

High-Performance Delay Line Stages

DL SERIES



The DL linear stage series is a high performance but very affordable, linear motor driven stage with an integrated motion controller. Optimized for small loads, repeatable positioning and fast traverse speeds, it is an ideal solution for spectroscopy applications that require delay lines. With travels of 125 mm, 225 mm and 325 mm, this offering covers almost all possible delay needs from femtosecond to nanosecond delays. Spectroscopy applications range from pump-probe, interferometry, 2DIR, etc. To facilitate setups, beam kits consisting of retroreflectors, mirrors, mounts and other optomechanical parts, are available to suit various wavelengths and delay line configurations.



DESIGN DETAILS

Base Material	Extruded Aluminum
Bearings	Recirculating bearings
Drive System	3-phase synchronous ironless linear motor (without Hall effect sensors)
Motor Initialization	Done by the controller.
Motor Commutation	Done by the controller on encoder feedback
Feedback	Linear glass scale, 80 μm signal period, 1 V _{pp}
Limit	Optical
Home Switch	Optical, on encoder's fiducial track, located at the minus end of travel
Controller Compatibility	DL Controller
Cable	3 m long pigtail cables included
MTBF	20,000 hours



- Excellent delay sensitivity and bi-directional repeatability
- Low angular deviation where it counts (pitch)
- Compatibility with optical tables & mounts
- Small footprint
- No moving cable
- Easy to use (Delay line GUI, LabVIEW drivers)

SPECIFICATIONS

		DL125	DL225	DL325
Travel Range (Single Pass)	(mm)	125	225	325
	(ns)	0.8	1.5	2.2
Minimum Incremental Motion (Single Pass)	(nm)	75	75	75
	(fs)	0.5	0.5	0.5
Bi-directional Repeatability, Guaranteed ⁽¹⁾	(μm)	± 0.15	± 0.15	± 0.15
Accuracy, Guaranteed ⁽¹⁾⁽²⁾	(μm)	± 1.5	± 2	± 2.5
Encoder Resolution	(nm)	50	50	50
Origin Repeatability	(μm)	0.4	0.4	0.4
Maximum Speed ⁽³⁾	(mm/s)	500	500	500
Maximum Acceleration, No Load	(mm/s ²)	7500	7500	7500
Pitch, Typical (Guaranteed) ⁽¹⁾⁽²⁾⁽⁴⁾	(μrad)	$\pm 60 (\pm 100)$	$\pm 60 (\pm 100)$	$\pm 90 (\pm 150)$
Yaw, Typical (Guaranteed) ⁽¹⁾⁽²⁾⁽⁴⁾	(μrad)	$\pm 30 (\pm 60)$	$\pm 40 (\pm 90)$	$\pm 50 (\pm 120)$

¹⁾ Shown are peak to peak, guaranteed specifications or \pm half the value as sometimes shown. For the definition of typical specifications which are about 2X better than the guaranteed values, visit www.newport.com for the Motion Control Metrology Primer.

²⁾ For a travel of 325 mm.

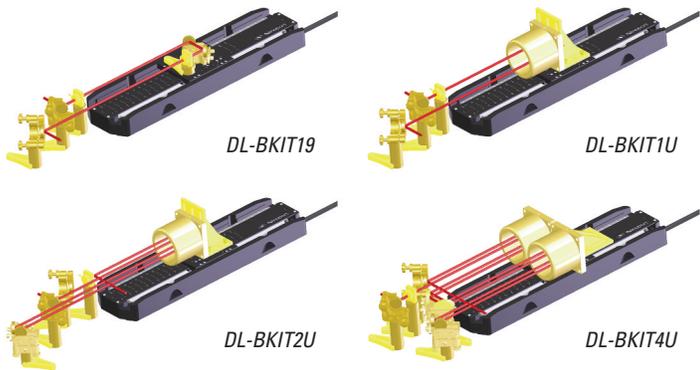
³⁾ With DL controller.

⁴⁾ To obtain arcsec units, divide μrad value by 4.8.

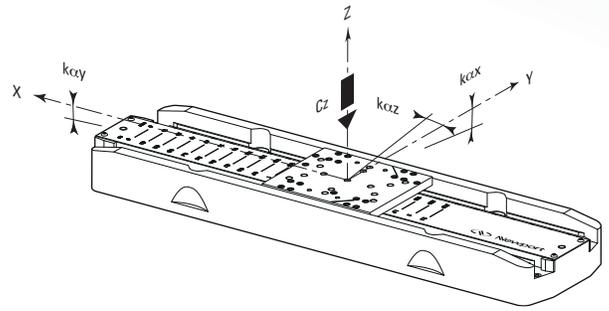
			Single Pass	Dual Pass	Quad Pass
Delay	DL125	(ns)	0.8	1.7	3.3
	DL225	(ns)	1.5	3.0	6.0
	DL325	(ns)	2.2	4.3	8.7
MIM		(fs)	0.5	1.0	2.0

