marmatek measurement technologies

◆ **Polytec**

VibroGo® is the truly portable, battery powered laser vibrometer for field studies and quick and easy condition monitoring of machines and facilities. VibroGo® measures vibrations on the go and without contact, covering a wide frequency range of up to 100 kHz. Use VibroGo® for a better understanding of dynamics and acoustics in nature and technology – for research, product development and quality assurance.

With auto and remote focus you can easily set up the laser beam on your test object and set the measurement range via touch screen. Directly retrieve the vibrational velocity, displacement and acceleration.

The integrated signal level indicator secures the optimum operation. Select high pass and frequency bandwidth filters for clean signals. Thanks to the ASE Adaptive Signal Enhancement VibroGo® measures reliably on any surface.

Use the VibroLink Ethernet or WLAN interface for a fully digital transfer of measurement data to a computer with the VibSoft data acquisition and analysis software. Alternatively, connect any data acquisition to the analog BNC output and control VibroGo® remotely via WLAN and web browser.

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Highlights
- Study vibrations with laser precision in field and lab
- Easy to use, with touch screen and autofocus
- Wireless remote control from everywhere
- Lightweight, versatile and outdoor proof (IP64)
- Measure from a safe distance with up to 100 kHz
- Optional mobile power supply for up to 3 hours operation

VibroGo®
Truly portable laser vibration measurement
Datasheet

Technical data

Metrological specifications

Model	VibroGo® VGO-200					
Package	Max. frequency	Velocity output	Velocity full scale	Displacement output [1]	Acceleration output [1]	Upgradeable later [2]
Lab	25 kHz	7 ranges	±1 m/s	16 ranges	11 ranges	yes
Explorer	25 kHz	8 ranges	±2 m/s	16 ranges	12 ranges	yes
Sonic	100 kHz	8 ranges	±2 m/s	16 ranges	14 ranges	yes

[1] optional

[2] all features (e. g. Explorer or Sonic package, additional displacement or acceleration output, wireless connectivity) can be upgraded later at any time

Measurement ranges velocity	mm/s/V	2.5	5	12.5	25	50	125	250	500
Full scale output (peak)	mm/s	10	20	50	100	200	500	1,000	2,000
Typical resolution[1] depending on adjusted frequency bandwidth									
10 kHz	µm s^{-1}/√Hz	< 0.01	< 0.01	< 0.02	< 0.02	< 0.04	< 0.1	< 0.2	< 0.4
25 kHz	µm s^{-1}/√Hz	< 0.02	< 0.02	< 0.02	< 0.02	< 0.04	< 0.1	< 0.2	< 0.4
100 kHz	µm s^{-1}/√Hz	< 0.03	< 0.03	< 0.03	< 0.03	< 0.04	< 0.1	< 0.2	< 0.4

[1] 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 (reflective film). The typical value refers to the center of the operating frequency range.

Measurement ranges displacement	Full scale output (peak)	Measurement ranges acceleration	Full scale output (peak)
mm/V	mm	m/s²/V	m/s²
0.000125	0.0005	1.25	5
0.00025	0.001	2.5	10
0.0005	0.002	5	20
0.00125	0.005	12.5	50
0.0025	0.01	25	100
0.005	0.02	50	200
0.0125	0.05	125	500
0.025	0.1	250	1,000
0.1	0.2	500	2,000
0.125	0.5	1,250	5,000
0.25	1	2,500	10,000
0.5	2	5,000	20,000 [1]
1.25	5	12,500	50,000 [2]
2.5	10	25,000	100,000 [2]
5	20	-	-
12.5	50	-	-

[1] The measurement range with a acceleration of ±20 km/s² is only available in the Explorer and Sonic Package.

[2] The measurement ranges with a maximum acceleration of ±50 km/s² and ±100 km/s² are only available in the Sonic Package.

Decoder type	Digital velocity decoder, 7..8 measurement ranges[1] Digital displacement decoder (optional), 16 ranges Digital acceleration Decoder (optional), 11..14 measurement ranges[1]
Analog signal outputs	±4 V, BNC connector output for vibration signal velocity, can be switched to displacement or acceleration (optional), SYNC output to synchronize with an external device
Digital signal outputs	VibroLink digital interface for measurement data (velocity) and signal level and remote control, requires VibSoft 5.5 or newer software and a A-CBL-000x Ethernet cable or VGO-WIC wireless connectivity with a WLAN-stick; Vibrolink interface also allows remote control via Ethernet or WLAN (optional) from any device via web browser
Frequency bandwidth	DC to 100 kHz[1]
Max. velocity	±2 m/s [1]
Filters	Adjustable frequency bandwidth: 1 kHz, 5 kHz, 10 kHz , 25 kHz, 50 kHz [2], 100 kHz [2] Digital high pass filters 13 Hz / 104 Hz (-3 dB) ASE Adaptive Signal Enhancement for signal optimization on uncooperative surfaces
Signal level	Bargraph on touch screen
Analog input signals	Trigger input for starting the autofocus or switching the laser beam on/off
Wireless connectivity	Option VGO-WIC allows establishing a wireless connection to VibroGo® for data transfer to a system with VibSoft 5.5 or newer and for remote control and configu- ration of the sensor via web browser from any WLAN-enabled device
Connectors	Industrial grade, waterproof M12 Ethernet connector for VibroLink digital interface (CON 3) BNC output for analog signal (CON 2) USB port for optional WLAN-Stick Trigger Input and SYNC output (CON 4) Connector for power supply 12 V (CON 1)

