VibroFlex TriMount is a modular setup for non-contact 3D vibration measurements, consisting of a sturdy sensor holder with three VibroFlex Compact measuring heads, each interacting with a powerful VibroFlex Connect front-end. This combination enables precise and reliable vibration measurements with a frequency bandwidth of up to 24 MHz for a wide range of applications. Its latest generation FPGA-based signal processing takes care of decoding raw measurement data in displacement, velocity and acceleration.

One sensor with integrated camera can be mounted on top, which simplifies measurement setup and test documentation.

The dedicated VibSoft-PRO data acquisition converts the raw data into the cartesian x, y and z components for further analysis. The sensor holder offers fine adjusters facilitating the easy and precise alignment of the three laser beams for unambiguouse measurement data.

In addition to using the VibroFlex TriMount as a 3D vibration measurement system, the three laser vibrometers can also be used as stand-alone 1D single point vibration measurement systems.

Highlights

- True 3D non-contact vibration measurement
- Precise laser positioning with fine adjustment and camera
- Highest frequency bandwidth and time resolution
- Ready-to-go with VibSoft-PRO data acquisition
- Measuring the real acceleration, velocity and displacement

VibroFlex TriMount

Modular 3D vibration measurement

Datasheet

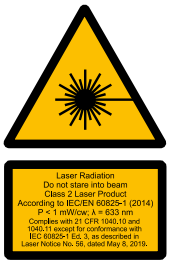
Technical data

System structure of the VibroFlex TriMount		
Composition	**Amount**	**Recommended subcomponents**
Sensor holder	1	VIB-A-T33
Tripod	1	VIB-A-T02
Sensor head	3	VFX-I-130-STA / VFX-I-130-CAM [6] (alternatively VibroOne)
Front-end	3	VibroFlex Connect VFX-F-110 (alternatively VibroOne)
Data acquisition	1	VibSoft-PRO (with 4 analog DAQ input channels)

General specifications of the subcomponents			
Component	**Sensor Holder VIB-A-T33**		
Dimensions (L x W x H)	390 x 300 x 260 mm (15.3 x 11.8 x 10.2 in) without sensors and alignment tool		
Weight	4.9 kg (10.8 lbs)		
XY linear stage	±6.5 mm with locking device (for sensor head left + right)		
3-Axes Stage: XZ plus Tilt	Allows fine adjustment in 3 axes. The travel of the X & Z traverse is 100 mm along and across laser beam and the tilt stage is ± 9°. Includes quick release plates for connection with VIB-A-T02		
Alignment tool	Included for alignment of the laser beams		
Strain relief	yes		
Component (short excerpt [1])	**Sensor** **VFX-I-130-STA**	**Sensor** **VFX-I-130-CAM** [6]	**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 [2] mm (13.4 x 6.1 x 6.42 [2] in)
Weight	1.0 kg (2.2 lbs)	1.1 kg (2.4 lbs)	4.6 kg (9.3 lbs) [3]
Protection class	IP40		
Operating temperature	+0 °C ... +40 °C (41 °F ... 104 °F)		
Storage temperature	+10 °C ... +65 °C (14 °F ... 149 °F)		
Relative humidity	max. 80%, non-condensing		
Front-end compatibility	VibroFlex Connect		
Maximum velocity	± 12 m/s		
Component (short excerpt [4])	**VibroFlex Connect VFX-F-110** [5]		
Dimensions (L x W x H)	383 x 285 x 140 mm (15.1 x 11.2 x 5.5 in)		
Weight	ca. 7.3 kg (16 lbs)		
Analog signal outputs	3 BNC connectors for simultaneous and phase synchronized output of velocity, displacement and acceleration (depending on configuration)		
Digital signal outputs	VibroLink digital interface (only for 1D- measurement)		
Frequency bandwidth	DC to 24 MHz		

