Engineering Specification

THORNTON
Leading Pure Water Analytics

High Purity pH Sensor

(Mettler-Toledo Thornton pHure Sensor™)

The pH sensor for low conductivity water samples shall use a stainless steel flow chamber to eliminate streaming potentials and flow sensitivity. The flow chamber shall have a volume less than 10 mL to ensure fast response at a flowrate of 50-150 mL/min and to carry any corrosion particles through to the outlet, eliminating the need for sample filters and their maintenance. The flow chamber shall be sealed to prevent contamination by carbon dioxide from the atmosphere.

The sensor shall provide measuring and reference electrode and temperature compensator functions in a single probe to fit the low volume flow chamber specified above and to provide compact installation and convenient removal for calibration. The reference electrode shall have an internally pre-pressurized gel electrolyte requiring no refilling or external electrolyte reservoir to maintain. The internal pressurized gel electrolyte shall produce minimal junction potential difference between calibration in buffer solution and measurement in low conductivity samples. The single probe combination electrode shall include both electrical and mechanical connectors for easy disconnection and removal without twisting cables.

The measuring circuit in the associated transmitter or preamp shall include solution ground, isolated measuring circuits, and shielding for maximum stability and resistance to interference. The associated pH indicating transmitter shall measure from 1, 2 or 4 pH sensors, as specified, with indication, alarm and analog output signals available for both pH and temperature. Multi-channel transmitters shall allow other parameters (pH, ORP, conductivity, TOC) to be measured on other channel(s) along with pH. Temperature compensation shall be provided both for the conventional Nernst electrode effects and for the ionization of pure water and trace solutes, to give pH referenced to 25 °C. The ionization effects shall be accommodated by solution temperature compensation, adjustable for the type of sample, with a temperature coefficient set in units of pH/°C.

The pH sensor shall be Mettler-Toledo Thornton model 363-21X pHure Sensor™ for 4-channel 770MAX Transmitters or model 5803223X pHure Sensor™ for 1- and 2-channel M300 Transmitters.

METTLER TOLEDO

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