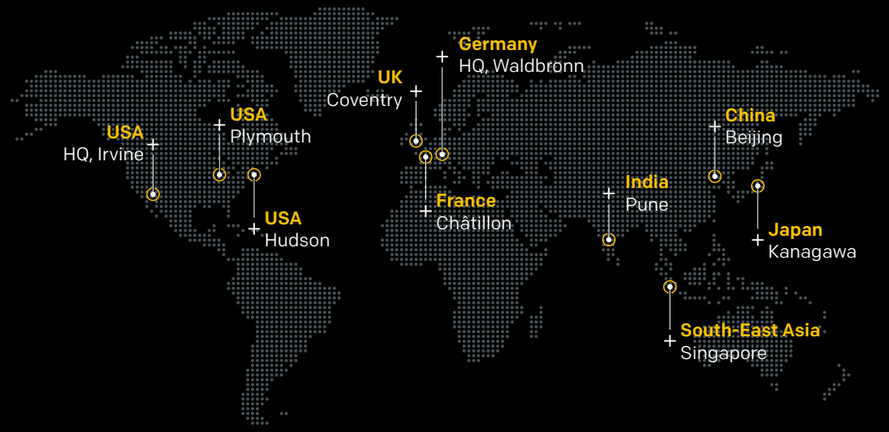


measure what matters. worldwide.

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

Polytec GmbH · Germany · Polytec-Platz 1-7 · 76337 Waldbronn
52205/2026/05 - Technical specifications are subject to change without notice.

Polytec

VibroFlex //

Non-contact vibration measurement from nano to macro

polytec.com

Modular sensor solution that adapts to your needs //

VibroFlex brings together six specialized sensor heads and two proven laser technologies in one intelligent, modular platform – from microscopic structures to large and distant objects. Developed in close collaboration with customers, the system continuously evolves to meet real-world challenges across R&D, production testing and quality assurance.

With thousands of units installed worldwide, Polytec provides not only a reliable system but also unmatched global expertise for troubleshooting and speeding up your development.

VibroFlex Compact //

VibroFlex Neo //

VibroFlex Connect + //

VibroFlex Fiber //

VibroFlex Range //

VibroFlex QTec //

VibroFlex Xtra Fiber //

The superior flexibility in optical vibration measurement //

Laser Doppler vibrometers from Polytec combine precise optical vibration measurement with easy and rapid operation. Measuring without contact, they sense the true vibrations of microscopic to macro-sized structures and lightweight components with the highest accuracy.

With VibroFlex, Polytec offers superior flexibility in optical vibration measurement with a modular sensor solution that adapts to your needs, from microscopic structures to large machinery at safe stand-off distances. Use it for research and product development to accelerate time-to-market, or for cost-efficient in-line inspections.

The VibroFlex Connect+ front-end provides phase-synchronous reference acquisition, encoder-based order analysis, an integrated signal generator, and PTP-synchronized multivibrometer setups with WiFi control via VibSoft.

Resolve vibrations from DC up to 32 MHz, quantify sub-picometer displacements, and capture velocities up to 30 m/s. Fiberoptics enable access to confined spaces, differential optics allow analysis of relative motions, and the integrated camera ensures precise laser positioning. Measure reliably on virtually all surfaces and at large distances.

// > 500 m
distance measurement

Highlights //

- High-performance non-contact vibration measurement solution
- Flexible, modular sensor solution that adapts to your needs
- Reference channel & signal generator for transfer function measurements
- Synchronous output of displacement, velocity and acceleration
- Measure from DC to 32 MHz up to ±30 m/s with highest time resolution
- Encoder and Tacho input for order analysis and run-ups
- VibroLink digital interface for convenient measurement data transfer via Ethernet or WiFi (TCP/IP)
- Supports QTec sensor heads with patented multi-path interferometer for best SNR

Five reasons to choose VibroFlex //

1 //

MOST PROVEN PLATFORM

Thousands of installations worldwide and decades of application experience – directly built in to support your tasks.

2 //

MAXIMUM MEASUREMENT FLEXIBILITY

Dedicated sensor heads for every application, combined with flexible signal inputs and powerful connectivity options.

