Magnetoresistive Sensor

The magnetoresistive angle sensor can be used for measuring the torsional vibration of a rotating disc. For doing so a small magnet is fitted onto the middle of the disc. The sensor includes magnetic field sensitive components and a pre-amplification. The power supply is ensured by the measuring system. The rotating disc creates a variable magnetic field and thus a sine- and cosine-shaped voltage with two periods per revolution at the sensor's output.

These voltages are digitalised using two analogue channels and are saved as time data. Following the measurement a synthesis is done, creating a speed channel with angle equidistant values. At the same time the drift is compensated to enhance resolution and accuracy.
When both sensor and magnet are being properly mounted, approximately 90 data points per revolution can be obtained. This measuring method is also suitable for slip and angular displacement analysis.

Schematic Diagram

Sensor with cable as well as power supply cable and magnet

Technical Specifications

- output signal: approx. 8 V peak-to-peak
- rotational frequency range: 0 to 150 kHz
- temperature range: -40°C to 125°C
- distance magnet – sensor: up to 10 mm
- excentricity: up to 2 mm
- dimensions of magnet:
  - Ø = 11 mm
  - h = 4 mm
- cable length:
  - 5 m (standard)
  - 10 m (extension; on demand)
- connectors:
  - LEMO 8-pin
  - power supply via ROTEC system
  - SMB, sine output