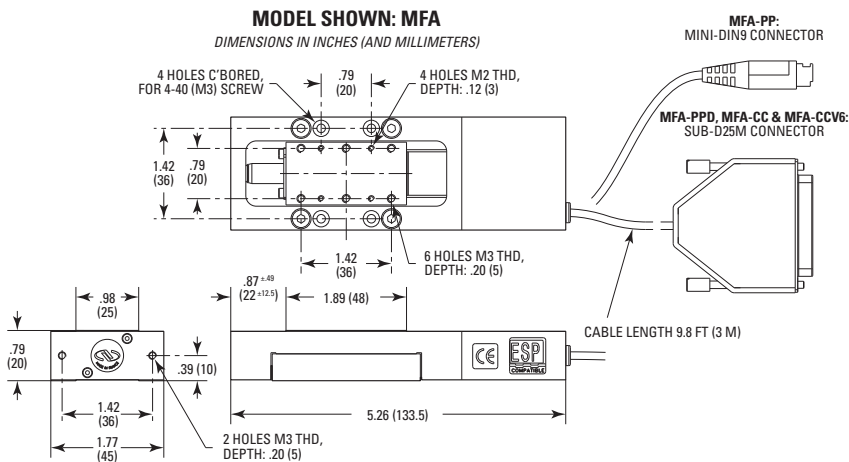
CONEX-MFACC Integrated Linear Stage and Controller



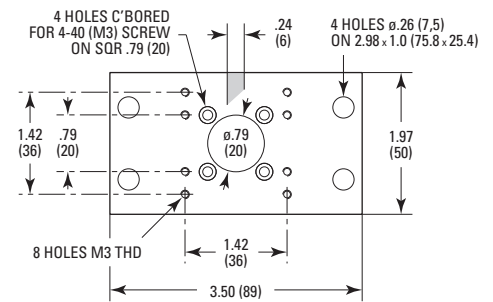
MFA stages in an XYZ configuration

Dimensions

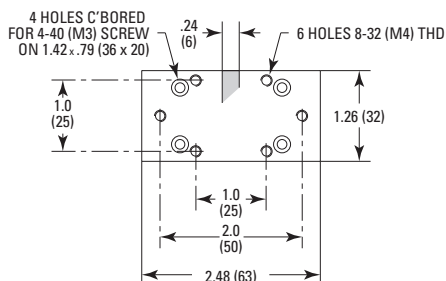
MFA-CC and MFA-PP



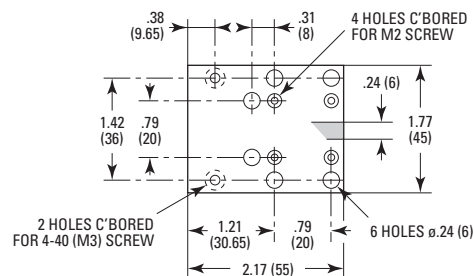
MFA-BP



MFA-TP



MFA-BK



MOTORIZED
LINEAR STAGES

MOTORIZED
VERTICAL STAGES

MOTORIZED
ROTATION STAGES

MOTORIZED
LINEAR ACTUATORS

HEXAPODS

CONTROLLERS
AND DRIVERS

MOTORIZED
OPTICAL MOUNTS

BEAM
MANAGEMENT

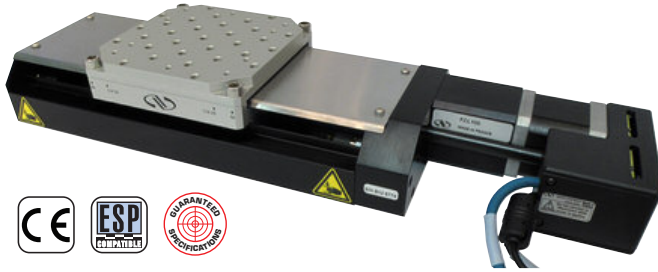
SPECIAL
COLLECTIONS

FCL Series

Intelligent Stepper Motor Linear Stages



scan QR code
to watch video



- Built-in stepper motor controller with iPP technology, eliminating any motor cables and driver setup
- Fully pre-configured with USB communication and enables out-of-the-box control
- Up to 4 FC units can be daisy-chained and controlled via RS-422 with one GUI, or more units via USB hub
- Most economical stage and controller available without compromising MIM
- FEM-optimized aluminum body

The FCL Series linear stages combine a fully integrated stepper motor controller (iPP™ technology) and mid-range travel linear stage in a small footprint. Similar to the CONEX series for DC motor, the FCL stage comes fully pre-configured and enables true out-of-the box control. The iPP™ technology used in the FC series completely eliminates controller or driver set up, allowing users to simply connect USB communication, plug in the power supply and start the motion GUI. Available in 50, 100 and 200 mm travel, features of the FCL stages include: FEM optimized aluminum body to minimize thermal expansions, robust construction of recirculating ball bearing for highly accurate linear motion and backlash-free ballscrew drive for rapid movement with short, step and settling time. Up to 4 FCL units can be daisy-chained and controlled with the same GUI.

Specifications

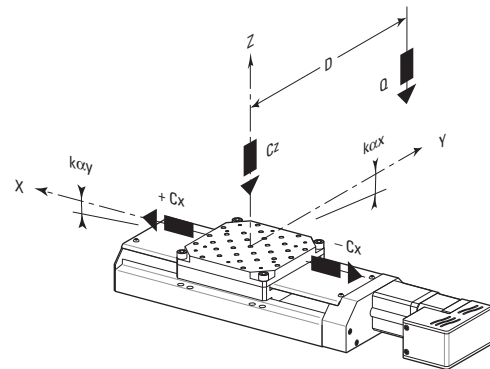
	FCL50	FCL100	FCL200
Travel Range	50 mm	100 mm	200 mm
Maximum Speed	20 mm/s		
Minimum Incremental Motion	0.15 μm		
Centered Load Capacity	250 N		
Compliance in Pitch	10 μrad/Nm		
Compliance in Yaw	10 μrad/Nm		
Compliance in Roll	15 μrad/Nm		
Limit Switches	Optical		
Origin	Optical, centered		
Origin Repeatability	±2.5 μm		
Computer Interfaces	RS232 and USB		
Weight	4.1 kg	3.3 kg	3.6 kg
MTBF	20,000 h (25% load, 30% duty cycle)		
CE	Compliant		

Ordering Information

Model	Description
FCL50	50 mm Travel, iPP motor/controller
FCL100	100 mm Travel, iPP motor/controller
FCL200	200 mm Travel, iPP motor/controller
FC-PS40	Power supply, iPP step motor, RoHS
USB-RS422-1.8	Cable adapter, USB to RS422, 1.8m
FC-CB1	1m communication cable, daisy chain, RS422

