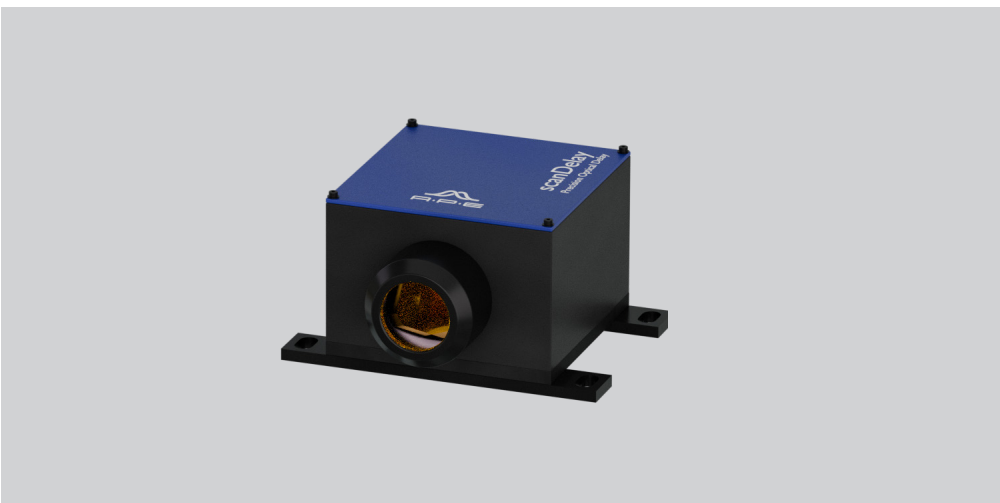
scanDelay
Precision Optical Delay Line with High Scan Speed

Femtosecond to Picosecond Delay

The scanDelay USB is a compact and high-precision optical delay stage, for use e.g. in interferometers, pump-probe configurations, terahertz spectroscopy, or fast scan modules.

The heart of the scanDelay USB is a special linear translation stage that is supplied together with appropriate control and drive electronics. This linear drive has been designed specifically for optical applications. It combines a low moving mass with compactness, scanning at high speeds with high precision and delay resolution. Because of spring bearings, the movement is frictionless, completely eliminating wear and tear.

APE's scanDelay USB is capable of generating both fast and wide scans as well as the tiniest delays without any stick-slip effects. The actual position is measured in real time by an optical system with high resolution and high dynamic range. The intrinsic stability of the linear drive leads to an excellent scan-to-scan reproducibility.



- Precise optical delay + high scanning speed
- Scan range variable from femto- up to several picoseconds
- Control Software / LabView drivers
- Scan rate phase-locked to external source
- Linear and calibrated scaling due to position measurement

scanDelay USB
Specifications

Version	15	50	150
Maximum scan range	15 ps	50 ps	150 ps
Scan frequency: internally generated*	0.1 Hz … 20 Hz		0.1 Hz … 10 Hz
Scan frequency: externally triggered*	0.01 Hz … 20 Hz		0.01 Hz … 10 Hz
External trigger input	TTL, 20 Hz … <50 kHz fast frequency divider for approx. 80 MHz optionally available		
Position output signal	± 10 V / 15 ps**	± 10 V / 50 ps**	± 10 V / 150 ps**
Trigger output	TTL programmable position		
Linearity of position signal	<0.5 %		
Retroreflector coating	Al protected Au, Ag and others on request		
Clear aperture	1"	1/2"	
Computer interface	USB		
Software	included		
Interface USB connection	included		

Including Software & Electronics

The control electronics contain the motion driver and a Quartz stabilized signal synthesizer. It can be synchronized with an external clock for a precise, phase-locked scanner movement.

The software interface allows the user to easily and quickly setup the scanning parameters. A visualized scan curve with amplitude values in time units gives direct feedback during optimization of the scanning parameters. A set of LabVIEW drivers allows the integration into existing measurement software and automation.

The scanner movement corresponds to a nearly perfect harmonic oscillator and can be operated over a whole range of scanning frequencies and amplitudes.

