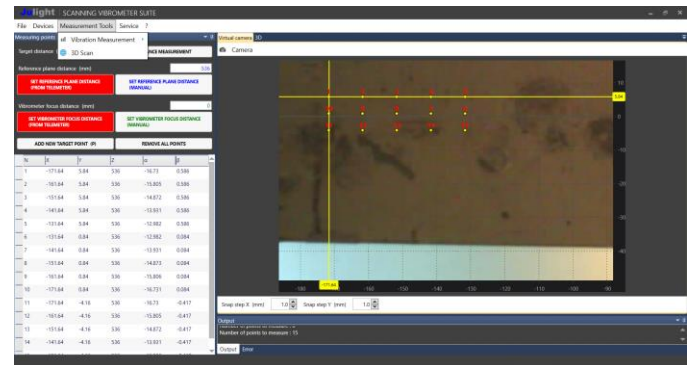




# VSM-1000-(EXT)-SCAN-UW2 SCANNING LASER VIBROMETER

- **SCANNING VIBROMETER FOR FULL-FIELD VIBRATION MEASUREMENT EVEN ON THROUGH WATER AND SUBMERGED TARGETS**
- **SELF-MIXING INTERFEROMETRIC CONFIGURATION**
- **FREQUENCY RANGE FROM DC TO 50 KHZ (OPTIONAL TO 3 MHZ)**
- **WORKING DISTANCE: 0.1-5.0M**
- **ETHERNET I/O FOR REMOTE CONTROL**
- **AUTOMATIC SPECKLE-TRACKING**
- **CLASS 2 LASER @ 633 NM**
- **FAST AUTOFOCUS**
- **WORKS ON ALL DIFFUSIVE SURFACES**
- **PC SOFTWARE FOR FULL REMOTE CONTROL**



Julight VSM-1000-SCAN Laser Vibrometer uses a deflection scanning system for the laser beam, thus allowing to perform the full-field vibration analysis of a large object without contact. It has the smallest and most lightweight optical head on the market for scanning applications, and it operates on rough and diffusive surfaces (e.g.: unfinished metal, plastic, rubber, wood, fabric, etc.). The analog electrical output is a replica of the target displacement or velocity, with a frequency range from DC to 50kHz (or from DC to 3MHz with "-EXT, extended frequency" option). Working distance is 0.1 ÷ 5m. Through-water maximum depth is 2m.

## APPLICATIONS

- Full-field non-contact measurement of vibrations
- Automotive, aerospace, and mechanical industry
- Quality control
- Modal analysis
- Through water or for submerged targets

## USE AND OPTIONS

The scanning vibrometer is remotely controlled by a PC through a dedicated software that allows to set the deflection angle of the laser beam. An external data acquisition system is needed to store and analyse vibration time series. The following features are available:

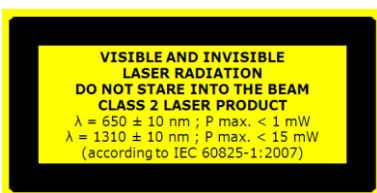
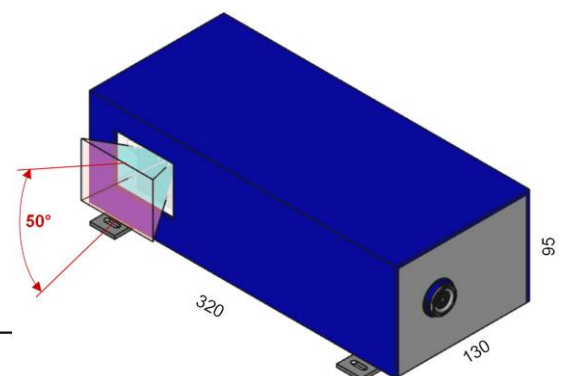
- **HD Video Camera** – The object under test can be viewed on the PC through a camera integrated into the optical head. The user can select the measuring points directly on the picture of the object under test.
- **Geometry 3D Scan** – A 3D scanning laser telemeter is integrated in the optical head, to acquire the profile of the object under test. This also increases the autofocus speed. Not for through-water or submerged targets
- **Data Acquisition and Modal Analysis Software** – [available in 2019] The scanning vibrometer can be equipped with an integrated data acquisition system (DAQ) that is controlled by the vibrometer software, and can also include a modal analysis software suite.