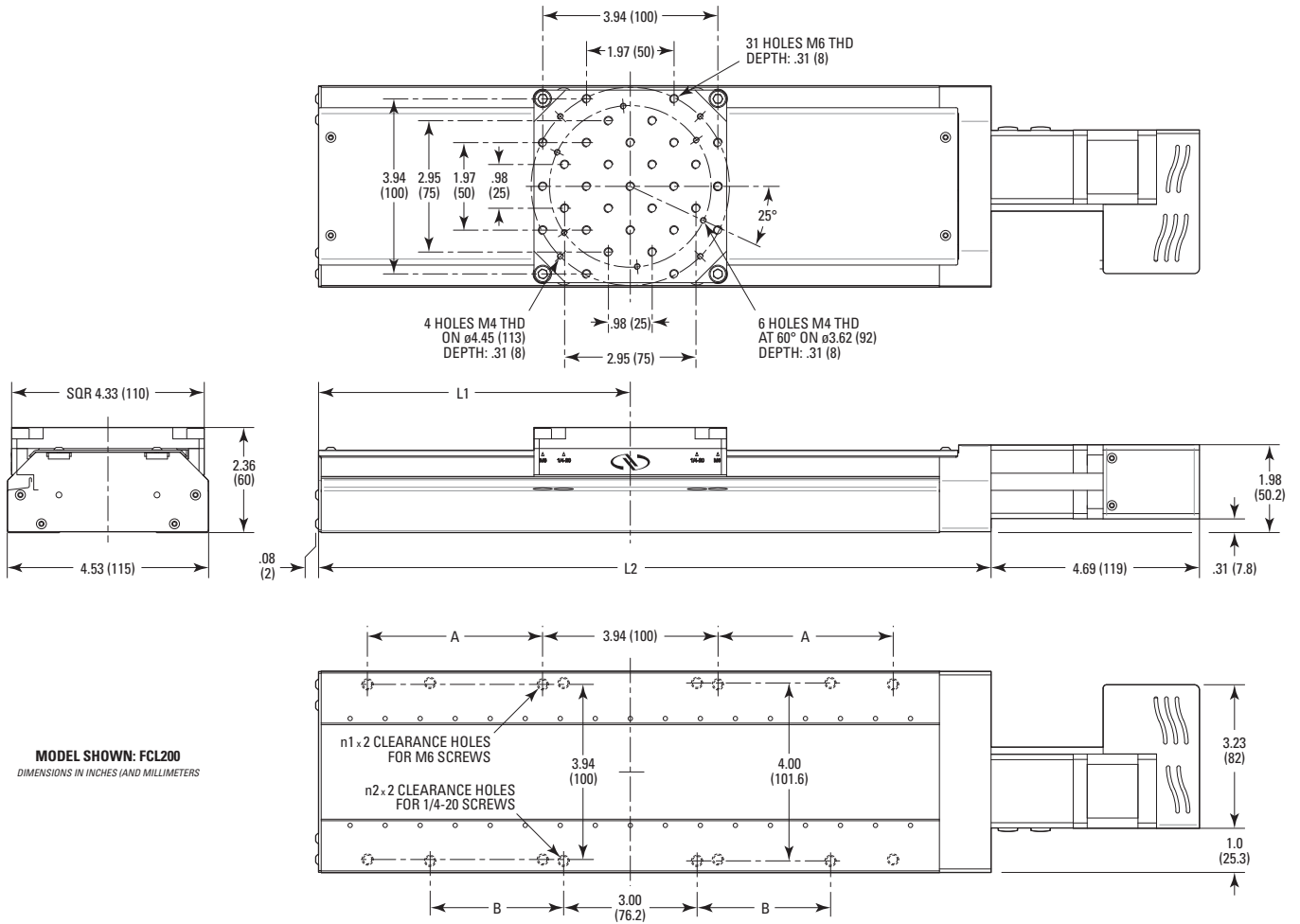
Power supply and cables are sold separately.

Load Characteristics and Stiffness



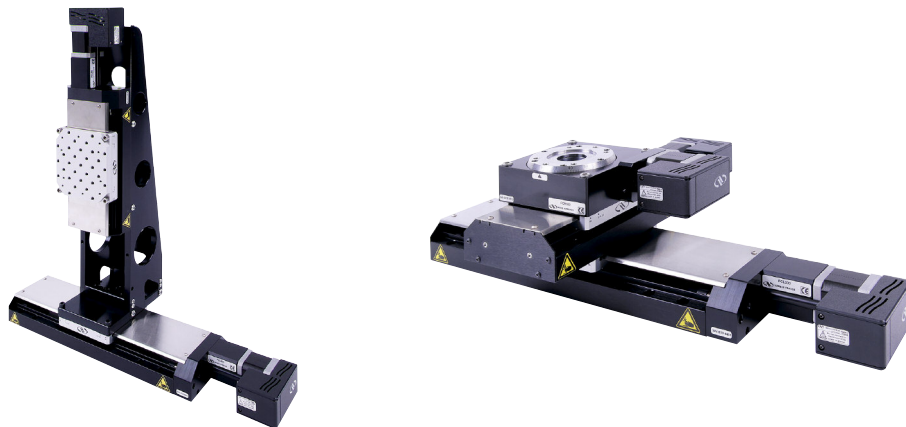
C_z , Normal center load capacity on bearings	250 N
$+C_x/-C_x$, Direct/Inverse load capacity on X axis	<40 N
$k_{\alpha x}$, Compliance in roll	15 μrad/N.m
$k_{\alpha y}$, Compliance in pitch	10 μrad/N.m
$k_{\alpha z}$, Compliance in yaw	10 μrad/N.m
Q , Off-center load	$Q \leq C_z / (1 + D/60)$
D , Cantilever distance in mm	

Dimensions



MODEL SHOWN: FCL200
DIMENSIONS IN INCHES (AND MILLIMETERS)

MODEL	A	n1	B	n2	L1	L2
FCL50	-	2	-	2	4.06 (103)	9.21 (234)
FCL100	-	2	-	2	5.04 (128)	11.18 (284)
FCL200	3.94 (100)	4	3.0 (76.2)	4	7.01 (178)	15.12 (384)



One-XY Mid-Travel Integrated XY Linear Stages



- Integrated XY stages with built-in orthogonality
- Excellent planarity with micron-level straightness and flatness
- Low profile three plate design reduces stacking errors and increases stiffness
- High efficiency, non-cogging linear motor
- Linear encoder for nano-scale MIM and repeatability

The ONE-XY series stage utilizes an integrated XY linear motor designed to eliminate the integration of individual X and Y stages and increase system stiffness for dynamic applications. The series features a travel range from 60 mm to 290 mm, with precise orthogonality alignment between the X and Y axes. This stage utilizes robust components such as its iron-less motor drive and cross-roller bearings to deliver high performance, making them ideal solutions for precision industrial applications such as semiconductor wafer inspection, microelectronics test and assembly, metrology, laser microprocessing.

