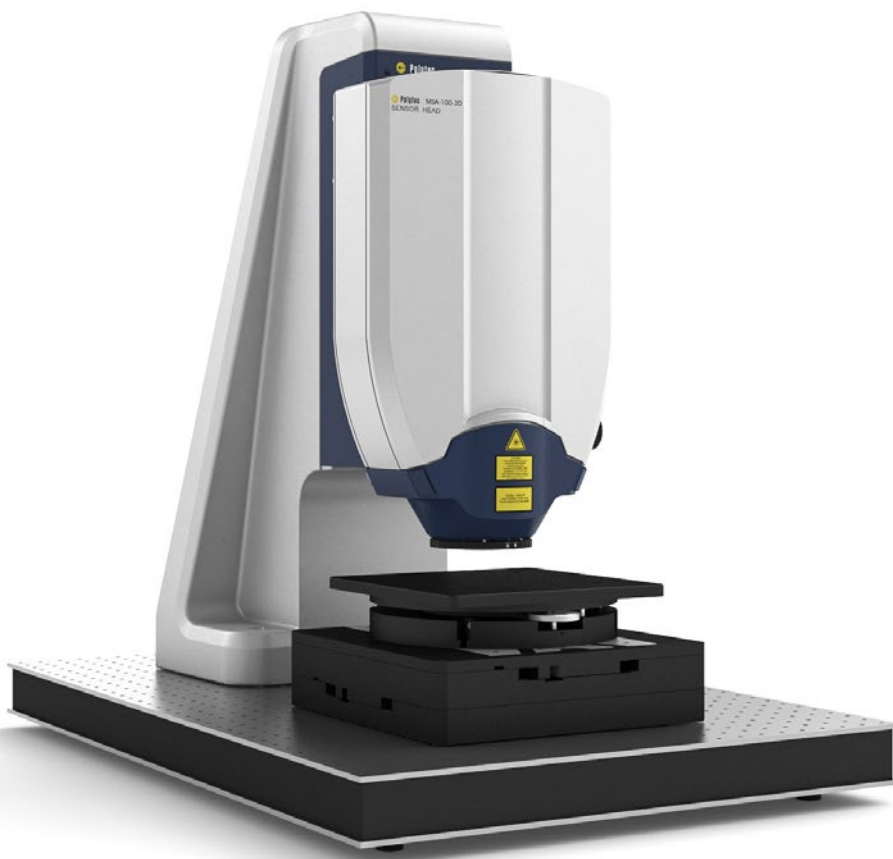


MSA-100-3D Micro System Analyzer

Complex motion patterns of micro structures as MEMS, precision mechanics and biological systems require acquisition and analysis of the complete motion vector with high resolution both for out-of-plane and in-plane components. The MSA-100-3D effectively meets this requirement by a revolutionary new approach in laser Doppler vibrometry deriving genuine real-time 3D vibration data in one common data set.

Two configurations of the Micro System Analyzer are available. The MSA-100-3D measures 3D vibration data on spot locations. The MSA-100-3DSV features a software-controlled high-precision XY stage and allows automated full-field scanning measurements. Meaningful visualization of 3D deflection shapes and extensive data analysis is provided by Polytec's PSV Software.



Highlights

- Real-time measurement with high bandwidth
- Sub-pm displacement resolution reveals important details
- Single-point and full-field scanning measurements
- Frequency range up to 25 MHz
- Small spot size of $<4 \mu\text{m}$ for high lateral resolution
- Large stand-off distance
- Probe station compatible


MSA-100-3D Micro System Analyzer

3D vibration measurement
for MEMS & microsystems

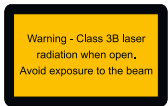
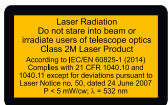
Datasheet



Technical data

|  Principal configurations | MSA-100-3D Single-Point 3D Vibrometer | MSA-100-3DSV Scanning 3D Vibrometer | |
|--|---|---|--|
| Sensor head unit | <ul style="list-style-type: none"> Microscope optics for best lateral resolution with spot size <4 μm Integrated LED sample illumination | | |
| Front-end unit / Data management system | Installed in a system cabinet for 19" electrical equipment: <ul style="list-style-type: none"> MSA-F-100-3D Vibrometer front end with digital decoder technology MSA-W-100-3D Data Management System | | |
| Stand (optional) | Rigid stand for interfacing the sensor head unit to an optical table or breadboard, incl. focus block with 100 mm travel range for traversing the sensor head unit in the Z axis | | |
| Prober compatibility | Compatible to manual, automatic and vacuum probestations | | |
| xy Stage | Manual stage (optional) | A-PST-200P XY Precision Positioning Stage: <ul style="list-style-type: none"> Travel range: 200 mm x 200 mm Tip/tilt adjustment Bi-directional repeatability: +/- 0.5 μm Load capacity: 10 kg | |
| Software | VibSoft-1004 Software Package for data acquisition and analysis | PSV Scanning Vibrometer Software for data acquisition and analysis | |
| Sensor head unit | | | |
| Configuration | Single measurement beam, three direction sensitive detectors | | |
| Laser source | DPSS, 532 nm, visible green laser beam | | |
| Laser output power | <5 mW visible output power | | |
| Laser safety class | Class 2M | | |
| Stand-off distance | 36,7 mm | | |
| Spot diameter | <4 μm | | |
| Depth of focus | ±10 μm | | |
| Weight | 12.5 kg | | |
| Camera | <ul style="list-style-type: none"> Two integrated digital cameras for displaying measurement and large overview area MAIN (measurement area): field of view (mm²) = 0.94 x 0.71, resolution (px) = 1,296 x 966 AUX (overview area): field of view (mm²) = 3.7 x 2.7, resolution (px) = 782 x 582 | | |
| Front-end configurations | | | |
| | MSA-100-3D-H¹ | MSA-100-3D-M | MSA-100-3D-V¹ |
| f _{max} | 100 kHz | 2.5 MHz | 25 MHz |
| Number of ranges | 13 velocity ranges | 13 velocity ranges | 13 velocity ranges |
| v _{max} | 0.001 m/s ... 10 m/s, range dependent | 0.001 m/s ... 10 m/s, range dependent | 0.001 m/s ... 10 m/s, range dependent |
| Velocity resolution, average value ² | 0.01 (μm/s)/√Hz ... 0.02 (μm/s)/√Hz range dependent, frequency dependent | 0.005 (μm/s)/√Hz ... 1 (μm/s)/√Hz range dependent, frequency dependent | 0.005 (μm/s)/√Hz ... 2 (μm/s)/√Hz range dependent, frequency dependent |
| General specifications | | | |
| Power consumption | 100 VAC ... 240 VAC ±10%, 50/60 Hz; overall max. 825 W | | |
| Environmental conditions | Operating temperature: +18 °C ... +28 °C (64.4 °F ... 82.4 °F); Storage temperature: -10 °C ... +65 °C (14 °F ... 149 °F); Relative humidity: max. 80%, non-condensing | | |

For available accessories visit our website www.polytec.com



¹ Also combined systems MSA-100-3D-HV available

² Averaging is performed over the maximum bandwidth f_{max} of the respective range

Shaping the future since 1967

High tech for research and industry.
Pioneers. Innovators. Perfectionists.

Find your Polytec representative:
www.polytec.com/contact

Polytec GmbH · Germany
Polytec-Platz 1-7 · 76337 Waldbronn