

VibroFlex Range

Remote detection of vibrations
from distant structures

Product Brochure



Vibration measurement and
condition monitoring with
laser precision at hundreds
of meters



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 300 m. The laser sensor 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.

Using the laser Doppler vibrometry avoids tedious contact sensor installation and cabling. Its intuitive point-and-measure operating principle makes VibroFlex Range a practical and ready-to-use high precision tool for on-site diagnostics. The patented multi-path interferometer technology QTec® makes use of every quantum of light and grants highest signal quality even at long distances and on uncooperative surfaces.



Highlights

- Remote vibration analysis > 300 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
- Patented coaxial HD camera for precise targeting
- Robust and outdoor-proof sensor (IP63)



Reliable precision measurement in the field

VibroFlex Range is designed as a robust and reliable high precision sensor with intuitive and easy operation. The super long range lens with large aperture in combination with the unique patented QTec® multi-path

interferometer technology guarantees excellent quality and precision of the measured data even under the most challenging conditions.

+ SENSOR HEAD

robust and outdoor-proof (IP63)

+ QTec® (PATENTED)

- for challenging conditions
- avoids surface preparation

QTec

+ PRECISE ALIGNMENT

- scope for overview
- integrated coaxial Full HD camera (patented)
- crisp video image with reticle on 7" TFT monitor

+ CONFIGURABLE FRONT-END

- DC .. 24 MHz frequency bandwidth
- ± 30 m/s max. velocity
- ± 2.5 m max. displacement

FINE ADJUSTMENT +
and 3-way geared head

+ INTUITIVE USER INTERFACE
on 7" color touch screen

+ VIBROLINK
fully digital data transfer
and remote control



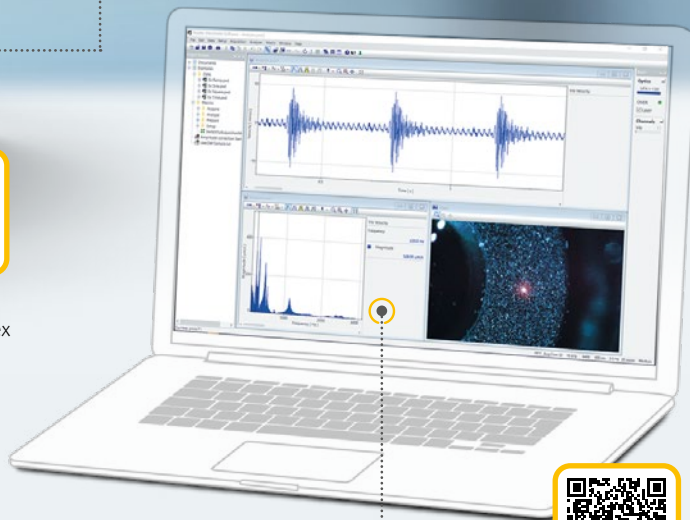
EASY UPGRADE

- in the field
- compatible with all VibroFlex sensor heads

+ **ANALOG BNC OUTPUTS**
for displacement, velocity,
acceleration and signal level



Learn more
about VibroFlex



DATA ACQUISITION AND ANALYSIS SOFTWARE

- intuitive and powerful
- analysis in time and frequency domain
- integrated display of video image
- powerful post-processing and automation
- optimally integrated in OS for flawless digital data transfer up to 24 MHz
- remote control of sensor



Learn more
about VibSoft



Structural dynamics and condition monitoring based on laser vibration measurement *



Ready for measurements in the field within minutes *



Focused laser measurement even under challenging conditions like from large distances, at rain or fog *

* source: DB Netz AG



Just point and measure

Simply mount the sensor head on the rigid tripod, use the geared head and fine adjustment to precisely position the laser beam on the exact feature of the object being examined by using the scope and the parallax-free high resolution camera image with reticle. Then start your measurement. With the VibSoft data acquisition software, you can immediately evaluate your test data anywhere – in the field or on-site.

