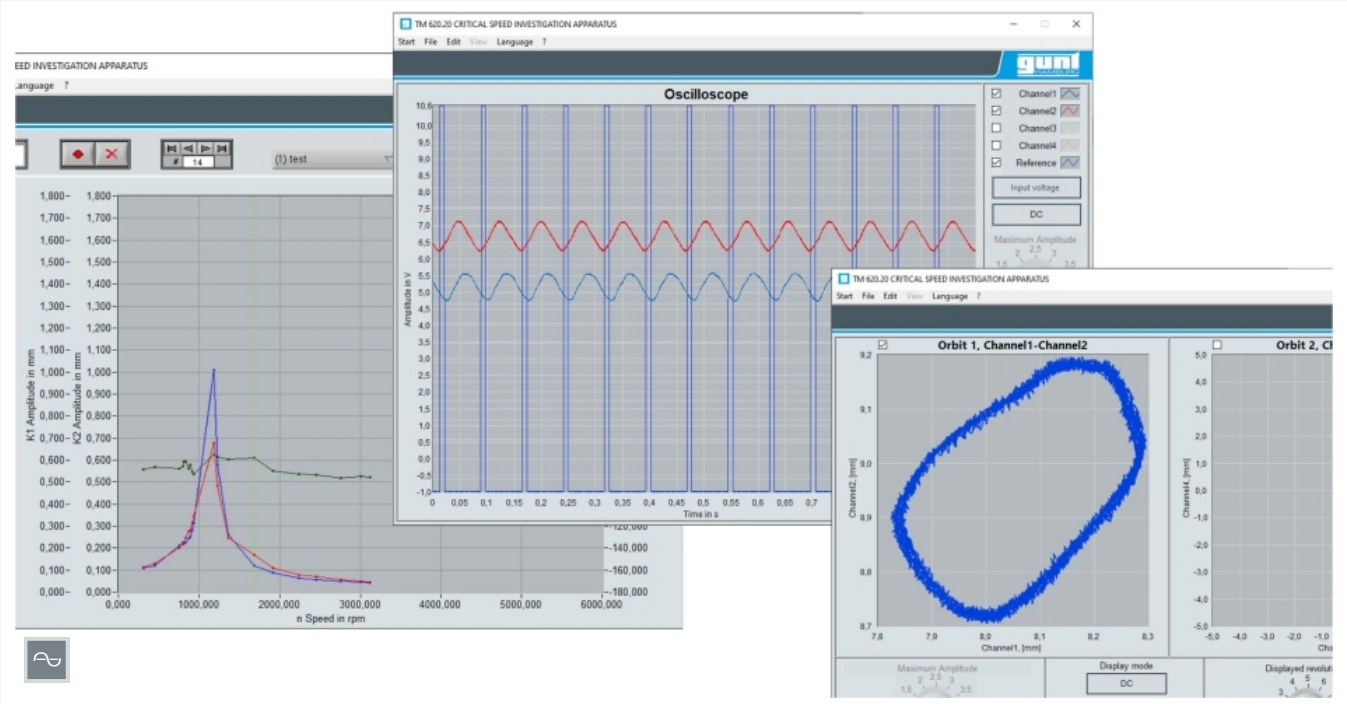
TM 620.20
System for data acquisition



Description

- **measurement and representation of shaft vibrations as a function of speed**
- **representation of a digital oscilloscope**
- **suitable for all experiments with the TM 620 and TM 625 experimental units**

The TM 620.20 system for data acquisition, as an accessory for the TM 620 and TM 625 experimental units, enables vibrations to be recorded and analysed. The system consists of two inductive displacement sensors, a measuring amplifier and software for further processing and displaying the measured values.

The two displacement sensors take contactless measurements of the deflection of the rotating mass disks on the elastic shaft of TM 620 or TM 625. The relative position of the two displacement sensors can be varied. By arranging the displacement sensors at right angles to each other (90° offset) in the measuring plane, the movement of the shaft can be represented over one whole revolution as an orbit.

With an arrangement with two different mass disks, it is possible to measure the natural mode of the vibrating shaft. The analogue signal of the displacement sensors is digitised in the measuring amplifier and sent to a PC via USB. The GUNT software provided allows the signals to be displayed optionally as either a time series on the oscilloscope or amplitude as a function of speed.

The displacement sensors are powered by the measuring amplifier. All necessary cable connectors are included. The experiments are described in the instruction material of the TM 620 or TM 625 unit.