[1] Depending on model
[2] Frequency bandwidths of 50 kHz and 100 kHz only available in Sonic Package

Optical specifications

Laser type	Helium Neon (HeNe)
Laser class	Class 2, < 1mW output power
Laser wavelength	633 nm, visible red laser beam
Focus	Autofocus, remote focus, manual focus – controlled via touch screen or remotely via VibroLink interface
Minimum stand-off distance [1]	355 mm
Maximum stand-off distance [1]	ca. 30 m, depending on surface properties of measurement object
Exit beam diameter ($1/e^2$)	typ. 12.2 mm
Visibility maxima 1, 2	$x = 463$ mm $+ n \cdot 138$ mm, $n = 0, 1, 2, 3, \ldots$

[1] For definition of stand-off distance see drawing on last page, dimension „x".
[2] The optimal stand-off distances where the signal level is at its maximum are called visibility maxima. The visibility maxima recur every 138 mm corresponding to the laser cavity length.
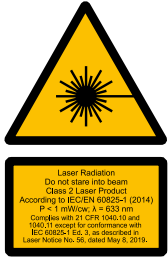
Working distance and laser spot size

Stand-off distance	Laser spot diameter	Laser depth-of-field
[mm]	[µm]	[mm]
355	23	±0.6
463	30	±1.1
1,015	69	±5.9
1,992	138	±24
5,028	349	±152
9,996	699	±606
20,070	1,415	±2,485
30,006	2,139	±5,676

General specifications

Interface/display	5" color touch screen with interactive menu guidance for setup and configuration. Also allows remote control wireless (via WLAN) or via Ethernet
Weight	ca. 3.1 kg
Protection class	IP64
Dimensions [W x H x L]	see drawing on last page
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
Power supply	11 V ... 14.5 V DC, max. 25 W 12 V plug-in power supply included (100 V...240 VAC ±10%, 50/60 Hz, max. 50 VA), mobile power supply available as an option

Options and accessories

Power supply		
A-PPS-01 Plug-in power supply	Plug-in power supply 12 V AC / DC, included in scope of delivery of VibroGo®	
A-MPS-001 Mobile Power Supply	High-performance lightweight rechargeable battery (lithium polymer, A-MPS-PB1) for mobile power supply. Also includes battery charger with adapter plates for EU, UK, US and AU sockets, an A-MPS-C02 Power Supply Cable (length 2 m) and a convenient waterproof bag (A-MPS-BAG) that allows to attach the battery directly to the tripod	

| Wireless connectivity [1]		
A-WIC-001 WLAN-Stick CE	CE-certified WLAN stick for using wireless access. (For all countries of the EU, Switzerland, South Africa, India, Oman, Qatar) Supports 802.11b/g/n WLAN standards with up to 150 Mbps data transfer speed when connected to an 802.11n device.	
A-WIC-002 WLAN-Stick FCC	FCC-certified WLAN stick for using wireless access (for USA, Canada, Rep. Taiwan) Supports 802.11b/g/n WLAN standards with up to 150 Mbps data transfer speed when connected to an 802.11n device.	

[1] For usage of WLAN-Sticks, the option VGO-WIC Wireless Connectivity is required
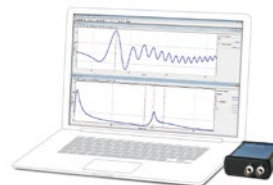
VibSoft: Data acquisition and analysis

A comprehensive and easy-to-use software package for digital or analog vibration data acquisition and analysis and remote control of VibroGo®. It closes the gap between raw signal acquisition and profound analysis of vibration measurement data even with special filters and signal enhancement dedicated to laser vibrometers.

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.
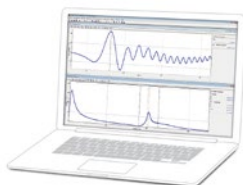
VibSoft-VL

The VibroLink interface allows for direct and fully digital data acquisition via Ethernet or WLAN. Thus, VibSoft-VL is the ideal lightweight solution for mobile use – set up quickly and easily, with reduced cabling and no need for additional data acquisition hardware.

