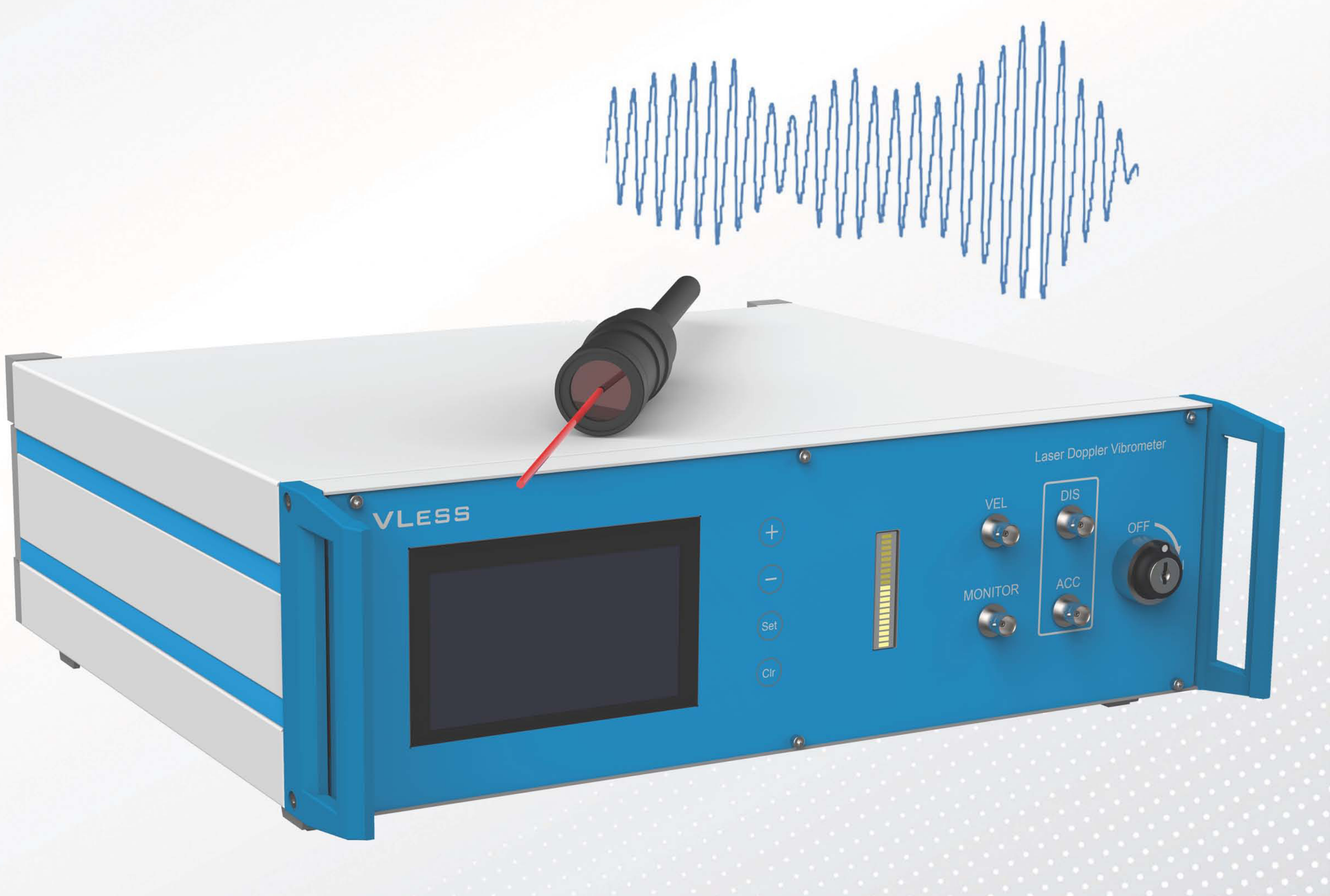
Infrared Fiber Laser Vibrometer



Laser Doppler Vibrometer

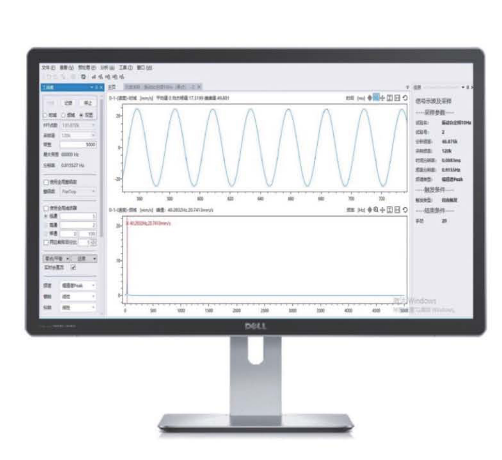
Product Description

TP-FLV-01 infrared fiber laser vibrometer adopts a compact optical system design, and the optical head is very small, which is very suitable for space-constrained measurements. It adopts non-contact measurement method, the target measurement distance is between 0m-10m, the equipment has strong anti-interference ability, has extremely high resolution and dynamic measurement range, and has been widely used in major universities, research institutes and factories, equipment installation Simple and fast, it can realize the acquisition of vibration data.