ORDERING INFORMATION

Model	Description
DL125	125 mm Travel range stage with DL controller
DL225	225 mm Travel range stage with DL controller
DL325	325 mm Travel range stage with DL controller
DL-PS	Power supply for DL stages
DL-BKIT19	Beam Kit, 9848 reflector, 1 pass for UV, IR or Vis
DL-BKIT1U-S	Beam Kit, UBBR retroreflector, 1 pass, IR or Vis
DL-BKIT1U-UV	Beam Kit, UBBR retroreflector, 1 pass, UV Beam
DL-BKIT2U-S	Beam Kit, UBBR retroreflector, 2 pass, IR or Vis
DL-BKIT2U-UV	Beam Kit, UBBR retroreflector, 2 pass, UV Beam
DL-BKIT4U-S	Beam Kit, UBBR retroreflector, 4 pass, IR or Vis
DL-BKIT4U-UV	Beam Kit, UBBR retroreflector, 4 pass, UV Beam



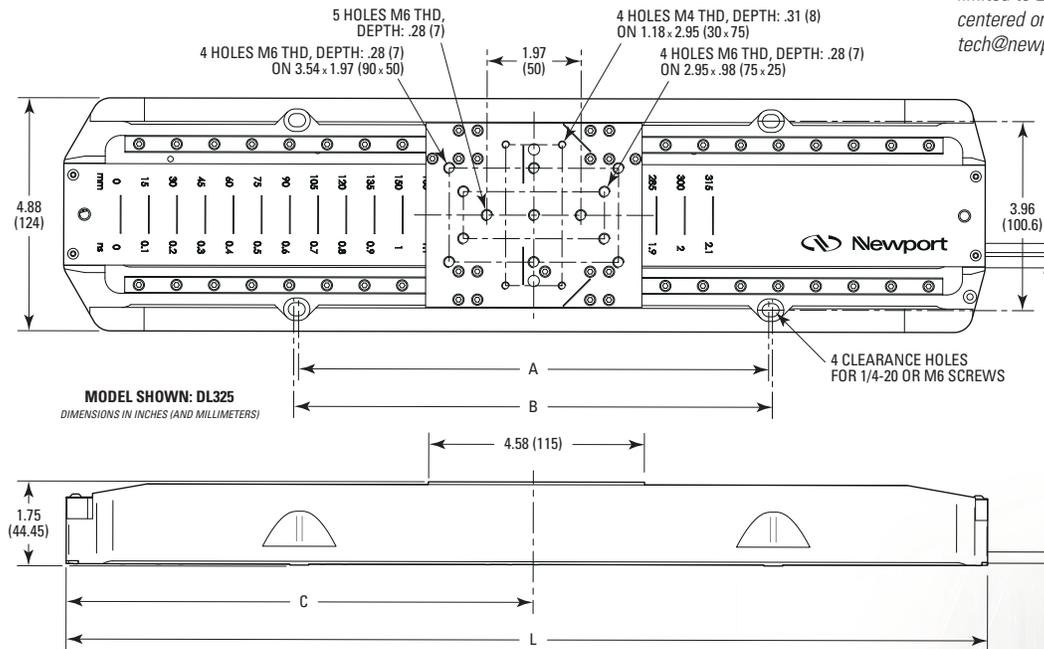
LOAD CHARACTERISTICS AND STIFFNESS



C_z , Normal center load capacity on bearings	200 N
k_{cxx} , Compliance in roll	15 μ rad/Nm
k_{cyy} , Compliance in pitch	10 μ rad/Nm
k_{czz} , Compliance in yaw	10 μ rad/Nm

Note: For Delay line application, the DL stage load capacity is limited to 20 N. It is recommended to keep the load centered on the carriage. For other applications, contact tech@newport.com

DIMENSIONS



MODEL	TRAVEL	L	A	B	C
DL125	4.92 (125)	11.42 (290)	5.91 (150)	6.0 (152.4)	5.91 (150)
DL225	8.86 (225)	15.35 (390)	7.87 (200)	8.0 (203.2)	7.87 (200)
DL325	12.80 (325)	19.29 (490)	9.84 (250)	10.0 (254)	9.84 (250)



Newport Corporation, Global Headquarters
 1791 Deere Avenue, Irvine, CA 92606, USA

PHONE: 1-800-222-6440 1-949-863-3144 FAX: 1-949-253-1680 EMAIL: sales@newport.com

Complete listings for all global office locations are available online at www.newport.com/contact

www.newport.com