Polytec 3D Scanning Vibrometers are the state-of-the-art tools to quickly and accurately determine operating deflection shapes and Eigenmodes for structural vibration validation with reliable experimental data. Its wide bandwidth extends the application range to non-destructive evaluation (NDE) research.

The HV version contains two separate acquistion systems enabling a 100 kHz or a 25 MHz frequency mode.

The turn-key modular rack system contains a front-end, data management system and 3 scanning heads with tripod plus a wide range of optional accessories and PSV software package.

Highlights

- Non-contact laser measurement
- Full-field with high spatial resolution
- Open-minded PSV software with open data and control interfaces
- Expandable to fully automated RoboVib® Test Station
- Wide range of accessories and software options

PSV-500-3D-HV Scanning Vibrometer

Full-Field 3D Vibration Measurement at High Frequencies

Datasheet

Technical Data

PSV-500-3D-HV Standard Components	
Vibrometer system	PSV-I-500 Scanning Head with high precision scanner, HD video; 20x zoom camera and PSV-G-500 Geometry Scan Unit; 2x PSV-I-520 Scanning Heads without video camera and Geometry Scan Unit; CoherenceOptimizer (Laser frequency stabilization) for all 3 scanning heads; PSV-F-500-V Front-End with 3 digital broadband decoders; signal generator) and VibroLink data acquisition for reference channels; 3x PSV-C-510 main cable, 10 m; PSV-E-530 Junction Box
Computer & data acquisition	PSV-W-500-V Data Management System: 19" industrial PC with 4 channel, 16-bit data acquisition, 25 MHz bandwidth per channel and signal generator board installed; Windows® 7 64-bit for "embedded systems" and PSV Software preinstalled
Accessories	PSV-A-014 System Cabinet: Workstation and storage for all standard accessories. Integrated 24" TFT Monitor with swivel stand, VIB-A-T02-S set of 3 tripods with manual fluid heads, hardware manual, software manual, and theory manual; laser adjustment goggles and reference object for head alignment

PSV-I-500 / PSV-I-520 Scanning Head	
Dimensions [W x L x H]	189 x 370 x 177 mm (74.4 x 145.7 x 69.7 in)
Weight	PSV-I-500: 9.2 kg (20.5 lbs), PSV-I-520: 9.0 kg (19.8 lbs)
Laser type, vibrometer	HeNe Laser (633 nm)
Laser type, PSV-G-500 Geometry Scan Unit	Diode laser (660 – 680 nm)
Laser safety class	Class 2 (<1 mW visible output)
Working distance	125 mm ... ~100 m (PSV-G-500 Geometry Scan Unit[1]: 250 mm ... 30 m)
Scan angle [h x v]	50° x 40°
Scanner properties	Angular resolution <0.002°, Angular stability <0.001°/h, max. 30 scan points/s
Sample size	From a few mm² up to several m²
Camera	HD format, 20x optical zoom, max. field of view [h x v] 55° x 32°
Interfaces, electrical	Multi-pin bayonet connector, DIN plug for optional external scanner control
Interfaces, mechanical	Hexagon type tripod adapter for VIB-A-T02, 2x M6 thread
PSV-F-500 Front-End	
Dimensions [W x D x H]	485 x 380 x 150mm (19", 84HP/3U)
Weight	~10 kg (~22 lbs)
Protection class	IP-20
Interfaces, electrical	Front: BNC connectors for 8 reference channels, signal generator, trigger Rear: multi-pin bayonet connector, mains cable, RJ45 Ethernet to computer for PSV-F-500
Interfaces, mechanical	19" Rack mount adapters
PSV-E-500 Junction Box	
Dimensions [W x D x H]	485 x 60 x 150 mm (19", 84HP/3U)
Weight	~8 kg (~17.6 lbs)
Protection class	IP-20
Interfaces, electrical	4 multi-pin bayonet connector for 3 umbilical cables and interconnection to PSV-F-500 Front-End, mains cable, 1x RJ45 Ethernet to computer
Interfaces, mechanical	19" Rack mount adapters