3 //

ENHANCED, CONNECTED WORKFLOWS

VibSoft and VibroLink integrate hardware, software and data flow for streamlined analysis in time and frequency domain.

4 //

FUTURE-PROOF MODULAR CONCEPT

Start with what you need today and expand as requirements grow. The modular concept protects your investment.

5 //

FLEXIBLE ACCESS TO SOLVE VIBRATION ISSUES

Application experts, service teams and flexible models like PolyRent and PolyMeasure ensure the right support at every stage.

For detailed information visit our website //

Flexibility built into the system //

Compatible

With all VibroFlex sensor heads
One front-end covers every task

PTP Synchronization (IEEE 1588)

Precisely synchronizes several sensors digitally by Precision Time Protocol

Trigger In & Sync Out

Easy synchronization features

3X Simultaneous analog vibrometer outputs

Velocity, displacement, acceleration

LVDS Output

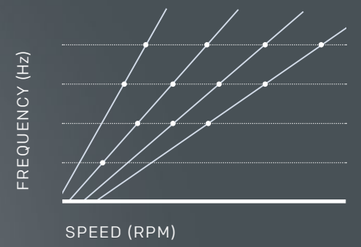
High-speed digital data transfer in real time

VibroFlex Connect+
Flexible core of the family //

// VibSoft Software unlocks the full power of VibroFlex

Encoder & Tacho Input

Order analysis & run-ups



Integrated Signal Generator

Direct sample excitation – complete FRF measurements

Reference Channel

Simultaneous data acquisition from different devices – no extra hardware needed

VibroLink Digital Interface

Control and data transfer via Ethernet or WiFi

Vibrations everywhere //

The heart beats, wings flap, sounds are sent out and received – life would be much too quiet without vibrations.

In the field of industrial research and development, Polytec's laser Doppler vibrometers are used to study objects of very different sizes including large automobile bodies, airplane fuselages, ship engines and buildings as well as tiny silicon micromachines, hard disk drive components and wirebonders. There are numerous other research applications in mechanical and civil engineering.

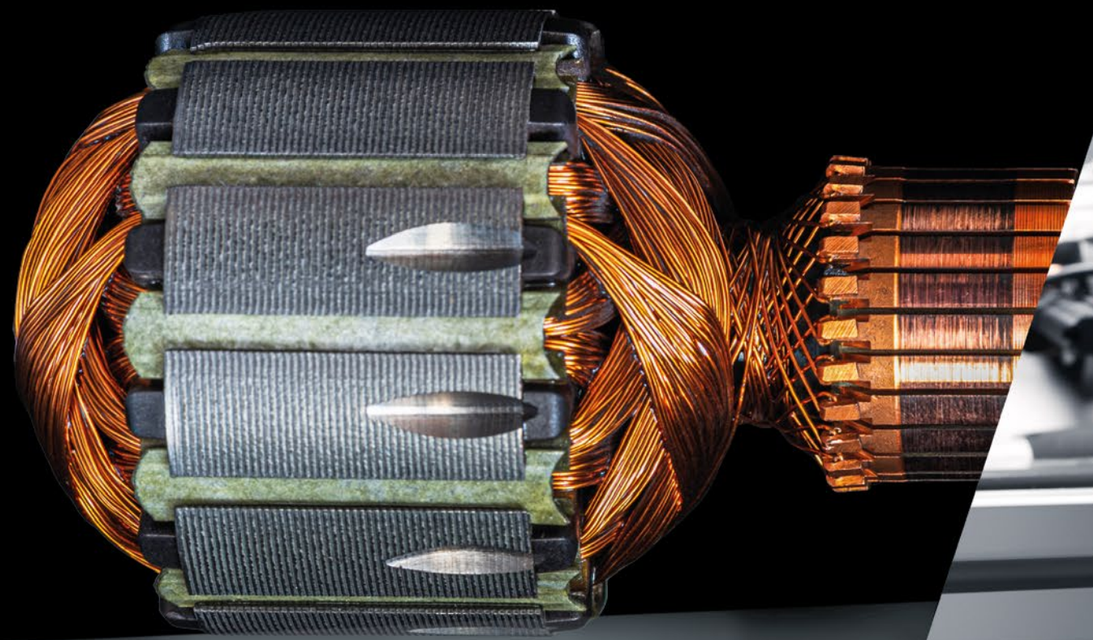
For detailed technical specifications of the VibroFlex laser vibrometer system refer to the corresponding datasheets.

