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pH-combined sensor for submersible probe systems

Only one housing for glass and reference electrode - Special double diaphragm for high signal stability - For depths of up to 6,000 m

The problem:
Measuring pH in sea water with glass electrodes demands a special sensor construction to avoid mistakes caused by the high ionic strength of the sea water. Troubles may also occur when using conventional reference electrodes with ceramic diaphragm because of the high and variable junction potentials which are developed at pressures. This was the reason, that up to now pH electrodes have been offered only for depths of up to 1,500 m. Besides, sometimes it was a little bit inconvenient to use two channels of the probe system for pH measurement - one for the glass electrode and another one for the reference electrode.

The solution - a new combined electrode for submersible probe systems
The pH-combined sensor consists of a reference electrode and a pH sensitive glass electrode in one housing to save one free channel of the probe system. To realize accurate measurements in the deep sea too, a double diaphragm for the reference electrode was used to avoid problems with the signal stability during pressure changes. The interface reference electrode/sample is realized in this case by means of a hole diaphragm. Inside the reference electrode follows a KCl containing gel with a special built-in second diaphragm containing the Ag/AgCl-reference system in a potassium chloride solution. The pH-combined sensor for the *in-situ* determination of pH is available as deep sea version (up to 600 bar) without integrated temperature sensor.

Main features:

☞ measuring range:	variable between 0...14 pH, standard: 2...11 pH
☞ accuracy/resolution:	0,05 pH/0,01 pH
☞ pressure range:	up to 6,000 dbar
☞ required power supply:	9.5...18 V DC as standard (others on request)
☞ signal output:	0 ... + 5 V DC (others on request)
☞ dimensions:	diameter: 30.0 (-0.5 mm), length: 250 mm over all

fig.: pH-combined electrode for deep sea use