VibroMicro VM-S-100

VibroMicro is a compact, high-performance laser vibrometer integrating a built-in data processing unit and an operational unit, capable of delivering both digital and analog outputs. With a sampling frequency of up to 50 Msps, it ensures precise measurement of vibration signals across a broad frequency range, from DC to 25 MHz. The system features a versatile lens assembly, allowing users to switch lenses as needed. All lenses support manual focus, Mars series supports auto focus, providing flexibility for diverse measurement scenarios.

As an intelligent measurement system. VibroMicro supports large-scale networked deployments, featuring synchronous input/output interfaces for network-synchronized measurements. The system also accepts external trigger signals, enabling synchronous operation with other sensors for multi-modal measurement applications.

VibroMicro also features analog signal output, enabling seamless integration with traditional measurement systems based on data acquisition (DAQ) cards. This facilitates easy upgrades for legacy test setups.With outstanding noise performance, VibroMicro supports measurements at distances of up to 100 m and achieves a maximum velocity of 30 m/s. Its patented signal-processing algorithms and rigorous quality control ensure high-precision results. Additionally, VibroMicro excels in static displacement measurement, functioning as a high-accuracy, long-range displacement sensor for diverse applications.

VibroMicro – New micro full-featured in laser vibration measurement.

(VibroMicro Sputnik/Apollo/Shenzhou)

(VibroMicro Mars)

!

Highlights

- Micro vibrometer
- Measure from 0.025m up to 100m, from DC up to 25MHz
- Velocity range up to 30m/s
- Support both digital and analog output
- Based on highly integrated silicon optical chips
- Intelligent sensor, built-in signal processing capability

VibroMicro VM-S-100

The World Smallest Laser Vibrometer

Datasheet

Technical data

Optical specifications	
Laser type	Measurement laser: invisible (IR), wavelength 1310 nm, effective output power < 5 mW Targeting laser: visible (red), wavelength 655 nm, effective output power adjustable
Laser class	Class I, < adjustable output power
Laser wavelength	655 nm, visible red laser beam
Focus	Manual focus(VibroMicro Sputnik/Apollo/Shenzhou) Automatic focus(VibroMicro Mars)
Minimum stand-off distance	25 mm
Maximum stand-off distance	ca. 100 m, depending on different lens
Displacement resolution	0.01 nm(VibroMicro Sputnik/Apollo/Shenzhou) 0.001 nm(VibroMicro Mars)
Frequency bandwidth	DC-2.5 MHz(VibroMicro Sputnik/Apollo/Shenzhou) DC-25 MHz(VibroMicro Mars)
Optical interference	>60000 lux
Noise density	Min 0.3 pm/√Hz
Displacement repeatability(>1 kHz)	<0.1 nm (VibroMicro Sputnik/Apollo/Shenzhou) <0.01 nm (VibroMicro Mars)
Velocity range	Max 30 m/s

General specifications	
Model	VibroMicro VM-S-100
Weight	ca. 350 g(VibroMicro Sputnik/Apollo/Shenzhou) ca. 285 g(VibroMicro Mars) ca. 590 g(VibroMicro Mars with radiator)
Protection class	IP64
Dimensions [W x H x L]	See drawing on last page
Operating temperature	-20 °C ... +50 °C (-68 °F ... +122 °F)
Sheating material	Aluminium alloy
Power supply and power consumption	12 VDC, 4 W
Digital interface	Ethernet 100BaseT(VibroMicro Sputnik/Apollo/Shenzhou) Ethernet 1000BaseT(VibroMicro Mars)

Analog output signal interface	SMA
Analog output sensitivity range	0.0005~4444 mV/mm
Analog sensitivity level	24 level, automatic
Trigger signal	rising edge
Network synchronization signal	Square wave (1Hz)
Trigger I/O	Input & Output
Synchronization accuracy	0.2 ms
Display	Color screen

