ECD Analytical

Your Liquid
Measurement Expert

ECD Analyzers

Product Catalog

ECD

Electro-Chemical Devices

- known for its ECD Analytical brand products

For over 40 years ECD has excelled in providing technologically advanced, rugged, industrial liquid analytical products for process control and compliance

---

Where Liquid Processes are Critical...
ECD has the Application Specific Analyzers

Field Proven Analytical Solutions for....

- Water and Waste Water Management
- Power Generation Industries
- Drinking Water - Food & Beverage
- Semi-Conductor Water Treatment
- Petro-Chemical Refineries
- Pulp & Paper - Metals & Mining
- Aerospace - Military

Complete Facility Coverage

With over 60 unique in process liquid analytical measurements available The ECD product line can monitor and analyze the complete plant facility process control and compliance requirements.

ECD - USA Manufacturer

Located in Southern California. Our world class facilities include: engineering design center, mechanical parts fabrication, electronic and mechanical assembly, test and measurement quality assurance, chemical laboratory, and training facility all with dedicated employees, experts in their field, with a singular propose of providing the best products & services.

Commitment to Quality and Reliability

ECD's certified quality management system integrates and centralizes all major manufacturing and design functions - Approved and Certified to ISO9001, ATEX/IECEx Directives and Quality Assessment Standards. Our Instrumentation Portfolio is covered by international certifications of CSA, FM, IECEx and ATEX with various hazardous location type design approvals available.

ECD Products Designed with State-of-the-Art Technology for Best Application Results

Our technology capabilities have been developed and engineered for use in the demanding industrial environments. Our technologies include: electro chemical – selective ion – conductivity cells – visible & near Infrared – Inductive – amperometric – fluorescence quenching – titration – colorimetric – galvanic – UV absorption – polaragraphic –

ECD Dedicated to Provide Application Knowledge with Worldwide Service and Support

ECD's worldwide support team of Factory Located Application Engineers, Chemists, Technical Service and Customer Service Specialists with ECD factory trained distributors and sales representatives represent over 100 field offices in numerous international locations for local sales, technical, and service support.

The ECD team of staff and sales representatives are here to assist you around the globe. Depending on your requirements, you can contact ECD directly or an ECD Representative to request assistance in your local area.

Direct ECD Manufacturing and Technical Support Center:

Electro-Chemical Devices
1500 North Kellogg Drive
Anaheim, California 92807 USA

We are here to help you to solve your requirements with our ECD support team of Application Engineers, Chemists, Technical Service and Customer Service Specialists. Contact via email or by telephone to speak directly to one of the ECD team members.

Sales & Customer Service Email: sales@ecdi.com
Tech Service & Application Support Email: support@ecdi.com
Phone: +1-714-695-0051
Fax: +1-714-695-0057
www.ECDanalytical.com

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

Table of Contents

SELECTION TABLE FOR MEASUREMENT PARAMETERS & PRODUCTS
Section 1.0.0

Green Boarder = General Purpose – Red Boarder = Hazardous Locations
Analyzer Systems can be installed in PE60 Purged Enclosure for Hazardous Locations

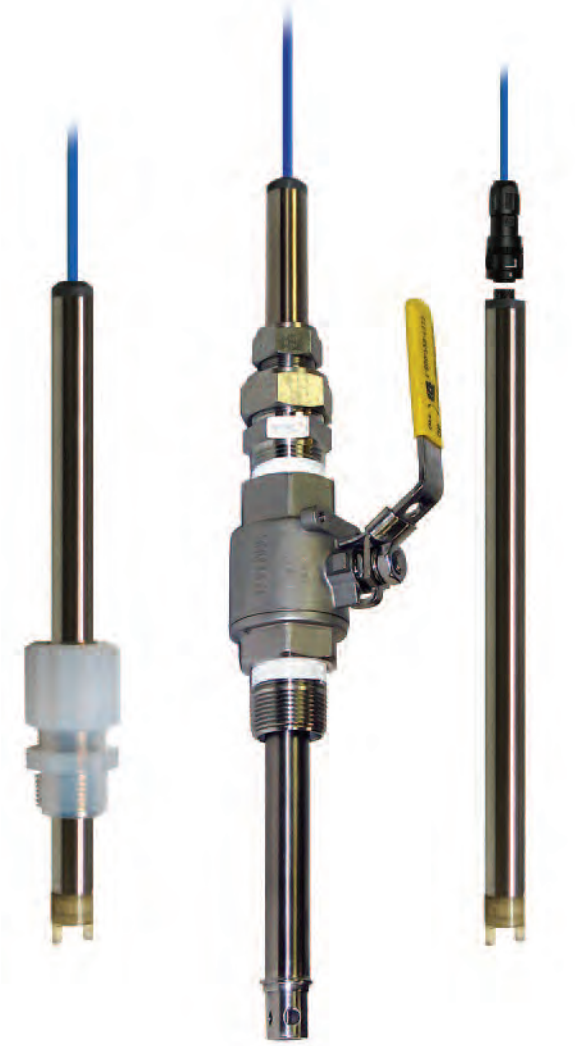
Parameter	Sensors	Transmitters or Controllers	Analyzer Systems
Alkalinity >			CA900
Aluminum >			CA6
Ammonia >	DS-HYDRA, S80, S88	T80, LQ800, X80	CA6
Ammonium>	DS-HYDRA, S80, S88	T80, LQ800, X80	CA6
Boiler Blowdown >			Model 61, Model 61
BOD-COD-TOC >	UV80	T80, LQ800	UV6, TOC3S
Bromide >	S80, S88	T80, LQ800, X80	
Bromine >	S80, S88	T80, LQ800, X80	
Cadmium >	S80, S88	T80, LQ800, X80	
Calcium >	S80, S88	T80, LQ800, X80	
Cation Conductivity >			CE800, CE800
Chloride >	S80, S88	T80, LQ800, X80	CA6
Chlorine Dioxide >			CD80
Chlorine – Free / Residual >			FCX80, FC80
Chlorine – Total >			FC80
Chromium VI >			CA6
Chlorophyll>	EV80	T80, LQ800	UV6

Parameter	Sensors	Transmitters or Controllers	Analyzer Systems
COD >	UV80	T80, LQ800	UV6, TOC3S
Conductivity >	S80, S88	T80, LQ800, X80	
Conductivity/Acid >	S80, S88	T80, LQ800, X80	
Conductivity Inductive >	S80	T80, LQ800	
Copper >	S80, S88	T80, LQ800, X80	CA6
Cupric >	CL80, S80, S88	T80, LQ800, X80	CA6
Cyanide >	S80, S88	T80, LQ800, X80	CA6
De-Chlorination >			DC80, TC80
Dissolved Oxygen>	DO82, S80, S88	T80, LQ800, X80	
Dissolved Oxygen ppB >	S80, S88	T80, LQ800, X80	
Dissolved Solids/TDS >	S80, S88	T80, LQ800, X80	
Fluoride >	S80, S88	T80, LQ800, X80	CA900
Hardness >	S80, S88	T80, LQ800, X80	CA900
Hydrogen Peroxide >			HP80
Hydrazine >			CA6
Iron >			CA6
Lead >	S80, S88	T80, LQ800, X80	
Manganese >			CA6
Nickel >	CL80, S80, S88	T80, LQ800, X80	CA6

Parameter	Sensors	Transmitters or Controllers	Analyzer Systems
Nitrate >	DS-HYDRA, S80, S88	T80, LQ800, X80	CA6
Nitrite >	S80, S88	T80, LQ800, X80	CA6
NH4-N >	DS-HYDRA, S80, S88	T80, LQ800, X80	
NO3-N >	DS-HYDRA, S80, S88	T80, LQ800, X80	
Oil-in-water >	OIW80	T80, LQ800	
ORP >	S80, S88	T80, LQ800, X80	
Ozone >			OZ80
Peracetic Acid >			PA80
pH >	S80, S88	T80, LQ800, X80	
Phosphate >			CA6
Total Phosphate >			CA6
Phenoyl >	OIW80		CA6
Potassium >	S80, S88	T80, LQ800, X80	
Resistivity >	S80, S88	T80, LQ800, X80	
Sodium ppm >	S80, S88	T80, LQ800, X80	NA6
Sodium ppb >			NA6
Silver >	S80, S88	T80, LQ800, X80	
Suspended Solids/TSS >	TR80, TR82	T80, LQ800	
Silica >			CA6