Specifications

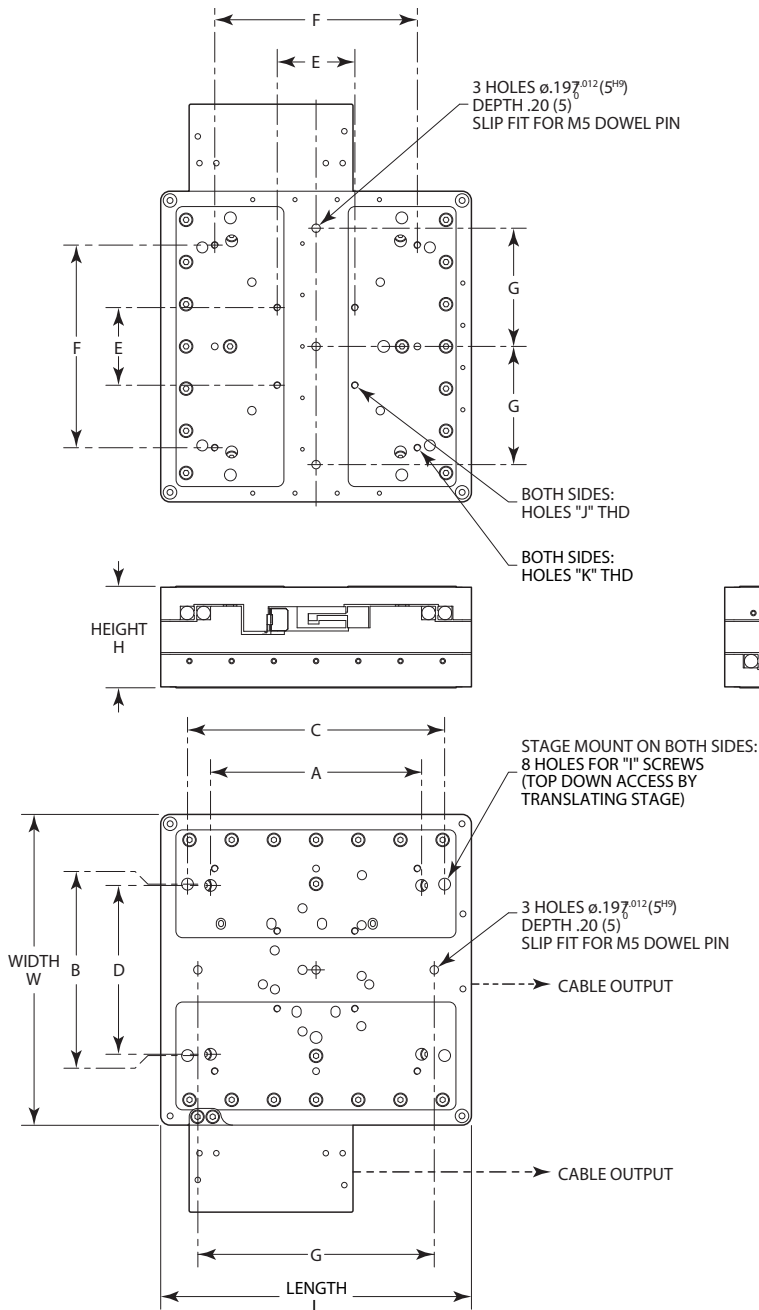
Models	ONE-XY60	ONE-XY100	ONE-XY200	ONE-XY300
Motorized Axes	XY			
Travel Range	50 mm	90 mm	190 mm	290 mm
Maximum Speed	200 mm/s			
Minimum Incremental Motion	0.050 μm			
Maximum Acceleration	0.3 G		0.2 G	
Continuous Motor Force	10 N		20 N	53 N
Peak Motor Force	21 N		42 N	107 N
Centered Load Capacity	100 N	120 N	150 N	350 N
Accuracy, Typical	$\pm 0.4 \mu\text{m}$		$\pm 0.5 \mu\text{m}$	
Accuracy, Guaranteed ¹	$\pm 1.5 \mu\text{m}$	$\pm 2.0 \mu\text{m}$	$\pm 2.5 \mu\text{m}$	$\pm 3.0 \mu\text{m}$
Bi-directional Repeatability, Typical	$\pm 0.040 \mu\text{m}$			
Flatness, Typical	$\pm 0.5 \mu\text{m}$	$\pm 1.0 \mu\text{m}$	$\pm 2.0 \mu\text{m}$	$\pm 3.0 \mu\text{m}$
Straightness, Typical	$\pm 0.5 \mu\text{m}$	$\pm 1.0 \mu\text{m}$	$\pm 2.0 \mu\text{m}$	$\pm 3.0 \mu\text{m}$
Pitch, Typical	$\pm 15 \mu\text{rad}$	$\pm 20 \mu\text{rad}$		$\pm 90 \mu\text{rad}$
Pitch, Guaranteed	$\pm 55 \mu\text{rad}$	$\pm 65 \mu\text{rad}$	$\pm 75 \mu\text{rad}$	
Yaw, Typical	$\pm 15 \mu\text{rad}$	$\pm 25 \mu\text{rad}$		
Yaw, Guaranteed	$\pm 55 \mu\text{rad}$	$\pm 65 \mu\text{rad}$	$\pm 75 \mu\text{rad}$	$\pm 90 \mu\text{rad}$
Roll, Typical	$\pm 29 \mu\text{rad}$		$\pm 36 \mu\text{rad}$	$\pm 24 \mu\text{rad}$
Orthogonality ²	96 μrad			
Origin Repeatability	$\pm 0.1 \mu\text{m}$			
Cable Length	3 m			
Width	125 mm	184 mm	275 mm	500 mm
Weight	2.9 kg	5.8 kg	12 kg	75 kg
MTBF	20,000 h (25% load, 30% duty cycle)			
CE	Compliant			

Notes:

Also available in HA version

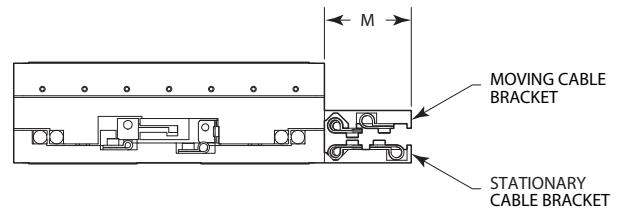
1. Guaranteed accuracy varies for the ONE-XY-HA versions. 2. Orthogonality is reduced to 5 μrad for the ONE-XY-HA versions.