Measure what matters – from lab to line //

Non-contact vibration analysis in research, product development and production testing

Benefit from the modular laser Doppler vibrometer //

- Handy, lightweight sensor heads for every application
- \+ Multi-wavelength system for all surfaces, media and working distances
- \+ Micrometer-sized laser spot for resolving fine structural details
- \+ Quick alignment via visible laser spot, autofocus or integrated camera
- \+ Wide range of application-specific accessories



Whether analyzing E-motor prototypes in R&D or ensuring quality in high-speed End-of-Line testing, VibroFlex delivers precise, reliable diagnostics from first prototype to series production.

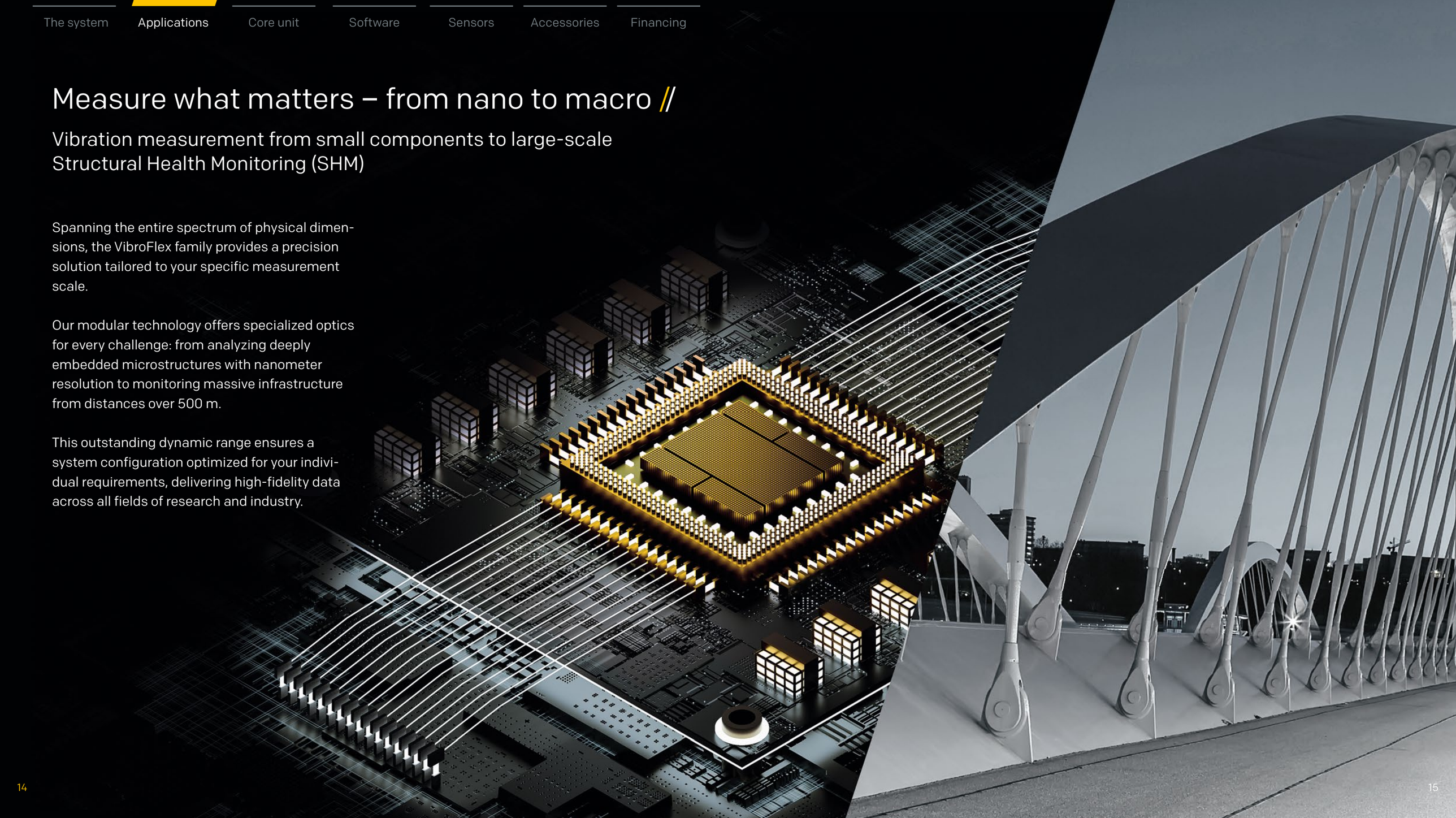
Measure what matters – from nano to macro //