Remote condition testing simplified

VibroFlex Range is the dedicated tool for high-resolution remote condition testing of displacement, velocity and acceleration.

Structural health monitoring



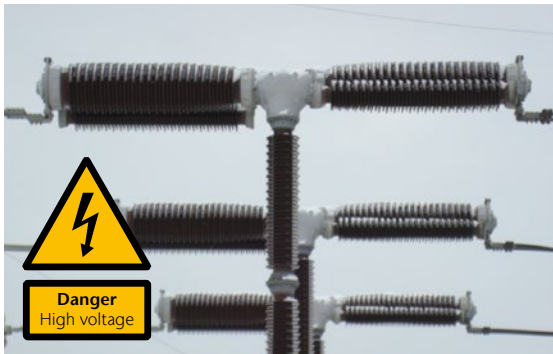
For monitoring the structural health or dynamic behavior of structures such as bridges and their assemblies, VibroFlex Range measures resonance frequencies and displacements for non-destructive vibration testing in a non-contact and cost-effective way. It allows for example measuring the deflection of a bridge under load or even determining the tension force in stay cables.

Condition monitoring & predictive maintenance



In condition monitoring, the accessibility of measurement points is an issue that increases cost and time needed for predictive maintenance. VibroFlex Range represents a versatile alternative to contact sensors, especially as it saves time by quickly analyzing multiple measurement points and collecting submicron displacement information even from large distances.

Troubleshooting



When time is short or access to the measurement location is limited or dangerous, VibroFlex Range also provides benefits for troubleshooting missions from a safe distance – for example finding areas of excessive vibration on pipes or installations, finding loose connections of high voltage insulators or locating noise sources.



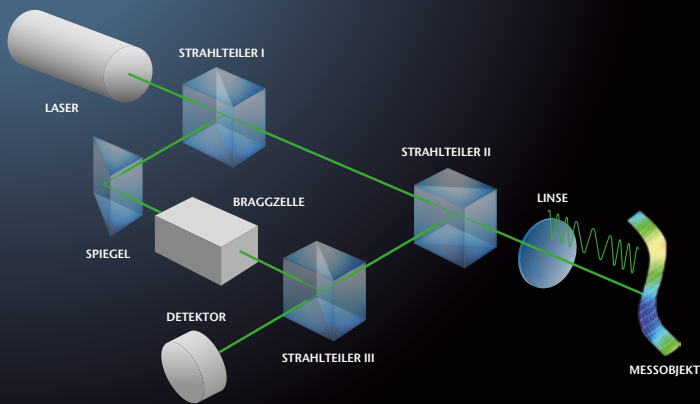
Applications

- Bridges, buildings and support structures
- In-service tubes and pipes for leaks
- Mining machinery even with dirty surfaces
- Furnace structures, piping or other hot objects
- Machinery and industrial installations in danger zones (explosive risk, high voltage, high temperature)
- Power poles, power lines, electrical equipment
- Historic buildings under monument protection

How it works

Laser Doppler vibrometers use light as information carrier, evaluating the backscattered light from a vibrating target, which modulates the laser frequency according to the Doppler effect. The integrated interferometer is used to optically extract the modulation, using a photodetector to convert it into a high-frequency electrical signal. The decoder electronics demodulate the FM signal in order to derive velocity, displacement or acceleration.

QTec® patented multipath interferometry uses reception diversity for recombining the best readings from different perspectives. This enables an always stable signal with 20 dB better SNR for faster and more consistent results without averaging or postprocessing.



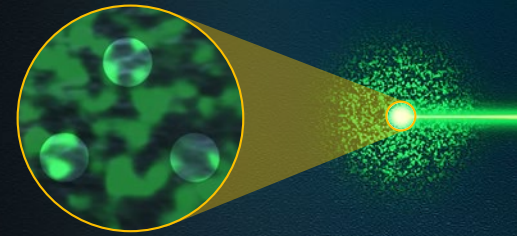
Detector 1



Detector 2



Detector 3



Learn more
about the
technologies





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