Polytec

VibroFlex Compact //

Datasheet

Compactness meets versatility

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 withlaser 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 micro-systems and complex structures with fine details.

VibroFlex – the new flexibility of laser vibration measurement.

Highlights //

- Extremely compact sensor head with separate laser unit for tightly packed setups and integration in test benches
- Easy set-up and test documentation with integrated HD+ camera (optional)
- Excellent optical sensitivity
- Microscope objectives and coaxial illumination available for analyzing microstructures (optional)
- Wide range of accessories, especially for integration in test benches

Technical data //

General specifications			
Model	**VibroFlex Compact VFX-I-130**		
Component	**Sensor VFX-I-130-STA**	**Sensor VFX-I-130-CAM**	**Laser Unit (without sensor tray)**
HD+ camera	no	yes	–
Dimensions [L x W x H]	183 x 67 x 41 mm (7.2 x 2.64 x 1.61 in)	183 x 67 x 61 mm (7.2 x 2.64 x 2.40 in)	339 x 155 x 163 mm [1] (13.4 x 6.1 x 6.42 in [1])
Weight	1.0 kg (2.2 lbs)	1.1 kg (2.4 lbs)	4.6 kg (9.3 lbs) [2]
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		

Optical specifications	
Laser type	Helium Neon (HeNe)
Laser class	Class 2, < 1 mW
Laser wavelength	633 nm, visible red laser beam
Focus	Manual focus
Minimum stand-off distance [1]	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

Integrated HD+ camera 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 adjusting the brightness of the laser spot in the video image, can be adjusted by the user
Video output	USB 3.0 (Micro-B/A), requires camera cable VFX-C-100-C0x (length 3 m, 5 m or 8 m)

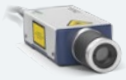
Working distance and laser spot size

Stand-off distance [mm] [1]	Laser spot diameter ($1/e^2$) [µm]	Laser depth-of-field [mm]	Camera field of view [mm x mm]
20 mm [2]	1.5	–	0.8 x 0.8
33.5 mm [3]	3.0	–	1.6 x 1.6
204 mm	31	±1	16 x 16
300 mm	46	±3	24 x 24
400 mm	62	±5	32 x 32
500 mm	77	±7	40 x 40
600mm	93	±11	48 x 48
700 mm	109	±15	57 x 57
800 mm	124	±19	65 x 65
900 mm	139	±24	73 x 73
1,000 mm	154	±30	81 x 81
1,500 mm	230	±66	121 x 121
2,000 mm	306	±116	162 x 162
5,000 mm	–	–	403 x 403
Each m plus [µm]	+150	–	–

[1] Measured from the front edge of the front lens (respectively from the front of the microscope objective)
[2] with VIB-A-20xLENS microscope objective
[3] with VIB-A-10xLENS microscope objective

Compliance with standards		
Laser safety	IEC/EN 60825-1	
Electrical safety	IEC/EN 61010-1	
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**	10x microscope objective providing a laser spot diameter of 3 µm at 33.5 mm stand-off distance, requires VIB-A-203 Front Lens Adapter for usage with VibroFlex Compact	
VIB-A-20xLENS **20x microscope objective**	20x microscope objective providing a laser spot diameter of 1.5 µm at 20 mm stand-off distance, requires VIB-A-203 Front Lens Adapter for usage with VibroFlex Compact	
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**	0° deflection of the laser beam (video image not fully visible). Can be rotated freely in any direction	

Options and accessories //

Optical accessories and transportation cases

VIB-A-210 **90° Deflection Unit**	Allows 90° deflection of laser beam and video image. Can be rotated in any direction. Must be combined with VIB-A-220 or VIB-A-221 Protective Window or a VIB-A-230 Air purge unit.	
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. Includes a Protective window with tube (similar to VIB-A-220) and VIB-A-202 Lens adapter with compressed air connection for mounting on sensor head. Requires oil-free compressed air	
VIB-A-240 **Pneumatic** **Beam Shutter**	For mounting on VIB-A-220 Protective window with tube or VIB-A-230 Air purge unit. Mechanically protects protective window from dust and contamination. Requires compressed air for opening	
VIB-A-CAS09 **Transp. Case (VibroFlex Compact VFX-I-130)**	Robust transportation case for the sensor head	
VIB-A-CAS13 **Transp. Case (VibroFlex Compact Accessories)**	Robust transportation case providing space for VIB-A-203 Front Lens Adapter, VIB-A-511 Illumination Unit and the microscope objectives VIB-A-10xLENS and VIB-A20xLENS	

