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Measuring principle "digital"

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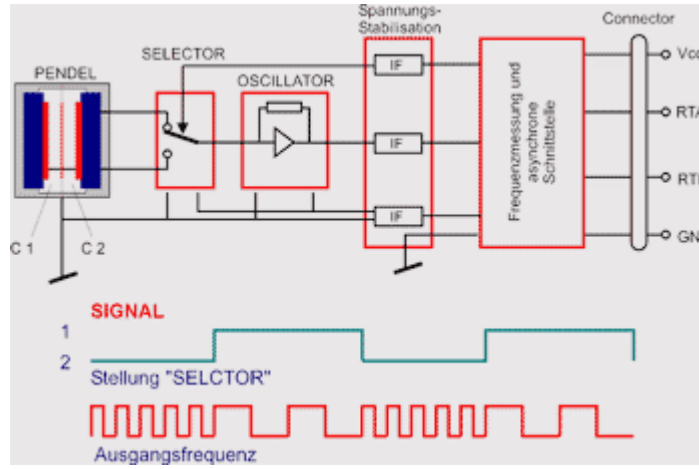
The pendulum, suspended by the Archimedes helical spring, is mounted between two electrodes. Depending on the inclined position of the system, the pendulum will swing out of the zero-position and by that, changing the capacity between the pendulum and the two electrodes. These capacities will be transformed into different frequencies through the RC-oscillator. The ratio of the two frequencies available will be used as the primary signal for detecting the required angle. (The system is patent protected in most countries)

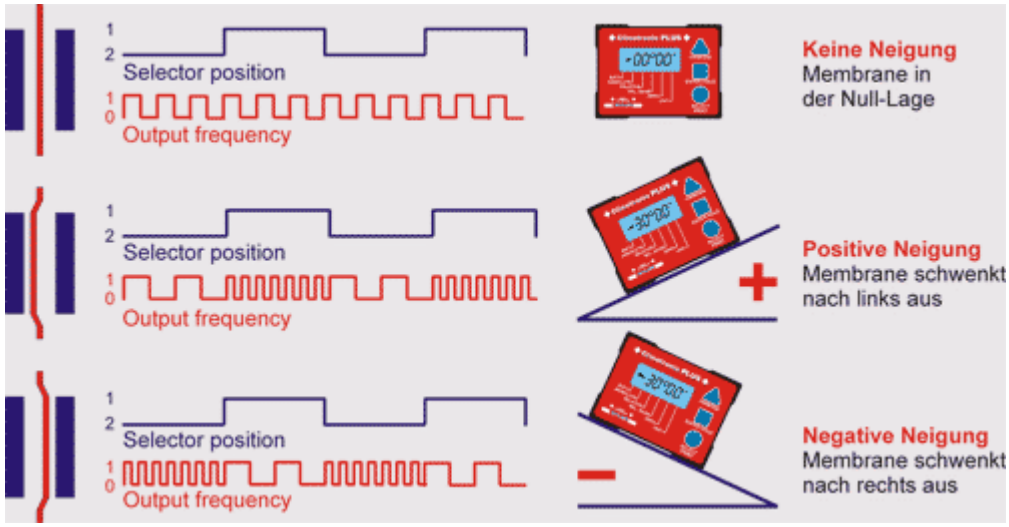


Ideally the mechanical dampening of the pendulums movements are done by gases, normally by air. The viscosity-changing of gases in the temperature range between -40°C and +70°C are marginal. Therefore the dampening with gases is superior to dampening with other substances like e.g. liquids. The best possible results in dampening are achieved in the optimized ratio between the surface of the pendulum to the aperture of the Archimedes helical spring. In addition mathematical smoothing can be done by integrating the results over a period of time. This is possible in a great variety by adjusting the individual parameters.

Depending on the switched-on electrode and the resulting capacity, one RC-Oscillator is supplying the required frequency between 250'000 and 350'000 Hz. Because of the alternating engagement of both of the electrodes through a selector switch and always using one oscillator only, it is assured that the temperature influence is limited to a minimum. This configuration has proved to be superior in terms of long-term stability over other existing applications. The short distances between the electrodes and the oscillator and the stable connections between the critical electronic elements further improve the system's capability.

The frequency difference of approx. 100'000 Hz assures that, even when a high measuring rate is applied (numbers of measurements per second), an excellent resolution is available. Most of the existing measuring instruments have an output rate of ±2 Volts. This output rate is equal to a possible ±2000 digits. Certainly not enough for accurate measurements.

The implemented calibration curve, stored in the sensor's head allows easy calibrating and leads to excellent results even when using large angles.



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