DL SERIES

High-Performance Delay Line Stages

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 iron less 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 VPP
- Limit: Optical
- Home Switch: Optical, on encoder's fiducial track, located at the minus end of travel
- Controller: DL Controller
- MTBF: 20,000 hours

Key Features

- Excellent delay sensitivity and bidirectional 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 (mm) (ns)	125 0.8	225 1.5	225 1.5
Minimum Incremental Motion (nm) (Single Pass) (fs)	75 0.5		
Bi-directional repeatability, guaranteed[1] (µm)	±0.15		
Accuracy, Guaranteed[1] (µm)	±1.5	±2	±2.5
Encoder Resolution (nm)	50		
Origin Repeatability (µm)	0.4		
Max. Speed[2] (mm/s)	300		
Max. Acceleration. No Load (mm/s²)	7500		
Pitch, Typical (Guaranteed)[1] [3] (µrad)	±60 (±100)	±60 (±100)	±90 (±150)
Yaw, Typical (Guaranteed)[1] [3] (µrad	±30 (±60)	±40 (±90)	±50 (±150)

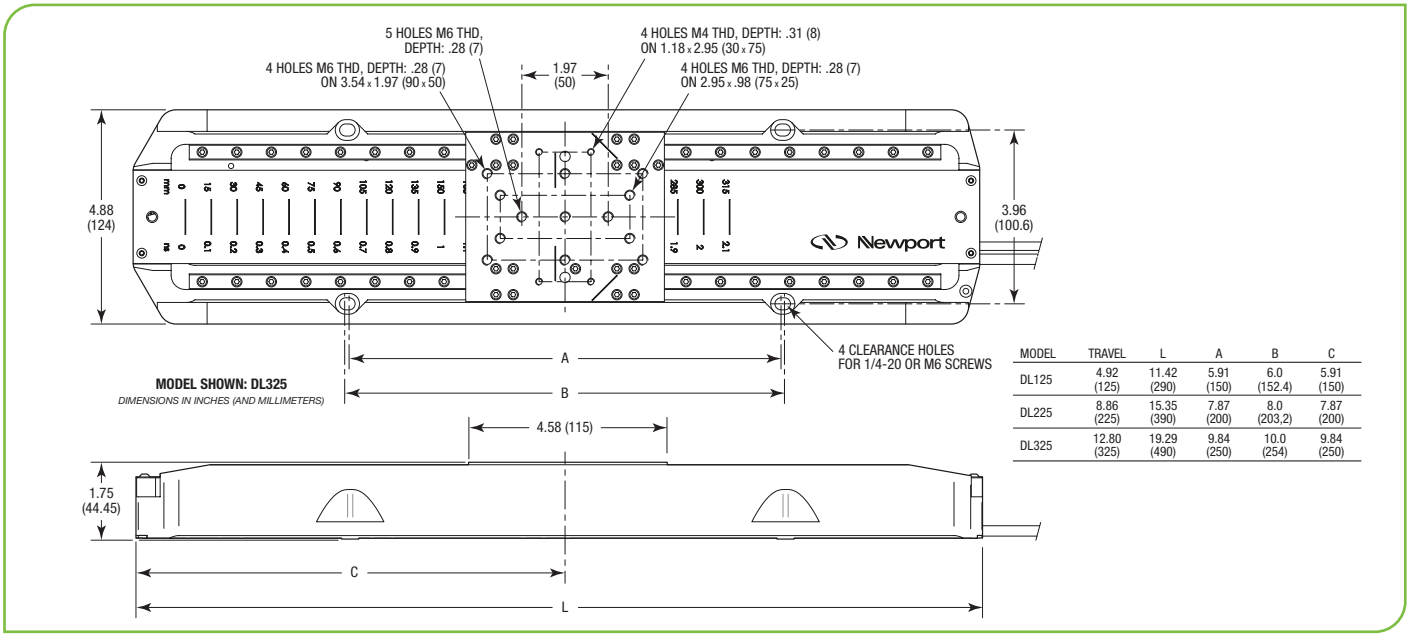
1) For the definition of Typical and Guaranteed specifications see "Motion Basics Terminology & Standards" Tutorial at www.newport.com

2) With DL controller.

