

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 | Ag protected (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.



Appendix Technical Drawings

All dimensions in mm

scanDelay 150

optical delay stage





optical delay stage









Appendix Technical Drawings

All dimensions in mm

scanDelay 15

optical delay stage







Contact

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