Vibration measurement from small components to large-scale Structural Health Monitoring (SHM)

Spanning the entire spectrum of physical dimensions, the VibroFlex family provides a precision solution tailored to your specific measurement scale.

Our modular technology offers specialized optics for every challenge: from analyzing deeply embedded microstructures with nanometer resolution to monitoring massive infrastructure from distances over 500 m.

This outstanding dynamic range ensures a system configuration optimized for your individual requirements, delivering high-fidelity data across all fields of research and industry.



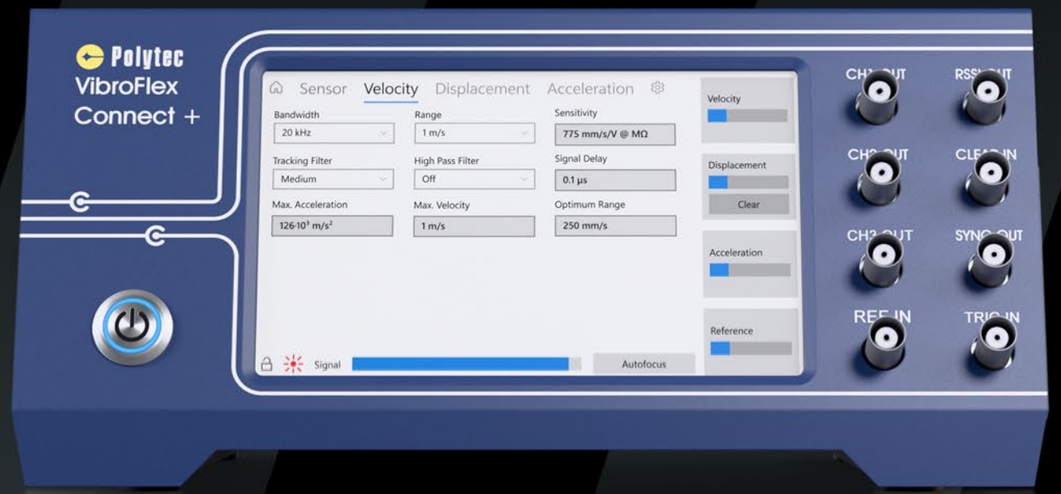
VibroFlex Connect+
The core of the family //

BEST SIGNAL QUALITY

High-speed FPGA decoding, QTec® sensor heads and a phase-synchronous reference channel deliver stable, high signal-to-noise ratio vibration data everywhere.

FLEXIBILITY

Start with your needs today and expand as requirements grow with a built-in signal generator, encoder input for order analysis, and a wide range of sensor heads and options.



// 32 MHz
bandwidth

REMOTE MEASUREMENTS

Control the system via VibSoft, transfer data via WiFi, use the HD+ camera for laser spot positioning and keep operators away from hazardous or hard-to-reach areas.

SMART DATA INTERFACES

Standardized BNC and digital outputs, IQ mode and PTP-based synchronization ensure reliable data exchange and seamless integration into your existing DAQ setup.

VibroFlex Connect+ Configurable core of the modular vibration sensing system //

Core of the VibroFlex system, the Connect+ front-end delivers the latest-generation FPGA-based signal processing, decoding raw measurement data into displacement, velocity and acceleration with full signal conditioning and versatile analog and digital outputs.

Connect+ supports flexible, application-specific setups with upgrade options, a phase-synchronous reference channel, an integrated signal generator and encoder input for run-ups, order and rotational analysis. Control all relevant parameters via PC, the 7“ color touchscreen or browser-based WiFi access. The no-touch concept keeps operators away from the test object and eliminates any influence on the measurement.

