

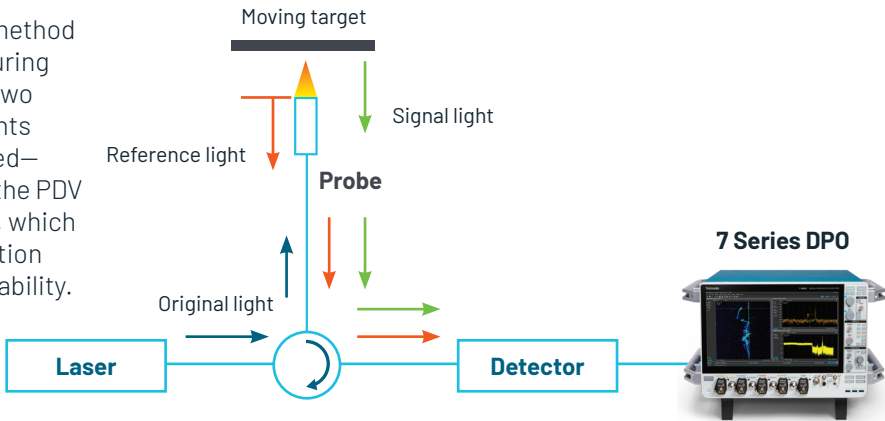
Photonic Doppler Velocimetry (PDV)



Precisely Measure Single Shot Events

Photonic Doppler Velocimetry (PDV) is a powerful method for accurately measuring the velocity of materials during shock events. At the heart of a PDV experiment are two closely connected tasks: capturing “single shot” events —brief, high-intensity moments that can’t be repeated— using a high-bandwidth oscilloscope, and validating the PDV system’s performance through machine diagnostics, which often involves multi-channel oscilloscopes and function generators to ensure signal integrity and system reliability.

To fully understand the material response, researchers often gather data from multiple laser channels, along with inputs from other sensors. Since the signals are often low in amplitude, capturing clean, accurate data is critical. High-fidelity acquisition ensures that the insights drawn from these complex, high-speed experiments are both meaningful and reliable.



Recommended Equipment for Single Shot Data Acquisition

Ideal for high-fidelity data capture in high-energy physics applications like PDV

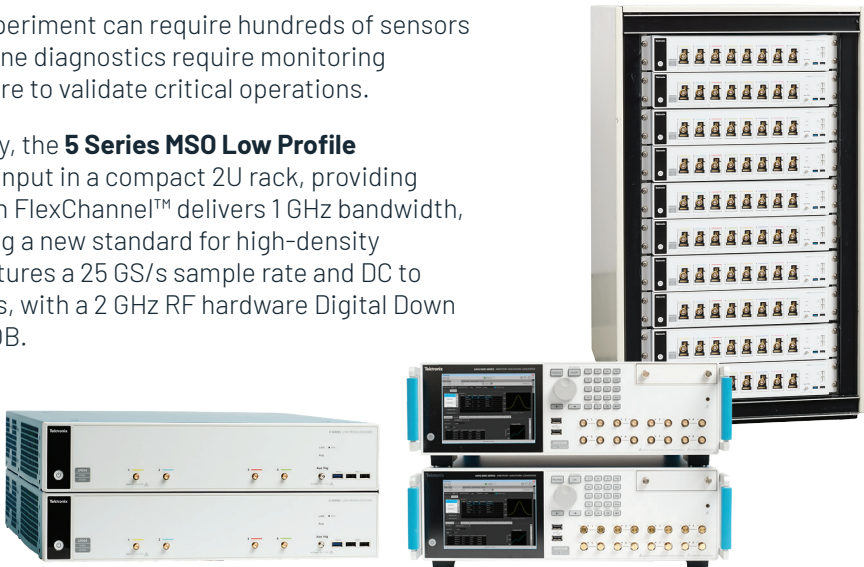
	Product	Description	Advantage	Datasheet
Hardware	DP0718AX DP0714AX	7 Series DPO oscilloscope from 8 GHz to 25 GHz bandwidth and 4 or 8-channels	High ENOB, SNR, Low Noise, high channel density	7 Series DPO
	DP073304SX	DP070000SX Series oscilloscope from 33 to 70 GHz bandwidth with 2 or 4-channels	High bandwidth, good ENOB, Low Noise, Low-profile	DP070000SX
	LPD64	6 Series Low Profile Digitizer from 1 GHz to 8 GHz bandwidth	Low Noise, Low-profile	6 Series Low Profile Digitizer
Software	RL-X Extended Record Length - OPT	Optional: Record length to extend acquisition time.	Extends acquisition time for comprehensive data capture.	
Software	Spectrum View 5-SV-RFVT or 6-SV-RFVT (Spectrograms)	Optional: Enables RF vs. time traces (frequency, magnitude, and phase) on 5/6 Series oscilloscopes.	Provides RF vs time traces for detailed signal analysis.	
Software	5 and 6 Series B MSO: Spectrum View with options 5-SV-RFVT or 6-SV-RFVT to add RF vs. Time traces and the ability to output I & Q data	Makes use of the integrated DDC found in the 5 and 6 series B MSO oscilloscopes.	Easily see your FFT data in a high-resolution Spectrogram, uncovering insights more quickly.	SignalVu-PC
	7 Series DPO: Output data directly to SignalVu-PC with the CON7NL-SVPC (node-locked) or CON7FL-SVPC (floating)	Makes use of the software DDC in SignalVu-PC on the 7 Series DPO.		
Service Plan	Comprehensive service plans	Premier service plan including loaner unit, free calibration, full damage coverage, and more. 17025 Accredited Calibration options available.	Ensures minimal downtime for your critical, complex equipment.	Service Plans
Service Plan	Factory Verified Calibration	Factory Verified Calibration restores your instrument to original performance standards through calibration, software and firmware updates, preventive maintenance, and comprehensive inspection.		Calibration Services

