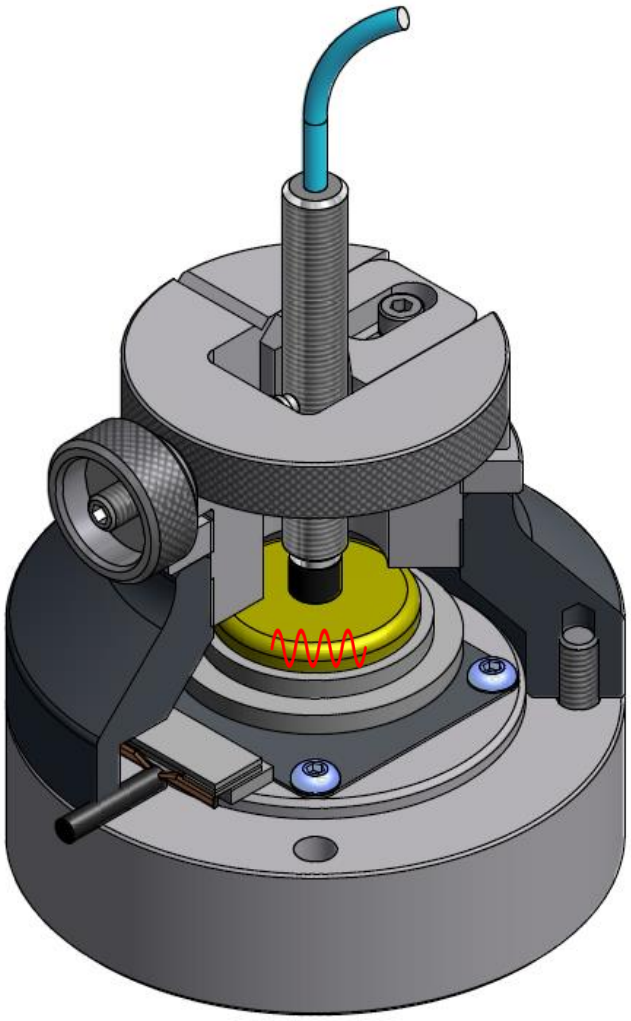
LoopChecker

Unique testing tool for eddy-current proximity probes



Functional testing of the entire
vibration monitoring system

LoopChecker

Functional testing of the entire vibration monitoring system
by simulating rotor vibration

Functional Principle

Inside a compact housing on an electromagnetic vibrator there is a measuring target. Above the oscillating target the probe is clamped in a prismatic adjusting screw and set to the correct GAP. The **LoopChecker** allows the use for outer diameters from 8 ... 22 mm (forward-mount probes as well as reverse-mount probes installed in a probe holder).

The target oscillates with 112 Hz. Amplitudes up to 250 µ ptp can be set using a compact handheld device; 4 values can be stored.

By means of a magnet on the back of the handheld it can be fixed at a convenient position. The rechargeable battery lasts for several hours; alternatively the **LoopChecker** can also be operated via power supply unit.

