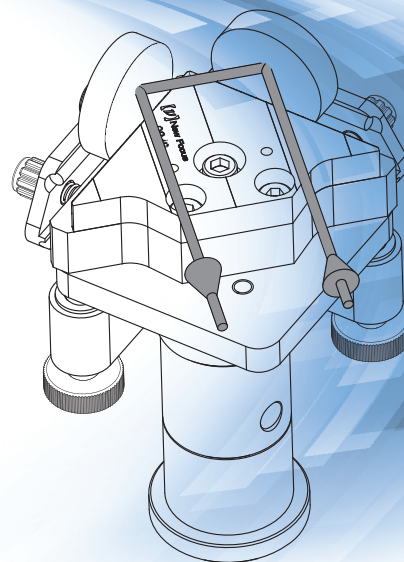
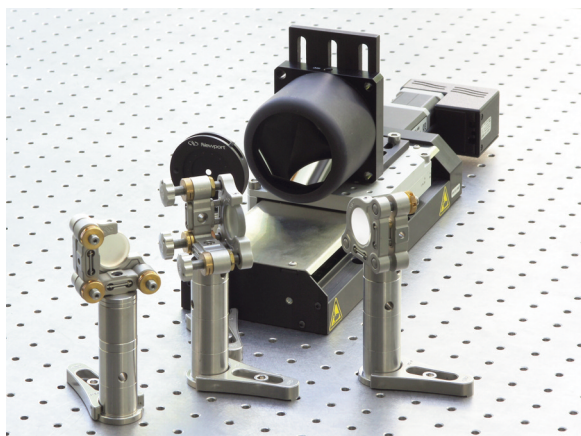


# Delay Line Kits

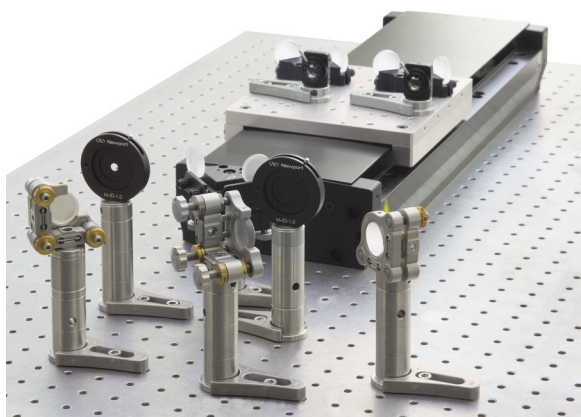
## DL SERIES



The Newport DL Delay Line Kits provide scientists and researchers with all the necessary components to build an optical delay line. The selection of proven Newport components has been thoroughly tested to provide a maximum of performance and flexibility. Newport's Delay Line Kits are a convenient and economic solution for a wide range of applications where the delay between two or more light pulses needs to be varied by increments in the femtosecond to nanosecond regime.



*DL100 Delay Line Kit with Retroreflector.*



*DL300 Delay Line Kit with New Focus 9848 Delay Line Mirror Mounts.*

All Newport Delay Line Kits come with two Suprema Series steel mirror mounts. These high quality mirror mounts play a key role in assuring the required long-term stability over the whole duration of an experiment. The Delay Line Kits also contain a number of iris apertures to facilitate the precise alignment of the laser beam to the delay line. An additional Suprema mount for reflecting the beam back to the experiment is also included.

### TYPICAL APPLICATIONS FOR OPTICAL DELAY LINES

- Pulsed pump-probe experiments
- Photon-echo-experiments
- Interferometric sensors and instruments
- Coherent communication systems
- Reconfigurable switching, buffering, processing

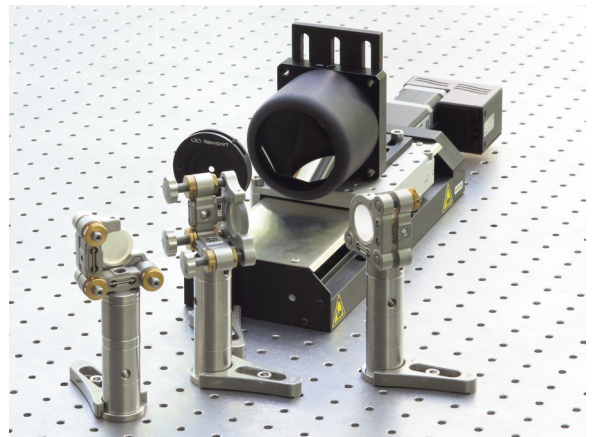
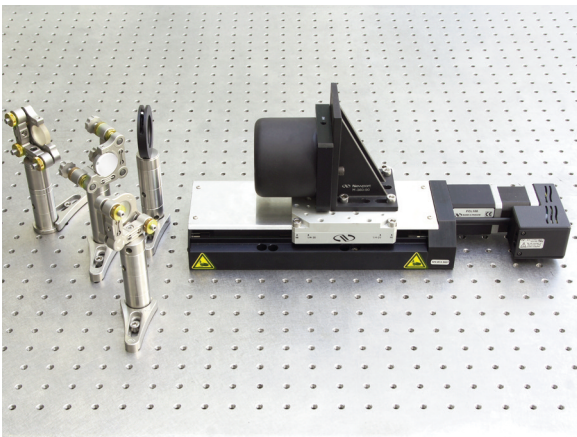
## DL SERIES

