



Sodium Ion Sensors



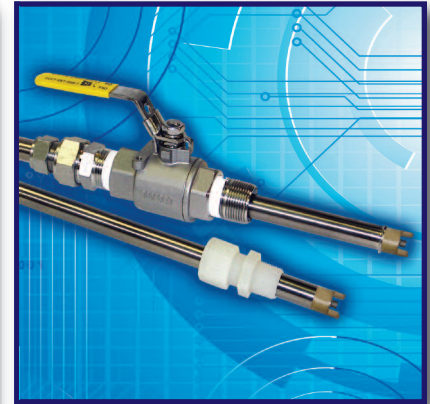
ELECTRO-CHEMICAL DEVICES

Features

- MVS10 or MVS17 Style Sensors
- Multiple materials of construction
- Integral Signal Conditioner
- Replaceable Electrode Cartridge
- Dual Channel Analyzers, pH/pION, pION/pION

Benefits

- Insertion, Immersion or Valve Retractable Service
- 316 Stainless Steel, Titanium, Hastelloy
- Noise free transmission
- Simple and Economical Service
- Mix and Match your choice of measurements



Model MVS10/MVS17
Sodium Ion Sensors

Description

The MVS10 and MVS17 sensors provide a stable and economical platform for the in line measurement of pH, ORP, Specific Ion, Dissolved Oxygen, Conductivity or Resistivity. The MVS10 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 MVS17 is 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 Sodium Ion Electrode is a combination electrode with a glass bulb sensing element and a double junction reference electrode. The Sodium Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of sodium ions in the measured solution. The typical output is 50mV to 60mV per decade of change in concentration. The Sodium Ion sensors can be used with either the T23, 4-20 mA Transmitter or the C22 Controller with its dual channel

capabilities. These analyzers will measure sodium ions from 200 ppb to 100,000 ppm in the optimum pH range of 6-12 pH. In the acidic solutions the sodium ion electrode, Na⁺, is interfered by the hydrogen ions, H⁺, and in alkaline pH solutions, above pH 12, the cations present swamp out all but the highest levels of sodium ions. For measurements below 2 ppm sodium, the pH of the solution should be above pH 10, 20 ppm > 9 pH, 200 ppm >8 pH....

Lithium ions, potassium ions and ammonium ions interfere with the sodium measurement. Lithium ions are the worst with 120 lithium ions generating the same signal as 1 sodium ion, potassium is around 1700:1 and ammonium is around 1,800:1. Other ions also interfere but to a much lower level, rubidium and thallium are two examples but they are rarely present in the sample solutions. Silver ions react with the glass bulb forming complexes changing the base potential, silver should be absent. 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 sodium 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 sodium ion concentration. Adjust the analyzer to read this laboratory determined value. It is recommended to verify the readings on a weekly basis.



Model T23 Transmitter



Model C22 Analyzer

Sodium Ion Sensors

Specifications

MVS10 and MVS17 Sensors

Combination electrode cartridge with a Sodium sensitive glass bulb and a double junction, KCl-AgCl, reference electrode, signal conditioner, ATC

Electrode Slope

54 ± 5 mV per decade of concentration change

Measurement Range

Sodium: 200 ppb to 100,000 ppm

pH: 6 to 12 pH

Temperature Range

0° C to 80° C (32° F to 176° F)

Pressure Range

0 - 100 psig (0 - 3.5 barg)

Response Time

T90 in 10 seconds

Electrode Life

12+ months

Interfering ions

Lithium, 120:1, Potassium 1700:1, silver 0.04:1

Wetted Materials

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

Process Connections

MVS10 ¾" MNPT compression fitting

MVS17 1" MNPT Ball Valve

T23 Transmitter

General purpose, ½ DIN, NEMA 4X, 24 VDC 4-20 mA loop powered Transmitter, CE Marking, Auto ranging display, ppb → ppm → ppthousand

C22 Analyzer/Controller

General purpose, ½ DIN, NEMA 4X, 110/220 VAC, CE Marking, single or dual channel, with or without pH compensation, (1) 4-20 mA output and (2) Alarm Relays per channel, Auto ranging display, ppb → ppm → ppthousand

Part No.	Model and Product Description
1418060.3000.Na	MVS10-C22-CBL-EG-2005031.VIT, Na ⁺ ISE sensor, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
1414060.3000.Na	MVS10-T23-CBL-EG-2005031.VIT, Na ⁺ ISE sensor, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
1419060.3000.Na	MVS17-C22-CBL-EG-2005031.VIT, Na ⁺ ISE sensor, 316 SS body, ¾" Diameter. x 17" length, 10 ft cable
1415060.3000.Na	MVS17-T23-CBL-EG-2005031.VIT, Na ⁺ ISE sensor, 316 SS body, ¾" Diameter. x 17" length, 10 ft cable
1900101.1009	Model T23 Sodium Ion transmitter, 24VDC loop powered, Universal Mounting Bracket (UMB)
16J01221.W000	Model C22 Sodium Ion Analyzer, 110/220 VAC, (1) 4-20 mA output, (2) Alarm Relays, UMB
16JJ2421.WW00	Model C22 2 Channel Sodium Analyzer, 110/220 VAC, (2) 4-20 mA outputs, (4) Alarm Relays, UMB
16JA2421.W1C0	Model C22 pH & Sodium Ion Analyzer, 110/220 VAC, (2) 4-20 mA outputs, (4) Alarm Relays, UMB

Part No.	Spare Parts and Accessories Description
2005031.VIT	Sodium Ion Electrode, Radel body, double junction Teflon Ref, 0.2 -100,000 ppm, 0°-80°C
2010466	Sodium Ion Calibration Solution, 10 ppm
2010467	Sodium Ion Calibration Solution, 100 ppm
2005145.VIT	General Purpose pH electrode cartridge, double junction reference, 0-14 pH, 0°-100°C
3600064	MVS10 Compression Gland Fitting, all polypropylene, ¾" MNPT to ¾" tube fitting
2000072	MVS10 Compression Gland Fitting, 316 SS with Teflon ferrule, ¾" MNPT to ¾" tube fitting
2000264	MVS10 Immersion Assembly, 5 ft. x 1" stand pipe, ¾" FNPT fitting and T handle, requires 3600064
2000743	MVS17 Valve Retraction Assembly, polypropylene, 1" ball valve, 1" x ¾" tube fitting and safety lanyard.
2000745	MVS17 Valve Retraction Assembly, 316 SS, 1" ball valve, 1" x ¾" tube fitting and safety lanyard.

Specifications subject to change without notice.

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