

What is a capacitive displacement sensor?

In the disc drive industry, capacitive displacement sensors are used to measure the runout (a measure of how much the axis of rotation deviates from an ideal fixed line) of disc drive spindles. By knowing the exact runout of these spindles, disc drive manufacturers are able to determine the maximum amount of data that can be placed onto the drives.

How do capacitor displacement sensors work?

Capacitive displacement sensors are sophisticated instruments that measure changes in an electrical field to assess physical quantities such as distance, position, or proximity. They work based on the fundamental principle of capacitor, which is a device capable of storing electrical energy within an electric field.

What are non-contact Capacitive displacement sensors?

Non-contact capacitive displacement sensors are not only able to operate in clean environments, but also in dirty and dusty industrial areas as well. Modular designed sensors with threaded bodies are also available, which further simplifies the mounting of these sensors in industrial or process manufacturing environments.

What is a capacitive sensor?

The capacitive measuring principle based on traditional methods used to determine distance, displacement and position measurement. As one of the most reliable and thermally stable of the non-contact displacement measuring techniques, capacitive sensors are capable of achieving resolutions that are much lower than one nanometer (nm).

What is a Micro-Epsilon Capacitive displacement sensor used for?

Capacitive displacement sensors from Micro-Epsilon are often used in vacuum and clean room applications where they achieve resolutions in the subnanometer range in particle-free surroundings. For vacuum applications, Micro-Epsilon offers special sensors, cables and feed-through accessories.

What are the applications of capacitive displacement sensing?

In this paper, we firstly introduce the concept of capacitive displacement sensing. After that, we present applications of capacitive displacement sensing under three broad categories: distance measurements, indirect measurements, and the applications applied in smart environments.

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Since the mid 1980's Capacitec has been supplying precision non-contact capacitive displacement sensors and systems to the Aerospace, Automotive, Coating & Copying, Extreme Environment, High Temperature/Cryogenic and Power Generation markets.

Capacitive displacement sensors are non-contact devices that measure the position or distance of a target object by detecting changes in capacitance. They are widely used in various industries due to their high ...

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Push-pull displacement capacitor sensor. 2.2.4. Linear Variable Differential Transformer. The linear variable differential transformer, generally referred to by the abbreviation LVDT, is a transformer with a primary coil and two secondary coils. Figure 2.7 shows the arrangement, there being three coils symmetrically spaced along an insulated tube. The central coil is the primary ...

In this paper we investigate the possibility of displacement detection by approaching dielectric plate to electrodes of interdigital capacitor. Working principle of this sensor is based on penetration depth of the fringing electric fields above capacitors electrodes and its intersection with dielectric plate. Tests were done with interdigital capacitor and dielectric plates fabricated ...

A capacitive sensor is similar to a capacitor and is used to measure various physical parameters. A capacitive proximity sensor is used to detect the presence of an object within the given ...

This paper proposes a high-precision absolute time-grating angular displacement sensor with a cascade structure consisting of a double stator and a single rotor. The bottom stator of the sensor is coupled with the bottom side of the rotor to generate coarse and fine induction signals, and the top side of the rotor receives induction signals through the internal ...

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The three-plate sensor can be used for either spacing-variation or area-variation sensors. With a two-plate sensor, the sensor capacitance is the measured variable. Any circuit which measures this capacitance will produce a ratio of the sensor capacitance to a discrete circuit element, a fixed capacitor or resistor.

A capacitive sensor is similar to a capacitor and is used to measure various physical parameters. A capacitive proximity sensor is used to detect the presence of an object within the given range. Capacitive displacement sensors measure the amount of distance travelled by the target object using capacitance.

Capacitive displacement sensors are crucial in precision measurement and positioning applications, leveraging the principles of capacitance to measure changes in position. These sensors are designed to detect the distance to a ...

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