Performance	0-50 kHz	20 kHz - 3 MHz
Maximum measurable vibration (peak-to-peak)	43 mm (theoretical) 10 mm (practical)	4 $\mu$ m
Maximum measurable velocity	0.5 m/s @ 0.5 m 0.2 m/s @ 5.0 m	40 m/s
Output signals	<ul style="list-style-type: none"> <li>Displacement / Velocity (analog)</li> <li>Scan Sync (digital)</li> <li>Monitor (3.5mm jack):</li> <li>- Optical Signal Level (analog)</li> <li>- Speckle-Tracking active (digital)</li> </ul>	
Output signal responsivity	<ul style="list-style-type: none"> <li>Displ.: 0.5 V/mm</li> <li>Vel.: 5 V/(m/s)</li> </ul>	5 V/ $\mu$ m
Resolution	Noise-limited	
Noise Equivalent Displacement	0.04 nm/ $\sqrt$ Hz @ 0.5 m 0.4 nm/ $\sqrt$ Hz @ 5.0 m	
Output signal accuracy	1 % (@ 0.5 m)	< 5 %
Spatial transversal resolution	100 $\mu$ m @ 0.5 m 500 $\mu$ m @ 5.0 m	
Target surface	Diffusive or retro-reflective.	
Working distance	from 0.1 m to 5.0 m (in air) from 0.1 m to 2.0 m (in water)	
Autofocus	Fast, assisted by laser telemeter	
Telemeter resolution	$\pm$ 0.5 mm	
Scan angle	50° $\times$ 50°	
Maximum scan rate <sup>(1)</sup>	up to 5 pts/s (with Windows SW control) up to 400 pts/s (with direct Galvanometer programming)	
Angular resolution	0.002°	
Angular stability	<0.001°/h	

<sup>(1)</sup> The effective scan rate may depend on the host PC (processor, RAM, tasks running in parallel), on the target surface finish, and on whether the speckle-tracking system is used or not.

Physical and Interface	
Laser radiation	<ul style="list-style-type: none"> <li>Pout &lt; 1 mW @ 633 nm (visible)</li> </ul>
Laser safety class	<ul style="list-style-type: none"> <li>Class 2 @ 633 nm (EN 60825-1:2008, CFR 1040.10, CFR 1040.11)</li> </ul>
Camera	HD 5MP (2592 x 1944 pixels), autofocus, variable exposure
Optical head dimensions	95 mm $\times$ 130 mm $\times$ 320 mm
Electronic unit dimensions	24.6 cm $\times$ 15.5 cm $\times$ 32.0 cm
Optical head cable length	3 m (5 m option)
I/O	Ethernet
Host PC Minimum Requirement	<ul style="list-style-type: none"> <li>Processor: Intel Core i7</li> <li>RAM: 8 GB</li> <li>OS: Windows 7 or later</li> </ul>
Software functionality	Distance setting; Autofocus; Laser control; Camera pan and zoom; Measuring point selection (mouse-click, automatic array, import from .csv); 3D profile measurement (3D view, data export); Vibration measurement set-up.
Power supply	<ul style="list-style-type: none"> <li>110-120 VAC / 60 Hz</li> <li>220-240 VAC / 50 Hz</li> </ul>
Power consumption	< 40 W
Weight	<ul style="list-style-type: none"> <li>main unit: 6 kg</li> <li>optical head: 3 kg</li> </ul>
Temperature (operating)	Optical head: +10 °C to +60 °C Main unit: +10 °C to +50 °C

### LASER HEAD DIMENSIONS



### MEASURABLE VIBRATIONS