Highlights //

- Reference channel & signal generator for transfer function
- Synchronous output of displacement, velocity and acceleration
- Measure from DC to 32 MHz up to ±30 m/s with highest time resolution
- Encoder and Tacho input for order analysis and run-ups
- VibroLink digital interface for convenient measurement data transfer via Ethernet or WiFi (TCP/IP)
- Supports patented QTec Multipath-interferometry for best SNR

VibSoft software unlocks the full power of VibroFlex //

VibSoft enables effortless use of all VibroFlex Connect+ capabilities, combining powerful data acquisition with comprehensive analysis in a single, seamlessly integrated software environment.

// Want to automate your test setup?

Polytec Device Communication enables direct real-time integration via TCP/IP

Highlights //

Ready in minutes
Connect your VibroFlex via Ethernet or WiFi and start measuring immediately.

Run-up measurements made simple
Spectrogram and Campbell diagrams, order analysis and transfer functions reveal structural behavior at any operating speed - directly from the encoder input of Connect+.

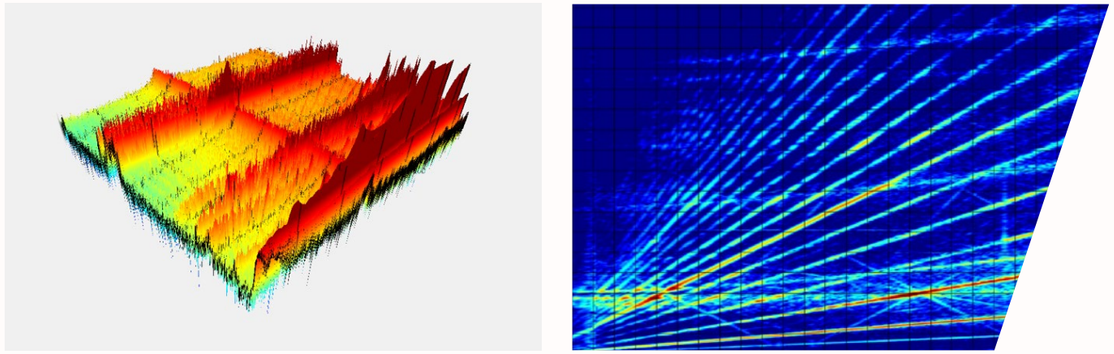
Complete FRF measurements - without extra hardware
Control the integrated signal generator of Connect+ and acquire the reference channel synchronously in phase with VibSoft. One system, complete results.

From measurement to report
Analyse, document and export your results without switching tools. Live video, powerful post-processing and open data formats are all included.

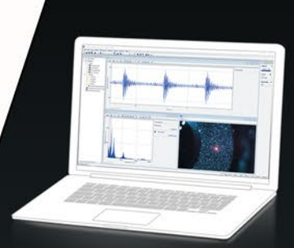
Automate repetitive tests
Analyze automated test routines with the scripting engine and connect seamlessly to MATLAB, Python or LabVIEW. Ideal for production and R&D environments.

One workflow – zero compromises //

Every measurement step from signal acquisition to analysis and reporting runs within a single, fully integrated software environment. No workflow interruptions, no tool switching, no data conversion.

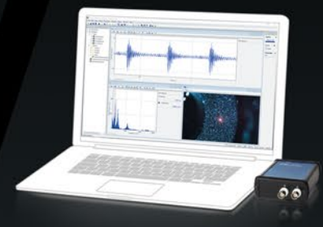


Detailed spectrograms and Campbell diagrams in both 2D and 3D to identify critical resonances



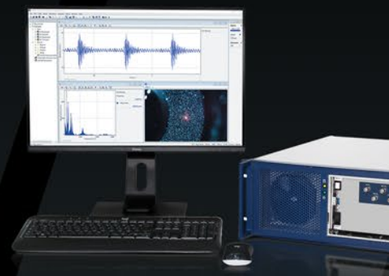
VibSoft-VL

Fully digital via VibroLink. Enables easy use of all Connect+ features.



VibSoft-20

2 analog inputs up to 20 kHz plus VibSoft-VL included. Ideal for field applications.



VibSoft-PRO

19" rack system with 4 analog channels and signal generator. Includes VibSoft-VL.