Parameter	Sensors	Transmitters or Controllers	Analyzer Systems
Sulfate >			CA6
Sulfide >	S80, S88	T80, LQ800, X80	CA900
TOC >	UV80	T80, LQ800	UV6, TOC3S
Total Dissolved Solids >	S80, S88	T80, LQ800, X80	
Total Phosphate >			CA6
Total Nitrogen (TN) >			TN6
Total Suspended Solids >	TR80, TR82	T80, LQ800	
Turbidity >	TR80, TR82	T80, LQ800	
UV 254 nm >	UV80	T80, LQ800	UV6
Zinc >			CA6

Model S80 Intelligent Sensors

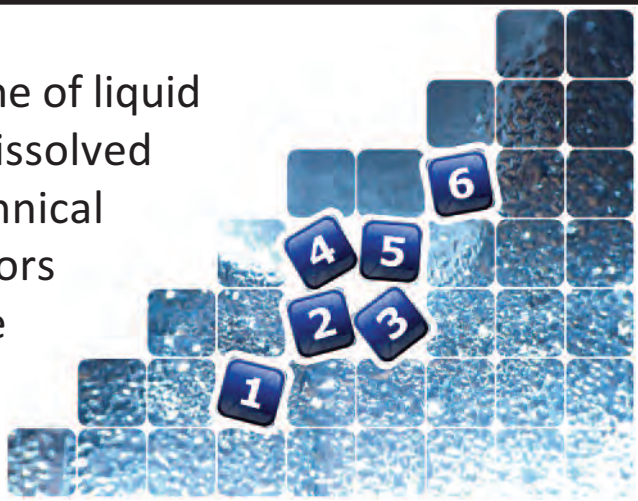


Measure pH, ORP, Specific Ion, Dissolved Oxygen,
Turbidity, Conductivity or Resistivity with

Model T80 Universal Transmitter

ELECTRO-CHEMICAL DEVICES

Electro-Chemical Devices offers a complete line of liquid analytical sensors: pH, ORP, Specific Ion, Dissolved Oxygen, Conductivity & Resistivity. The technical advantage of the Model S80 Intelligent Sensors are the 6 points of design flexibility to configure a sensor that best fits your application.



6 Point Advantage

1 **Intelligent sensor design with digital communication** Calibration data is stored in the sensor allowing field installation of a pre-calibrated sensor. Detachable cable option simplifies the installation of pre-calibrated sensors.

2 **Multiple individual measurement parameters** in the same mechanical configuration- pH, ORP, Specific Ion, Dissolved Oxygen, Conductivity & Resistivity

3 Readily available **application specific electrode cartridges**. Many unique pH electrode design formulations and materials of construction which are field proven and selected for long life and accuracy.

4 Long life **replaceable electrode cartridges** lower the over all operating cost.

5 **Submersible and Retractable Sensors** Various process fittings with adjustable insertion lengths - threaded fittings, sanitary fittings, flanges and valve retractable fittings.

6 **Industrial housing materials for compatibility with process fluid.** Stainless Steel, Titanium, Hastelloy C-22, Polypropylene or PVDF (Kynar™). Standard 10" or 17" lengths additional lengths available.

Model S80 Intelligent Sensors

ECD Model S80 Sensor Overview - The intelligent sensor choice to fit your application. The S80 sensors have two Universal Sensor Designs; Insertion/Submersion or Valve Retractable with flaired end to prevent blow out. The standard Model S80 sensors have a rugged ¾" O.D. 316 stainless steel body with a 10 ft. cable or an optional waterproof detachable cable assembly.

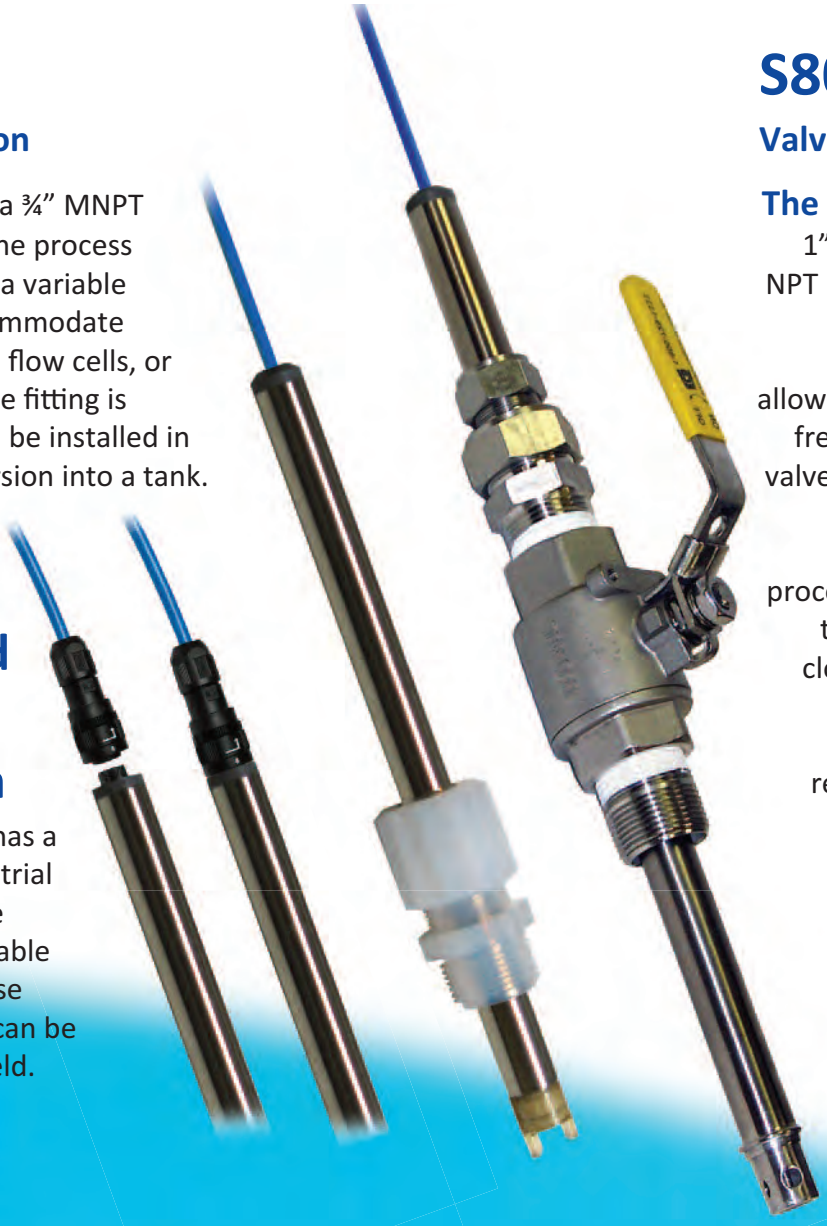
S80 Sensor

Insertion/Submersion

The S80 Sensor uses a ¾" MNPT compression fitting as the process connection. This allows a variable insertion length to accommodate installation in pipe tees, flow cells, or through tank walls. If the fitting is reversed the sensor can be installed in a stand pipe for submersion into a tank.

Pre-Calibrated Detachable Sensor Option

this detachable sensor has a rugged IP68 rated industrial connector. Just a simple quarter turn locks the cable connector in place. These Pre-Calibrated sensors can be easily installed in the field.



S80 Sensor

Valve Retractable

The S80 Sensor uses a 1" ball valve with a 1" NPT process connection. Loosening the rear compression fitting allows the sensor to slide freely through the ball valve for either insertion into the process or retraction from the process. Once retracted, the ball valve can be closed and the sensor removed for maintenance or replacement without shutting down the process line.

pH and ORP Electrodes

The Model S80 Intelligent Sensors use replaceable electrode cartridges to provide application specific solutions for the most demanding pH measurements.

