

VibroFlex Compact

The Polytec VibroFlex laser Doppler vibrometer is a modular high-performance solution for non-contact vibration measurement. It offers unrivalled measurement performance and versatility for solving pressing vibration issues in both R&D and industrial quality control.

The VibroFlex family includes the front-end VibroFlex Connect and a selection of non-contact laser sensor heads. Integrated with the VibSoft data acquisition and analysis software, the vibration measurement system is ready to go. Study acoustics, dynamics and vibrations on nano to macro structures without contact and with laser precision.

The VibroFlex Compact sensor head is designed for tightly packed setups, challenging production environments and tiny details in technology or bio-med applications. The optional inline HD camera helps positioning the laser precisely and provides proper test documentation. An optical filter adjusts for a perfect contrast. Optional microscope lenses focus to a 1.5 μm laser spot, allowing the inspection of microsystems and complex structures with fine details.

VibroFlex – the new flexibility of laser vibration measurement.



Highlights

- Extremely compact sensor head with separate laser unit
- Easy set-up and test documentation with integrated HD video camera (optional)
- Excellent optical sensitivity for best SNR on all surfaces
- Microscope objectives and coaxial illumination available for analyzing microstructures (optional)

VibroFlex Compact

Compactness meets versatility

Preliminary datasheet



Technical data



General specifications

Model	VibroFlex Compact VFX-I-130	
Component	Sensor	Laser Unit
Dimensions (L x W x H)	183 x 63 x 61.5 (40.5*) mm (7.2 x 2.5 x 2.4 (1.59*) in)	339 x 155 x 162 (112.5)** mm (13.4 x 6.1 x 6.4 (4.4)** in)
Weight	1 kg (2.2 lbs)	4.2 kg (9.3 lbs)
Protection class	IP40	
Cable length	3 m (Sensor to Laser Unit, not separable, optional: 5 m)	
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	
Controller compatibility	VibroFlex Connect	
Maximum velocity	± 12 m/s	

* height of VFX-I-130-STA sensor
 ** height without handle

Optical specifications

Laser type	Helium Neon (HeNe)
Laser class	Class 2, < 1 mW, eye-safe
Laser wavelength	633 nm, visible red laser beam
Focus	Manual focus
Minimum stand-off distance	204 mm (with standard objective lens)
Maximum stand-off distance	Surface dependent
Visibility maxima ¹	44 mm + n · 204 mm; n = 0; 1; 2; ...

¹ Measured from the front edge of the front lens.

Video camera only in VFX-I-130-CAM

Camera type	CMOS color camera
Resolution (H x V)	1920 x 1920 pixel (1.8 x HD resolution)
Lens aperture	F 4.5
Contrast adjustment	polarization filter for laser brightness adjustment
Video output	USB 3.0 (Micro-B/A), requires camera cable VFX-C-100-C03 (length 3 m, also available with 5 m or 8 m length)



Working distance and laser spot size			
Stand-off distance [mm] *	Laser spot diameter ($1/e^2$) [μm]	Laser depth-of-field [mm]	Camera field of view [mm x mm]
20 **	1.5	-	0.8 x 0.8
33.5 ***	3.0	-	1.6 x 1.6
204	31	± 1	16 x 16
300	46	± 3	24 x 24
400	62	± 5	-
500	77	± 7	40 x 40
600	93	± 11	-
700	109	± 15	-
800	124	± 19	-
900	139	± 24	-
1000	154	± 30	81 x 81
1500	230	± 66	-
2000	306	± 116	162 x 162
5000	-	-	403 x 403
Each m plus	+ 150	-	-

* Measured from the front edge of the front lens (respectively from the front of the microscope objective).

** with VIB-A-20xLENS microscope objective

*** with VIB-A-10xLENS microscope objective

Compliance with standards	
Laser safety	IEC/EN 60825-1
Electrical safety	IEC/EN 61010-1
EMC	EMC IEC/EN 61326-1 Emission: Limit 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

Options and accessories



Sensor head options

VFX-I-130-STA

Compact sensor head with smallest form factor



VFX-I-130-CAM


Compact sensor head with integrated HD+ camera (USB 3.0) for easy targeting, especially when measuring with a microscope objective on a small object. Also includes adjustable contrast filter for clearly visible laser spot with varying surface reflectivity.