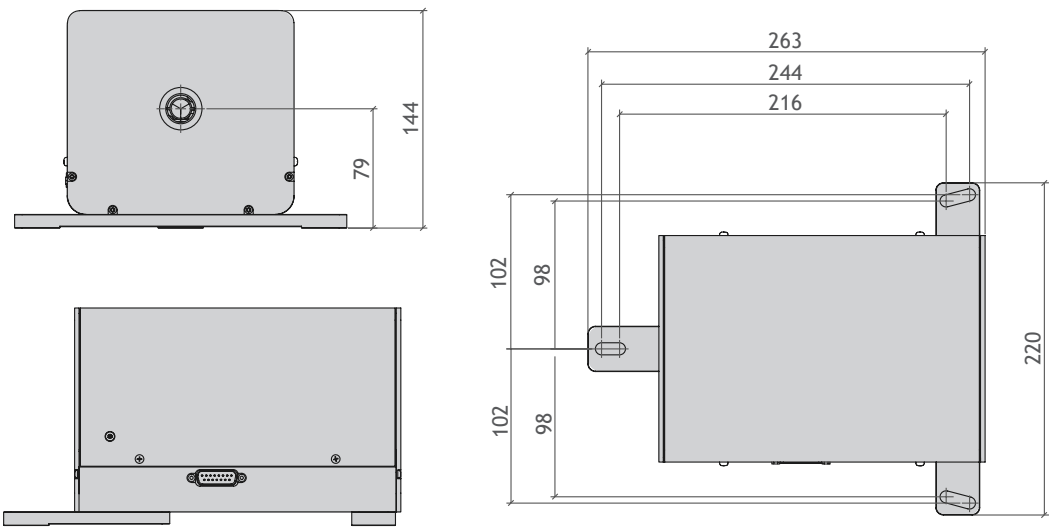
* The position display works best between 0.4 Hz … 20 Hz. Below 0.4 Hz, only a part of the detected position scan range is displayed. However, the exact position can be retrieved by an analog signal.
** x10, x100 switchable

Appendix Technical Drawings

All dimensions in mm

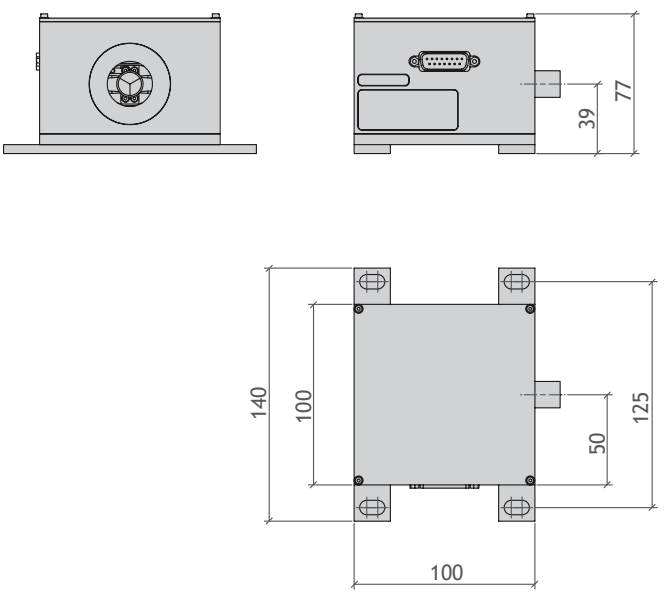
scanDelay 150

- optical delay stage



scanDelay 50

- optical delay stage



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All dimensions in mm

scanDelay 15

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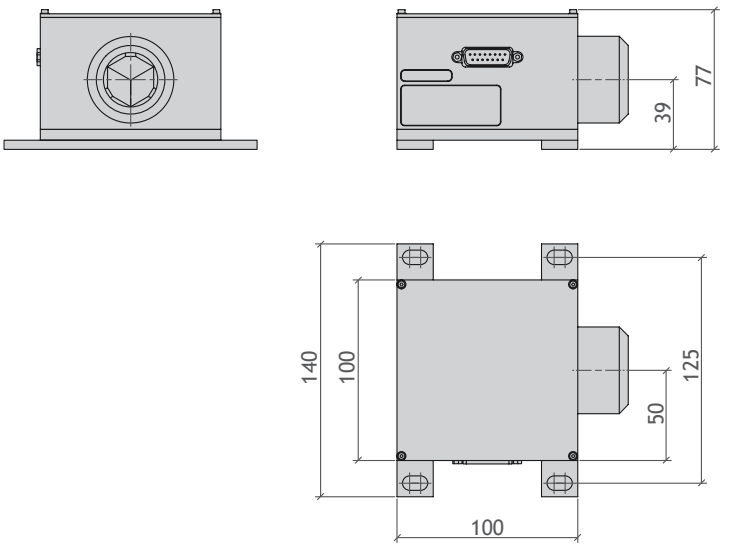

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