- Radel (PES) or PEEK construction
- Single tine, double tine or full crown style pH bulb protection.
- Spherical bulbs (best response), hemispherical bulbs (more durable) or a slightly radiused flat surface (easily cleaned)
- Platinum tip ORP electrodes.
- Double or Triple junction reference cells
- Porous Teflon® and ceramic junctions with various reference electrolytes.

One of these three widely used pH electrode cartridges will satisfy most installations, Consult our technical support staff for additional configurations.

6 Point Advantage

2005145 – This **General Purpose Electrode** has a two tine Radel body, double junction reference and slightly radiused pH bulb. While suitable for higher temperatures it is optimized for fast and stable readings in ambient temperature applications. Neutralizations, waste effluent monitoring, rinse applications and potable water are just a few of the suggested applications.

2005157 – This **High Temperature Electrode** has a two tine PEEK body, triple junction reference and hemispherical pH bulb. This electrode is designed for the process control or neutralization of most mineral acids and bases in applications up to 130°C. The triple junction design is resistant to sulfide ion poisoning making it ideal for use in petroleum refineries and metal processing plants.

2005066 – This **Chemically Resistant Electrode** has a two tine PEEK body, double junction reference and slightly radiused pH bulb. The PEEK body is suitable for use in most aggressive solvents, oxidizing solutions and acids or bases. This electrode is optimized for a harsh chemical environment and is suitable for service up to 130°C. Chemical separations and solvent recovery in the CPI and pharmaceutical industries along with chlorine production and flotation in mining are suggested applications.

2005167 – This **ORP (Oxidation Reduction Potential) Electrode** has a two tine PEEK body, double junction reference and a platinum tip. This general purpose sensor can be used for monitoring the oxidant level of cooling towers, swimming pools, aquariums or the de-chlorination of waste water. Metal finishing and mining also provide applications such as cyanide destruction and monitoring chrome plating baths.

Specific Ion & Dissolved Oxygen Electrodes

Ion selective electrodes are not limited to laboratory use; some are suitable for continuous online measurement. ECD offers Specific Ion Electrode cartridges to measure the various ions listed below. Specific Ion electrodes measure the activity (concentration) of the ion in solution, the "free" ion, not a complexed version. Cyanide, Fluoride and Sulfide ions only exist in a specific pH range as free ions and outside this pH range some percentage of the total concentration is complexed as H(X) which is not seen by the sensor. These measurements can be pH compensated using the dual channel transmitter or controller with a pH sensor to determine the total ion concentration. Most pIon sensors are subject to interfering ion errors. A positive interference caused by similar ions in the solution. Consult with the factory on all new installations to determine the suitability of the measurement.

Specific Ion (pIon) Electrodes

Part#	Type	Measurement Range	pH Range	Temperature Range
2005083	Ammonium	0.05 - 18,000 ppm	2-10 pH	0°-40°C
2005062	Bromide	1 - 80,000 ppm	2 - 12pH	0°-50°C
2005140	Cadmium	0.1 - 11,200 ppm	3 - 9 pH	0°-80°C
2005143	Calcium	0.1 - 40,000 ppm	2.5 - 10 pH	0°-40°C
2005008	Chloride	2 - 35,000 ppm	2 - 12 pH	0°-50°C
2005142	Cyanide	0.1 - 260 ppm	11 - 13 pH	0°-80°C
2005058	Cupric	1.0 ppb -6,300 ppm	2 - 6 pH	0°-80°C
2005163	Fluoride	0.02 - 2,000 ppm	5 - 8 pH	0°-80°C
2005141	Lead	2.0 - 20,700 ppm	4 - 8 pH	0°-80°C
2005086	Nitrate	0.1 - 1000 ppm	2 - 12 pH	0°-40°C
2005161	Nitrite	0.5 - 500 ppm	4.5 - 8 pH	0°-40°C
2005034	Potassium	0.1 - 40,000 ppm	2 - 12 pH	0°-40°C
2005031	Sodium	0.2 - 23,000 ppm	2 - 14 pH	0°-80°C
2005122	Sulfide	0.01 - 32,000 ppm	11 - 14 pH	0°-80°C
2005016	Silver	0.1 - 107,000 ppm	2 - 14 pH	0°-80°C

Dissolved Oxygen Electrodes

The ECD Dissolved Oxygen electrodes are galvanic cells with a lead anode, silver cathode and either the quick response 2 mil or rugged 5 mil Teflon membrane. The electrode is ready to use as received, there are no solutions or membranes to install before the electrode can be used. The membrane is protected by a double tine PEEK body allowing for easy cleaning. Designed for ppm level measurements it is ideal for environmental water measurements and aerobic waste treatment.

Part#	Type	Range	Pressure Range	Temperature Range
2005622 (2 mil)	Dissolved or Gaseous Oxygen	0 - 20 ppm (mg/L) 250% Saturation	0 - 50 psig	-5°- 80°C
2005623 (5 mil)	Dissolved or Gaseous Oxygen	0 - 20 ppm (mg/L) 250% Saturation	0 - 50 psig	-5°- 80°C

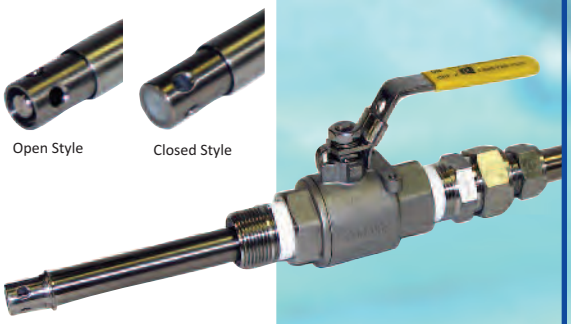
Conductivity Measurements

Two technologies are used to measure Conductivity. **Contacting Conductivity** is an impedance measurement made between two metal contacts in the solution. **Inductive Conductivity** is a non-contacting measurement made between two toroidal coils inside the sensor that are inductively coupled through the solution's conductivity. Inductive sensors excel in the higher conductivity ranges and where coating is a problem. The chemically resistant PVDF (KYNAR) body is excellent for corrosive environments. Contacting sensors can measure from very low conductivities, (resistivity measurements) to very high conductivities but they are subject to coating and corrosion issues, conditions where the inductive sensors excel. The Contacting Conductivity S80 sensors come in two ranges, Conductivity Range, 0.5µS – 50mS and Resistivity Range, 0 – 20MΩ. Inductive Sensors measure from 50 µS to 1000 mS.

6 Point Advantage

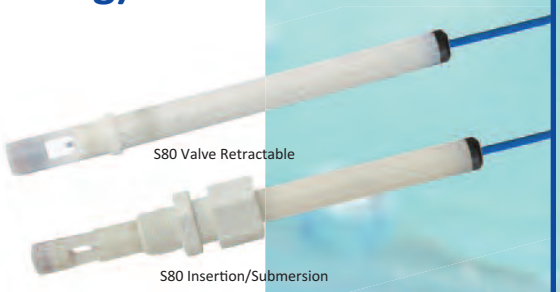
Conductivity and Resistivity Sensors

The Model S80 Conductivity sensor is available for measurements from 0.05µS to 50mS. The **Model S80 Resistivity** sensor measures from 0 - 20 MΩ. The design of the inner electrode defines the measurement range of the sensor. The Open Style with its large surface area inner electrode and short path length is best for resistivity and low conductivity measurements while the Closed Style is best suited to high conductivity measurements. The standard wetted materials are 316 Stainless Steel, PEEK insulators and VITON o-rings.



Inductive Conductivity Sensors - (non-contacting)

The Model S80 Inductive sensors have a ¾" diameter PVDF body. These sensors are ideal for measuring high conductivity solutions and % concentration measurements. Since the toroidal electrodes are inside the PVDF body, the inductive sensors are ideal for any application that coats or corrodes the electrode of the standard contacting conductivity sensors. The measurement range of the inductive sensor is from 50 µS to 1000 mS.