PSV-E-530 Junction Box (extension for V-mode)	
Dimensions [W x D x H]	482 x 320 x 44.5 mm (19", 84HP/1U)
Weight	1.1 kg
Protection class	IP-20
Interfaces, electrical	Front: BNC connectors for 3 reference channels, signal generator, trigger Rear: conncetor for vibrometer channel and to data acquistion to PC
PSV-A-014 System Cabinet	
Dimensions [W x L x H]	580 x 1330 x 845 mm
Weight	186 kg (incl. front-end, PC, monitor, scanning head and cables)

Metrological Specifications

	Decoder	# of ranges	Full scale m/s (peak)	Decoder frequency range [1]	Resolution [2] (µm/s) / √Hz	# of reference channels	# of signal generator channels
In V mode	DV-08	13	0.001...10	0 Hz ... 25 MHz	0.02 ... 15	1	1
In H mode	DV-08	13	0.001...10	0 Hz ... 100 kHz	0.001 ... 0.5	8	4

[1] 25 MHz available in 1D (1 scanning head) and 3D mode. The maximum bandwidth recommended for 3D is 5 MHz.
[2] The noise-limited resolution is defined as the signal amplitude (rms) at which the signal-to-noise ratio is 0dB with 1Hz spectral resolution, measured in a distance of 1m on 3M Scotchlite™ Tape (retro-reflective film).

General Specifications	
Overall weight	186 kg
Powers	100 VAC ... 240 VAC ±10%, 50/60 Hz; overall max. 600 VA
Environmental conditions	Operating temperature: +5 °C ... +40 °C (41 °F ... 104 °F) Storage temperature: –10 °C ... +65 °C (14 °F ... 149 °F) Relative humidity: max. 80%, non-condensing
Calibration	Recommended every 24 months (shorter re-calibration intervals available upon request)

Compliance with Standards	
Electrical safety	IEC/EN 61010-1:2011-07
	IEC/EN 61326-1:2006-10; Emission: FCC Class B, IEC/EN 61000-3-2 and 61000-3-3 Immunity: IEC/EN 61000-4-2 to 61000-4-6 and IEC/EN 61000-4-11
Laser safety	IEC/EN 60825-1 (2008) (CFR 1040.10, CFR 1040.11)

Options and Accessories

General Accessories	
PSV-A-525 Front Window	Protects the scanning mechanism against dust, wind and acoustic excitation at high dB levels
PSV-C-5xx Main Cable	Available length: 5, 10, 20 and 30 m
For Measurements on Small Parts	
PSV-A-T34 Table Tripod	Rigid support of 3 PSV scanning heads. Provides a configuration optimized for in-plane performance with small parts.
PSV-A-T35 Table Tripod	Rigid tripod for 3 scanning heads. Provides a narrow configuration optimized for out-of-plane performance with small parts.
PSV-A-T51 Motorized Tripod	Convenient motorized support for 3 PSV scanning heads
Accessories for Acoustics and Modal Analysis	
PSV-A-MIR / PSV-A-MIR+ Mirror Set	Mirror set for measurements in difficult-to-access areas. The mirror set comprises 4 (PSV-A-MIR+: 5) HeNe coated mirrors including magnetic fixtures.
A-MIR-2030 Mirror Set	Mirror set with one mirror 200 mm x 300 mm including magnetic fixtures