VFX-A-001 Sensor tray with cord wrap

Sensor tray and cord wrap for easy handling and transport in the lab (included)



Optical accessories		
VIB-A-10xLENS	10x microscope objective providing a laser spot diameter of 3 μm at 37.3 mm stand-off distance, requires VIB-A-203 Front Lens Adapter	
VIB-A-20xLENS	20x microscope objective providing a laser spot diameter of 1.5 μm at 21.7 mm stand-off distance, requires VIB-A-203 Front Lens Adapter	
VIB-A-203 Front Lens Adapter	Adapter for mounting VIB-A-10xLENS or VIB-A-20xLENS microscope objectives on VibroFlex Compact sensor head	
VIB-A-511 Illumination Unit	LED light source providing a coaxial illumination of the test object. The illumination unit is highly recommended in conjunction with the microscope objectives	
VIB-A-532 90° Deflection Unit	90° deflection of the laser beam (video image not fully usable)	
VIB-A-210 90° Deflection	90° deflection of the laser beam and the video image	
VIB-A-220 Protective Window with tube	Protects the objective lens of the laser vibrometer from dust, oil and contamination. Tube around window for additional protection.	
VIB-A-221 Protective Window flat	Protects the objective lens of the laser vibrometer from dust, oil and contamination. Flat design for easy cleaning.	
VIB-A-230 Air Purge Unit	For improved protection of the protective window from oil mist and dust.	
VIB-A-240 Pneumatic Beam Shutter	Mechanically protects protective window from dust and contamination.	
VIB-A-CAS09 Transportation Case for FibroFlex Compact (VFX-I-130)	Robust transportation case for the sensor head	



Tripods

VIB-A-T02 Standard Tripod

Easy targeting on the object under test



VIB-A-T05 Tripod with Geared Pan/Tilt Head

For precise pointing of the sensor head. The geared pan/tilt head allows quick coarse adjustment and fine adjustment in 3 axes



Positioning stages

VIB-A-P01 Tripod Mountable Tilt Stage

The tilt travel is $\pm 9^\circ$. Quick release plates to interface with VIB-A-T02 and VIB-A-T05 tripods are included.



VIB-A-P02 Tripod Mountable Traverse/Tilt Stage

The travel of the traverse stage is 105 mm and the tilt travel is $\pm 9^\circ$. Quick release plates to interface with VIB-A-T02 and VIB-A-T05 tripods are included.



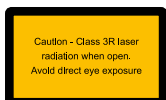
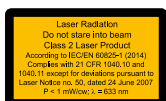
VIB-A-P06 Tripod Mountable X/Y/Tilt

The travel of the x & y traverse is 100 mm along and across laser beam and the tilt stage is $\pm 9^\circ$. Quick release plates to interface with VIB-A-T02 and VIB-A-T05 tripods are included.



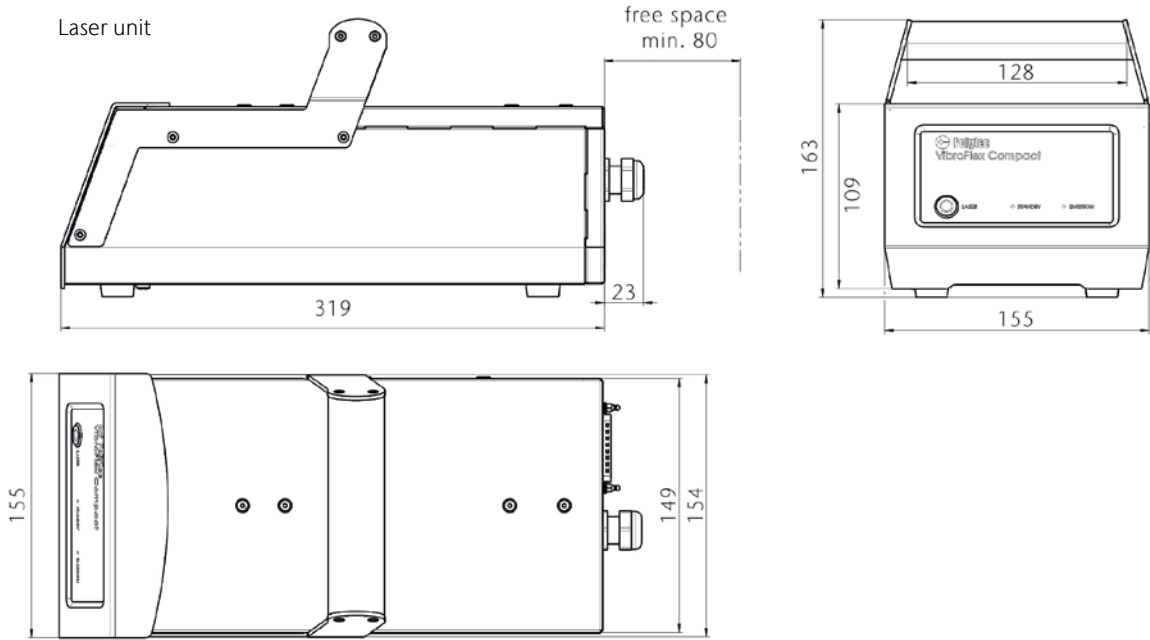
Polytec offers a wide range of accessories including tripods, tilt and traverse stages for mounting and positioning fiber heads.

