

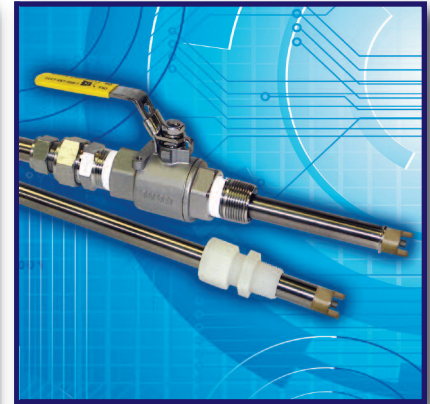


Features

- MVS10 or MVS17 Style Sensors
- Multiple materials of construction
- Integral Signal Conditioner
- Replaceable Electrode Cartridge
- Available with pH compensation

Benefits

- Insertion, Immersion or Valve Retractable Service
- 316 Stainless Steel, Titanium, Hastelloy
- Noise free transmission
- Simple and Economical Service
- Range, 11 pH to 14 pH with pH compensation



Model MVS10/MVS17
Sulfide Ion Sensors

Description

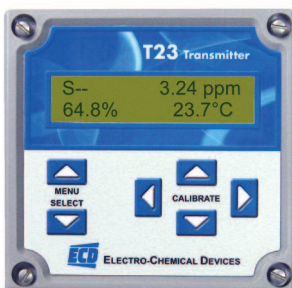
The MVS10 and MVS17 sensors provide a stable and economical platform for the in line measurement of pH, ORP, Specific Ion, Dissolved Oxygen, Conductivity or Resistivity. The MVS10 is an insertion or immersion style sensor for use in pipe Tees or on the end of a Stand Pipe for immersion into a tank or 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 Sulfide Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of free sulfide ions in the measured solution. The Sulfide Ion Sensors can be used with either the T23 4-20 mA Transmitter or the C22 Controller with its dual channel or pH compensation capabilities. These analyzers will measure free sulfide ions from 0.02 ppm to 32,000 ppm with the pH greater than pH 14. Without pH compensation a 10 % low error will occur at pH13 and 50% low

error will occur at pH 12.

Hydrogen Sulfide is a diprotic acid, it dissociates from H_2S to $H^+ + HS^-$ as the pH rises and then to $H^+ + S^{2-}$. Only the S^{2-} ion is measured by the sulfide ion sensor. The dissociation constants for the two hydrogen ions are $pK_{a1} = 7.04$ and $pK_{a2} = 11.96$. When the pH of a solution equals the pK_a of an acid then half of the acid is dissociated and half is not. For the sulfide ion the $pK_{a2} = 11.96$, so at 11.96 pH half of the total sulfide is the measurable S^{2-} ion and half is not. This characteristic can be compensated for by adding a pH sensor into the measurement loop. The C22 analyzer will report the total sulfide ion concentration by measuring the available free sulfide and adjusting the value in accordance with the measured pH value. The sensor is calibrated in two standard solutions differing in concentration by a factor of 10, i.e. 10 ppm and 100 ppm. This calibration sets the slope of the electrode, mV/decade and a zero potential for the sensor. In many cases the process solution's ionic strength and pH value differ widely from the calibration solutions characteristics. This difference will affect the zero potential of the sulfide sensor, causing an offset in the measurement but it will not affect the slope.

The offset is eliminated by conditioning the solution with sodium hydroxide to get the pH above pH 14 and performing a process standardization. When the sensor has stabilized in the conditioned process solution take a grab sample and determine the sulfide ion concentration and the adjust the analyzer to read this laboratory determined value. When using the pH compensated system, the solution only needs to be conditioned to above pH 11, this uses much less conditioning solution.



Model T23 Transmitter



Model C22 Analyzer

Sulfide Ion Sensors

Specifications

MVS10 and MVS17 Sensors

Combination electrode cartridge with a Silver Sulfide measurement cell and a double junction reference electrode, KNO₃ : KCl/AgCl, signal conditioner, ATC

Electrode Slope

27 ± 2 mV per decade of concentration change

Measurement Range

Sulfide: 0.02 to 32,000 ppm, pH sensitive measurement, 11 pH to 14 pH with pH compensation, >14 pH without

Temperature Range

0° C to 80° C (32° F to 176° F)

Pressure Range

0 - 50 psig (0 - 3.5 bar)

Response Time

T90 in 10 seconds

Electrode Life

6 to 12 months

Interfering ions

None

Wetted Materials

PEEK, epoxy, AgS crystal, 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.S	MVS10-C22-CBL-EG-2005122.VIT, S ⁻ ISE sensor, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
1414060.3000.S	MVS10-T23-CBL-EG-2005122.VIT, S ⁻ ISE sensor, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
1419060.3000.S	MVS17-C22-CBL-EG-2005122.VIT, S ⁻ ISE sensor, 316 SS body, ¾" Diameter. x 17" length, 10 ft cable
1415060.3000.S	MVS17-T23-CBL-EG-2005122.VIT, S ⁻ ISE sensor, 316 SS body, ¾" Diameter. x 17" length, 10 ft cable
1900101.0004	Model T23 Sulfide Ion transmitter, 24VDC loop powered, UMB (Universal Mounting Bracket)
16B01221.C000	Model C22 Sulfide Ion Analyzer, 110/220 VAC, (1) 4-20 mA output, (2) Alarm Relays, UMB
16BB2421.CC00	Model C22 Dual Channel Sulfide Analyzer, 110/220 VAC, (2) 4-20 mA outputs, (4) Alarm Relays, UMB
16BA2421.C1C0	Model C22 pH & Sulfide Ion Analyzer, 110/220 VAC, (2) 4-20 mA outputs, (4) Alarm Relays, UMB

Part No.	Spare Parts and Accessories Description
2005122.VIT	Sulfide Ion Electrode, PEEK body, double junction reference, 0.02-32,000 ppm, 0°-80°C
2010414	Sulfide Ion Calibration Solution, 25% SAOB, 1.0 ppm (Hazardous Shipping Charge)
2010415	Sulfide Ion Calibration Solution, 25% SAOB, 10.0 ppm (Hazardous Shipping Charge)
2010437	Sulfide Ion Calibration Solution, 25% SAOB, 100 ppm (Hazardous Shipping Charge)
2000250-1	Polishing Strip Kit, abrasive cleaning strips for Ion electrodes
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.

Represented by:

Electro-Chemical Devices

1681 Kettering
Irvine, California, USA 92614
Phone: +1-949-336-6060
+1-800-729-1333
Fax: +1-949-336-6064
email: sales@ecdi.com
web: www.ecdi.com