High Temperature/Pressure Sensors

The CSX2 High Temperature- High Pressure sensor is designed for service to 200°C and 250 psig, 400 psig at 100°C. This insertion style ¾" MNPT, 316 stainless steel sensor has PEEK insulators and is available with or without an integral signal conditioner. An aluminum junction box is mounted on the rear of the sensor that contains a terminal block and optional signal conditioner. The junction box is rated Class I, Div I, Groups C & D, Class II, Groups E, F and G hazardous locations. It is an ideal choice for boiler control applications, blowdown control, condensate monitoring, leak detection on heat exchangers, and steam purity measurements.

Fittings and Accessories

The proper installation and calibration of an analytical loop is critical for a successful measurement. Using the flow of the sample in an insertion application to maximize the cleaning potential can be as simple as changing the size of the Pipe Tee, changing the insertion depth or using an ECD Flow Cell with a spray cleaning port in the most difficult applications. Spray Cleaning heads are also available for immersion applications where the sample velocity is much lower and fouling is more common. Valve retractable units allow the sensor to be removed, serviced and installed without shutting down the sample flow in a pipe or emptying a tank. A compression gland fitting seals the sensor into a ball valve, loosening the gland fitting allows the sensor to be retracted through the ball valve which is then closed, isolating the process solution, before removing the sensor for service. Materials of construction for the Valves, Glands, Flanges and Immersion Assemblies vary from PVC, PVDF and polypropylene plastics to 316 SS, Titanium and Hastelloy C-22. Contact our application specialists for the most cost effective solution to your application.

Calibration Solutions

All of the S80 sensors require periodic calibration and ECD offers a full range of calibration solutions. For pH applications we offer pH 4.00, 7.00 and 10.00 buffers. ORP calibrations can be accomplished with a +465 mV ferric-ferrous solution or by adding quinhydrone to pH 4 and pH 7 buffer solutions creating +267 mV ORP and +90 mV ORP respectively. Specific ion calibration solutions are standardly 10 ppm and 100 ppm although any value can be formulated at no extra cost. Conductivity solutions are made with KCl and Deionized water, values from 10 µS to 500 mS are available. Solutions to simulate % acid or % caustic are labelled as the actual solution, i.e. 4% NaOH, even though the solution is made from KCl with an equivalent conductivity providing a safe and accurate calibration system.

Fittings and Flow cells

The Model S80 sensors are offered with a wide array of fittings, flow cells, immersion assemblies and valve retraction assemblies. ¾" MNPT compression fittings are available for S80 insertion into pipe Tees or flow cells and when reversed, for coupling with Stand Pipes for immersion applications. Flow cells of PVC, PVDF or 316 SS have ⅜" or ½" FNPT ports on a 2" O.D.by 5" body. 316 SS Sanitary 3A Flanges and 150# Flanges can be adapted for insertion or valve retractable service.Contact our Technical support staff for other configurations.

Model T80 Universal Transmitters

The ECD Model T80 transmitter is a single or dual channel transmitter for the measurement of pH, ORP, pION, Conductivity, Resistivity, Dissolved Oxygen and Turbidity. The Model T80 transmitter digitally communicates with any ECD intelligent S80 digital sensor, automatically configuring the transmitter's menus and display screens to the measured parameter. The ECD S80 digital sensors facilitate two way communication with the Model T80 transmitters. The type of sensor, identity and serial number are stored in the sensor's memory along with calibration registers. Ordering pH, ORP or pION sensors with the SENTINEL option automatically activates the "Remaining Life" diagnostic shown in the picture.

Product Specifications

S80
All Sensors

Dimensions:
S80 Insertion - ¾"OD x 10" Length
S80 Valve Retractable - ¾" OD x 17"

Cable Length:
10 ft. standard, optional lengths in 10 ft increments, optional Detachable cable connection

Housing Materials:
Standard: 316 Stainless Steel
Optional: Titanium (T), grade 2
Hastelloy C-22 (H),
PVDF (K)
Polypropylene (P)

O-Ring Materials:
Standard: Viton® (VIT)
Optional: Ethylene Propylene (EPR),
VITON® 75 (VIT75)
Kalrez® (KLZ)
CV75 (CV)

Process Connections:
S80 Insertion/Immersion

-75 ¾" 316 SS gland fitting with nylon ferrule
-75HT ¾" 316 SS gland fitting with Teflon® ferrule
-75SF ¾" 316 SS gland fitting with stainless steel ferrule
-75TFE ¾" Teflon® gland fitting with Teflon™ ferrule
-100P 1" Polypropylene gland fitting for Polypropylene housing only

S80 Valve Retractable

-VSS 1" 316 SS valve retraction assembly
-VSSE 1" 316 SS valve retraction assembly for Inductive sensors
-VKY 1" PVDF valve retraction assembly
-VPP 1" Polypropylene Valve Retraction assembly

PHS80
pH measurement

Measurement Range:
0-14 pH

Temperature Range:
0˚- 100˚ C

Optional HT version:
0˚- 150˚C

Pressure Range:
0 - 100 psig @ 90˚C

Temperature Compensation:
Automatic 0˚- 100˚C
Accuracy ± 0.2˚C

MVS80
ORP & Specific Ion

Measurement Range:
ORP: -2000 mV to 2000 mV
pIon: Sensor Specific, ppb, ppm&ppt

Temperature Range:
ORP -0˚- 90˚ C, pIon Sensor Specific

Pressure Range:
0 - 100 psig @ 90˚C

Temperature Compensation:
Automatic 0˚- 100˚C
Accuracy ± 0.2˚C

DOS80
Dissolved Oxygen

Measurement Range:
0-20 ppm, 0-250% SAT

Temperature Range:
0˚- 90˚ C

Pressure Range:
0 - 50 psig @ 80˚C

Temperature Compensation:
Automatic 0˚- 100˚C
Accuracy ± 0.2˚C

CS80/RS80
Conductivity/Resistivity

Measurement Ranges:
Conductivity: 0.5µS to 50 mS
Resistivity: 0 - 20 MΩ

Temperature Range:
-5˚ to 100˚C

Optional HT version:
-5˚ to 150˚C

Pressure Range:
CS/RS80 0 - 100 psig

Temperature Compensation:
Automatic 0˚- 100˚C
Accuracy ± 0.2˚C,100K thermistor

CS80
Inductive Conductivity

Measurement Ranges:
50 µS to 1000 mS

Temperature Range:
-5˚ to 100˚C

Pressure Range:
0 - 100 psig

Temperature Compensation:
Automatic 0˚- 100˚C
Accuracy ± 0.2˚C, 100K thermistor

Body material:
KYNAR (PVDF)

CSX2 Series
High Temperature Conductivity

Measurement Ranges:
1.0µS to 50mS

Temperature Range:
0˚ to 200˚C

Pressure Range:
0 -250 psig (400psig @100°C)

Temperature Compensation:
Automatic 0˚- 200˚C
Accuracy ± 0.2˚C, 10K ohm platinum RTD

Wetted Materials:
316 SS and PEEK

Shipping Weight:
S80 (10") 2.5 lbs (1.2 kg)
S80 (17") 2.75 lbs (1.25 kg)
S80-VSS 5.8 lbs (2.65 kg)

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

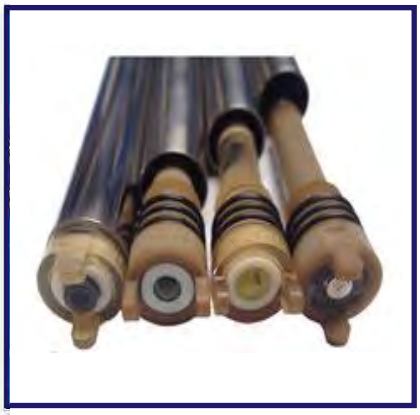
pH Electrode Selection Guide

ELECTRO-CHEMICAL DEVICES

The Models S80/S88 Intelligent Sensors use replaceable electrode cartridges to provide application specific solutions for the most demanding pH measurements.