Please contact your local vibrometer sales engineer or visit our website www.polytec.com/vibroflex for more detailed information.

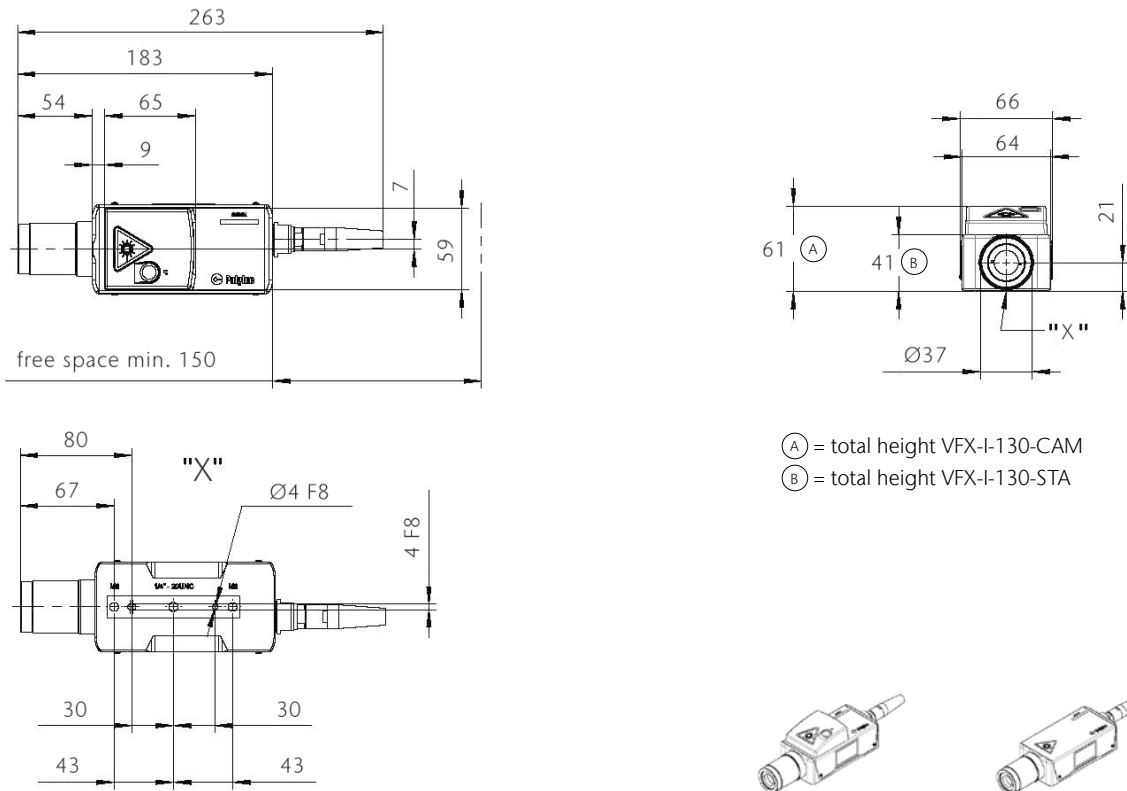


Dimensions

Laser unit



Sensor