VibSoft-20

USB based compact data acquisition system for measuring frequencies up to 20 kHz enabling the connection of one additional analog sensor. Suitable for laptop computers. Comprises VIB-E-220 Junction Box.

i | **Cables**

A-CBL-0001 Ethernet Cable RJ 45/M12 5 m	Ethernet cable for digital data transfer between VibroGo® and a computer (VibSoft 5.5 or newer required). Connector RJ45 on one side, M12 industrial connector on the other side. Length = 5 m	
A-CBL-0002 Ethernet Cable RJ 45/M12 10 m	Ethernet cable for digital data transfer between VibroGo® and a computer (VibSoft 5.5 or newer required). Connector RJ45 on one side, M12 industrial connector on the other side. Length = 10 m	
VGO-C-200-C04 Trigger Cable 1.5 m	For connection with the Trigger input (CON 4) (included in scope of delivery of VibroGo®)	

Tripods

VIB-A-T02 Standard Tripod	Easy targeting on the object under test. Rigid tripod with manual 3-way fluid head.	
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.	
VIB-A-T08 Tripod	Lightweight Tripod with pan/tilt head, total weight ca. 1.6 kg. Note: Suitable for loads up to 4 kg.	

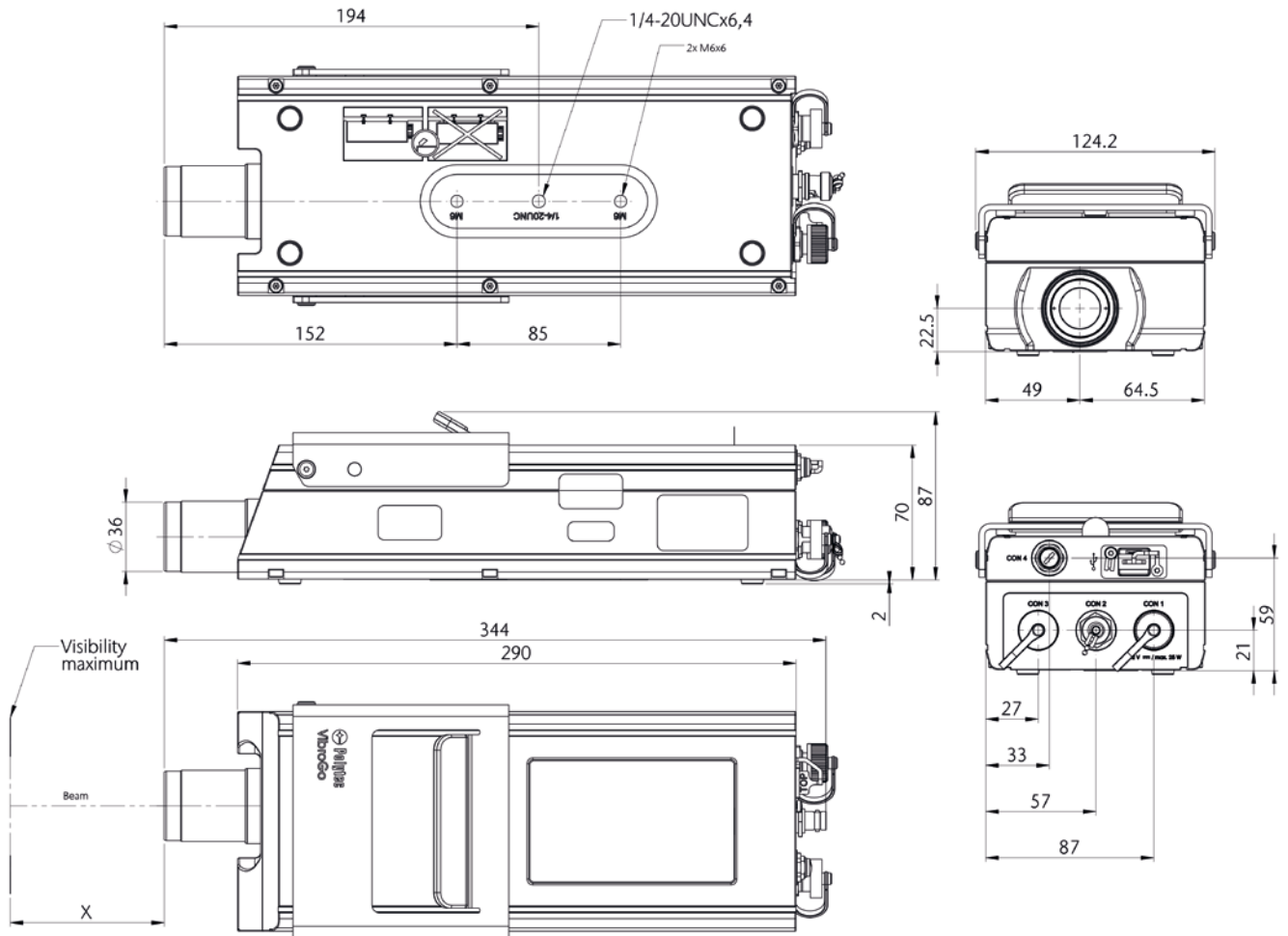| Transportation case	
VIB-A-CAS16 Transp. Case (VibroGo® VGO-200)	Robust transportation case for VibroGo®. Included with sensor. Provides space for VibroGo®, the plug-in power supply and also for optional accessories like Mobile Power Supply and WLAN-Stick.

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

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/vibrogo** for more detailed information.

All dimensions in mm if not marked otherwise