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

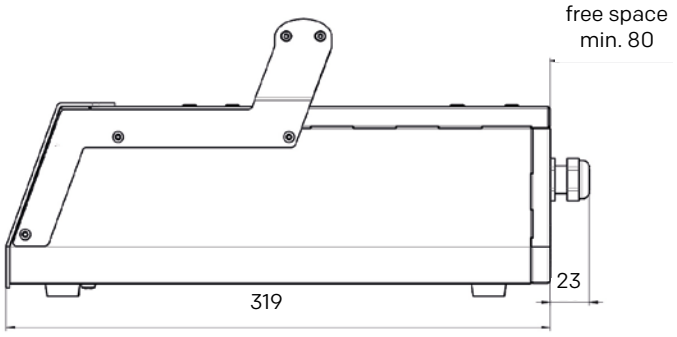
VIB-A-P01 **Tilt Stage**	Allows fine adjustment of the sensor head by tilting. The tilt travel is ±9°. Quick release plates to interface with VIB-A-T02 and VIB-A-T05 tripods are included	
VIB-A-P02 **2-Axes Stage: X plus Tilt**	Allows fine adjustment of the sensor head in 2 axes. The travel of the traverse stage is 105 mm and the tilt travel is ±9°. Quick release plates to interface with VIB-A-T02 and VIB-A-T05 tripods are included	
VIB-A-P06 **3-Axes Stage: XY plus Tilt**	Allows fine adjustment of the sensor head in 3 axes. The travel of the x & y traverse is 100 mm along and across laser beam and the tilt stage is ± 9°. Quick release plates to interface with VIB-A-T02 and VIB-A-T05 tripods are included	

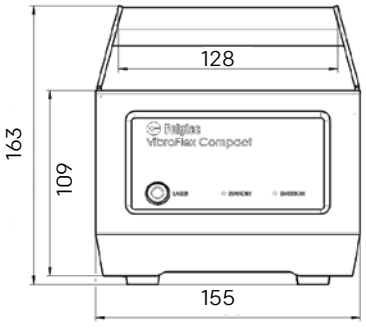
Polytec offers a wide range of accessories for setting up and performing measurements.
Please contact your local vibrometer sales engineer or visit our website www.polytec.com/vibroflex for more detailed information.

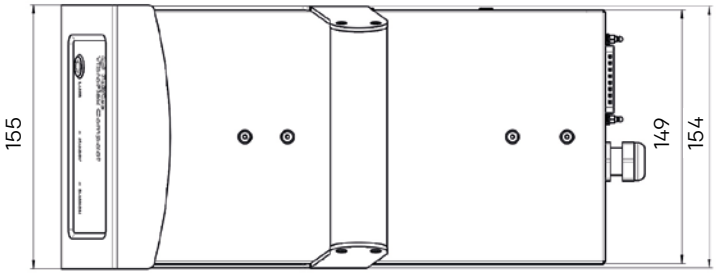

SIGNAL
VibroFlex Compact

Dimensions laser unit

All dimensions in mm if not marked otherwise

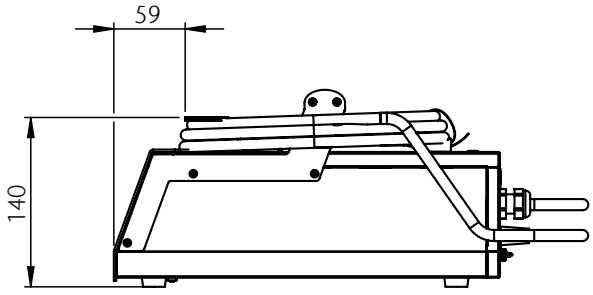


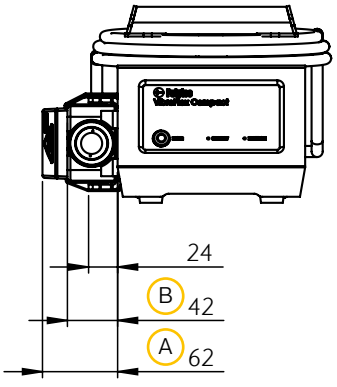


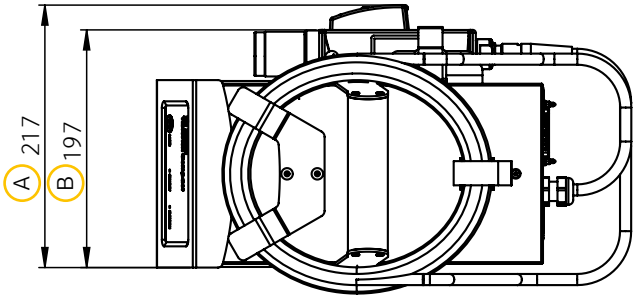


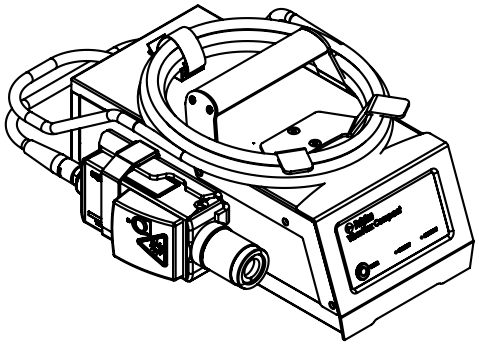
Dimensions laser unit with VFX-A-001 Sensor tray with cord wrap