- Over 15 pH electrodes for the perfect fit for the application
- Radel (PES) or PEEK construction
- Single tine, double tine or full crown style pH bulb protection.
- Spherical bulbs (best response), hemispherical bulbs (more durable) or a slightly radiused flat surface (easily cleaned/self-cleaning)
- Double or Triple junction reference cells to protect from poisoning
- Porous Teflon and ceramic junctions with various reference electrolytes for the rigorous applications

Consult our technical support staff for additional configuration options.



pH Electrode Types
for S10/S80 Sensors

Description

The full range of ECD pH electrode are specially designed and made from rare earth elements carefully blended with the best formula pH glasses and then anneladed to resist stress cracking. These special pH glass designs specially treated to withstand destructive chemical attacks for longer periods of time. A proven design that has been tested in a variety of industries with the most demanding applications.

With over 15 different types of pH electrodes to choose from, we can ensure you are getting the most effective pH sensor for your application. From the standard General Purpose electrode, this electrode has a two tine Radel body, double junction reference and slighty radiused pH bulb for ease of cleaning and has self cleaning from the flow of your process. While suitible for higher temperatures it is optimized for fast and stable readings in ambient temperatures applciations. Neutralizations, waste effluent monitoring, rinse applciations and potable water are just a few examples where this electrode shines. With higher temperature applcations, demands for more rugged pH glass and materials are necessary. ECD High Temperature electrode has a two tine Peek body, triple junction reference and hemishperical bulb. This electrode is designed for the process control or neutralization of most mineral acids and bases in applciations up to 130 °C. The triple junction design is resistant to sulfide poisoning, making it ideal for use in petroleum refineries and metal processing plants. Chemically Resistant electrodes are called for by customers with the harshest of chemicals. This electrode has a two tine PEEK body, double junction reference and slightly radiused pH bulb. The PEEK body is suitable for use in most aggressive solvents, oxidizing solutions and acids or bases. This electrode is optimized for the harsh chemical environment and is suitable for service up to 130°C. Chemical separations and solvent recovery in CPI and pharmaceutical industries along with chlorine production and flotation in mining are successful applications.

Specifications

Model S80 Sensors pH Electrode
Combination electrode cartridge with measurement cell, reference electrode, signal conditioner, ATC

Electrode Slope
54 ± 5 mV per decade of concentration change

Measurement Range
-.5 to 14.5 pH

Temperature Range
0° C to 100° C (32° F to 212° F)

Pressure Range
0 - 100 psig (0 to 6.89 barg)

Response Time
T90 in less 5 seconds

Repeatability ± 0.05 pH

Accuracy ± 0.02 pH

Wetted Materials
Radel, PEEK, epoxy, glass, PTFE, Viton/EPR/KLZ O-Ring. Many options available to suit your application

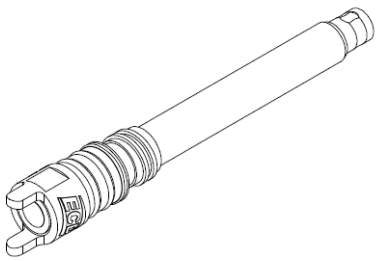
Process Connections S80 Sensor
S80 Insertion: ¾" MNPT compression fitting
S80 Valve Retractable: 1" MNPT Ball Valve
316L Stainless Steel, Titanium, Monel, Kynar, Polypro.

Flow Rate
3 m (10 ft.) per second

Solution Ground
Platinum

Certificates and approvals with S80
CE, CSA, FM, ATEX, IECEx

Part No.	Electrode Choice, pH Electrode Cartridges
2005145	General Purpose, RADEL body, TFE ref, Flat pH glass, -10°-90°C
2005146	HT Cycling, PEEK body, Ceramic ref, Flat pH glass, -10°-90°C
2005005	High Purity Water, RADEL body, TFE ref, Full pH glass, -10°-90°C
2005148	Non Conductive, RADEL body, TFE ref, Flat pH glass, -10°-90°C
2005157	Hi Temp, PEEK body, TFE ref, Hemi pH glass, 0°-130°C
2005066	Scrubber, PEEK body, TFE ref, Flat pH glass, 0°-130°C
2005130	Sulfide Resistant, FC PEEK body, TFE ref, Full pH glass, 0°-130°C
2005059	Slurry, RADEL body, TFE ref, recessed Hemi pH glass, 0°-130°C
2005150	Solvent Resistant, RADEL body, TFE ref, Flat pH glass, -10°-90°C
2005103	Fluoride Resistant, PEEK body, TFE Ref, Rugged pH glass, -10°-90°C
2005013	Antimony, RADEL body, TFE junction, Antimony billet, 10°-60°C
2005169	Full Range, PEEK body, TFE ref, Hemi pH glass, 0°-100°C
2005111	Extended Life, RADEL body, TFE junction, Flat glass, -10°-90°C
2005138	Sulfide Res., RADEL body, Triple junction, TFE ref, Hemi pH glass, -10°-90°C
2005149	High Temp, PEEK body, TFE junction, Flat glass, 0°-130°C



pH Selection Matrix

Type	Wetted Materials	Description	Application	Measurement and design features	Recommended Sensor P/N	Recommended Sensor Description
GP	PES, PTFE, Glass, VITON	General Purpose	environmental water, rinse water, cooling water, municipal WW	General purpose	S80-00-0006-0100 (S80-50-0006-0100)	S80 sensor, 316L SS, 10" length with ¾" PP Fitting, 10 ft. cable, VITON o-rings
HT CYCLE	PEEK, Ceramic, Glass, EPR	General Purpose, High temperature cycles	Scrubbers on waste incinerators, Temperature cycling applications	Reduced reference fouling in temperature cycling applications	S80-00-0002-0100 (S80-50-0002-0100)	S80 sensor, 316L SS, 10" length with ¾" SS Fitting, 10 ft. cable, EPR o-rings
HPW	PES, PTFE, Glass, EPR	High Purity Water	Boiler water, Low conductivity water	Long term stability in low conductivity water, below 5µS expect high drift	S80-00-0C65-0102 (S80-00-0C65-0102)	S80 sensor, 316L SS, 8" length with Flange fitting for S90 flowcell, 4 ft. cable, EPR o-rings
SUGAR	PES, PTFE, Glass, VITON	Non-Conductive Solutions	Corn Syrup, Sugar and Starch solutions	Stable reference signal in low conductivity, below 5µS expect high drift ,high dissolved solids	S80-00-0002-0100 (S80-50-0002-0100)	S80 sensor, 316L SS, 10" length with ¾" SS Fitting, 10 ft. cable, VITON o-rings
HI TEMP	PEEK, PTFE, Glass, VITON	High Temperature	Industrial waste treatment	high temperature, acid or alkaline solutions, no metal ions that react with Chloride	S80-00-0002-0100 (S80-50-0002-0100)	S80 sensor, 316L SS, 10" length with ¾" SS Fitting, 10 ft. cable, VITON o-rings
SCRUB	PEEK, PTFE, Glass, VITON	Chemical Resistant Flat glass	Wet Gas Scrubbers	high temperature, acid or alkaline solutions, resistant to metals and sulfides, easily cleaned	S80-00-0002-0100 (S80-50-0002-0100)	S80 sensor, 316L SS, 10" length with ¾" SS Fitting, 10 ft. cable, VITON o-rings
SR	PEEK, PTFE, Glass, VITON	Chemical Resistant rugged glass	Industrial waste treatment, sulfide present	high temperature, acid or alkaline solutions, resistant to metals and sulfides, rugged glass	S80-00-0002-0100 (S80-50-0002-0100)	S80 sensor, 316L SS, 10" length with ¾" SS Fitting, 10 ft. cable, VITON o-rings
SLUR	PEEK, PTFE, Glass, VITON	Chemical Resistant recessed glass	Slurries and abrasive solutions	high temperature, acid or alkaline solutions, resistant to metals and sulfides, pH glass protected from impact	S80-00-0002-0100 (S80-50-0002-0100)	S80 sensor, 316L SS, 10" length with ¾" SS Fitting, 10 ft. cable, VITON o-rings
SOLR	PEEK, PTFE, Glass, Extreme	Solvent Resistant	Wastewater with trace solvents	Solutions with trace amounts of organic solvents present	S80-00-0002-0100 (S80-50-0002-0100)	S80 sensor, 316L SS, 10" length with ¾" SS Fitting, 10 ft. cable, VITON EXTREME o-rings
FLR	PEEK, PTFE, Glass, VITON	Fluoride Resistant	Semiconductor waste treatment,	Thick pH glass for use in HF acid treatment baths	S80-00-0002-0100 (S80-50-0002-0100)	S80 sensor, 316L SS, 10" length with ¾" SS Fitting, 10 ft. cable, VITON o-rings
ANT	PES, PTFE, Sb, VITON	Antimony	3-10 pH, No Glass	Non glass metallic electrode, only aerated solutions between 3-10 pH	S80-00-0002-0100 (S80-50-0002-0100)	S80 sensor, 316L SS, 10" length with ¾" SS Fitting, 10 ft. cable, VITON o-rings

