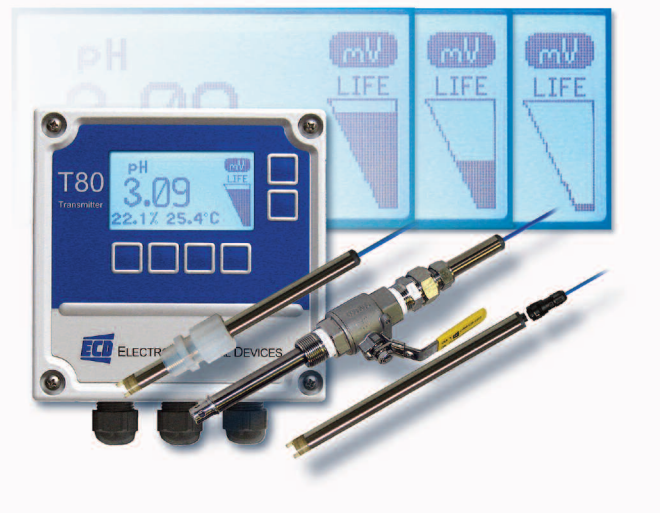
SENTINEL Pre-pHault Diagnostic

The ECD 6 Point Advantage

ELECTRO -CHEMICAL DEVICES

1. Unique Visual Sensor Life Indicator allows scheduled maintanence
2. Output the Diagnostic Signal to avoid unscheduled down time
3. Intelligent Pre-Calibrated Digital Sensors eliminate the need for field calibrations
4. Application Specific Electrode Cartridges, pH, ORP and Specific Ion
5. Submersible and Retractable Sensor Designs with various process fittings and lengths
6. Various Industrial Housing Materials, 316 SS, Ti, Hastelloy provide process compatibility



Description

The SENTINEL feature allows the Model T80 transmitter to provide Pre-pHault diagnostic information about the accuracy of a pH, ORP or pIon measurement. The SENTINEL displays a filled triangular gauge that decreases proportionally to the degradation of the reference electrode, a filled gauge indicates a properly functioning measurement while the emptying gauge indicates the remaining life of the electrode. This Pre-pHault diagnostic alerts the user to potential problems and the remaining life before the measurement fails.

Model S80 sensors for the measurement of pH, ORP and the various pIons use replaceable electrode cartridges specific for the measured parameter. These electrode cartridges have a measurement cell (pH glass electrode, platinum ring or ion selective membrane) and a reference cell. The reference cell is designed to produce a standard potential independent of the solution it is immersed in.

While this style of electrode is typically trouble free, there are conditions that lead to failure. Diffusion through the porous liquid junction decreases the concentration of the potassium chloride inside the electrode as the electrode ages. The decreasing concentration of potassium chloride changes the potential of the cell which shows up as a drift in the measured value. Diffusion also allows chemicals in the process to infiltrate into the electrode. If these chemicals can react with silver then the electrode will become poisoned and a large offset voltage will be generated destroying the accuracy of the measurement.

The SENTINEL addresses these issues by including an additional sleeved silver element into the reference cell. When the electrode cartridge is new, both silver elements are at the same potential but as the electrode ages or becomes poisoned the bare element changes its potential in response to the electrolyte depletion or poisoning. The SENTINEL monitors the potential difference between the two elements and displays the value as a gauge of the electrodes remaining life. The protected silver element is still producing the correct potential but it is in danger of failing due to the changing environment inside the reference cell. This Pre-pHault indication notifies the user of the potential electrode failure before the measurement actually fails.

When a Model S80 SENTINEL sensor is connected to a T80 transmitter the SENTINEL functions are displayed. The Pre-pHault diagnostic is displayed on one of the Model T80s main screens along with the process variable, % 4-20 mA output and temperature. The diagnostic value can be assigned to an optional alarm relay and/or a secondary 4-20 mA output or monitored through HART® communication. The mV limit value for the diagnostic is user configurable with a default setting of 60 mV.

The Model S80 SENTINEL sensor uses Diagnostic electrodes designated by Part#'s 20053XX, These electrodes use a triaxial connector with a PV connection (pH, ORP, Ion), Reference connection and Diagnostic connection.