Metrological specifications						
Model	VibroMicro VM-S-100					
Package	Max. velocity(m/s)	Max. distance(m)[1]	Spectral floor noise@10cm	Depth-of-field(10%)	Laser source	Lens[4]
Sputnik[2]	1.5	~100	1pm/√Hz	10	High power	Optional
Apollo[2]	4.5	~100	1pm/√Hz	10	High power	Optional
Shenzhou[3]	20	~100	0.1pm/√Hz	20	High power, low noise	Optional
Mars[3]	30	~100	0.02pm/√Hz	20	High power, low noise	Optional

[1]Depending on model with different lens.
[2]VibroMicro Sputnik, VibroMicro Apollo could be remotely programmed and the configuration updated.
[3]VibroMicro Shenzhou, VibroMicro Mars should be confirmed in factory, no upgrades on customer side.
[4]Lens, reference to len information table.

Working distance and laser spot size(Lens DR-L-F28)						
Stand-off distance	[mm]	300	800	1,000	1,500	2,000
Laser spot size	[μm]	60	160	190	280	380
Laser depth-of-field	[mm]	±10%@ Stand-off	±10%@ Stand-off	±10%@ Stand-off	±10%@ Stand-off	±10%@ Stand-off

Working distance and laser spot size(Lens DR-L-C40)						
Stand-off distance	[mm]	800	1,000	1,500	2,000	3,000
Laser spot size	[μm]	110	130	200	290	400
Laser depth-of-field	[mm]	±10%@ Stand-off	±10%@ Stand-off	±10%@ Stand-off	±10%@ Stand-off	±10%@ Stand-off

Options and accessories

Lens specifications						
Model[1]	Optical aperture (mm)	Focus adjustable distance(m)	Optimum working distance(m)	Depth-of-field(%)	Figure[2]	Description
DR-L-DF28	20	0.025 ~ 0.04	0.025 ~ 0.04	±0.5		Close distance use, diffuse reflector receiving Angle is ±60°
DR-L-F2815	20	0.04 ~ 0.06	0.04 ~ 0.06	±2		Close distance use, diffuse reflector receiving Angle is ±30°
DR-L-F15	8.5±0.02	0.1 ~ 1	0.15 ~ 0.3	±20		Medium distance use, diffuse reflector receiving Angle is ±5°
DR-L-F28	20	0.3 ~ 40	0.3 ~ 40	±20		Medium and long-distance use, diffuse reflector receiving Angle is ±10°
DR-L-C40	22	5 ~ 100	5 ~ 100	±20		Long distance use, diffuse reflector receiving Angle is ±10°
DR-L-W25AF	20	0.2 ~ 10	0.2 ~ 10	-10 ~ +20		Medium and long-distance use, diffuse reflector receiving Angle is ±10°

[1]VibroMicro Sputnik, VibroMicro Apollo, VibroMicro Shenzhou can match all lenses, except DR-L-W25AF.
The DR-L-C40 requires a confocal distance of 5 m for the VibroMicro hardware setup, while the requirements for other lenses are 1 m.
DR-L-W25AF is only for VibroMicro Mars with automatic focus.
[2]Above all display pictures, specific please in kind prevail.

Power supply

A-PPS-06 Plug-in power supply	Plug-in power supply 12 V AC/DC, Included in scope of delivery of VibroMicro
A-MPS-006 Mobile power supply (Optional)	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-BMC-0006 Power supply cable (length 1.5 m) and a convenient waterproof bag (A-MPS-BAG) that allows to attach the battery directly to the tripod

Cables

A-PEC-0006 Power/Ethernet cable 3 m	Power/Ethernet cable for power and digital data transfer between VibroMicro and computer, standard length 3 m included. Included in scope of delivery of VibroMicro.
A-BCB-0006 BNC analog signal output cable 5 m	BNC analog signal cable, MAM-BNCM-3M harness, SMA(m) straight connector to BNC(m) straight connector. 50 Ω, standard length 5 m included. Included in scope of delivery of VibroMicro.
A-BMC-0006 BNC mobile power cable 1.5 m	BNC mobile power cable, DC5.5mm to USB connector. It can replace the plug-in power supply on the Power/Ethernet cable and work after being connected to the USB interface of mobile power supply, standard length 1.5 m included. Included in scope of delivery of VibroMicro.

