



What is the difference between pH meters/probes offered as classic (analogue) or new digital (intelligent) version?

With classic technique the analog signal from the sensor is transferred through the cable and connectors into the meter. There an electrical circuit board which “translates” the signal from analogue to digital (A/D converter) and the display shows the value, e.g. pH 4.01. This display may be a classic analogue indicator (needle) or the digital display (e.g. LED, LCD).



With the digital technology the analogue signal from the sensor is converted directly inside the electrode from analogue to digital. This new digital signal is sent through cable and connectors into the meter, where only the memory and digital display is handled. There is no more an electrical circuit board inside, which manipulates the original signal.

	classic / analogue	digital
sensor tip signal	analogue	analogue
signal from sensor to meter	analogue	digital
cable length	max. 3 m (pH)	up to 30 m
plug/connector	individual per parameter	for all parameters the same connection type
signal / noise ratio	analogue signal interfered by electrical / magnetic parts	digital signal inert against electrical / magnetic interference
sensor specific data	stored as manual input in meter	stored in electrode head, automatically send to meter
pH / conductivity / dissolved oxygen measurement in parallel	pH is influenced by measurement of other parameters, e.g. COND	signal is converted inside the probe, no influence of other parameters

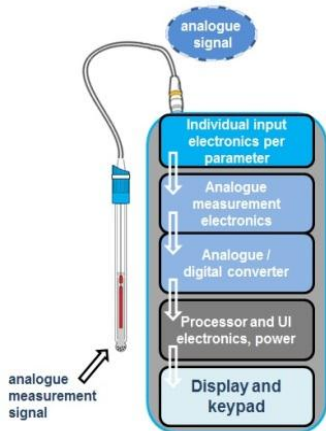
However, when changing pH probes or taking calibrated pH probes to another meter, the differences are huge.

While any analogue pH probe needs to be “recalibrated” every time before use with different meters, the digital probes have their electronics inside their probe head. The signal from the sensing element (pH glass vs. Ag/AgCl-reference) is quickly converted into a digital information, which passes thru the cable into the “display” electronics in the meter.

Analogue pH probe mV signals have to pass the electrode cable. There is a risk, that the mV potential is “modified” by electromagnetic forces (like pumps, generators, etc.). The interferences must be neglected, because they may change the pH reading up to 1 pH. A digital data transmission through a cable cannot be changed due to magnetic fields etc. In addition much longer cables can be used.

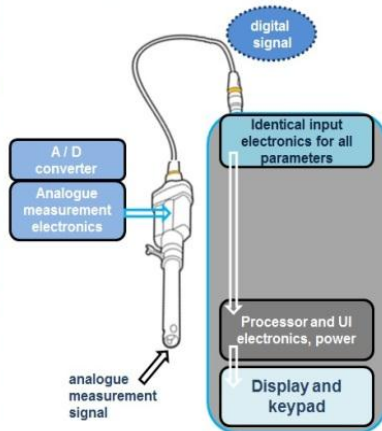
With the digital probe head the calibration information is stored with each electrode. When connected to a digital meter, the probe can transmit the calibration data and is quickly ready to use.

Classical (analogue) pH Meter



Example: sensiON+ meter and probes

New digital electrodes and meters



Example: HQ40d meter and IntelliCal probes

If a probe has to be calibrated, the procedure is the same for analogue and digital. The preparation and pH buffers and calibration procedure are also the same.