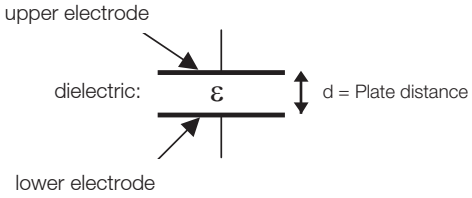
2.1 Capacitive Testo humidity sensor

The Testo humidity sensor has been used successfully, and continually improved, for over 15 years, and from the very beginning, the focus was on the two accuracy parameters measurement inaccuracy and long-term stability.

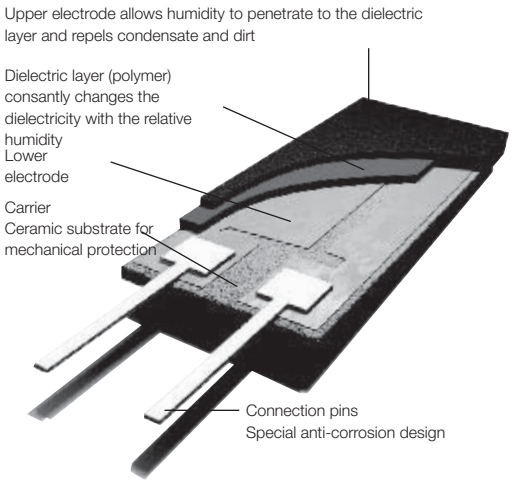
The capacitive Testo humidity sensor is in principle a plate capacitor. A plate capacitor consists of two electically conductive plates (electrodes), which are positioned parallel to each other.



They are separated by an isolating layer called a dielectric. (In the dielectric of a charged capacitor, energy is stored which can then be released again.)

In the Testo humidity sensor, a humidity-sensitive polymer serves as the dielectric between the capacitor electrodes. The extraordinary feature is the perfect adaptation of the individual layers to each other. This is seen especially in the upper electrode, which has to fulfil two functions which at first glance appear contradictory: It must be completely permeable for the water vapour which must penetrate through to the polymer dielectric. At the same time, however, it must be impermeable, smooth and resistant as regards condensate, oil and dirt, in order to protect the sensor. In the Testo humidity sensor, this combination has been achieved perfectly with the help of extensive research.

In testo 6740, this highly accurate Testo humidity sensor is subjected to a special calibration at -40 °Ctd, resulting in optimum accuracy in the trace humidity range. In order to obtain optimum stability - and with it, accuracy - the testo 6740 is exposed to a very constant trace humidity situation for eight hours (reference: a high quality dewpoint mirror), after which a 1-point calibration with a factory protocol is carried out.



2.2 Temperature sensor (NTC = Negative Temperature Coefficient)

The testo 6740 uses an NTC thermistor for temperature measurement. Thermistors (NTC) are semi-conductor resistances which are temperature-dependent. They conduct better at high temperatures than at low temperatures, because the resistance is lower at higher temperatures. They have a negative temperature coefficient and are thus referred to as “Negative Temperature Coefficient” resistances.

They are particularly suited for use in humidity measurement transmitters, as they combine good accuracy with a fast reaction time.