Nitrite Ion Sensors

ELECTRO-CHEMICAL DEVICES

Features	Benefits
• Model S80 Universal Style Sensors	• Insertion, Immersion or Valve Retractable Service
• Multiple materials of construction	• 316 Stainless Steel, Titanium, Hastelloy
• Integral Signal Conditioner	• Noise free transmission
• Replaceable Electrode Cartridge	• Simple and Economical Service
• Dual Channel Analyzers, pH/pION, pION/pION	• Mix and Match your choice of measurements

Model S80 Sensors
Nitrite Ion Sensors

Description

The Model S80 universal sensors provide a stable and economical platform for the in line measurement of pH, ORP, Specific Ion, Dissolved Oxygen, Conductivity or Resistivity. The Model S80 is an insertion or immersion style sensor for use in pipe Tees or on the end of a Stand Pipe for immersion into a tank or pond. The Model S80 is also available as a valve retractable design allowing insertion or removal of the sensor into a pipe without interrupting the process flow. Both sensor designs use easily replaceable electrode cartridges. ECD offers several ion selective electrode cartridges suitable for continuous online measurement.

The Nitrite Ion Electrode is a combination electrode with a sensing element made of a PVC membrane containing an ion exchanger and a double junction reference electrode. The Nitrite Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of nitrite ions in the measured solution. The typical output is 50mV to 60mV per decade of change in concentration. The speed of response varies from a few seconds in concentrated solutions up to a few minutes in the lower ppm ranges. The Nitrite Ion sensors are used with the Model T80 Transmitter with its dual channel mix and match capabilities. These analyzers will measure nitrate ions from 0.05 ppm to 200 ppm autoranging the display between the ppb, ppm and ppt (parts per thousand) scales.

The Nitrite Ion Electrode is an ion exchange sensor that is selective for nitrite ions but many anions also interact with the sensing membrane. Salicylate, Chlorate, iodide, Bromide, Chloride and Sulfate all interfere with the measurement. Iodide interacts at 150:1 with nitrate and chloride interacting at 2000 and 3000:1, respectively.

Although the electrode can be used in a pH range of 4 to 8, the optimum pH range for the nitrite electrode is pH 4 to 5. A constant pH must be maintained on both samples and standards.

The sensor is calibrated using two standard solutions differing in concentration by a factor of 10, i.e. 10 ppm and 100 ppm. The calibration sets the slope of the electrode, mV/decade, and the zero potential for the sensor.

The process solution's ionic strength, temperature and pH value may differ widely from the calibration solution. These factors will affect the zero potential of the nitrite sensor causing an offset, but they will typically not affect the slope. To eliminate the offset perform a standardization. Once the sensor has stabilized in the process solution take a grab sample from the process and determine the nitrate ion concentration. Adjust the analyzer to read this laboratory determined value. It is recommended to verify the readings on a weekly basis.

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Specifications

Model S80 Nitrite Sensors

Combination electrode cartridge with a PVC/ion xchgr measurement cell and a double junction, KNO_3/KCl /AgCl, reference electrode, signal conditioner, ATC

Electrode Slope

50 ± 10 mV per decade of concentration change

Measurement Range

Nitrite: 0.05 ppm to 200 ppm (4-8 pH)
3.6 x 10^{-6} molar to 1.4x 10^{-2} molar NO_2

Temperature Range

0° C to 40° C (32° F to 104° F)

Pressure Range

0 - 50 psig (0 - 3.5 barg)

Response Time

T90 in 120 seconds

Electrode Life

3 to 6 months

Interfering ions

ClO4, ClO3, I, Br, F, NO3, SO4, HCO3, Cl, Acetate

Wetted Materials

Radel, epoxy, PVC, PTFE, 316 SS, Viton O-Ring

Process Connections

S80 Insertion: ¾" MNPT compression fitting
S80 Valve Retractable: 1" MNPT Ball Valve

Model T80 Transmitter

General purpose, ½ DIN, NEMA 4X, 110/220 VAC, 24 VDC or 4-20 mA loop powered, CE Marking, single or dual channel, (1) or (2) 4-20 mA outputs, optional (3) Alarm Relays 250 VAC 3 amp, MODBUS RTU (standard) or HART 7, Auto ranging display, ppb → ppm → ppthousand

Part No.	Model and Product Description
S80-00-0002-0100-081	S80 Nitrite, NO_2^- insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-081	S80 Nitrite, NO_2^- insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-081	S80 Nitrite, NO_2^- Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-081	S80 Nitrite, NO_2^- Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 30 ft cable
T80-10-21-00-1	Model T80 Single Channel Transmitterr, 110/220 VAC, (1) 4-20 mA outputs, (3) Alarm Relays, UM
T80-11-21-20-1	Model T80 Dual Channel Transmitterr, 110/220 VAC, (2) 4-20 mA outputs, (3) Alarm Relays, UM

Part No.	Spare Parts and Accessories Description
2005161.VIT	Nitrite Ion Electrode, Radel body, double junction Teflon Ref, 0.05 ppm - 200 ppm, 0°-40°C
2010474	Nitrite Ion Calibration Solution, 10 ppm, 500 ml
2010475	Nitrite Ion Calibration Solution, 100 ppm, 500 ml
S80-00-0002-0100-075	S80 Chloride, Cl^- insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable with Potassium electrode (for Chloride Ion compensated measurement)
2005008.VIT	Chloride Ion Electrode, Radel body, double junction Teflon Ref, 2 ppm -35,000 ppm, 0°-80°C

Specifications subject to change without notice.

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CERTIFIED ISO9001 QUALITY SYSTEM