### DL100 AND DL200 DELAY LINE KITS

The DL100 and DL200 Delay Line Kits are designed for experiments requiring delays up to 1333 ps.

All kits of this series are equipped with a broadband retroreflector (450–10,000 nm) for user-friendly operation. The setup is fast and easy due to the inherent design of the retroreflector that assures a perfectly parallel reflected beam independent of the angle of incidence. All optics and opto-mechanical components that are required for the setup are included.

The kit is based on Newport's FCL Series Stepper Motor Linear Stage with either 100 or 200 mm travel range. When powered off, the stage's position will remain unchanged and any accidental misalignment will be prevented. The controller is conveniently integrated into the stage to save space and simplify cable routing. The delay line setup can be connected directly to a PC without any need for additional hardware.



### KEY COMPONENTS

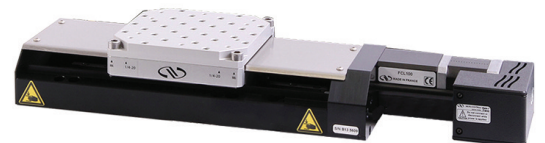


#### UBBR2.5-5S Broadband Retroreflector

The broadband hollow retroreflector is constructed of three front-surface flat mirrors assembled into a corner cube. Its geometry results in a reflected beam that is precisely parallel to the incident beam, independent of the angle of incidence.

#### FCL100/FCL200 Stepper Motor Linear Stage

The FCL Series Linear Stages combine a fully integrated stepper motor controller and a mid-range travel linear stage in a small footprint. The stages come fully pre-configured for true out-of-the-box control and operation.



#### Suprema Mirror Mounts

The Suprema Series are Newport's flagship mirror mounts and feature a stainless steel construction for superior stiffness and stability.

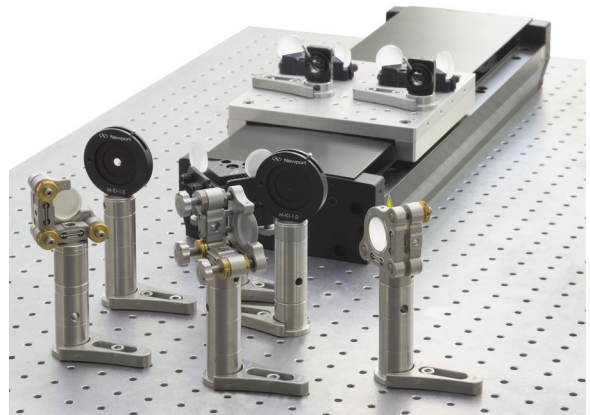
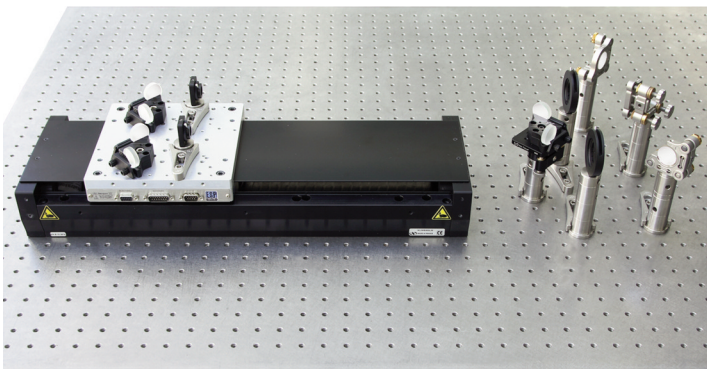


## DL300 AND DL600 DELAY LINE KITS

The DL300 and DL600 kits are specifically designed for advanced experiments requiring up to 8000 ps delays and highly dynamic delay variations. Both kits are based on Newport's IMS-LM Series Linear Motor Stages for superior speed and accuracy. A Newport XPS Motion Controller and the cable chain management for the stage are also included.