[1] More Details in product-specific datasheet of VibroFlex Compact. Alternatively, the VibroOne all-in-one system can also be used, as it has the same sensor heads available. You will find these information in the respective data sheet.
[2] Height of laser unit housing without handle: 112.5 mm (4.4 in)
[3] For weight of 3 m fiber cable add 300 g (0.66 lbs), for 5 m fiber cable add ca. 600 g (1.3 lbs)
[4] More Details in product-specific datasheet of VibroFlex Connect. If VibroOne measuring systems are used, then you can find it there.
[5] For 3D measurements, the configurations to be set must be identical on all three frontends
[6] With the Sensor Holder VIB-A-T33, only one sensor with camera can be attached at the top (not at the sides)

Performance specifications of system VibroFlex TriMount	
Optics	
Laser type	Helium Neon (HeNe)
Laser class	Class 2, <3 mW (<1 mW per beam)
Laser wavelength	633 nm, visible red laser beam
Focus	Manual focus
Angle laser beam	10° to the central axis / 120° radially positioned to each other
Nominal standoff distance [1]	242 mm (9.5 in)
Laser depth-of-field [2]	±1.7 mm
Laser spot diameter ($1/e^2$) [2]	37 µm per beam
Laser spot size combined [2]	100 µm
Camera field of view [2]	19 x 19 mm (0.74 x 0.74 in)



[1] Measured from the front edge of the front lens
[2] Measured at the nominal stand-off distance of 242 mm

v_x, v_y, v_z output performance [1]

Measurement range (peak)	Maximum frequency range [2]	Optimum frequency bandwidth f_{opt}	Typical resolution [3] at frequency bandwidth f_{opt} for sensor heads VibroFlex Compact		
m/s	kHz	kHz	nm/s/√Hz		
			v_x	v_y	v_z
0.001	100	1	7.5	7.5	1.5
0.002	100	2	7.5	7.5	1.5
0.005	3,000	5	10	10	2
0.01	3,000	10	15	15	3
0.02	3,000	20	35	35	7
0.05	3,000	50	50	50	10
0.1	24,000	100	90	90	18
0.2	24,000	200	200	200	40
0.5	24,000	500	350	350	70
1	24,000	1,000	750	750	150
2	24,000	3,000	2,000	2,000	400
5	24,000	6,000	4,000	4,000	800
6	24,000	6,000	4,000	4,000	800
10	24,000	12,000	8,000	8,000	1,600
12	100	50	1,500	1,500	300

[1] Only for 3D measurements. For 1D measurement more details can be found in the product-specific datasheet of VibroFlex Connect. If VibroOne measurment systems are used, you will find the information in the respective data sheet.
[2] Frequency range from 0 Hz up to given value. Maximum frequency bandwidth depending on system configuration.
[3] The noise-limited resolution is defined as the signal amplitude (rms) at which the signal-to-noise ratio is 0 dB and with 1 Hz spectral resolution. Maximum linearity error: 0.5% for all measurement ranges.

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

VibSoft data acquisition and analysis software

VibSoft is a comprehensive and easy-to-use software package for digital vibration data acquisition and analysis. VibSoft closes the gap between raw signal acquisition and profound analysis of vibration measurement data. The VibroLink interface allows for direct and fully digital data acquisition via Ethernet. Alternatively, the multi-channel DAQ units permit connecting additional analog inputs like other sensors. Further options like the powerful SignalProcessor (a Polytec math library for post-processing) and a scripting engine for individual post-processing and control make VibSoft an extremely powerful tool.

S: Standard
O: Option

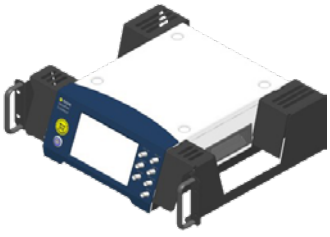
General specification (short excerpt [1])	
System component	VibSoft-PRO
Maximum frequency bandwidth [2]	Analog 25 MHz
Analog DAQ input channels	4
Internal signal generator	O
Real-time video imaging of the test object (VIB-S-VID_USB) [3]	O
Cabling	BNC cables

[1] More details in product-specific datasheet of VibSoft.
[2] For VibSoft-PRO and VibSoft-VL, the maximum frequency bandwidth can be chosen between 100 kHz and 24 resp. 25 MHz, according to the application and the used vibrometer system.
[3] For sensor heads with integrated camera like VibroFlex Compact or VibroOne.