Dimensions



MODEL	TRAVEL	L	W	H	A
ONE-XY60	1.97 (50)	4.92 (125)	4.92 (125)	2.36 (60)	4.0 (101.6)
ONE-XY100	3.54 (90)	7.24 (184)	7.24 (184)	2.36 (60)	6.0 (152.4)
ONE-XY200	7.48 (190)	10.83 (275)	10.83 (275)	2.36 (60)	6.0 (152.4)
ONE-XY300	11.42 (290)	19.69 (500)	19.69 (500)	3.94 (100)	12.0 (304.8)

MODEL SHOWN: ONE-XY100
DIMENSIONS IN INCHES (AND MILLIMETERS)



MODEL	B	C	D	E	F
ONE-XY60	3.0 (76.2)	3.94 (100)	2.95 (75)	1.81 (46)	2.36 (60)
ONE-XY100	4.0 (101.6)	4.92 (125)	3.94 (100)	1.81 (46)	4.72 (120)
ONE-XY200	6.0 (152.4)	6.89 (175)	4.92 (125)	4.72 (120)	6.69 (170)
ONE-XY300	8.0 (203.2)	13.78 (350)	9.84 (250)	6.69 & 8.86 (170 & 225)	10.83 (275)

MODEL	G	I	J	K	M
ONE-XY60	1.38 (35)	1/4-20 or M6	4 HOLES M4	4 HOLES M5	-
ONE-XY100	2.76 (70)	1/4-20 or M6	4 HOLES M4	6 HOLES M5	2.05 (52)
ONE-XY200	2.76 (70)	1/4-20 or M6	8 HOLES M5	6 HOLES M6	2.56 (65)
ONE-XY300	3.94 (100)	5/16-18 or M8	8 HOLES M6	6 HOLES M8	3.78 (96)

Ordering Information

Model	Description
ONE-XY60	50 mm integrated XY stage
ONE-XY100	90 mm integrated XY stage
ONE-XY200	190 mm integrated XY stage
ONE-XY300	290 mm integrated XY stage

Recommended Motion Controllers

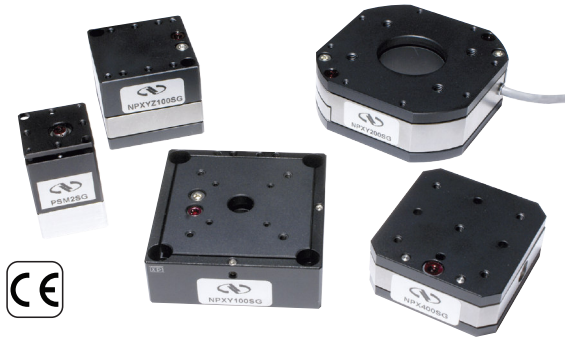
XPS-RL see page 153

XPS-D see page 148

Driver cards to be ordered separately. Please refer to Stage to Controller compatibility chart on page 146. Motor cables are included.

NPX Series

NanoPositioning Linear Stages



- Sub-nanometer piezoelectric positioning resolution
- Motion in X, XY, or XYZ
- Piezoelectric travel range of up to 400 μm
- Optional integrated strain-gauge for closed-loop operation
- High resonant frequency for high dynamic applications
- Vacuum versions

The NPX Series is a family of compact, long travel piezo-based linear stages providing nanometer resolution motion in one, two or three axis. These versatile stages are ideally suited for nanopositioning of small components such as mirrors, fibers, laser diodes, micro-optics, sensors, or cellular samples. NPX stages feature highly reliable, multi-layer, low-voltage piezoelectric transducer (PZT) stacks for high-duty cycle operations. A sophisticated, FEA-optimized, parallelogram solid state flexure guide system ensures perfect parallel motion and up to 400 μm travel range. Due to the frictionless guide principle, NPX stages are maintenance-free and are not subject to wear. Applications include optical delay lines, path length changes of interferometers, laser lithography, scanning microscopy, and patch-clamping, among others.

Specifications

	NPX200	NPX200-D	NPX200SG	NPX200SG-D	NPX200SGV6	NPX400	NPX400-D	NPX400SG	NPX400SG-D	NPX400SGV6
Motorized Axes	X									
Travel Range	0.2 mm					0.4 mm				
Axial Load Capacity	16 N					64 N				
Axial Stiffness	0.08 N/ μm					0.16 N/ μm				
Vertical Load Capacity	10 N									
Cable Length	1 m		2 m	1.2 m	2 m	1 m		2 m	1.2 m	2 m
Vacuum Compatibility	NA	NA	NA	NA	10 ⁻⁶ hPa	NA	NA	NA	NA	10 ⁻⁶ hPa
Capacitance	1.8 μF					5.2 μF				
Closed Loop Resolution	NA	NA	4 nm			NA	NA	4 nm		
Closed Loop Travel	NA	NA	160 μm			NA	NA	320 μm		
Open Loop Resolution	0.4 nm									
Open Loop Travel	200 μm					400 μm				
Resonant Frequency, Unloaded	177 Hz					200 Hz				
Weight	180 g									
CE	Compliant									

Ordering Information*

Model	Description
NPXY100	Nanopositioning Open-loop XY Stage, 100 μm
NPXY100-D	Nanopositioning Open-loop XY Stage, 100 μm , XPS
NPXY100SG	Nanopositioning XY Stage, 100 μm , Strain-gauge
NPXY100SG-D	Nanopositioning XY Stage, 100 μm , Strain-gauge, XPS
NPXY100SGV6	Vacuum Nanopositioning XY Stage, 100 μm , Strain-gauge

* Selected examples only. See full product offering at Newport.com

Recommended Motion Controllers

XPS-RL see page 153

Use XPS-DRVP1

XPS-D see page 148

Use XPS-DRVP1

NPC3 see page 173

NPC3SG see page 173

NPC1USB see page 174

Piezo Stack Amplifier, Single Channel, Low Cost

Agilis™ Series

Piezo Motor Driven Linear Stages



- Small minimum incremental motion
- Set-and-forget stability when not in use
- Ripple-free with low friction travel
- Available with direct read encoder and CONEX controller
- Available in vacuum compatible versions