High Fidelity, High Channel Density for Machine Diagnostics

Monitoring a PDV system to validate a single shot experiment can require hundreds of sensors and precision acquisition hardware. Effective machine diagnostics require monitoring numerous sensors and precision acquisition hardware to validate critical operations.

In applications that demand extreme channel density, the **5 Series MS0 Low Profile oscilloscope** offers 8 channels and auxiliary trigger input in a compact 2U rack, providing high channel density at a low cost-per-channel. Each FlexChannel™ delivers 1 GHz bandwidth, 6.25 GS/s sampling rate, and 12-bit resolution, setting a new standard for high-density performance. The **6 Series Low Profile Digitizer** features a 25 GS/s sample rate and DC to 8 GHz bandwidth on all four analog/spectral channels, with a 2 GHz RF hardware Digital Down Converter, ensuring best-in-class low noise and ENOB.

The **AWG5200 and AFG31000 signal generators** provide the flexibility and control needed to test the accuracy of PDV measurements and verify proper system functionality.



Recommended Equipment for Machine Diagnostics

Ideal for monitoring and validating hardware operations in a PDV system

	Product	Description	Advantage	Datasheet
Hardware	MS058LP AND/OR LPD64	5 Series Low-Profile (500 MHz to 1 GHz) and 6 Series Low-Profile (1 GHz to 8 GHz) Digitizers. Multiple oscilloscopes can be daisy-chained together to synchronize and coordinate other devices.	High channel density and synchronization for comprehensive sensor data acquisition.	5 Series MS0 Low Profile
				6 Series Low Profile Digitizer
Hardware	AFG31000 AND/OR AWG5200	Generate precise signals for calibration and testing. The AFG31000 and AWG5200 signal generators provide the flexibility and control needed to test the accuracy of PDV measurements and verify proper system functionality.	Precise signal generation for calibration and testing accuracy.	AFG31000 Arbitrary Function Generator
				AWG5200 Arbitrary Waveform Generator
Service Plan	Comprehensive service plans	Premier service plan including loaner unit, free calibration, full damage coverage, and more.	Ensures minimal downtime for your critical, complex equipment.	Service Plans
Service Plan	Factory Verified Calibration	Factory Verified Calibration restores your instrument to original performance standards through calibration (accredited or not), software and firmware updates, preventive maintenance, and comprehensive inspection.	Restores your instrument to factory-new condition.	Calibration Services

Contact your local salesperson today for details or visit:
tek.com/research/photonic-doppler-velocimetry