Tripods		
VIB-A-T02 Standard Tripod	Easy targeting on the object under test	

Accessories		
Option	**Description**	
VFX-C-100-S05 Sensor Cable 5 m	Sensor cable with quick lock connectors for connecting a VibroFlex sensor head to the VibroFlex Connect front-end (length 5 m).	S
VFX-C-100-S10 Sensor Cable 10 m	Sensor cable with quick lock connectors for connecting a VibroFlex sensor head to the VibroFlex Connect front-end (length 10 m).	O
VFX-C-100-S20 Sensor Cable 20 m	Sensor cable with quick lock connectors for connecting a VibroFlex sensor head to the VibroFlex Connect front-end (length 20 m).	O
VFX-C-100-D02 Data Cable	Data cable (length 2 m) for connecting VibroFlex Connect to a computer. Industrial grade connector M12 and RJ45 (Ethernet, X-coded). Allows configuration via web browser and data transfer via VibroLink.	S
A-RMK-0001 Rack Mounting Kit	Rack Mounting Kit with two handles on the front and additional flanges for mounting the VibroFlex Connect front-end in a 19" rack.	O
VIB-A-CAS09 Transportation Case (VibroFlex Compact VFX-I-130)	Robust transportation case for the sensor head	O
VIB-A-CAS12 Transportation Case (VibroFlex Connect VFX-F-110)	Transportation Case for VibroFlex Connect	O

S: Standard
O: Option



A-RMK-0001
Rack Mounting Kit

VIB-A-CAS09
Transportation Case

VIB-A-CAS12
Transportation Case

Configurable options

The VibroFlex Connect front-end offers a lot of flexibility: thanks to its various options for frequency bandwidth, output signals for measurands (velocity, displacement and acceleration), signal enhancement capabilities and accessories, which can be combined freely with each other, it fits perfectly to your application.

Frequency bandwidth
Choose between 7 different maximum frequency bandwidths from 50 kHz to 24 MHz covering the acoustic and the ultrasonic range.

S: Standard
O: Option

Option	Description	
VFX-BW-50kHz	50 kHz maximum frequency bandwidth	S
VFX-BW-100kHz	100 kHz maximum frequency bandwidth	O
VFX-BW-500kHz	500 kHz maximum frequency bandwidth	O
VFX-BW-1MHz	1 MHz maximum frequency bandwidth	O
VFX-BW-3MHz	3 MHz maximum frequency bandwidth	O
VFX-BW-12MHz	12 MHz maximum frequency bandwidth	O
VFX-BW-24MHz	24 MHz maximum frequency bandwidth	O

Velocity output
The velocity limit of minimum ±6 m/s can be extended up to ±12 m/s by adding max. performance options for the VibroFlex Compact sensor heads. For extending the velocity resolution, the option VFX-VelResS offers additional measurement ranges down to ±1 mm/s (full scale).