Model CSX2 Conductivity Sensor

ELECTRO-CHEMICAL DEVICES

Features

- Rugged 316 stainless steel construction
- Double EPR o-ring seals
- Standard 3/4" MNPT process connection
- Cast Aluminum Junction Box
- PEEK insulator

Benefits

- High Temperature, 200˚C and High Pressure, 250 psig sensor
- Redundant, maximum reliability
- Standard pipe fittings, no special adapters needed
- Convenient access to wiring
- Chemically resistant with high heat deflection temperature

Model CSX2
Conductivity Sensor

Description

The ECD Model CSX2 conductivity sensor is designed for high pressure, high temperature conductivity measurements. It is an ideal choice for boiler control applications, blowdown control, condensate monitoring, leak detection on heat exchangers, and steam purity measurements are just a few of the many applications in which this rugged and reliable sensor can be used.

The Model CSX2 has a 316 stainless steel outer body and center electrode separated by a PEEK® (poly ether ether ketone) internal insulator. All possible leak paths through the sensor are double sealed with EPR O-rings for maximum on-stream reliability. Hot water is a severe environment for any elastomer. The front EPR o-ring seals bear the brunt of the chemical attack, allowing the back seals to remain relatively unaffected. This redundant design increases the reliability of the CSX2, dramatically increasing the usable lifetime of the sensor in these harsh applications.

The weather resistant aluminum junction box allows easy access to the terminal strip or the signal conditioner. The signal conditioner amplifies the conductivity signal allowing a noise free signal to be transmitted hundreds of feet. If the temperature is below 70˚C the signal conditioner can be mounted in the CSX2's integral junction box otherwise it is located in the instrument or if the sensor is more than 10 feet from the instrument, in a remote junction box.

A wide range of signal conditioners are available that optimize the conductivity measurement for a specific range. The Model C22 controller, Model T23 and T28 transmitters have a user specified signal conditioner mounted inside the instrument or optionally in a remote junction box.

The Model CSX2 conductivity sensor is designed for high temperature service up to 200˚C at pressures of 250 psig. At temperatures below 100˚C the CSX2 sensor is rated for pressures up to 400 psig. The CXS2 junction box has a ¾" FNPT port for cable connection. High temperature cable and cable glands are user supplied. Low temperature PVC jacketed cable and gland fittings are available from ECD.

Model CSX2 Conductivity Sensor

Specifications

Measuring principle:
Electrolytic Conductivity, two-electrode sensor

Cell Constant:
1.0/cm

Measuring Range:
1.0 - 50,000 µS

Analyzer/Remote Signal Conditioner: (select range)
1µS, 2µS, 5µS, 10µS, 20µS, 50µS, 100µS, 200µS, 500µS, 1mS, 2mS, 5mS, 10mS, 20mS, 50mS

Process Temperature Range:
–5 ...200°C

Process pressure range:
250 psig at 200˚C
400 psig at 100˚C

Temperature Compensation:
10 kΩ Platinum RTD temperature sensor

Materials of Construction:
Sensor body: stainless steel 316
PEEK (poly ether ether ketone) insulator, EPR o-rings

Junction Box: Explosionproof, weatherproof aluminum with ¾" FNPT connection, includes a low temperature (80˚C) ½" polyamide cable gland with reducer bushing

Process Connection:
¾" MNPT Thread

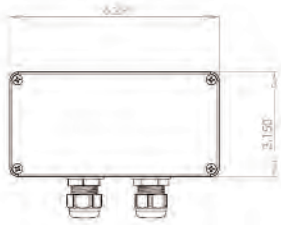
Electrical connections:
From Sensor to Signal Conditioner/Analyzer:
User Supplied 4 conductor shielded cable
Signal Conditioner in optional junction box to Transmitter:
Shielded 7-conductor cable (PN 9640004.COND)

Maximum Total Cable Length:
100 m cable extension with optional junction box

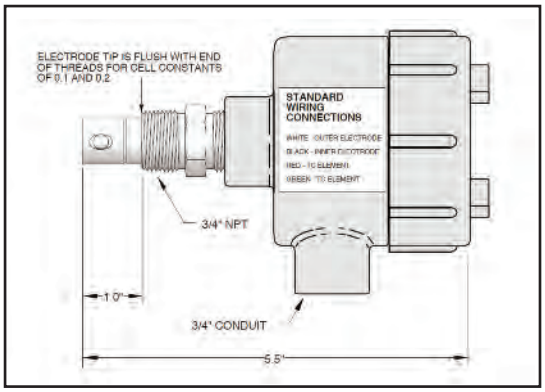
Shipping Weight:
3.0 lbs (1.4 kg)

Part No.	Model and Product Description
1300400-1	CSX2 conductivity sensor with integral junction box

Part No.	Spare Parts and Accessories Description
9250008	Aluminum Junction Box (XJB)
1000190-1	Signal Conditioner in Remote Junction Box, 1µS
1000190-2	Signal Conditioner in Remote Junction Box, 2µS
1000190-3	Signal Conditioner in Remote Junction Box, 5µS
1000190-4	Signal Conditioner in Remote Junction Box, 10µS
1000190-5	Signal Conditioner in Remote Junction Box, 20µS
1000190-6	Signal Conditioner in Remote Junction Box, 50µS
1000190-7	Signal Conditioner in Remote Junction Box, 100µS
1000190-8	Signal Conditioner in Remote Junction Box, 200µS
1000190-9	Signal Conditioner in Remote Junction Box, 500µS
1000190-10	Signal Conditioner in Remote Junction Box, 1mS
1000190-11	Signal Conditioner in Remote Junction Box, 2mS
1000190-12	Signal Conditioner in Remote Junction Box, 5mS
1000190-13	Signal Conditioner in Remote Junction Box, 10mS
1000190-14	Signal Conditioner in Remote Junction Box, 20mS
1000190-15	Signal Conditioner in Remote Junction Box, 50mS
9640004.COND	7 conductor cable, Tinned ends, 60˚C, 10 ft. increments
9640037	4 conductor cable, tinned ends, 80˚C, 10 ft. increments
9360005	½" MNPT cable Gland, 80˚C



Remote Junction Box



Specifications subject to change without notice.