VibroFlex Sensor heads – from nano to macro //

VibroFlex Xtra Fiber

Tight spaces, deeply embedded components, hard-to-access locations are no longer a barrier.

VibroFlex Fiber

Measure the actual relative displacement between two points directly with phase stability and without post-processing.

VibroFlex Compact

Integrates seamlessly into tight test setups and production lines. Microscope objectives enable direct analysis of microstructures.

VibroFlex Neo

Measurements through water or glass deliver a decisive advantage in biomedical and fluidic applications.

VibroFlex QTec

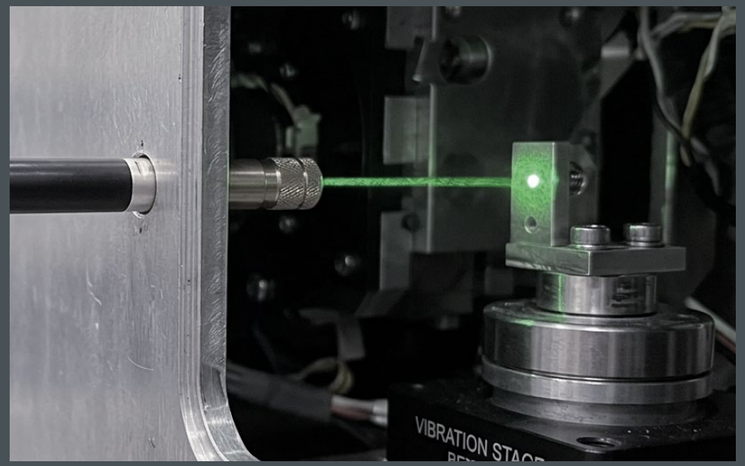
No surface preparation on oily, shiny, dark, or rotating surfaces with the patented QTec® multi-path interferometry. It delivers a stable, low-noise signal.

VibroFlex Range

Hazardous areas, large rotating machinery, inaccessible infrastructure — measure non-contact from over 500 m away.

VibroFlex Xtra Fiber – Xtra sensitivity in small spaces //

The VibroFlex Xtra Fiber is a fiber-optic vibrometer sensor head designed for short measurement distances and hard-to-reach areas. Slim, flexible fiber cables access even the most confined spaces and narrow openings. The SWIR laser delivers high optical sensitivity for demanding surfaces in R&D and quality assurance, while the permanently attached fiber cable and compact mini fiber heads ensure stable, reliable measurements.

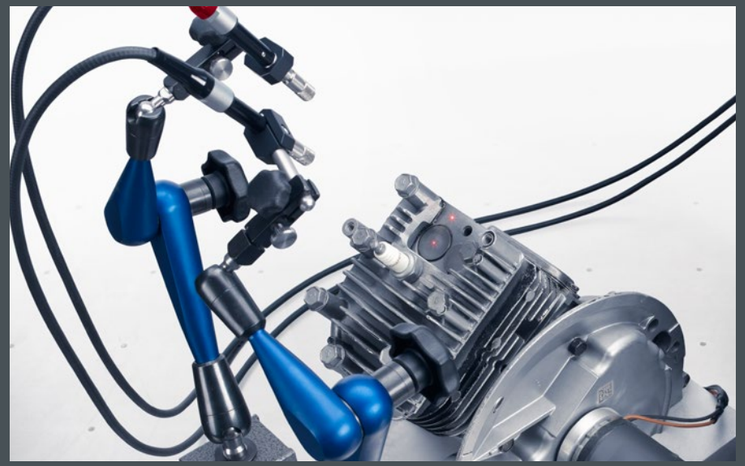


Highlights //

- High-fidelity data from all surfaces – even on dark, biological or moving objects
- 10 mm diameter fiber-optic head reaches hard-to-access areas
- Micron-sized measurement spot for tiny structures
- High dynamic range up to 30 m/s
- Wide range of optical accessories available

VibroFlex Fiber – big insights from small spaces //

VibroFlex Fiber is a fiber-optic vibrometer sensor head and particularly suitable for short measurement distances and sample points difficult to access by using the flexible and slim optical fiber cables. In addition, the VibroFlex Fiber sensor head is capable of measuring differentially, i.e. it can acquire relative movements between two sample points. The differential interferometer separates the different motion vectors already in the optical signal path and allows high-resolution measurement with inherent absolute phase stability. Thus VibroFlex Fiber extracts minute vibrations of components on heavily vibrating structures.