SENTINEL Pre-pHault Diagnostic

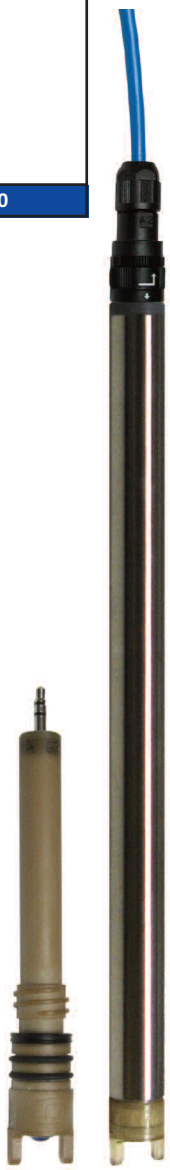
Model S80 Intelligent Sensor Part Number Configurator

For other configurations contact the Sales team at the factory

Model	Type	Style	Mat & Length	Connection	Detachable	Cable	T Handle	Valve Oring
S80-	**5** Diagnostic, pH, ORP, plon	**0** Insertion	**00** 316 SS 10"	**00** No fitting	**0** not detachable	**0** none	**0** no T handle	**0** Viton or none
		1 Valve Retract	**01** 316 SS 17"	**01** ¾" 316 SS Gland	**1** Axial Detachable cable	**1** 10'	**1** T w Lanyard	**5** VIT 75
			10 Titanium 10"	**04** ¾" Haste Gland		**2** 20'	**2** T w poly fitting	**6** EPR
			11 Titanium 17"	**05** ¾" Titan Gland	**2** Right Angle Detachable cable	**3** 30'		**7** Kalrez
			20 Hastelloy 10"	**06** ¾" Polypr Gland		**4** 40'		**9** CV75
			21 Hastelloy 17"	**07** ¾" Kynar Gland		**5** 50'		
				30 1" 316 SS Valve				
				33 1" Haste Valve				
				34 1" Titan Valve				
				40 1" Kynar Valve				
				42 1" Polypr Valve				
S80 -	**5**	**0 -**	**00**	**01 -**	**1**	**1**	**0**	**0**

Diagnostic Electrodes Selection Guide

Part No.	Parts and Accessories Description
	pH Electrode Cartridges
2005345	Diag, General Purpose, RADEL body, dbl jct TFE Ref, Flat pH glass, -10°-90°C
2005346	Diag, GP, PEEK body, dbl jct ceramic Ref, Flat pH glass, -10°-90°C
2005349	Diag, High Temperature, PEEK body, dbl jct TFE Ref, Hemi pH glass, 0°-130°C
2005360	Diag, Chemical Resistant, PEEK body, triple jct TFE Ref, Flat pH glass, 0°-130°C
2005330	Diag, Sulfide Resistant, PEEK body, triple jct TFE Ref, Hemi pH glass, 0°-130°C
2005348	Diag, Solvent Resistant, PEEK body, dbl jct TFE Ref, Flat pH glass, -10°-90°C
2005303	Diag, Fluoride resistant, PEEK body, Rugged pH glass, dbl jct TFE Ref, -10°-90°C
	ORP (REDOX) Electrode Cartridges
2005328	Diagnostic, Platinum ORP, PEEK body, dbl jct TFE Ref, -10-80°C
	Ion Electrode Cartridges
2005383	Diag, Ammonium, RADEL body, dbl jct TEF Ref, 0.05-18,000 ppm, 0°-40°C
2005362	Diag, Bromide, RADEL body, dbl jct TEF Ref, 1-80,000 ppm, 0°-80°C
2005340	Diag, Cadmium, RADEL body, dbl jct TEF Ref, 0.1-11,200 ppm, 0°-80°C
2005343	Diag, Calcium, RADEL body, dbl jct TEF Ref, 0.1-40,000 ppm, 0°-40°C
2005308	Diag, Chloride, RADEL body, dbl jct TEF Ref, 2-30,000 ppm, 0°-80°C
2005358	Diag, Copper, RADEL body, dbl jct TEF Ref, 1 ppb-6,300 ppm, 0°-80°C
2005342	Diag, Cyanide, RADEL body, dbl jct TEF Ref, 0.1-260 ppm, 0°-80°C
2005363	Diag, Fluoride, PEEK body, dbl jct TEF Ref, 0.02-2,000 ppm, 0°-80°C
2005341	Diag, Lead, PEEK body, dbl jct TEF Ref, 2.0-20,700 ppm, 0°-80°C
2005386	Diag, Nitrate, RADEL body, dbl jct TEF Ref, 0.1-14,000 ppm, 0°-40°C
2005334	Diag, Potassium, RADEL body, dbl jct TEF Ref, 0.1-40,000 ppm, 0°-40°C
2005331	Diag, Sodium, RADEL body, dbl jct TEF Ref, 0.2-23,000 ppm, 0°-80°C
2005322	Diag, Sulfide, RADEL body, dbl jct TEF Ref, 0.01-32,000 ppm, 0°-80°C
2005316	Diag, Silver, RADEL body, dbl jct TEF Ref, 0.1-107,000 ppm, 0°-80°C



Specifications subject to change without notice.

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CERTIFIED ISO9001 QUALITY SYSTEM