



VibroFlex QTec

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 comprises 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 QTec sensor head delivers the highest optical sensitivity, enabling high-fidelity measurements on all surfaces – even on dark, biological, rotating or moving objects. This safe laser technology is perfect for challenging applications such as NDT, biomedical, long distance displacement measurements, quasi-static displacement measurement and shaker feedback control. QTec makes vibration measurements faster, easier and more reliable than ever – for the most robust, unambiguous results.

VibroFlex – the new flexibility of laser vibration measurement.



Highlights

- Spare performance - SNR improvement up to 20 dB or a factor of 10
- Make use of every quantum of light for unparalleled optical sensitivity
- High-fidelity data with no surface preparation – even dark, biological or moving objects
- From μm -sized to large, distant objects
- No limits with a high dynamic range up to 30 m/s
- Fast remote and auto focus for best signal quality
- Match range and depth of field with interchangeable lenses

VibroFlex QTec
Powerful on all surfaces
Preliminary datasheet



Technical data



General specifications

Model VibroFlex QTec VFX-I-160

Weight 6.1 kg

Protection class IP40

Dimensions [W x H x L] 135 x 121 x 383 mm

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 ± 30 m/s

Optical specifications

Optical setup QTec heterodyne multi-path interferometer utilizing reception diversity. Protected by international patents

Laser type Measurement laser: invisible (IR), wavelength 1550 nm, output power <10 mW
Targeting laser: visible (green), wavelength 510 - 530 nm, effect. output power < 1 mW

Laser class Class 2, with both lasers in operation

Focus Auto focus ¹, remote focus, manual focus ²

Maximum stand-off distance ³ Up to 100 m (with VFX-O-LRI long range front lens, surface dependent)

Working distance and laser spot size

	Front lenses				Fiber heads for VFX-O-FMI-02			
	VFX-O-SRI short range		VFX-O-LRI long range		VFX-O-100 ⁴ Mini Fiber Head		VFX-O-110 ⁵ Micro Spot Fiber Head	
Min. stand-off distance [mm] ³	25		380		60		56±2	
Exit beam diameter (1/e ²) [mm]	2...4.5		11...12.4		3.3...4.3		14	
Stand-off distance [mm] ³	Typical spot size [µm]	Depth-of-field [mm]	Typical spot size [µm]	Depth-of-field [mm]	Typical spot size [µm]	Depth-of-field [mm]	Typical spot size [µm]	Depth-of-field [mm]
25 mm	48	±0.38	–	–	–	–	–	–
50 mm	77	±0.75	–	–	–	–	–	–
56 mm	81	±0.86	–	–	–	–	8	±0.03
60 mm	84	±0.94	–	–	28	±0.39	–	–
75 mm	91	±1.3	–	–	37	±0.69	–	–
100 mm	97	±1.9	–	–	53	±1.4	–	–
300 mm	150	±11	–	–	180	±16	–	–
380 mm	184	±17	60	±1.8	224	±27	–	–
500 mm	236	±28	81	±3.4	295	±44	–	–
1,000 mm	448	±102	171	±15	608	±189	–	–
2,000 mm	906	±415	349	±60	1,300	±873	–	–
5,000 mm distance	2,766	±3,900	898	±400	–	–	–	–
Each additional meter add [µm]	–	–	+183	–	–	–	–	–

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



¹ Used auto focus range can be limited individually for shorter cycle time.

² Quick and easy operation of all focus functions with turning knob on sensor head, on touch screen of front-end VibroFlex Connect or remote controlled from a computer or digital device.

³ Measured from the front edge of the front lens.

⁴ Included with VFX-O-FMI-02 Fiber Lens (IR).

⁵ Optional available for VFX-O-FMI-02 Fiber Lens (IR).

Options and accessories



Optical accessories

VFX-O-SRI SR Front Lens (IR)

Short Range front lens for measuring at short working distances (highest depth of field).

VFX-O-LRI LR Front Lens (IR)

Long Range front lens for measuring at long working distances.



VFX-O-FMI-02 Fiber Lens (IR) 2 m

Flexible measurements with 2 m fiber cable on small objects or where space is restricted. Includes VFX-O-100 Mini Fiber Head, reference head for setup and VIB-A-CAS08 Transportation Case. Please note that QTEC's additional performance does not convey via the fiber lens



VFX-O-100 Mini Fiber Head

Small fiber head (10 mm diameter) with a laser spot size down to 28 μm for VFX-O-FMI-02 Fiber Lens (IR) 2 m



VFX-O-110 Micro Spot Fiber Head

Small fiber head (24 mm diameter) with a laser spot size of 8 μm for VFX-O-FMI-02 Fiber Lens (IR) 2 m



Tripods

VIB-A-T02 Standard Tripod

Easy targeting on the object under test



Positioning stages

VIB-A-P35
4-Axes Precision Stage:
XZ plus Tip-Tilt

XY-traverse stage featuring 18 mm travel with $\pm 5^\circ$ pan/tilt function in both directions for positioning a single 10 mm outer diameter Mini Fiber Head.



VIB-A-P36
Tip-Tilt Precision Stage

For positioning a single 10 mm outer diameter Mini Fiber Head. Travel range $\pm 5^\circ$ in both directions.





Positioning stages

VIB-A-P01
Tilt Stage

Allows fine adjustment of the sensor head by tilting. 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
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 $\pm 9^\circ$. 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 $\pm 9^\circ$. Quick release plates to interface with VIB-A-T02 and VIB-A-T05 tripods are included.



Transportation case

VIB-A-CAS18
Transp. Case
(VibroFlex QTEC VFX-I-160)

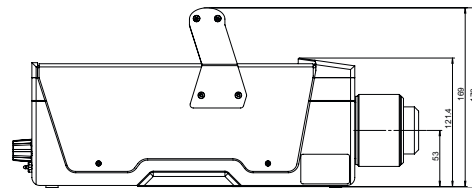
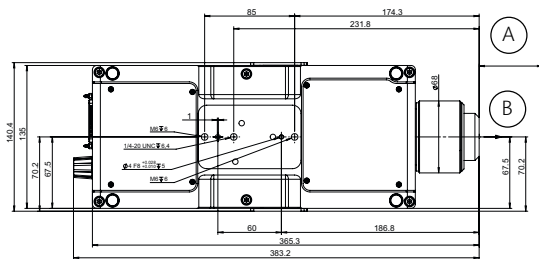
Robust transportation case for the sensor head



picture similar

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.

Dimensions



All dimensions in mm if not marked otherwise

(A) Stand-off distance (B) Beam

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