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to watch video

The AG-LS25, AG-LS25-27 and CONEX-AG-LS25-27P are high precision miniature linear stages featuring Newport's proprietary Agilis™ piezo motor. With ultra-high adjustment sensitivity, convenient programmable operation and compact design, Agilis stages provide outstanding motion performance at the cost of a high-quality manual stage. Precision motion is achieved by calibrated, pre-stressed linear ball bearings. The thermally matched stainless steel design and precision manufactured bearing surfaces provide ripple-free, low friction linear travel and angular deviations better than 100 μ rad in any axis. The Agilis piezo motor is also directly coupled to the moving carriage with no intermediate screw or gear avoiding problems with coupling in drivetrain. In contrast to ultrasonic motors, the Agilis non-resonant motor makes small incremental adjustments more predictable with 50 nm incremental motion capability, ideal for ultra-sensitive alignments and adjustments. Available with integrated direct read encoder and CONEX Controller, the CONEX-AG-LS25-27P is well-suited for applications where repeatability is critical. For vacuum applications, see V6 versions of Agilis.

Specifications

	AG-LS25	AG-LS25-27	AG-LS25-27V6	AG-LS25V6
Travel Range	12 mm	27 mm		12 mm
Minimum Incremental Motion	0.05 μ m	0.1 μ m		0.05 μ m
Maximum Speed	0.5 mm/s			
Vertical Load Capacity	3 N	3.5 N	2.5 N	3 N
Axial Load Capacity	2 N	1.5 N		2 N
Vacuum Compatibility			10-6 hPa	10-6 hPa
Holding Force	4 N			
Material	Stainless Steel			
Pitch	200 μ rad			
Yaw	200 μ rad			
Cable Length	1.2 mm			
Operating Temperature	+10 to +35 °C			
Weight	70 g	125 g		70 g

Ordering Information

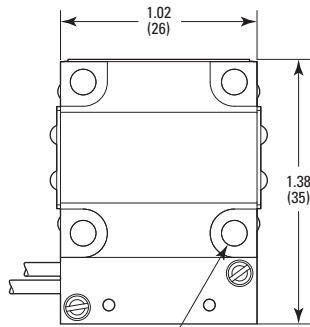
Model	Description
AG-LS25	Piezo Motor Driven Linear Stage, 12 mm travel
AG-LS25-27	Piezo Motor Driven Linear Stage, 27 mm travel
AG-LS25V6	Piezo Motor Driven Linear Stage, 12 mm travel, Vacuum Compatible
AG-LS25-27V6	Piezo Motor Driven Linear Stage, 27 mm travel, Vacuum Compatible
CONEX-AG-LS25-27P	Piezo Motor Linear Stage, Direct Encoder, Integrated Controller

Recommended Motion Controllers

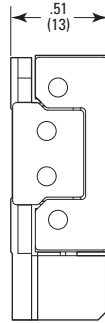
Agilis™ Series Controller, see page 165

Dimensions

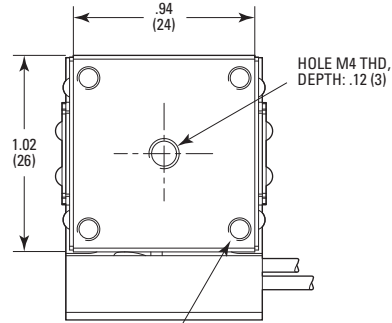
Model AG-LS25



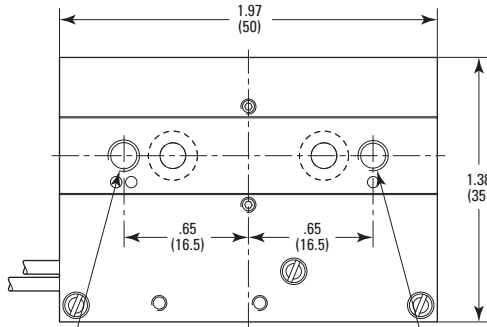
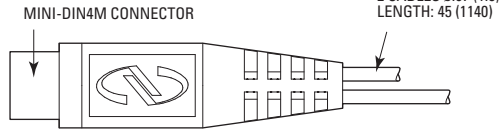
4 HOLES C'BORED FOR M3 SCREW ON SQR .79 (20)



MODEL SHOWN: AG-LS25
DIMENSIONS IN INCHES (AND MILLIMETERS)

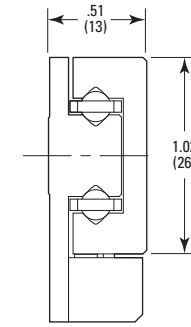


4 HOLES M3 THD ON SQR .79 (20), DEPTH: .14 (3.5)

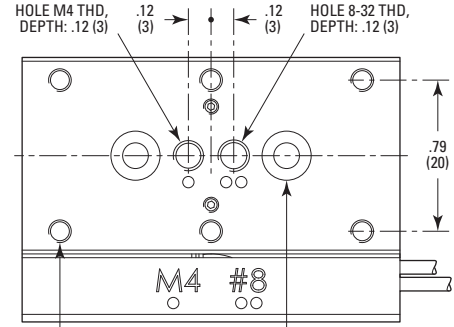


HOLE 8-32 THD, DEPTH: .24 (6)

HOLE M4 THD, DEPTH: .24 (6)

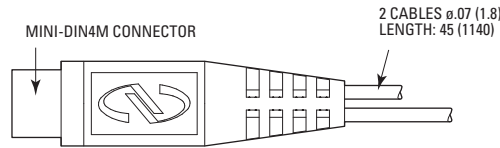


MODEL SHOWN: AG-LS25-27
DIMENSIONS IN INCHES (AND MILLIMETERS)



6 HOLES M3 THD .79 (20) SPACING, DEPTH: .14 (3.5)

2 HOLES C'BORED FOR M3 SCREW .79 (20) SPACING



CONEX-AG-LS25-27P shown

MOTORIZED LINEAR STAGES
MOTORIZED VERTICAL STAGES
MOTORIZED ROTATION STAGES
MOTORIZED LINEAR ACTUATORS
HEXAPODS
CONTROLLERS AND DRIVERS
MOTORIZED OPTICAL MOUNTS
BEAM MANAGEMENT
SPECIAL COLLECTIONS

Multi-Axis Kinematic Alignment Stages



Model 8071 Four-Axis Tilt Aligner shown

- Easily align modulators and isolators
- 4-axis, 5-axis, and 6-axis versions
- <30 nm resolution
- Standard and vacuum compatible versions



New Focus' Multi-Axis Kinematic Alignment Stages increase the utility of our popular kinematic stages by motorizing each of the axes. The addition of Picomotor™ actuators to each stage allows remote high-resolution (<30-nm) adjustment of various combinations of X, Y, Z, x, and y. The four-axis and five-axis aligners are ideal for positioning modulators or isolators and for coupling light into waveguide devices. The six-axis aligner is ideal for semiconductor-wafer alignment.