Features

- Passivation: Passive fiber optic head design, there is no active circuit
- High stability: The optical system adopts fiber-optic design, and the system has high stability
- Miniaturization: Compact design, very small size, easy to carry and easy to operate
- Large range: The maximum measurement speed can reach 24.5m/s
- Eye-safe: Use eye-safe invisible infrared light as measurement light
- Customizable: The appropriate range and frequency range can be selected according to customer requirements, and customized for customers
- Complete solution: Includes optical debugging, circuit denoising, signal processing, data acquisition and software analysis functions
- Personalized software: Software with intelligent functions such as real-time evaluation of measurement results and real-time display of changing trends can be equipped according to customer needs
- Portability: Can be fixed on a tripod, with a trolley case customized for the instrument, easy to carry

Measurement Software



V-METER4.0

V-METER4.0 analysis software is a real-time signal analysis software. The software has a friendly user interface, provides FFT spectrum analysis, high-pass, low-pass and band-pass filters and various window functions, and can display time-velocity curves in real time , time-displacement curve, time-acceleration curve, etc. The data supports arbitrary formula conversion, calculus conversion and other functions, and can record the vibration process data for a long time for playback, viewing and analysis, and supports the export of commonly used data formats (such as UFF format for modal analysis), which is convenient for customer analysis and processing.

Technical Information

Optical Specifications

Laser wavelength		635nm (Indicating lase) / 1550nm (Measuring laser)	
Laser power		P_{635nm}<1mW , P_{1550nm}<10mW	
Laser Safety Level		Indicating lase , Class II @ 635nm , Eye safety Measuring laser , Class I @ 1550nm , Eye safety	
Fiber length		1000mm ; 2000mm ; 3000mm	
Optical head		 IFL-CL-003	 IFL-DW-050
Lens focal length		Collimated output	50mm
Focus method		Not adjustable	Manual focus
Minimum working distance		0mm	350mm
The scope of work		0-5m	0.35-10m
Laser spot size(1/e²)	@ 0m	1600μm(Divergence angle0.073°)	-
	@ 0.35m	-	22μm
	@ 2m	-	141μm
	@ 5m	-	357μm
	@ 10m	-	714μm

Decoder

Velocity Decoder	Description	Bandwidth	Range	Velocity Range	Velocity Resolution
VS-03F	Intermediate Frequency Velocity Decoder	0.5Hz-50kHz	3	±1.225m/s	Better than 0.1μm/s/√Hz
VD-16F	Wideband Digital velocity decoder	0-3MHz	16	±24.5m/s	Better than 0.01μm/s/√Hz
Displacement Decoder	**Description**	**Bandwidth**	**Range**	**Displacement Range**	**Displacement Resolution**
DD-21F	Wideband Digital Displacement Decoder	0-3MHz	21	±4.9m	Better than 1pm

Electric Specifications

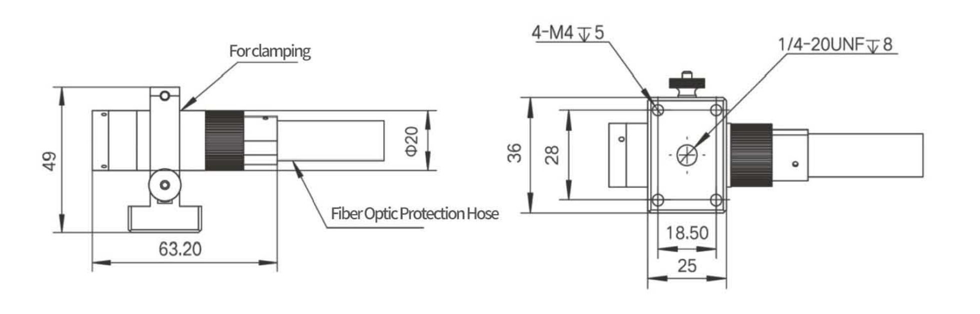
Output voltage range	±10V
Maximum measurement velocity*	± 24.5 m/s
Maximum measurement displacement	± 4.9 m
Velocity Resolution**	Better Than0.01μm/s/√Hz
Displacement resolution**	Better Than 1pm
Maximum Linearity Error	<±1%
Analog Output	BNC interface output
Digital Output	Rj45 Gigabit Ethernet port
Velocity Decoder	VS-03F Intermediate frequency velocity decoder VD-16F Wideband Digital velocity decoder
Displacement Decoder	DD-21F Wideband Digital displacement decoder
Frequency Range	DC~3MHz(VD-16/DD-21F Decoder)
Low Pass Filter	2kHz,10kHz,20kHz,40kHz,80kHz,160kHz,360kHz,1MHz,3MHz(VD-16F/DD-21F Decoder)
Tracking filter (optional)	Slow, Medium, Fast, Off
Signal Level Display	Reflective signal strength displays、DC voltage signal output (BNC interface, 0...5V)
Interface/Display	LCD screen with interactive menu-guided setup
Operating Temperature	+3°C...+45°C
Storage Temperature	-10°C...+65°C
Relative Humidity	<90%
Power Supply	100...240VAC ± 10%, 50/60Hz
Power Consumption	max. 100 VA