VibroSoft: Data acquisition and analysis software

VibroSoft is specially developed for VibroMicro laser Doppler vibrometer products. The software user interface has two measurement modes: universal frequency measurement and high frequency vibration measurement. The software supports real-time original time domain signal display, which can display vibration displacement, vibration speed and vibration acceleration signals. At the same time, the software can perform real-time FFT analysis and online sound playback functions, and can also set high-low pass filtering and window functions for the original signal.

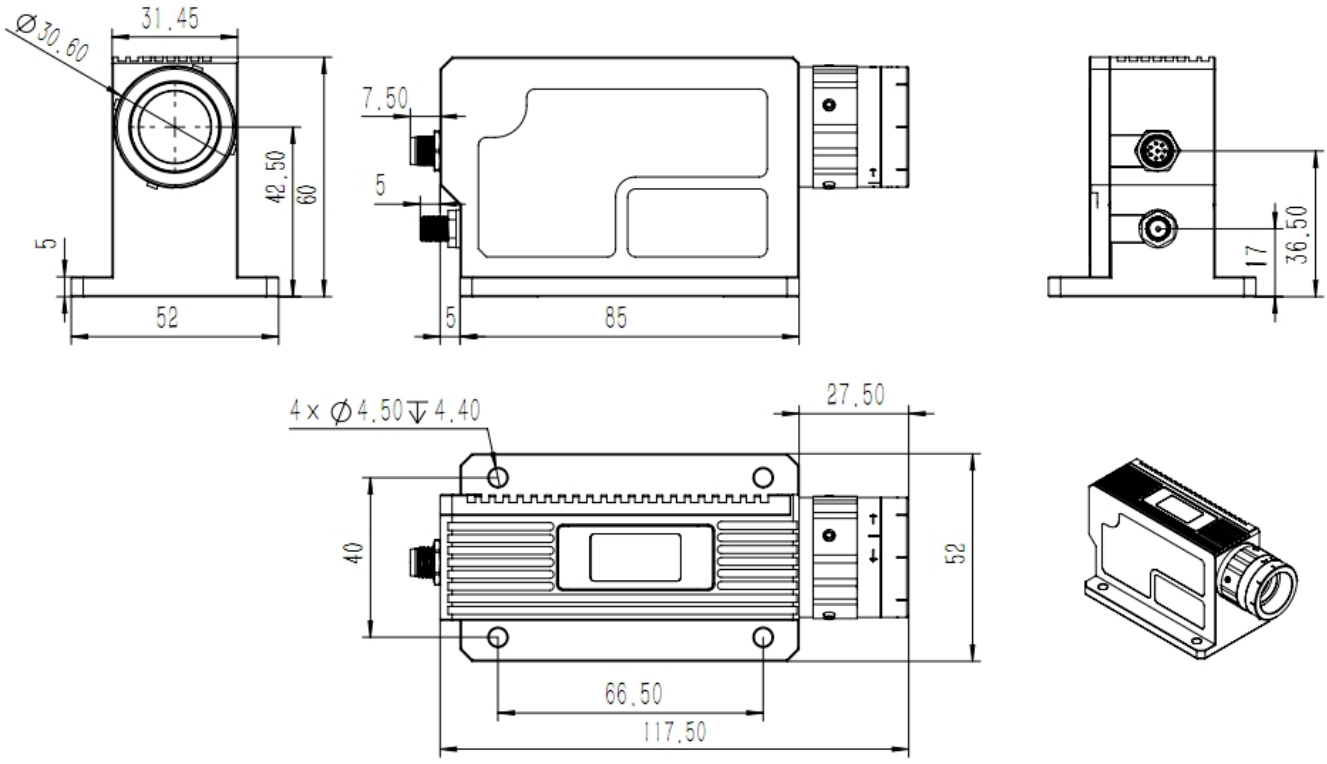
In addition, the software also has the function of on-line short-time Fourier analysis, which can monitor the unsteady transient vibration in real time. VibroSoft supports data post-processing analysis, can provide SDK software development kit, customers can according to their own needs for secondary development, currently can support C++, Labview, C#, Python and so on.