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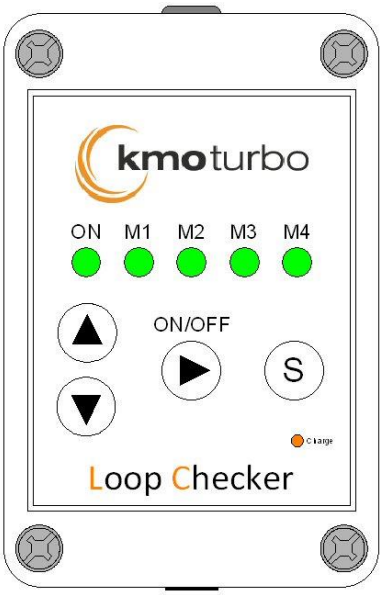
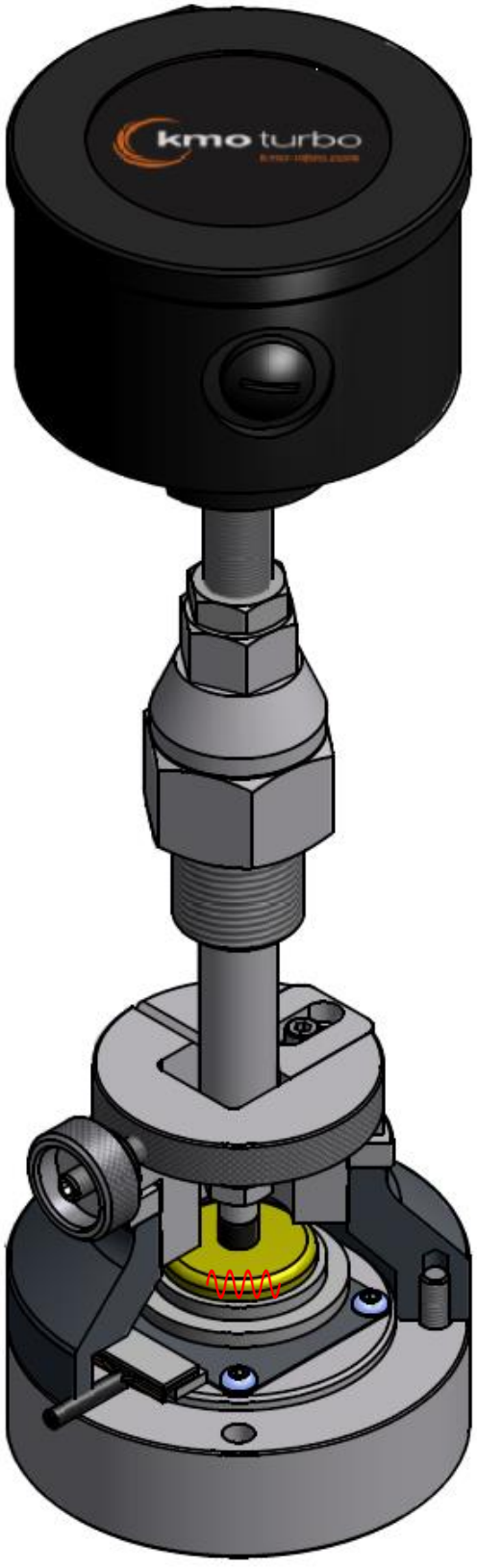
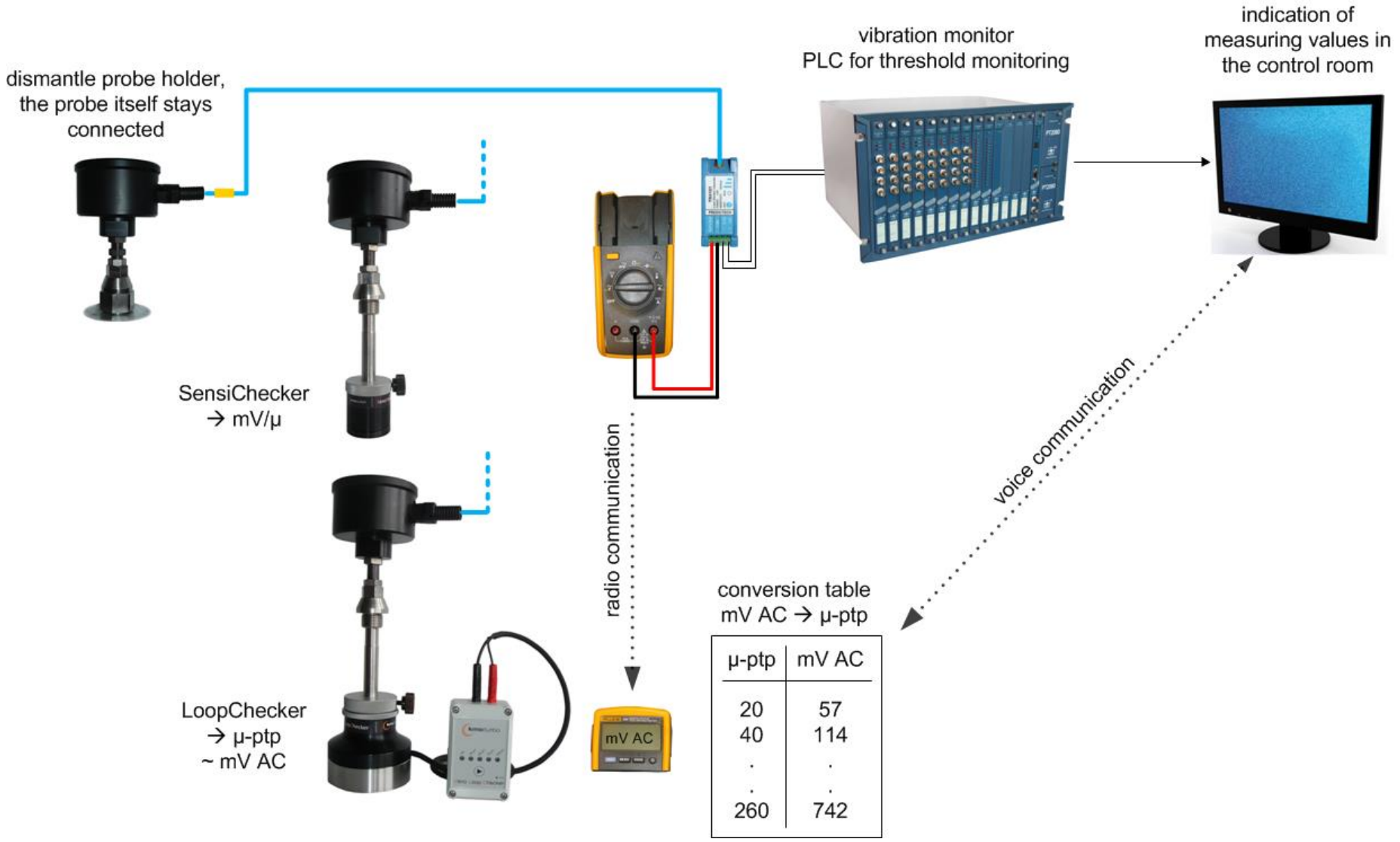




Simple measuring arrangement:



With the **LoopChecker** the functionality of the entire monitoring system (eddy-current proximity probe, wiring, evaluation unit, indication, limit switches, …) can be easily tested.