Represented by:

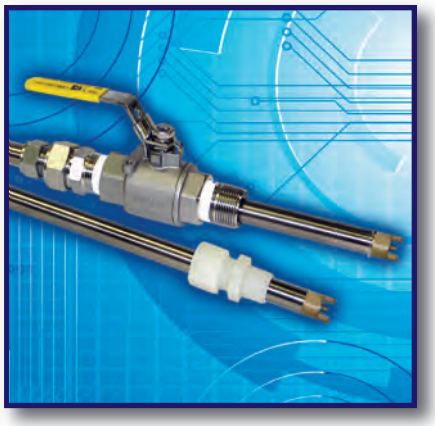
Electro-Chemical Devices
1500 North Kellogg Dr.
Irvine, California, USA 92614
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Ammonium 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
• Available with pH compensation	• Wide range of service from 2 pH to 10pH



Model S80 Sensors
Ammonium 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 Ammonium Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of ammonium ions in the measured solution. The S80 Ammonium Ion sensors can be used with the Model T80 Transmitter with its dual channel and pH compensation capabilities. The T80 Transmitter will measure ammonium from 0.1 ppm to 14,000 ppm in the optimum pH range of 2-7 pH. Outside this pH range large errors can occur, in the alkaline pH ranges NH_4^+ gives up a hydrogen ion to form ammonia, NH_3 which is not measured, a small amount of ammonium is measured and a large compensation factor is applied.

Ammonium, NH_4^+, is a conjugate acid with the pKa = 9.2, at 9.2 pH half of the available ammonia is the measureable NH_4^+ and half is NH_3. This generates a 50% error in the ammonium measurement at 9.2 pH and a 10 % error at 8.2 pH. This error can be compensated for by adding a pH sensor into the measurement loop. The T80 Transmitter will report the total ammonium/ammonia concentration by measuring the available ammonium and adjusting the value in accordance with the pKa and measured pH value.

Potassium ions, sodium ions, magnesium ions, hydrogen ions, all interfere with the ammonium measurement. Potassium is the worst with 8 potassium ions generating the same signal as 1 ammonium ion, sodium and magnesium are 800:1 If the potassium ion concentration is changing then K^+ compensation can be accomplished in the T80 by adding an S80 potassium ion sensor.

The sensor is calibrated using 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, temperature and pH value differ widely from the calibration solutions characteristics. This will affect the zero potential of the ammonium sensor, an offset, but not affect the slope. Eliminate the offset by performing a process standardization. When the sensor has stabilized in the process solution take a grab sample of the process and determine the ammonium concentration and the adjust the analyzer to read this laboratory determined value.

Ammonium Ion Sensors

Specifications

Model S80 Sensors
Combination electrode cartridge with a PVC membrane measurement cell and a single junction, KCl/AgCl, reference electrode, signal conditioner, ATC

Electrode Slope
54 ± 5 mV per decade of concentration change

Measurement Range
Ammonium: 0.1 to 14,000 ppm
pH: 2 to 8 pH, 2 to 10.5 pH with pH compensation

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 10 seconds

Electrode Life
6 to 12 months

Interfering ions
Potassium, 8:1, Sodium 800:1, Magnesium 800:1

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
S80-00-0002-0100-071	S80 Ammonium, NH_4^+ insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-071	S80 Ammonium, NH_4^+ insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-071	S80 Ammonium, NH_4^+ Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-071	S80 Ammonium, NH_4^+ 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
2005083.VIT	Ammonium Ion Electrode, Radel body, double junction Teflon Ref, 0.1-14,000 ppm, 0°-40°C
2010449	Ammonium Ion Calibration Solution, 10 ppm
2010446	Ammonium Ion Calibration Solution, 100 ppm
S80-00-0002-0100-001	S80 pH, insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable with General Purpose pH electrode (for pH compensated measurement)
S80-00-0002-0100-082	S80 Potassium, K^+ insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable with Potassium electrode (for Potassium Ion compensated measurement)
2005034.VIT	Potassium Ion Electrode, Radel body, double junction Teflon Ref, 0.1-39,000 ppm, 0°-40°C
2005145.VIT	General Purpose pH electrode cartridge, double junction reference, 0-14 pH, 0°-100°C

Specifications subject to change without notice.

Represented by:

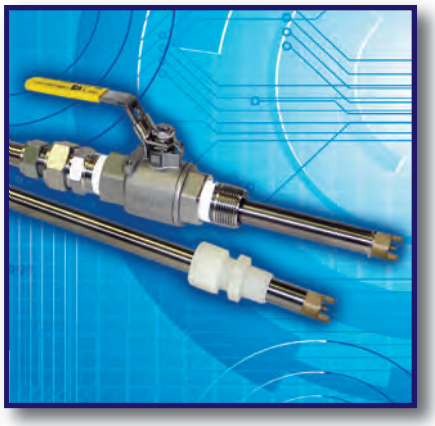
Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Bromide 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
Bromide 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 Bromide Ion Electrode is a combination electrode with a silver bromide/silver sulfide (AgBr/AgS) solid state pressed crystal sensing element and a double junction reference electrode. The Bromide Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of bromide ions in the measured solution. The typical output is 54mV to 60 mV 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 Bromide Ion sensors are used with the Model T80 Transmitter with its dual channel mix and match capabilities. This analyzer will measure bromide from 0.2 ppm to 79,000 ppm autoranging the display between the ppb, ppm and ppt (parts per thousand) scales.

All silver sulfide based solid state ion electrodes are sensitive to the silver and sulfide ions in solution in addition to the primary ion of interest. Both ions must be absent from the measured solution. Strong reducing solutions like photographic developer, thiosulfate, cyanide, ammonia, will attack the sensor depositing silver on the sensing crystal surface. Chloride, sulfide, iodide will form insoluble precipitates on the crystal surface diminishing the response. Polishing the sensor with the supplied polishing strips will restore the function.

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.

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

Bromide Ion Sensors

Specifications

Model S80 Sensors
Combination electrode cartridge with a silver bromide measurement cell and a double junction, KNO_3/KCl /AgCl, reference electrode, signal conditioner, ATC

Electrode Slope
54 ± 5 mV per decade of concentration change

Measurement Range
Bromide: 0.2 to 79,000 ppm (1-12 pH)
2×10^{-6} molar to 1.0 molar

Temperature Range
0° C to 80° C (32° F to 176° F)

Pressure Range
0 - 50 psig (0 - 3.5 barg)

Response Time
T90 in 10 seconds

Electrode Life
6 to 12 months

Interfering ions
Chloride, iodide, strong reducing agents

Wetted Materials
Radel, epoxy, AgS/AgBr, 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
S80-00-0002-0100-072	S80 Bromide,Br^- insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-072	S80 Bromide,Br^- insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-072	S80 Bromide,Br^- Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-072	S80 Bromide,Br^- 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
2005062.VIT	Bromide Ion Electrode, Radel body, double junction Teflon Ref, 0.2-79,000 ppm, 0°-80°C
2000250-1	Polishing Strip Kit, abrasive cleaning strips for Ion electrodes
2010456	Bromide Ion Calibration Solution, 10 ppm
2010457	Bromide Ion Calibration Solution, 100 ppm

Specifications subject to change without notice.

Represented by:

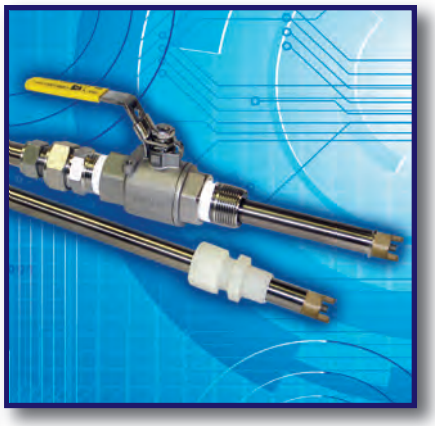
Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Cadmium 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
Cadmium 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 Cadmium Ion Electrode is a combination electrode with a cadmium sulfide (CdS) solid state pressed crystal sensing element and a double junction reference electrode. The cadmium Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of free cadmium ions, Cd^{+2}, in the measured solution. The typical output is 25mV to 30mV 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 Cadmium Ion sensors are used with the Model T80 Transmitter with its dual channel mix and match capabilities. This analyzer will measure cadmium ions from 0.1 ppm to 11,200 ppm autoranging the display between the ppb, ppm and ppt (parts per thousand) scales.

The cadmium ion electrode is poisoned by copper, silver, lead, ferric and mercury ions in solution. Copper, silver and mercury must be absent from the measured solution. Ferric and Lead must be at a lower concentration than the cadmium.Polishing the sensor with the supplied polishing strips will restore the function if the sensing tip becomes poisoned.