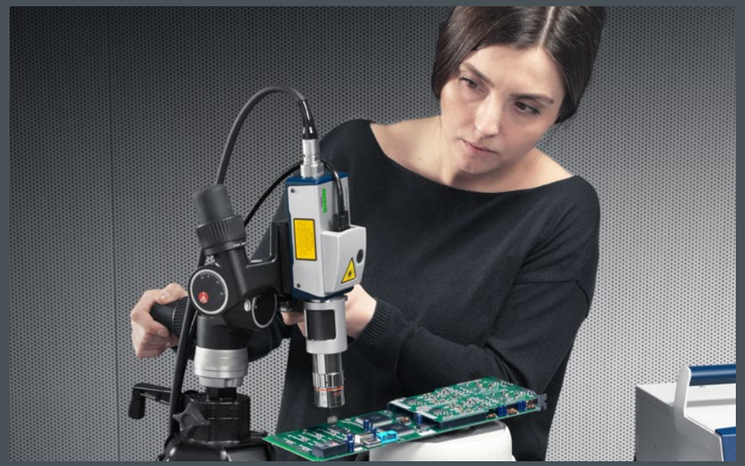


Highlights //

- 10 mm diameter fiber-optic head reaches hard-to-access areas
- Differential optics measures relative motions between two locations
- Inherent absolute phase stability between two measurement points
- Micron-sized measurement spot for tiny structures
- Also usable for single-point vibration measurement
- Wide range of optical accessories available

VibroFlex Compact – compactness meets versatility //

VibroFlex Compact is a very compact and versatile vibrometer sensor head and is designed for tightly packed setups, challenging production environments and tiny details in technology or biomedical applications. The inline HD+ camera helps position the laser precisely and provides proper test documentation. An optical filter adjusts for a perfect contrast. Optional microscope objectives focus the laser spot down to 1.5 µm, allowing the characterization of microsystems and complex structures with fine details.



+ Optional microscope objectives available

Highlights //

+ Very compact design for easy setup in limited workspaces and integration into test stands
+ Easy laser positioning and test documentation with integrated HD+ camera and adjustable contrast filter
+ Excellent optical sensitivity
+ Completely integrated miniaturized interferometer for robust measurements under noisy conditions
+ Microscope objectives and coaxial illumination unit available

VibroFlex Neo – for demanding vibration measuring tasks //

VibroFlex Neo is the robust and reliable laser Doppler vibrometer sensor head for demanding measurement tasks. Gather high-resolution vibration data anytime, and even measure through transparent media like glass for climate chamber tests or water like fluid-coupled ultrasonic analysis.

Highlights //

- Outstanding nominal signal-to-noise ratio (SNR)
- Integrated signal level indicator for optimizing data quality
- Fast remote and auto focus for best signal quality
- Measures through transparent media like glass or water
- Full remote control for zero impact on the measurement setup

VibroFlex QTec – powerful on all surfaces //

The VibroFlex QTec sensor head delivers the highest optical sensitivity, enabling high-fidelity measurements on all surfaces – even on dark, biological, rotating or moving objects. This safe laser technology is perfect for challenging applications such as NDT, biomedical, long distance displacement measurements, quasi-static displacement measurements and shaker feedback control. QTec makes vibration measurements faster, easier and more reliable than ever – for the most robust, unambiguous results.

\+ Use the optional VFX-O-FMI Fiber lens for reaching hard-to-access measuring areas

Highlights //

\+ Superior performance - SNR improvement up to 20 dB or a factor of 10

\+ SWIR laser and QTec® for best SNR

\+ High-fidelity data with no surface preparation – even dark, biological or moving objects

\+ From µm-sized to large, distant objects

\+ No limits with a high dynamic range up to 30 m/s

\+ Fast remote and auto focus for best signal quality

VibroFlex Range – remote detection of vibrations from distant structures //

VibroFlex Range is the outdoor-proof long-range vibration measurement solution designed for remote analysis of vibrating structures, model validation and health monitoring on large and distant structures from more than 500 m. The laser sensor featuring QTec® conveniently monitors structural dynamics and stability of buildings, operating machinery and critical production facilities, providing a fast and efficient on-site testing solution. The determined Eigen frequencies and deflections can be used e. g. for health monitoring or model validation of simulations.

