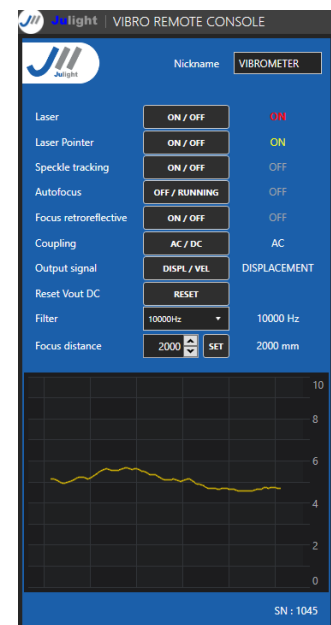




VSM-1000-LL30-EXT35 SINGLE-HEAD LASER VIBROMETERS

- **SELF-MIXING INTERFEROMETRIC CONFIGURATION FOR NON-CONTACT VIBRATIONS MEASUREMENT**
- **FREQUENCY RANGES: DC TO 50 KHZ AND 20 KHZ TO 35 MHZ**
- **WORKING RANGE: 0.1-30.0M**
- **SMALL-SIZE OPTICAL HEAD**
- **EASY BEAM ALIGNMENT WITH AUTOMATIC SPECKLE-TRACKING AND AUTOFOCUS SYSTEMS**
- **CLASS 3B LASER**
- **WORKS ON ALL DIFFUSIVE SURFACES**
- **REMOTE CONSOLE SOFTWARE**



LASER VIBROMETERS FROM JULIGHT

Julight VSM1000-LL30-EXT35 Laser Vibrometer allows easy and accurate non-contact vibration measurements on all rough and diffusive surfaces (e.g.: unfinished metal, plastic, rubber, paper, fabric, etc.). It provides an analog electrical output which is a replica of the target displacement or velocity, in an extended frequency range from DC to 35 MHz (in two separate bands: 0-50kHz and 20 kHz-35 MHz).

PRINCIPLE OF OPERATION

Julight Laser Vibrometers are based on the novel self-mixing interferometric scheme, and make use of a compact semiconductor diode laser. While conventional Laser Doppler Vibrometers/Velocimeters (LDVs) use the complex Michelson interferometric configuration, the self-mixing scheme is based on the coherent interference of the backscattered light directly into the laser diode, allowing for a reduced optics count. Julight Laser Vibrometers have a high sensitivity, which allows correct operation even for weak intensities of the light backscattered by the diffusive target surface.

APPLICATIONS

- Non-contact measurement of vibrations
- Automotive, Aerospace, and Mechanical Industry
- Vibration measurement without mass-loading on small, soft and delicate structures
- Loudspeaker and piezoceramic testing
- Material analysis and Modal analysis
- On-line process & quality control in industrial plants

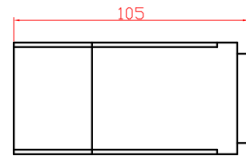
USE

The laser beam shall be aimed at the target surface, and the vibration signal is readily available from the output BNC connector. AutoFocus and Automatic Speckle-Tracking functionality allow unattended operation on any diffusive surface, while an LED-bar indicator measures optical signal strength in real-time. The vibration signal can be displayed onto an oscilloscope, or supplied to a FFT analyzer for frequency domain analysis.

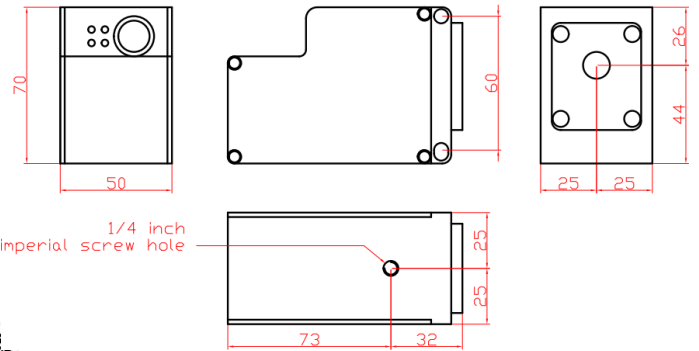
Performance	0 – 50 kHz	20 kHz – 35 MHz
Maximum measurable vibration (peak-to-peak)	43 mm (theoretical) 10 mm (practical)	4 μm
Maximum measurable velocity	> 0.5 m/s	40 m/s
Output signals	<ul style="list-style-type: none"> Displacement / Velocity (analog, BNC connector) Monitor (3.5mm jack): <ul style="list-style-type: none"> Optical Signal Level (analog) Speckle-Tracking active (digital) 	
Output signal responsivity	<ul style="list-style-type: none"> Displacement: 0.5 V/mm Velocity: 5 V/(m/s) 	5 V/ μm
Working distance	from 0.1 m to 30 m	
Resolution	Noise-limited	
Noise Equivalent Displacement	10 pm/ $\sqrt{\text{Hz}}$ at 0.1 m working distance 40 pm/ $\sqrt{\text{Hz}}$ at 0.5 m working distance 500 pm/ $\sqrt{\text{Hz}}$ at 30 m working distance	
Output signal accuracy	1 %	5 %
Spatial transverse resolution	100 μm @ 0.1 m	10 mm @ 30 m
Target surface	Diffusive or back-reflecting (reflective tape need from 5 to 30 m)	

Physical	
Laser radiation	<ul style="list-style-type: none"> Pout < 1 mW @ 650 nm (collimated) Pout < 20 mW @ 785 nm (focused)
Laser safety class	<ul style="list-style-type: none"> Class 2 @ 650 nm (visible) Class 3B @ 785 nm (invisible)
Optical head dimensions	50 mm x 70 mm x 105 mm
Electronic unit dimensions	12.5 cm x 15.5 cm x 29.6 cm
Optical head cable length	3 m (up to 10 m available upon request)
Power supply	<ul style="list-style-type: none"> 110-120 VAC / 60 Hz 220-240 VAC / 50 Hz
Power consumption	< 5 W
I/O	USB 2.0 (for remote control from PC)
Weight	Main unit: 4 kg Optical head: < 0.5 kg
Temperature (operating)	Optical head: -20 °C to +80 °C Main unit: 0 °C to +50 °C

**INVISIBLE LASER RADIATION
AVOID EXPOSURE TO BEAM
CLASS 3B LASER PRODUCT**
 $\lambda = 785 \text{ nm}$; P max. < 20 mW
(according to IEC 60825-1:2007)



LASER HEAD DIMENSIONS
(in mm)



MEASURABLE VIBRATIONS