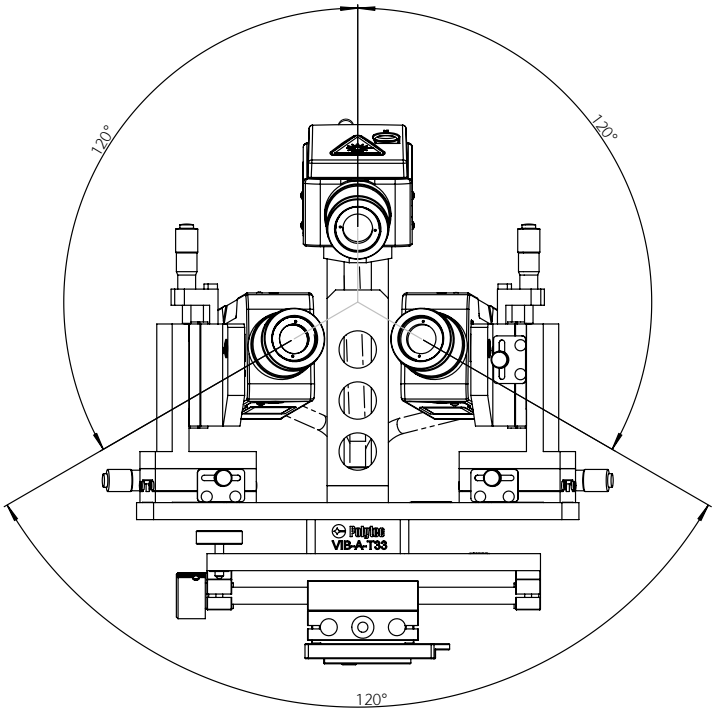
S: Standard
O: Option

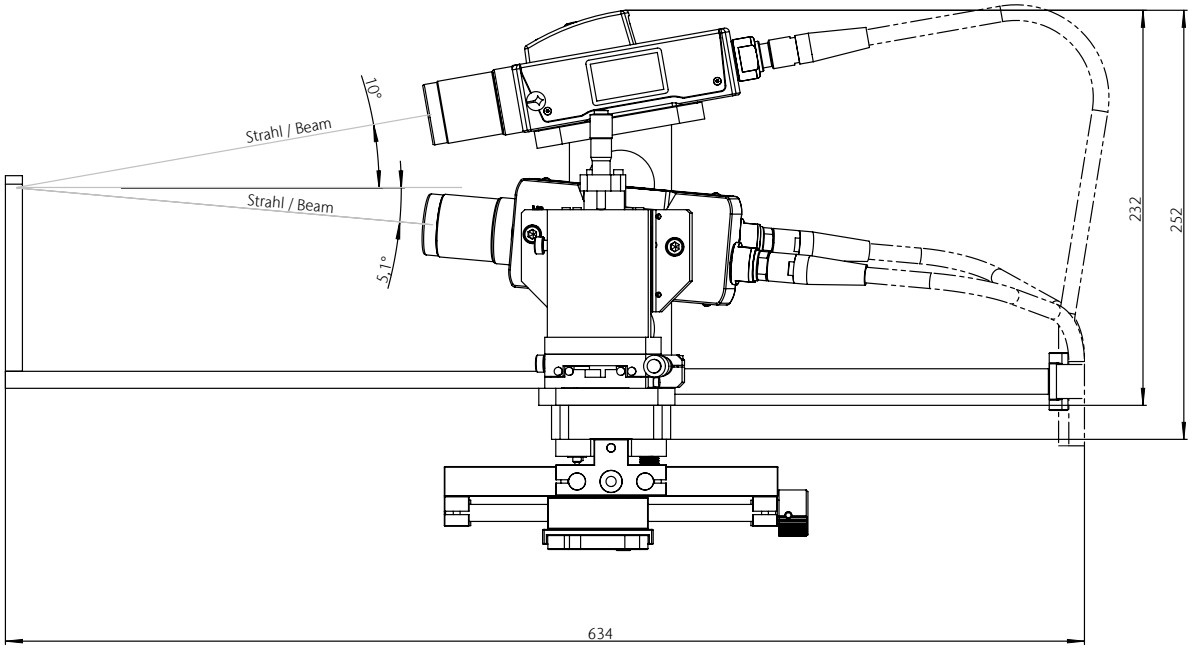
Maximum velocity options		
Option	**Description**	
VFX-VelBase	Base (±6 m/s)	S
VFX-VelPerformance	Performance (±12 m/s)	O
VFX-VelHighSpeed	High Speed (±30 m/s)	O

Velocity resolution options		
Option	**Description**	
VFX-VelResH	High resolution Most sensitive measurement range ±0.01 m/s (peak)	S
VFX-VelResS	Super fine resolution Extra fine resolution thanks to additional velocity measurement ranges. Most sensitive measurement range ±0.001 m/s (peak)	O

More details in product-specific datasheet of VibroFlex Connect respectively VibroOne.

Dimensions





All dimensions in mm if not marked otherwise

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