Tripods		
VIB-A-T00X Tripod-L (Optional)	Rigid tripod for easy targeting on test objects. Available as standard version with manual 3-way fluid head, as geared pan/tilt head allows quick coarse adjustment and fine adjustment in 3 axes.	
VIB-A-T00X Tripod-S (Optional)	Rigid tripod for easy targeting on test objects. Light Age monopod base, tripod, camera monopod support, foot support 3/8 tripod, triangle claw.	
VIB-A-T00X Tripod Plate	Tripod adaptor board, sandblasted 120 mesh, oxidized black Included in scope of delivery of VibroMicro.	
VIB-A-B00X Bracket (Optional)	Laboratory support, X axis, Z axis 2-D movement adjustable, Angle rotation adjustable.	
VIB-A-VRC Infrared Detection Card	Infrared detection card, realistic wavelength 700~2000 nm, display threshold 0.1mw, luminous area 55*35 mm Included in scope of delivery of VibroMicro.	

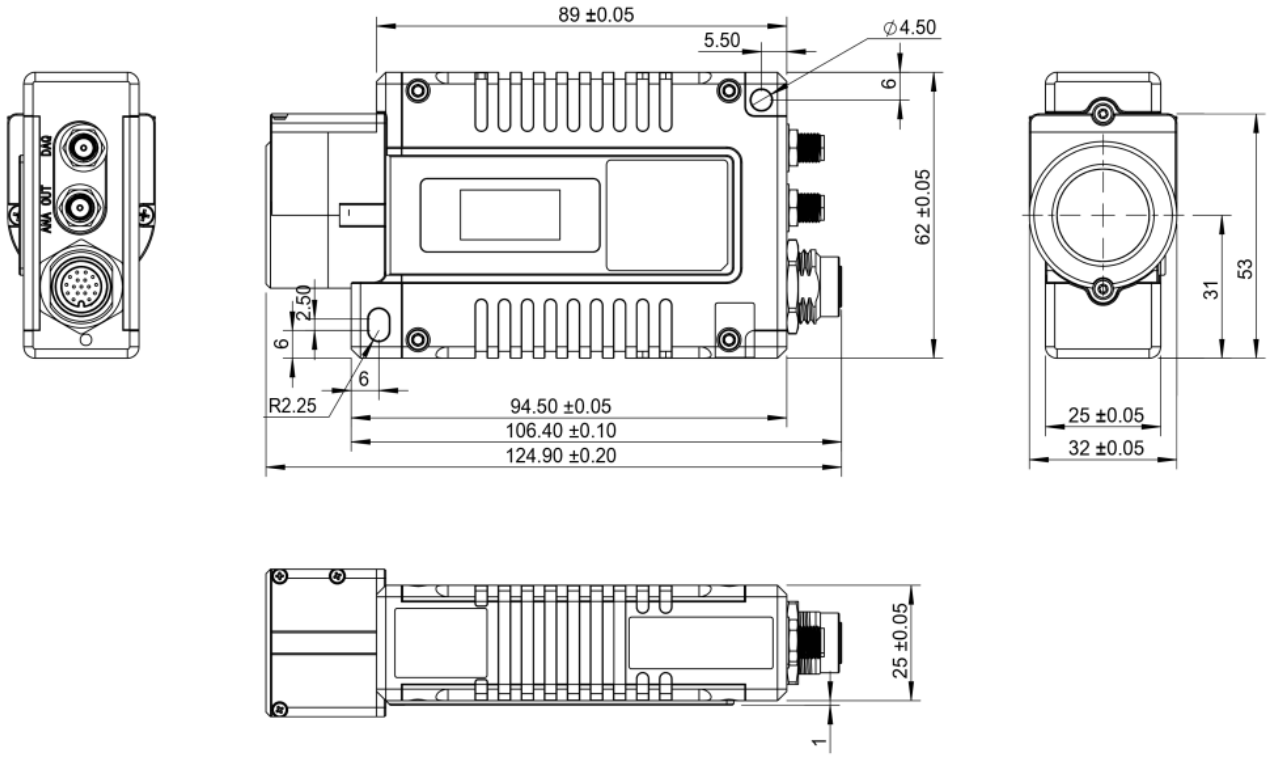
Transportation case		
VIB-A-CAS06 Transp. case (VibroMicro VM-S-100)	Robust transportation case for VibroMicro. Included with sensor. Provides space for VibroMicro, the plug-in power supply and also for optional accessories like mobile power supply. Included in scope of delivery of VibroMicro.	