The vibration amplitudes can be simulated very exactly.

The exact adjustment is achieved by measuring the raw signal with a multimeter set to "AC" in mV and by converting this to a peak-to-peak value. With a Multimeter you measure RMS. Since the simulated signal is a sinus, it can be converted to peak-to-peak directly:

$$\boldsymbol{S}\,[\mu] = \frac{\boldsymbol{RMS}\,[\boldsymbol{mV}] * \boldsymbol{2} * \sqrt{\boldsymbol{2}}}{\boldsymbol{sensitivity}\,[\boldsymbol{mV}/\mu]}$$

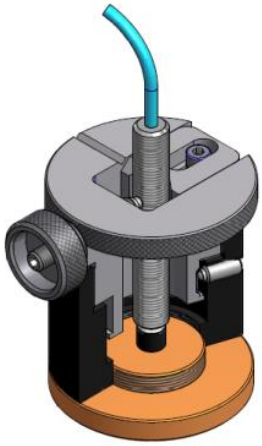
$$\boldsymbol{RMS}\,[\boldsymbol{mV}] = \frac{\boldsymbol{S}\,[\mu] * \boldsymbol{sensitivity}\,[\boldsymbol{mV}/\mu]}{\boldsymbol{2} * \sqrt{\boldsymbol{2}}}$$

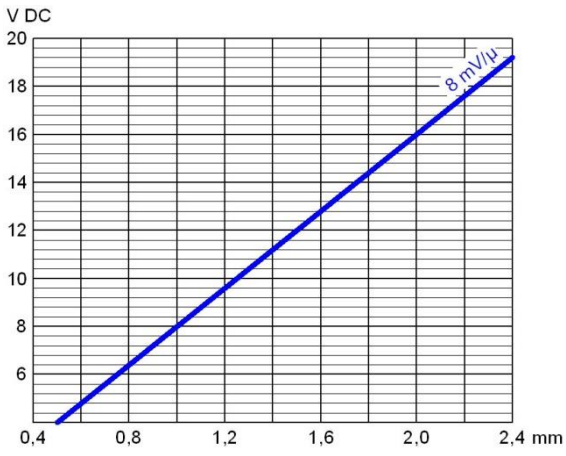
To measure the buffered-out signal, you can connect the multimeter either to the oscillator or to the monitor.

Note: for measuring the RMS signal a multimeter with remote display has proved. The shown unit can be ordered at **kmo turbo**.

<u>Determination of the loop sensitivity</u>

With the **SensiChecker** weak points of probe, cable and oscillator can be detected.





To determine the loop sensitivity of a disassembled probe the **SensiChecker** is the first choice: simply turn it! After 5 "clicks" you see how the loop reacts to a reference material with 8 mV/µ.

If there is a non-conformance between rotor and reference material, the indication of vibration will be incorrect. The only way to detect this is to determine the sensitivity probe versus rotor material. The one and only way to do this is to use the **kmo probe holder**.

Do You Monitor Turbomachines with Non-Contact Vibration Measurement?

Monitoring rotor vibration and axial shaft position is very important to protect turbomachines against fatal damages.

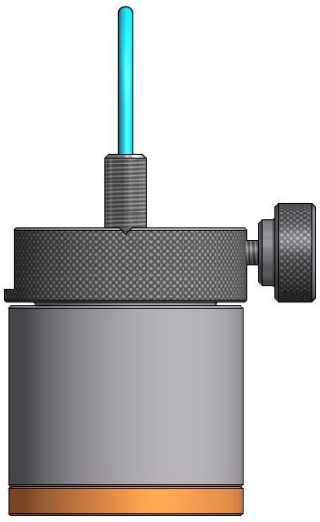
Regular tests of pressure, temperature and flow measurement equipment are common practice; vibration and axial shaft position are merely tested. Usually only the GAP is set by measuring the GAP voltage.

Sometimes machine shutdowns are triggered by the vibration monitoring system. From experience we know that not always high vibration was the real cause but electronic influences. With a specific review of the measuring loop many expensive and long lasting machine standstills and overhauls could have been avoided.

It is also critical for the machine if vibration signals are displayed which are too low; upcoming damages will be detected too late.

Since a falsely measured value can be critical in several aspects, **a regular testing of the complete eddy-current measuring loop is highly recommended!** Obviously so far no testing system has proved reliable for the practical use under rough industrial conditions.

kmo turbo has designed own compact and easy-to-handle unique test equipment.



SensiChecker

Testing the sensitivity
of the loop as well as
the axial shaft position

LoopChecker

Functional testing of the entire loop
(probe, cable, oscillator, vibration transmitter
remote display and threshold monitoring)

kmo turbo GmbH, Friedrichstr. 59, 88045 Friedrichshafen, Germany
www.**kmo-vibro**.com / +49 7541 95289-0 / info@**kmo-vibro**.com