Highlights //

- Remote vibration analysis > 500 m with laser precision
- SWIR laser and QTec® for best SNR
- Measures on all surfaces, even corroded and dirty structures
- Remote access to distant and hazardous areas
- True zero Hz performance for precise determination of natural frequencies
- Easy setup in minutes avoids sample cabling and surface preparation

Application-specific accessories //

A WIDE RANGE OF APPLICATION-SPECIFIC ACCESSORIES

We constantly learn from our customers and every project. Benefit now from the wide range of smart and thoughtfully designed accessories to comfortably solve your specific measurement task.

Positioning accessories
Stands, tip-tilt and xyz-positioning stages and more

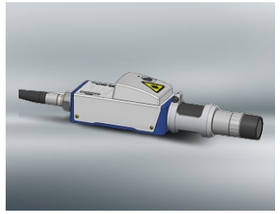
Optical accessories
Multiple microscopic objectives for observing fine details, mirror sets, laser beam deflection units and fiber lenses for accessing hard-to-reach locations

Miscellaneous
Transportation cases, laser adjustment goggles and more

Accessories that expand applications //

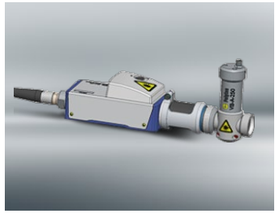
SCIENCE AND RESEARCH

VibroFlex Compact serves as an expandable tool for the lab to help push your science to new limits. It extracts vibration data from the smallest features with pm resolution and can be augmented with coaxial illumination and microscope lenses.



Magnification

Microscope lenses for small or intricate structures

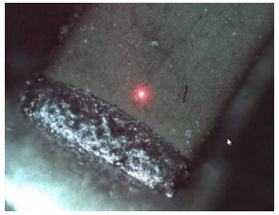


Illumination

Coaxial illumination for crisp images and best contrast

Positioning

Quickly fine adjust the laser beam with µm precision

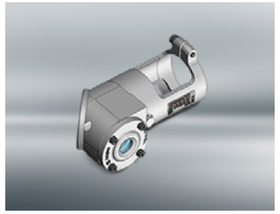


Documentation

Easy laser positioning and test documentation with integrated HD+ camera and adjustable contrast filter

QUALITY ASSURANCE

Our most compact Laser Doppler Vibrometer sensor with integrated miniaturized interferometer for robust measurements under noisy conditions conveys its unique performance and suitability in testing machines. Accepting a large range of protective and directional accessories makes it a low life cycle cost package for end-of-line testing.



Direction

Guide the laser to the right spot in confined spaces of testing machines

Protection

Protective windows for dust and oil spray protection

PolyFlex – precise metrology with lower investment risks //

When measurement matters – and budgets are tight

PolyFlex is the smart choice if you...

- need to expand without capital expenditure.
- want financial flexibility and faster approvals (OpEx over CapEx).
- require metrology for short-term or project-based needs.
- operate with a limited budget or face uncertain forecasts.

Ideal for companies looking to quickly expand capacity, win new projects, or keep their measurement processes agile and adaptable.

PolyMeasure //

Our on-demand measurement services

Leverage our infrastructure and expertise — we perform the measurement for you.
When timing and expertise matter most.

PolyRent //

Your temporary access to measurement equipment

Rent the equipment you need for a defined short-term period. **For short-term needs without long-term commitments.**

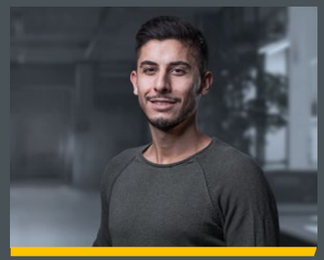
PolyLease //

Long-term technology leasing

Lease the equipment over a defined period with a residual value option.
Reliable access with predictable costs.

LETS TALK

Talk to a PolyXpert and take the smarter path to measurement success in vibrometry, velocimetry, surface metrology or acoustics.
Measure what matters — with full flexibility and no investment barriers.



polytec.com/polyflex