Dynatronic offers a wide range of accessories for setting up and performing measurements. Please contact your local distributors or visit our website ***www.dynatronic-tech.com*** for more detailed information.

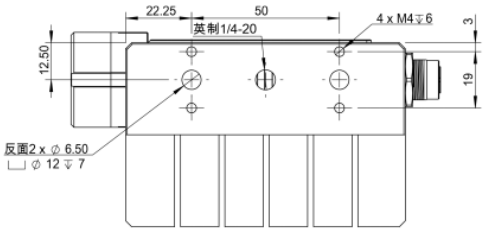
VibroMicro Sputnik, VibroMicro Apollo, VibroMicro Shenzhou
(All dimensions in mm if not marked otherwise)

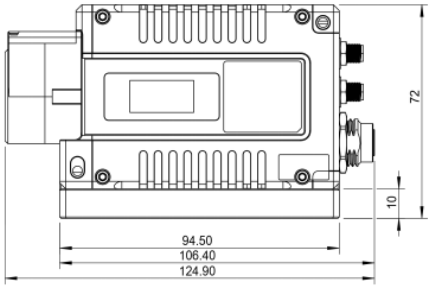


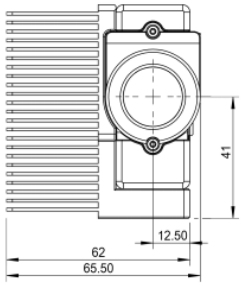
VibroMicro Mars
(All dimensions in mm if not marked otherwise)



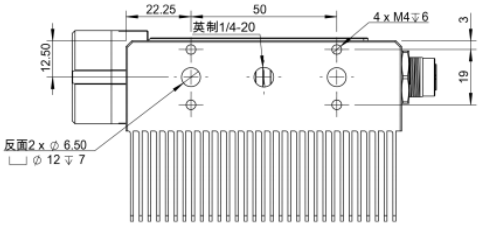
VibroMicro Mars
(All dimensions in mm if not marked otherwise)



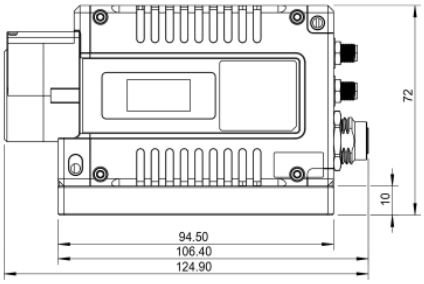


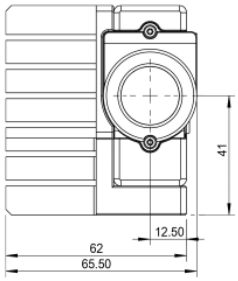


VibroMicro Mars equipped with horizontal radiator



VibroMicro Mars
equipped with vertical radiator





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