All dimensions in mm if not marked otherwise



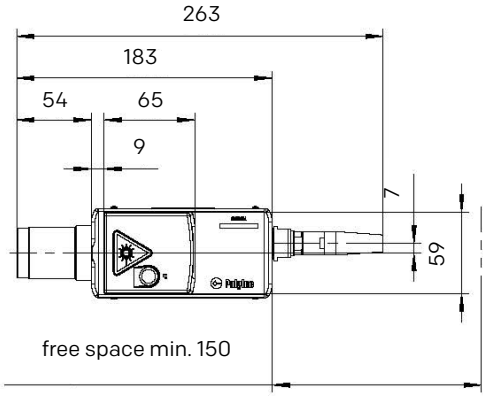


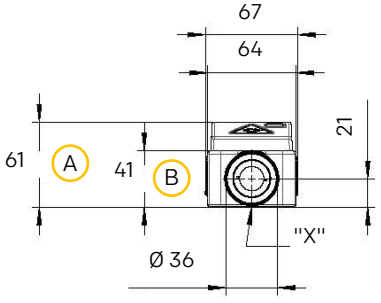


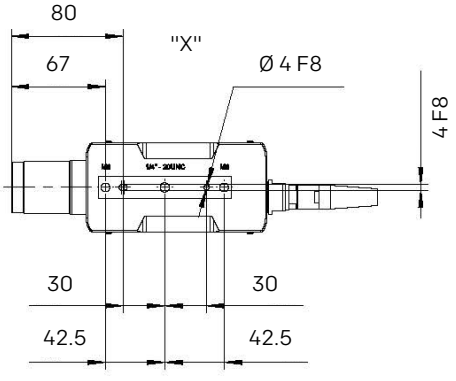


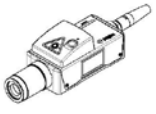
Dimensions sensor

All dimensions in mm if not marked otherwise

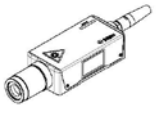








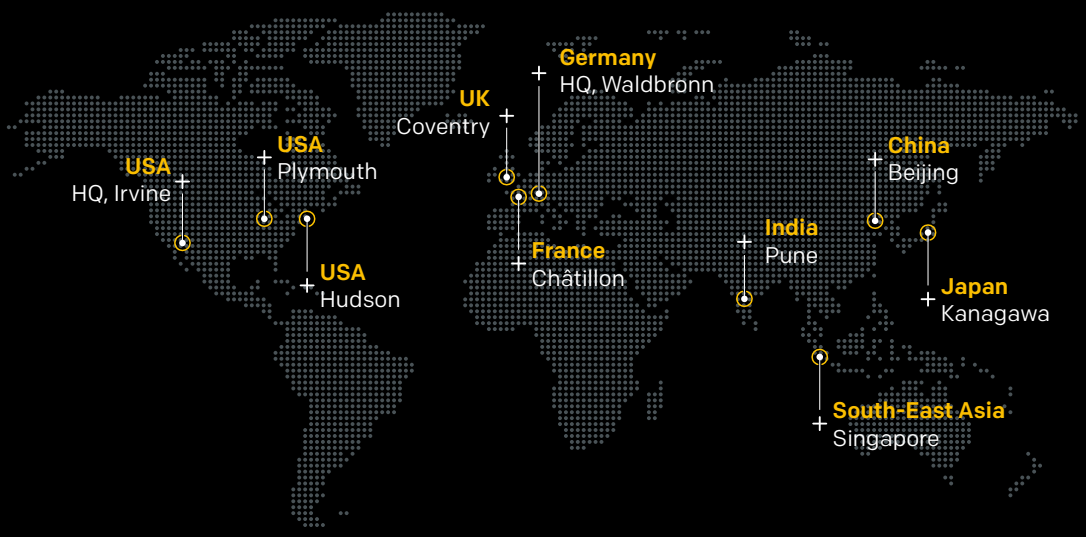
VFX-I-130-CAM



VFX-I-130-STA

(A) total height VFX-I-130-CAM

(B) total height VFX-I-130-STA



measure what matters. worldwide.

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