The DL300 and DL600 Delay Line Kits come equipped with dedicated New Focus 9848 Delay Line Mounts. These mounts allow users to incorporate their own choice of ultrafast optics while both mirror surfaces are always perfectly orthogonal to each other. The Delay Line Mounts tremendously minimize setup time and improve the pointing stability of the reflected beam when the delay is changed.

For increased performance and flexibility, both kits contain all components required to use the delay line in a dual pass (DP) configuration. Without the need for additional hardware, users can double the effective delay by means of a second optical path on the same stage. This is realized by installing a second delay line mount on the carriage of the stage and one at the fix end of the optical path thereby adding a second round trip to the total variable path length.



### KEY COMPONENTS

#### New Focus 9848 Delay Line Mount

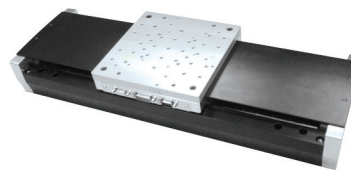
The 9848 Optical Delay Line Mirror Mount is an easy-to-use, versatile fixture for creating an optical delay line. It has two orthogonal surfaces for mounting standard mirrors so that any optical beam will be reflected back perfectly parallel to itself.



#### Suprema Mirror Mounts

The Suprema Series are Newport's flagship mirror mounts and feature a stainless steel construction for superior stiffness and stability.

#### IMS-LM Linear Motor Stage



The IMS-LM Series Linear Stages feature a stiff body constructions and a non-contact direct drive system for high dynamic performance, smallest incremental motion steps and excellent reliability.

#### XPS Controller

The XPS is a high-performance, easy-to-use motion controller offering high-speed communication through Ethernet, outstanding trajectory accuracy and powerful programming functionality. The Delay Line Kit includes the XPS-RLM, a special version of Newport's flagship controller.



## SPECIFICATIONS

	DL100	DL200	DL300		DL600	
			Single Pass	Dual Pass	Single Pass	Dual Pass
Delay (ps)	667	1333	2000	4000	4000	8000
Min $\Delta T$ (fs)	1	1	0.13	0.26	0.13	0.26
Delay Repeatability (fs)	7	7	1.6	3.2	1.6	3.2
Beam height (mm)	100	100	120		120	
Entrance height (mm)	100–120	100–120	100–120		100–120	
Delay Speed (ps/s)	132	132	3300		3300	

## KIT CONTENTS

## DL100 &amp; DL200

Component	Quantity	Model	Description
Motion components	1	FCL100/FCL200	Stepper linear stage, 100/200 mm, iPP motor/controller
	1	USB-RS422-1.8	Cable adapter, USB to RS422, 1.8 m
	1	FC-PS40	Power supply, iPP step motor, RoHS
Retroreflector	1	UBBR2.5-5S	Broadband hollow retroreflector, 63.5 mm, 5 arc-sec parallelism, 450–10,000 nm
Mirror mounts	3	SN100C-F2K	Suprema clear edge mirror mount, 1.0 in, (2) 127-TPI locking actuators
Opto-mechanics	1	M-ID-1.0	Iris diaphragm, 1.5–25 mm aperture range, m4 thread, 14 leaves
	1	M-360-90	M-360-90
Mirrors	3	10D620ER.2	ValuMax broadband mirror, 25.4 mm, $\lambda/10$ , 480–20,000 nm

All screws, clamps, posts, and post extensions for mounting the kit are included.

## DL300 &amp; DL600

Component	Quantity	Model	Description
Motion components	1	M-IMS300/600LM	High performance linear stage, 300/600 mm travel, linear motor
	1	XPS-RLM	Single axis version of XPS controller
	1	IMSLMC	Cable chain, cable routing to IMS stationary base
Delay line mount	2	9848	Mirror mount, optical delay line
	1	9848-KT	Adjustable mirror mount kit, optical delay line
Mirror mounts	3	SN100C-F2K	Suprema clear edge mirror mount, 1.0 in, (2) 127-TPI locking actuators
Opto-mechanics	2	M-ID-1.0	Iris diaphragm, 1.5–25 mm aperture range, M4 thread, 14 leaves
	2	ID-0.5	Iris diaphragm, 1 to 11 mm aperture range, 10 leaves
	2	MH-2P	Fixed position lens mount, 0.75 in. (19.1 mm) diameter

All screws, clamps, posts, and post extensions for mounting the kit are included.



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