

RSV-150 Remote Sensing Vibrometer

The detection of vibration, resonance frequencies and displacement on distant buildings, machine parts and other structures can be achieved quickly and effortlessly with the RSV-150 Remote Sensing Vibrometer. Designed for point-and-shoot measurement from a distance, its advanced laser Doppler interferometer technology eliminates time consuming contact sensor installation. Hence, the RSV-150 Remote Sensing Vibrometer is the ideal tool for cost-effective monitoring of the structural health or dynamic behavior of bridges, buildings and industrial plants.

For lab applications, a short range variant of the RSV-150 is also available. Its ability to measure on literally any surface without prior treatment puts the RSV-150 in a league of its own as one of the most sensitive optical vibration measurement systems worldwide.



Highlights

- Works on nearly all surfaces including those that are encrusted and dirty
- Remote access to distant hazardous areas
- True 0 Hz performance – precise determination of natural frequencies for health monitoring and model validation
- Small laser spot size – precise targeting
- Easy set-up in minutes – no cabling or measurement point preparation
- Full visual control – easy targeting with integrated telescopic video camera

RSV-150 Remote Sensing Vibrometer

Detection of Vibrations on Distant Structures

Datasheet



Technical Data



General Specifications

Laser	Dual Class 2 laser source
Targeting	<ul style="list-style-type: none"> ■ Visual targeting with green laser spot and additional reticle overlay in telescopic camera image ■ Coarse adjustment with geared tripod head (pan/tilt) ■ Fine adjustment with adapter plate ($\pm 1^\circ$ tilt, $\pm 1.5^\circ$ pan), repeatability approx. 5 mm @ 100 m
Operating temperature	+5 °C ... +40 °C (41 °F ... 104 °F)
Total weight	Approx. 30 kg (including storage case, excluding tripod)

RSV-I-150 Sensor Head	Short range lens ¹	Long range lens ¹
Optics	Manual focusing, min. stand-off distance 1 m, max. stand-off distance 4 m	Manual focusing, min. stand-off distance 5 m, max. stand-off distance ² >300 m
Spatial resolution	Laser spot 135 μ m @ 1 m, depth of field 9 mm @ 1 m	Laser spot 7.5 mm @ 100 m, depth of field 28.7 m @ 100 m
Laser	<ul style="list-style-type: none"> ■ Targeting laser: wavelength 532 nm (green), effective output power <1 mW ■ Measurement laser: wavelength 1550 nm, output power 10 mW Class 2 with both lasers in operation 	
Signal level	LED bar indicator; indicates return signal strength	
Laser emission	Emission indicator LED on backplate	
Camera	PAL CCD color camera, 765 x 582 pixels	
Size L x W x H	402 mm x 165 mm x 145 mm incl. lens	
Operating temperature	+5 °C ... +40 °C (41 °F ... 104 °F)	
Weight	-8 kg (9.8 kg incl. fine adjustment adapter)	
Protection class	IP63 (dust and spray protection)	
Mechanical interfaces	<ul style="list-style-type: none"> ■ 1/4" – 20 UNC thread for tripod, 2 x M6 threaded holes at baseplate ■ (3/8" – 16 UNC thread for tripod, if fine adjustment adapter is mounted) ■ 10-32 UNF-2B standard thread for accelerometer (back) 	

¹ Optics are not interchangeable by the user.

² Depending on target reflectivity and amplitude.

Accessories and Options

Targeting	A-VIS-SCOP1 Scope with zoom optics, 3x zoom allows a wider field of view and easier selection of target on uniform structures like stay-cables
Monitor	A-MON-TFT3 5" monitor with tripod mount
Compensation	A-VIB-ACC01 Reference Accelerometer; measurement of ambient vibration
Video adaptor	A-CON-VIDEO USB Video Converter

³ The noise-limited resolution is defined as the signal amplitude (rms) at which the signal-to-noise ratio is 0 dB with 1 Hz spectral resolution, measured on 3M Scotchlite™ Tape (retro-reflective film) in a distance of 5 m. The attainable resolution is frequency-dependent and is specified for frequencies above 10Hz.

Controller	RSV-E-150-B	RSV-E-150-M
Velocity output	Digital decoding featuring 8 sensitivity ranges: 0.4 mm/s/V – 100 mm/s/V, full scale (peak) 1 m/s; analog output ±10 V, BNC connector	Digital decoding featuring 8 sensitivity ranges: 12.25 mm/s/V – 2450 mm/s/V, full scale (peak) 24.5 m/s; analog output ±10 V, BNC connector
Displacement output	Digital decoding featuring 16 sensitivity ranges: 1 µm/V – 100 mm/V, full scale (peak-peak) 2 m, analog output ±10 V, BNC connector	Digital decoding featuring 16 sensitivity ranges: 0.1225 µm/V – 12.25 mm/V, full scale (peak-peak) 245 mm, analog output ±10 V, BNC connector
Resolution ³	velocity: <0.5 µm/s/√Hz displacement 0.3 nm	velocity: < 5 µm/s/√Hz displacement 0.38 nm
Bandwidth	0 Hz ... 25 kHz (range dependent)	0 Hz ... 2,000 kHz (range dependent)
Filter high pass	100 Hz, 10 Hz (suppression of ground vibration)	100 Hz, 10 Hz (suppression of ground vibration)
Low pass	1 kHz, 5 kHz	1 kHz, 10 kHz, 100 kHz



RSV-E-150 Controller general Properties

Video output	CVBS signal, 1 V p-p/75 Ω, BNC, PAL standard
Direct voltage output	12V DC for the optional monitor
Settings	LCD display and soft keys, software remote control via USB (with supplied control application Vibrometer Panel)
Signal level	LED bar indicator and RSSI voltage output (BNC)
Size L x W x H	235 mm x 320 mm x 150 mm (1/2 19“, 42 HP/3 U)
Operating temperature	+5 °C ... +40 °C (41 °F ... 104 °F)
Weight	6 kg
Power supply	AC adaptor: 100 VAC...240 VAC ±10%, 50/60Hz DC Voltage Connection: 12 VDC...24 VDC ±10%
Power input	Max. 75 W, max. 60 W for DC power supply
Protection class	IP20
PC interfaces	USB 1.1, system remote control

VibSoft-20 Data Acquisition System

Features	Easy-to-use USB data acquisition 204, 800 FFT lines; time domain analysis up to 64 MSamples Integrated live video; SignalProcessor for post processing; export filters; macro programming interface; remote control of controller sensitivity and filters
Input	VIB-E-220 Frontend, USB 2.0; 2 channels, IEPE sensor power supply, AC and DC coupling
Bandwidth	20 kHz per channel
System requirements	Windows® 7 Ultimate 64-bit Hardware requirements: AMD Athlon XP 3000+, 1 GB RAM, DVD-ROM drive, graphics board compatible with DirectX 9.0c, 3 free USB 2.0 ports




Compliance with Standards

Laser safety	IEC/EN 60825-1 (Safety of Laser Products, complies to US 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice no. 50, dated 24 June 2007)
Electrical safety	IEC/EN 61010-1 (Safety requirements for electrical equipment for measurement, control, and laboratory use)
EMC	IEC/EN 61326-1 (EMC requirements on Emission and Immunity – Electrical equipment for measurement, control, and laboratory use) Emission: Limit Class A 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

 **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
1 Cabot Road
Suites 101 & 102
Hudson, MA 01749
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 402, Tower B
Minmetals Plaza
No. 5 Chaoyang North Ave
Dongcheng District
100010 Beijing
Tel. +86 10 65682591
info-cn@polytec.com