Specifications

	8071 (8071-M)	8081 (8081-M)	8081-UHV (8081M-UHV)	8082 (8082-M)	8095 (8095-M)
Axes of Travel	X, Y, x, y		X, Y, Z, x, y		X, Y, Z, x, y, z
Mechanism	Piezo Motor				
Travel Range	3 mm				
Angular Range	8°		x=8°, y=10°	8°	4°
Load Capacity	13 N				
MIM	<30 nm				
Angular Resolution	x, y≤0.7 μrad				x, y, z≤0.2 μrad
Vacuum Compatibility	NA	NA	10 ⁻⁹ Torr	NA	NA
Wire Type	NA	NA	Kapton® Ribbon Ultrahigh	NA	NA
Connector Type	6-pin Connectors (2)		DB15 Female	6-pin Connectors (2)	4-pin Connectors (6)
Operating Temperature	10 to 40°C				
Thread Type	*8-32 (M4)	8-32 and 1/4-20 (M4 and M6)	8-32 and 1/4-20 (M4 and M6)	8-32 and 1/4-20 (M4 and M6)	1/4/2020 (M6)

Ordering Information

Model	Description
8071	Motorized XY x y Tilt Aligner, 3 mm, 8°
8081	Motorized XYZ x y Tilt Aligner, 3 mm, 8°
8082	Motorized Wide XYZ x y Tilt Aligner, 3 mm, 8°
8095	Motorized XYZ x y z Aligner, 3 mm, 4°
8081-UHV	Ultra High Vacuum Motorized XYZ x y Tilt Aligner
8081-UHV-C	8081-UHV cable, 1.83m, DB15 Female to 6-pin RJ25 Connector

Add -M to model number for metric version.

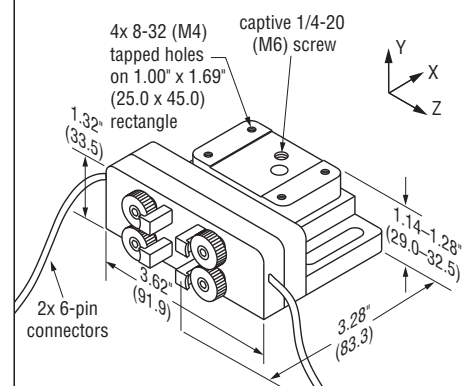
Recommended Motion Controller

8742 see page 166



Model 8081 Motorized Five-Axis Tilt Aligner shown

Dimensions



Model 8071 shown.
Visit Newport.com for other drawings.

Gothic Arch Bearing Picomotor Linear Stages



Model 9062-XYZ-PPN

- < 30 nm resolution
- gothic-arch bearings for demanding applications
- Ultra-compact motorized and manual axis configurations
- True set-and-forget long-term stability
- Easy-to-use, flexible controllers and drivers



Model 9065-XYZ-PPN

New Focus' Gothic Arch Bearing Motorized Linear Stages (Model 9062 and 9063 Series) include integrated Picomotor™ actuators to provide the ultimate stability and rigidity along with remote-control operation. These motorized stages offer stainless-steel construction, thumbscrew locks, and 13-mm travel ranges. They are ideal for demanding applications in the laboratory, OEM, or on the manufacturing floor. Gothic-arch bearings offer the smooth motion of ball bearings but high stiffness and repeatability. The unique gothic profile provides increased contact area so that the load and momentum are more evenly distributed.

The Compact Gothic Arch Bearing Motorized Linear Stages (Model 9061 Series) feature integrated Tiny Picomotor™ actuators. Note the Tiny Picomotor is recommended only for driving XY axes due to the lower force limit compared with standard Picomotor.

The Crossed Roller Bearing Motorized Stages (Model 9066 and 9067 Series) provide smooth and accurate positioning for critical optical alignment applications such as fiber alignment and high-stability positioning in laser systems. To ensure accurate linear travel, the stages use thermally matched hardened-steel, crossed-roller bearing and high-precision reference surfaces.

The Triple Divide motorized translation stage system (Model 9064 and 9065 Series) is based on the unique e•z•trac™ rail system and delivers the stability of an integrated stage but is effortlessly adaptable and easy to use. Because of its modularity, these stages are extremely economical.

Specifications

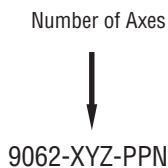
	9062-X-P	9062-XY-NP	9062-XY-PN	9062-XY-PP	9062-XYZ-NNP	9062-XYZ-NPN	9062-XYZ-NPP	9062-XYZ-PNN	9062-XYZ-PNP	9062-XYZ-PPN	9062-XYZ-PPP
Motorized Axes	X	Y	X	X	Z	Y	Y, Z	X	X, Z	X, Y	X, Y, Z
Micrometer Axes		X	Y	Y	X, Y	X, Z	X	Y, Z	Y	Z	
Travel Range	12.7 mm										
Platform Size	40 x 40 mm										
Minimum Incremental	<30 nm										
Thread Type	8-32 and 1/4-20										
Material	Stainless Steel										
Bearings	Gothic Arch Bearings										
Horizontal Load Capacity	84 N										
Feedback	Open Loop										
Cable Length	2.1 m										
Connector Type	4-Pin										
Operating Temperature	10 to 40°C										

	9063-X-P	9063-XY-NP	9063-XY-PN	9063-XY-PP	9063-XYZ-NNP	9063-XYZ-NPN	9063-XYZ-NPP	9063-XYZ-PNN	9063-XYZ-PNP	9063-XYZ-PPN	9063-XYZ-PPP
Motorized Axes	X	Y	X	X, Y	Z	Y	Y, Z	X	X, Z	X, Y	X, Y, Z
Micrometer Axes		X	Y		X, Y	X, Z	X	Y, Z	Y	Z	
Travel Range	25.4 mm										
Platform Size	65 x 65 mm										
Minimum Incremental	<30 nm										
Thread Type	8-32 and 1/4-20										
Material	Stainless Steel										
Bearings	Gothic Arch Bearings										
Horizontal Load Capacity	173 N										
Vertical Load Capacity	35 N										
Feedback	Open Loop										
Cable Length	2.1 m										
Connector Type	4-Pin										
Operating Temperature	10 to 40°C										

Recommended Motion Controller

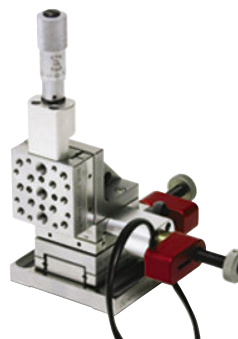
8742 see page 166

Ordering Information

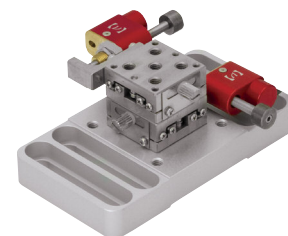


Indicates if Corresponding Axis has a Picomotor™ Actuator (P) or Manual Micrometer (N)

Example Model Number: 9062-XYZ-PPN
 9062-XYZ stage with Picomotor actuators integrated on X and Y axes and manual micrometer on Z axis.