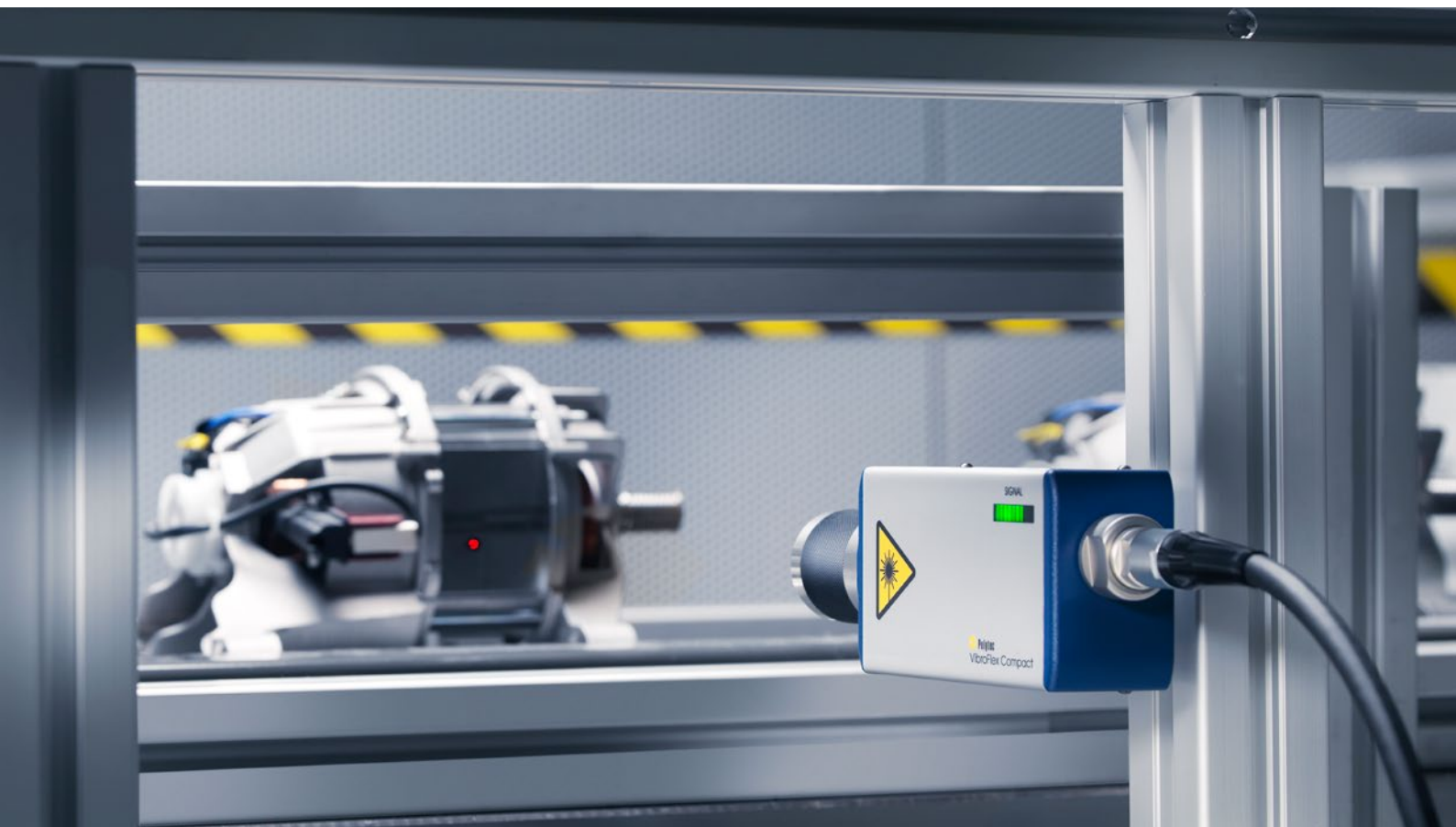
- (A) = total height VFX-I-130-CAM
- (B) = total height VFX-I-130-STA



VFX-I-130-CAM

VFX-I-130-STA

All dimensions in mm if not marked otherwise



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