Software Options

Model	PSV-500-3D-HV Scanning Vibrometer	-HV
Preparation		
APS Professional	For arbitrary definition of measurement points and individual object properties	S
Geometry Data Import	Geometry module for importing geometry data to the PSV software for defining the scan points	S
VideoTriangulation®	Image processing for enhanced automatic alignment of the 3 laser spot with the grid points	S
Signal Generator	Internal arbitrary signal generator for vibration excitation	S
Measurement		
High Resolution Scan	Up to 512 x 512 scan point density for higher spatial resolution	S
FastScan	Fast scan routine for analyzing the response of structures at a single frequency	S
Time Domain Animation	Time domain data are acquired while scanning. Allows for "slow motion" animation e.g. of surface waves propagation or switches	O
Extended FFT Lines	Various options to extend the number of FFT lines up to 819,200	O
Gate Input	Allows gated measurements with external TTL signal	S
Analysis & Interfaces		
SignalProcessor	The user interface to the math library included in the PSV software, designed as an easy-to-use spreadsheet	S
UFF Interface	Universal File Format data conversion from and to major modal analysis and Finite Element packages	S
ME'scope Modal Software	Software package for modal analysis. Including data interface.	O
Interface to ME'scope	Data export to Vibrant's ME'scope modal analysis software	O
ASAM ODS	Import and export of data in ASAM ODS 5.2.0 ATFX standard	O
StrainProcessor	For post processing in-plane measurement files and calculating dynamic strain and stress. Stand-alone software component. Visualization of the results in PSV Software.	O
Desktop Analysis Version	Desktop version of PSV Software for offline post processing and presentation of measurement results	O
Automation and programming interface		
Macro Programming	WinWrap® Basic Engine: Visual Basic® for Applications (VBA) compatible. Allows automation of test routines.	S
Polytec File Access	API for retrieval of Polytec data via external applications supporting Microsoft's Component Object Model (COM), e.g. Visual Basic .NET®, C#, MATLAB®, LabVIEW™	S
Maintenance package		
Software Maintenance Basic	Basic software maintenance. Free PSV Software updates for a period of 1 year	S
Extended Software Maintenance	Software updates supplied for an additional period. Available in 12 month increments.	O
University Program	Lifetime update license for universities and education (terms and conditions apply)	O

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MATLAB® is a registered trademark of The MathWorks, Inc.

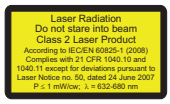
LabVIEW™ is a trademark of National Instruments Corporation.

VideoTriangulation® is a registered trademark of Polytec GmbH.

WinWrap® is a trademark of Polar Engineering, Inc.

S: Standard;

O: Option



Polytec GmbH (Germany)
Polytec-Platz 1-7
76337 Waldbronn
Tel. +49 7243 604-0
info@polytec.de

Polytec GmbH (Germany) Vertriebs- und Beratungsbüro
Schwarzschildstraße 1
12489 Berlin
Tel. +49 30 6392-5140

Polytec, Inc. (USA)
North American Headquarters
16400 Bake Parkway
Suites 150 & 200
Irvine, CA 92618
Tel. +1 949 943-3033
info@polytec.com

Central Office
1046 Baker Road
Dexter, MI 48130
Tel. +1 734 253-9428

East Coast Office
25 South Street, Suite A
Hopkinton, MA 01748
Tel. +1 508 417-1040

Polytec Ltd. (Great Britain)
Lambda House
Batford Mill
Harpenden, Herts AL5 5BZ
Tel. +44 1582 711670
info@polytec-ltd.co.uk

Polytec France S.A.S.
Technosud II
Bâtiment A
99, Rue Pierre Semard
92320 Châtillon
Tel. +33 1 496569-00
info@polytec.fr

Polytec Japan
Arena Tower, 13th floor
3-1-9, Shinyokohama
Kohoku-ku, Yokohama-shi
Kanagawa 222-0033
Tel. +81 45 478-6980
info@polytec.co.jp

Polytec South-East Asia Pte Ltd
Blk 4010 Ang Mo Kio Ave 10
#06-06 TechPlace 1
Singapore 569626
Tel. +65 64510886
info@polytec-sea.com

Polytec China Ltd.
Room 1026, Hanwei Plaza
No. 7 Guanghua Road
Chaoyang District
100004 Beijing
Tel. +86 10 65682591
info-cn@polytec.com

www.polytec.com

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