Model 9066-XYZ-PPN



Model 9061-XY-PP

MOTORIZED LINEAR STAGES
 MOTORIZED VERTICAL STAGES
 MOTORIZED ROTATION STAGES
 MOTORIZED LINEAR ACTUATORS
 HEXAPODS
 CONTROLLERS AND DRIVERS
 MOTORIZED OPTICAL MOUNTS
 BEAM MANAGEMENT
 SPECIAL COLLECTIONS

Motorized Fiber Positioners



Model 8051



- Unique flexure design
- Picomotor actuators
- <math><30\text{ nm}</math> minimum incremental motion

New Focus motorized XY fiber positioners provide the resolution from $1.0\text{ }\mu\text{m}$ down to finer than $0.1\text{ }\mu\text{m}$. A multimode-fiber positioner can be assembled by combining one of these stages with Model 9092 coupler body and clamp.

Specifications

	8051	8051-M
Axes of Travel	X, Y	
Thread Type	*8-32	M4
Connector Type	6 Pin	
Maximum Speed	1 mm/min	
Minimum Incremental Motion	30 nm	
Operating Temperature	10-40 °C	

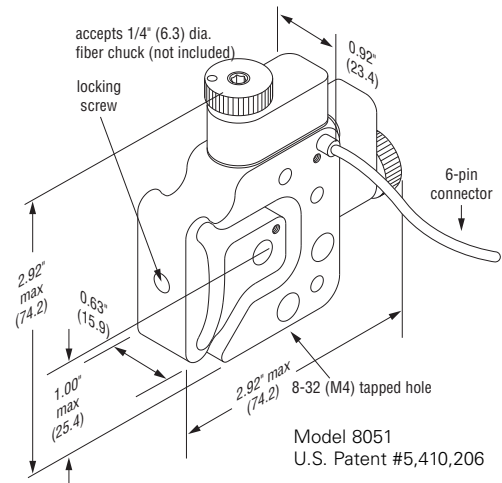
Ordering Information

Model	Description
8051	Motorized XY Fiber Positioner, 8-32 Tapped Hole
8051-M	Motorized XY Fiber Positioner, M4 Tapped Hole

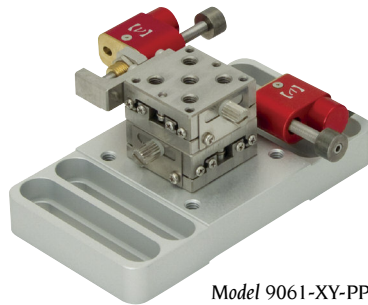
Recommended Motion Controller

8742 see page 166

Dimensions



Compact Gothic Arch Bearing Picomotor Linear Stages



- < 30 nm resolution
- Gothic-arch bearings for demanding applications
- Ultra-compact motorized and manual axis configurations
- True set-and-forget long-term stability
- Easy-to-use, flexible controllers and drivers

We've incorporated our Tiny Picomotor actuators with our compact gothic-arch-bearing translation stages to achieve the ultimate in stability and rigidity along with remote-control operation. Please note that the Tiny Picomotor is only recommended for driving XY axes of our Gothic arch bearing stages due to the lower force limit compared with our regular Picomotor.

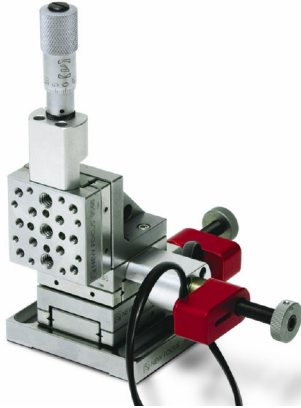
Specifications

	9061-X-P	9061-XY-NP	9061-XY-PN	9061-XY-PP	9061-XYZ-NPN	9061-XYZ-PNN	9061-XYZ-PPN
Motorized Axes	X	Y	X	X, Y	X, Z	X	X, Y
Micrometer Axes		X	Y			Y, Z	Z
Travel Range	5 mm						
Platform Size	25 x 25 mm						
Minimum Incremental Motion	<30 nm						
Thread Type	*8-32						
Material	Stainless Steel						
Bearings	Gothic Arch Bearings						
Axial Load Capacity	13 N						
Vertical Load Capacity	4 N						
Feedback	Open Loop						
Cable Length	2.1 m						
Connector Type	4-Pin						
Operating Temperature	10 to 40°C						

Recommended Motion Controller

8742 see page 166

Crossed Roller Bearing Picomotor Translation Stages



- Crossed-roller-bearing design for smooth and accurate positioning
- < 30 nm resolution
- True set-and-forget long-term stability
- Easy-to-use, flexible controllers and drivers

We've incorporated our Picomotor™ actuators with our crossed-roller-bearing translation stages to meet your demanding photonics applications. Crossed-roller-bearing motorized stages provide smooth and accurate positioning for critical optical alignment applications such as fiber alignment and high-stability positioning in laser systems.