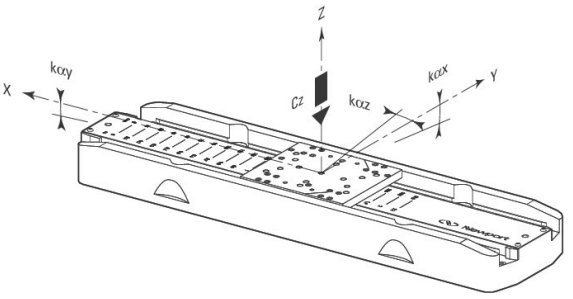
3) To obtain arcsec units, divide µrad value by 4.8.

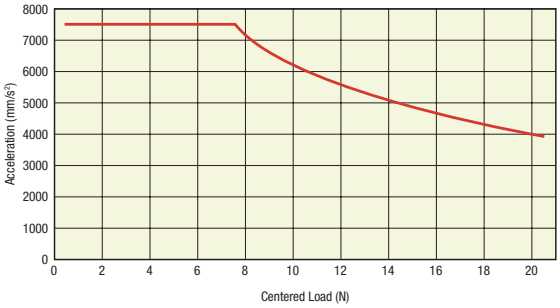
		Single Pass	Dual Pass	Quad Pass
Delay	DL125 (ns) DL225 (ns) DL325 (ns)	0.8 1.5 2.2	1.7 3.0 4.3	3.3 6.0 8.7
MIM	(fs)	0.5	1.0	2.0

Dimensional Drawing



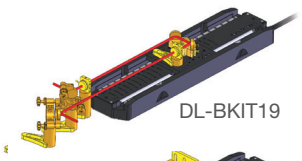
MODEL	TRAVEL	L	A	B	C
DL125	4.92 (125)	11.42 (290)	5.91 (150)	6.0 (152.4)	5.91 (150)
DL225	8.86 (225)	15.35 (390)	7.87 (200)	8.0 (203,2)	7.87 (200)
DL325	12.80 (325)	19.29 (490)	9.84 (250)	10.0 (254)	9.84 (250)

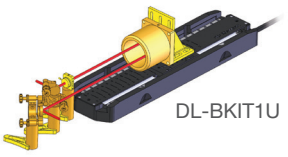


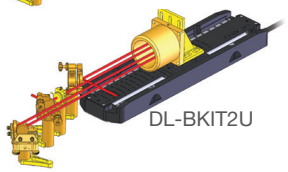


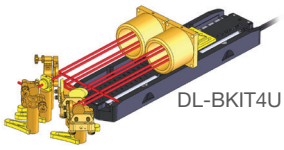
Cz, Normal center load capacity on bearings	20 N
• kax, Compliance in roll	15 µrad/Nm
• kay, Compliance in pitch	10 µrad/Nm
• kaz, Compliance in yaw	10 µrad/Nm

Note: It is recommended to keep the load centered on the carriage.
For other applications, contact tech@newport.com









Ordering Information

Stages	Model
125 mm Travel range stage with DL controller	DL125
225 mm Travel range stage with DL controller	DL225
325 mm Travel range stage with DL controller	DL325

Stages	Model
Power supply for DL stages	DL-PS
Beam Kit, 9848 reflector, 1 pass for UV, IR or Vis	DL-BKIT19
Beam Kit, UBBR retroreflector, 1 pass, IR or Vis	DL-BKIT1U-S
Beam Kit, UBBR retroreflector, 1 pass, UV Beam	DL-BKIT1U-UV
Beam Kit, UBBR retroreflector, 2 pass, IR or Vis	DL-BKIT2U-S
Beam Kit, UBBR retroreflector, 2 pass, UV Beam	DL-BKIT2U-UV
Beam Kit, UBBR retroreflector, 4 pass, IR or Vis	DL-BKIT4U-S
Beam Kit, UBBR retroreflector, 4 pass, UV Beam	DL-BKIT4U-UV

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