Learning objectives/experiments

- in conjunction with the TM 620 or TM 625 experimental units
  - ▸ investigation and representation of the vibration amplitude of a rotating shaft
  - ▸ recording of signals over time
  - ▸ investigation of how amplitude depends on speed and location
  - ▸ representation of the orbit

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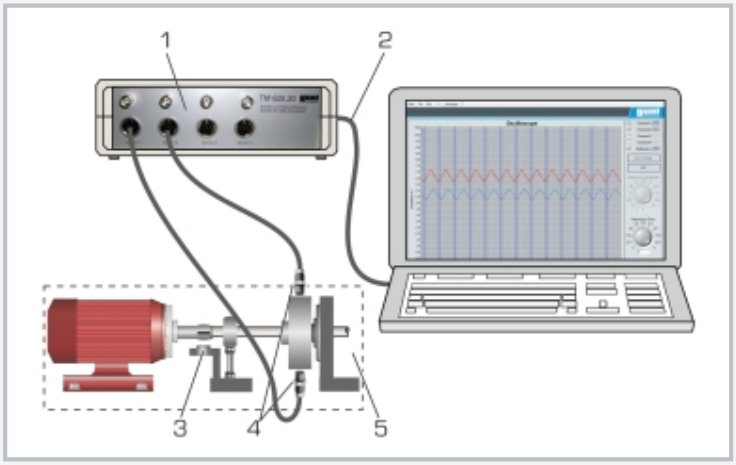
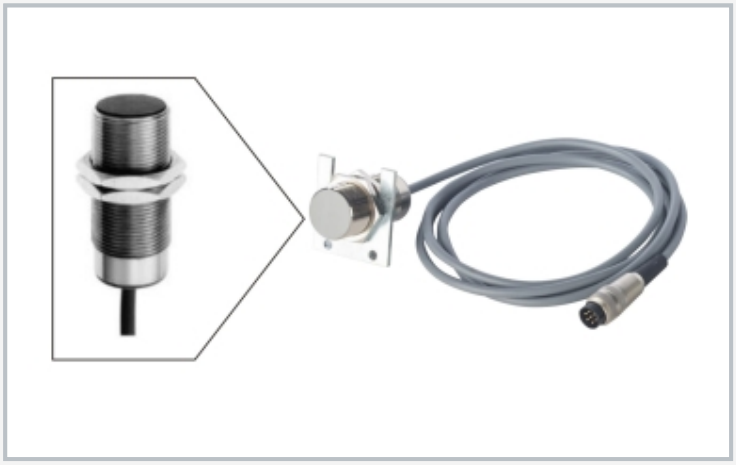
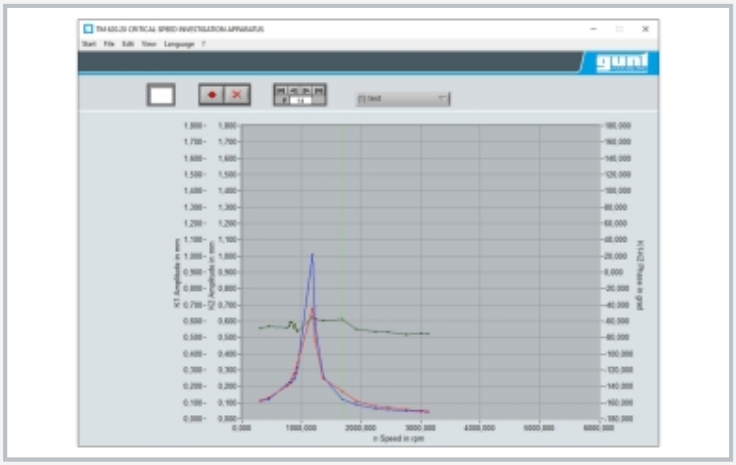


1 measuring amplifier and A-D converter, 2 USB output to PC, 3 speed sensor, 4 inductive displacement sensor, 5 TM 620 experimental unit



Sensors: inductive displacement sensor



Software screenshot: representation of the amplitude as a function of the speed

Specification

[1] data acquisition and analysis of shaft vibrations for TM 620 and TM 625
[2] 2 inductive, non-contact displacement sensors
[3] measuring amplifier and A-D converter for signal processing
[4] GUNT software for data acquisition via USB under Windows 10

Technical data

2 displacement sensors
- measuring principle: inductive, non-contact
- output signal: analogue 1...9V
- measuring distance: 5...10mm
- measuring velocity: <1,5mm/ms

Measuring amplifier
- 4 input signals
- 4 analogue output channels via BNC
- A-D converter
- output signal via USB

230V, 50Hz, 1 phase
230V, 60Hz, 1 phase; 120V, 60Hz, 1 phase
UL/CSA optional
LxWxH: 230x200x80mm
Weight: approx. 2kg

Required for operation

PC with Windows

Scope of delivery

1 GUNT software + USB cable
2 displacement sensors
1 measuring amplifier
1 set of cables
1 manual

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Required accessories

TM 620	Bending elasticity in rotors
or	
TM 625	Elastic shafts