Specifications

	9066-X-P	9066-XY-NP	9066-XY-PN	9066-XY-PP	9066-XYZ-NNP	9066-XYZ-NPN	9066-XYZ-NPP	9066-XYZ-PNN	9066-XYZ-PNP	9066-XYZ-PPN	9066-XYZ-PPP	9067-X-P	9067-XY-NP	9067-XY-PN	9067-XY-PP	9067-XYZ-NNP	9067-XYZ-NPN	9067-XYZ-NPP	9067-XYZ-PNN	9067-XYZ-PNP	9067-XYZ-PPN	9067-XYZ-PPP
Motorized Axes	X	Y	X	X, Y	Z	Y	Y, Z	X	X, Z	X, Y	X, Y, Z	X	Y	X	X, Y	Z	Y	Y, Z	X	X, Z	X, Y	X, Y, Z
Micrometer Axes		X	Y		X, Y	X, Z	X	Y, Z	Y	Z			X	Y		X, Y	X, Z	X	Y, Z	Y	Z	
Travel Range	12.7 mm											25.4 mm										
Platform Size	36.8 x 36.8 mm											63.5 x 63.5 mm										
Minimum Incremental Motion	<30 nm																					
Thread Type	8-32 and 1/4-20																					
Material	Stainless Steel																					
Bearings	Crossed Roller Bearings																					
Straightness	3 μm																					
Flatness	3 μm																					
Center Load Capacity	25 lb (111 N)											50 lb (222 N)										
Vertical Load Capacity	10 lb (44.5 N)											18 lb (80 N)										
Cable Length	2.1 m																					
Connector Type	4-Pin																					
Operating Temperature	10 to 40°C																					

Recommended Motion Controller

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Triple-Divide Picomotor™ Translation Stages

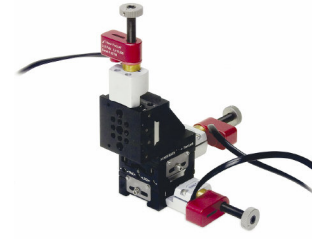
We've incorporated our Picomotor actuators with our Triple Divide translation stages to meet your laboratory applications. The Triple Divide motorized translation stage system is based on the unique e•z•trac™ rail system and delivers the stability of an integrated stage but is effortlessly adaptable and easy to use. Because of its modularity, these stages are extremely economical.



Model 9065-XY-PP



Model 9065-X-P



Model 9065-XYZ-PPP

Specifications

	9065-X-P	9065-XY-NP	9065-XY-PN	9065-XY-PP	9065-XYZ-NNP	9065-XYZ-NPN	9065-XYZ-NPP	9065-XYZ-PNN	9065-XYZ-PNP	9065-XYZ-PPN	9065-XYZ-PPP
Motorized Axes	X	Y	X	X, Y	Z	Y	Y, Z	X	X, Z	X, Y	X, Y, Z
Micrometer Axes		X	Y		X, Y	X, Z	X	Y, Z	Y	Z	
Travel Range	12.7 mm										
Platform Size	39.4 x 39.4 mm										
Thread Type	8-32 and 1/4-20										
Material	Aluminum										
Bearings	Ball Bearings										
Straight Line Accuracy	<3 μm										
Maximum Nominal Load	12 lbs (53 N)										
Orthogonality	N/A	<2 mrad									
Resolution	0.5 μm										
Cable Length	2.1 m										
Connector Type	4-Pin										
Operating Temperature	10 to 40°C										

	9064-X-P	9064-XY-NP	9064-XY-PN	9064-XY-PP	9064-XYZ-NNP	9064-XYZ-NPN	9064-XYZ-NPP	9064-XYZ-PNN	9064-XYZ-PNP	9064-XYZ-PPN	9064-XYZ-PPP
Motorized Axes	X	X	X	X, Y	Z	Y	Y, Z	X	X, Z	X, Y	X, Y, Z
Micrometer Axes			Y		X, Y	X, Z	X	Y, Z	Y	Z	
Travel Range	25.4 mm										
Platform Size	63.5 x 63.5 mm										
Thread Type	8-32 and 1/4-20										
Material	Aluminum										
Bearings	Ball Bearings										
Straight Line Accuracy	<2.5 μm										
Maximum Nominal Load	20 lbs (88 N)										
Orthogonality	N/A	<1 mrad									
Resolution	0.5 μm										
Cable Length	2.1 m										
Connector Type	4-Pin										
Operating Temperature	10 to 40°C										

Recommended Motion Controller

8742 see page 166

Optically Encoded Stainless-Steel Translation Stages



Model 9066-COM-E stage with a Picomotor actuator

- Vacuum compatible crossed roller bearing stages to 10^{-6} Torr
- Stages are clean assembled and use low vapor pressure grease
- Precision control and smooth translation with $<150 \mu\text{rad}$ deviation
- Available without baseplate for minimal profile
- Ultrastable, sub-micron performance



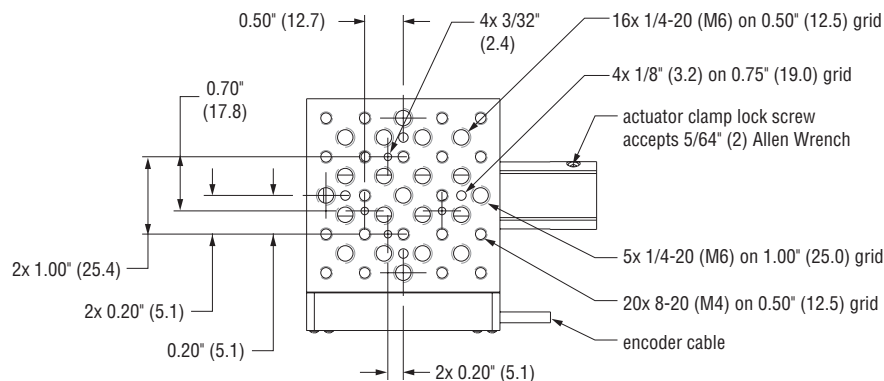
New Focus' stainless-steel, crossed-roller-bearing translation stages include linear optical encoders that create a closed-loop Picomotor™ actuated stage. Highly repeatable motion and outstanding accuracy can be achieved by using these stages with their integrated encoders and selected Picomotor actuators. These encoders are fully compatible with the Model 8743-CL Closed-Loop Picomotor Driver. For example, a 9066-COM-E stage with a Model 8302 Picomotor actuator and Model 8743-CL driver becomes a closed-loop linear stage.

	9066-COM-E	9066-COM-E-M	9067-COM-E	9067-COM-E-M
Travel Range	12.7 mm	12.7 mm	25.4 mm	25.4 mm
Platform Size	36.8 x 36.8 mm	63.5 x 63.5 mm	36.8 x 36.8 mm	63.5 x 63.5 mm
Height	22.1 mm			
Bearings	Crossed Roller Bearings			
Material	Stainless Steel			
Thread Type	8-32 and 1/4-20	M4 and M6	8-32 and 1/4-20	M4 and M6
Resolution	80 nm			
On-Axis Accuracy	3 μm			
Feedback	Closed Loop			

Ordering Information

Model	Description
9066-COM-E(-M)	Stainless Steel Translation Stage, Optical Encoder, 0.5 in. (12.7 mm), 8-32 (M4)
9067-COM-E(-M)	Stainless Steel Translation Stage, Optical Encoder, 1.0 in. (25.4mm), 1/4-20 (M6)

Dimensions



Model 9067-COM-E