*Customized services can be provided according to customer needs
**The resolution is defined as the signal amplitude (RMS) measured in a 1Hz bandwidth when the signal-to-noise ratio is 0Db when the reflective film is attached at a distance of 2 meters. The resolution is related to frequency, and this value is measured in a 10Hz bandwidth.

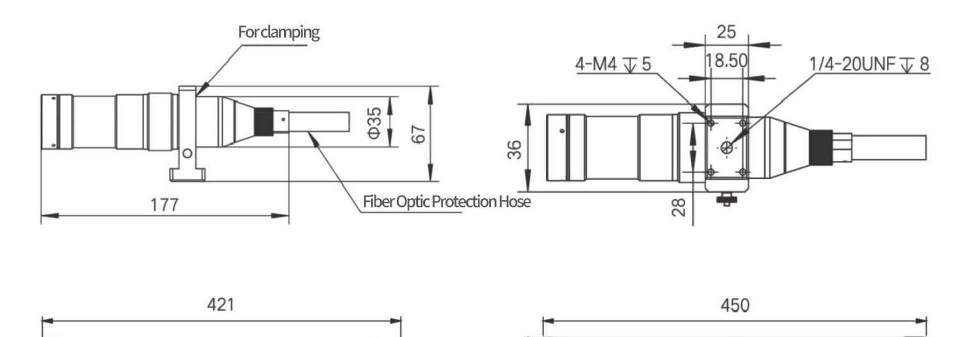
Product Description

unit : mm

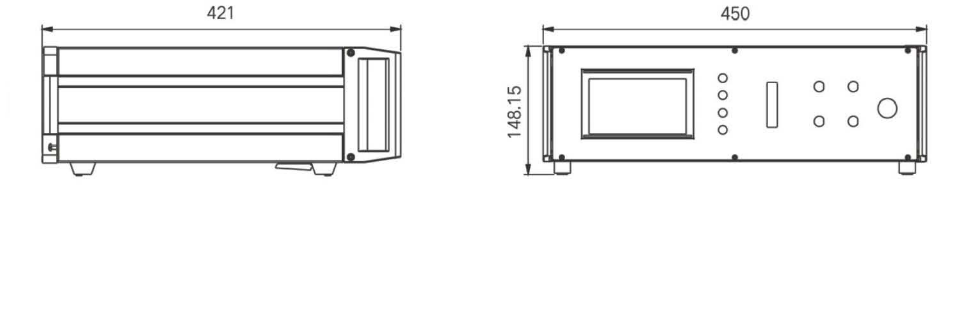
IFL-CL-003 Optical head



IFL-DW-005 Optical head



Control box



Optional Accessories

Instrument Case

Vibration isolation table

Fixed accessories

Tripod

Workbench

Objective lens

Telescope

Applications

MEMS

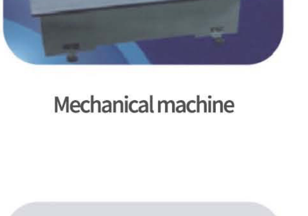
Ultrasonic vibration measurement

Medical industry

Automobile industry

Bridge construction

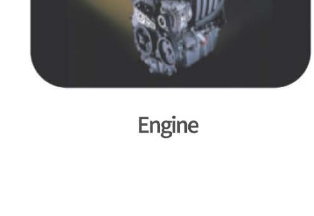
Disk storage



Mechanical machine

Electronic device

Sport control



Engine

Turbocharger

New material