In basic solutions, cadmium reacts with hydroxide and precipitates as $Cd(OH)_2$, cadmium hydroxideis not measured by the sensor. The Hydrogen ion (the pH) interferes with the cadmium measurement at low ppm levels, limiting the pH range to values greater than pH3 and less than pH9.

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.

In many cases the process solution's ionic strength, temperature and pH value will differ widely from the calibration solution. These factors will affect the zero potential of the cadmium sensor causing an offset. To eliminate the offset perform a standardization, a single point in-line calibration. Once the sensor has stabilized in the process, take a grab sample and determine the Cd^{+2} value. Adjust the analyzer to read this laboratory determined value, verify weekly.

Cadmium Ion Sensors

Specifications

Model S80 Sensors
Combination electrode cartridge with a cadmium sulfide sensing cell and a double junction, KNO_3/KCl /AgCl, reference electrode, signal conditioner, ATC

Electrode Slope
27 ± 3 mV per decade of concentration change

Measurement Range
Cadmium ion: 0.1 ppm to 11,200 ppm (3-9 pH)
10^{-7} molar to 0.1 molar

Temperature Range
0° C to 80° C (32° F to 176° F)

Pressure Range
0 - 50 psig (0 - 3.5 barg)

Response Time
T90 in 10 seconds

Electrode Life
6 to 12 months

Interfering ions
Copper, Silver, Mercury, Lead, Ferric must be absent

Wetted Materials
Radel, epoxy, CdS, 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
S80-00-0002-0100-073	S80 Cadmium,Cd^{+2} insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-073	S80 Cadmium,Cd^{+2} insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-073	S80 Cadmium,Cd^{+2} Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-073	S80 Cadmium,Cd^{+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
2005140.VIT	Cadmium Ion Electrode, Radel body, double junction Teflon Ref, 0.1 ppm -11,200 ppm, 0°-80°C
2010468	Cadmium Ion Calibration Solution, 10 ppm, 500 ml
2010469	Cadmium Ion Calibration Solution, 100 ppm, 500 ml
2000250-1	Polishing Strip Kit, abrasive cleaning strips for Ion electrodes

Specifications subject to change without notice.

Represented by:

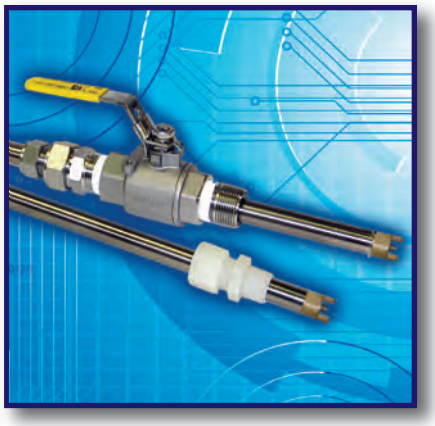
Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Calcium 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
Calcium 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 Calcium 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 Calcium Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of calcium ions in the measured solution. The typical output is 25mV to 30 mV 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 Calcium Ion sensors are used with the Model T80 Transmitter with its dual channel mix and match capabilities. This analyzer will measure calcium from 20 ppb to 40,000 ppm autoranging the display between the ppb, ppm and ppt (parts per thousand) scales.

The calcium ion electrode is an ion exchange sensor that is selective for calcium ions but many anions also interact with the sensing membrane. Lead ions strongly interfere with the measurement, 2 Lead ions = 1 Calcium ion. Mercury, iron (II), Copper (II), nickel (II) and ammonium interfere at 1000 - 3000:1. The pH also interferes with low level measurements, keep the pH >4 for concentrations < 1ppm Ca^{++}. Hydroxide, carbonates, fluorides, phosphates, sulfates all complex with calcium ions. Adjusting the pH <7 eliminates carbonate and hydroxide issues. 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.

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

Specifications

Model S80 Sensors
Combination electrode cartridge with a PVC / ion exchange membrane and a double junction, KNO_3/KCl /AgCl, reference electrode, signal conditioner, ATC

Electrode Slope
26 ± 3 mV per decade of concentration change

Measurement Range
Calcium: 20 ppb to 40,000 ppm (3-11 pH)
5×10^{-7} molar to 1.0 molar

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 10 seconds

Electrode Life
6 to 12 months

Interfering ions
Lead (II), Mercury (II), Iron (II), Ammonium

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
S80-00-0002-0100-074	S80 Calcium, Ca^{+2} insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-074	S80 Calcium, Ca^{+2} insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-074	S80 Calcium, Ca^{+2} Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-074	S80 Calcium, Ca^{+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
2005143.VIT	Calcium Ion Electrode, Radel body, double junction Teflon Ref, 20 ppb -40,000 ppm, 0°-40°C
2010408	Calcium Ion Calibration Solution, 1 ppm
2010407	Calcium Ion Calibration Solution, 10 ppm
2010421	Calcium Ion Calibration Solution, 100 ppm

Specifications subject to change without notice.

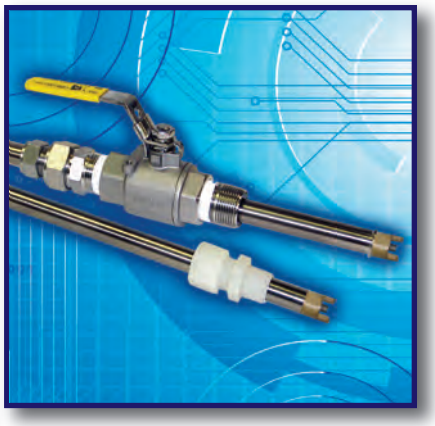
Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

Chloride 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
Chloride 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 Chloride Ion Electrode is a combination electrode with a silver Chloride/silver sulfide (AgCl/AgS) solid state pressed crystal sensing element and a double junction reference electrode. The Chloride Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of chloride ions in the measured solution. The typical output is 54mV to 60 mV 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 Chloride Ion sensors are used with the Model T80 Transmitter with its dual channel mix and match capabilities. These analyzers will measure chloride from 2.0 ppm to 35,500 ppm autoranging the display between the ppb, ppm and ppt (parts per thousand) scales.

All silver sulfide based solid state ion electrodes are sensitive to the silver and sulfide ions in solution in addition to the primary ion of interest. Both ions must be absent from the measured solution. Strong reducing solutions like photographic developer, thiosulfate, cyanide, ammonia, will attack the sensor depositing silver on the sensing crystal surface. Bromide, sulfide, iodide will form insoluble precipitates on the crystal surface diminishing the response. Polishing the sensor with the supplied polishing strips will restore the function.

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.

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

Specifications

Model S80 Chloride Sensors
Combination electrode cartridge with measurement cell, reference electrode, signal conditioner, ATC

Electrode Slope
54 ± 5 mV per decade of concentration change

Measurement Range
Chloride: 2.0 to 35,500 ppm (2-12 pH)
5.6 x 10^{-5} molar to 1.0 molar

Temperature Range
0° C to 80° C (32° F to 176° F)

Pressure Range
0 - 50 psig (0 - 3.5 barg)

Response Time
T90 in 10 seconds

Reproducibility ± 2%

Accuracy
± 2% (Calibrated with NIST Cal Solutions/Standards)

Electrode Life
6 to 12 months

Interfering ions
Bromide, iodide, strong reducing agents

Wetted Materials
Radel, epoxy, AgS/AgCl, 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
S80-00-0002-0100-075	S80 Chloride, Cl^- insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-075	S80 Chloride, Cl^- insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-075	S80 Chloride, Cl^- Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-075	S80 Chloride, Cl^- 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
2005008.VIT	Chloride Ion Electrode, Radel body, double junction Teflon Ref, 2 -35,000 ppm, 0°-80°C
2000250-1	Polishing Strip Kit, abrasive cleaning strips for Ion electrodes
2010460	Chloride Ion Calibration Solution, 10 ppm
2010454	Chloride Ion Calibration Solution, 100 ppm

Specifications subject to change without notice.

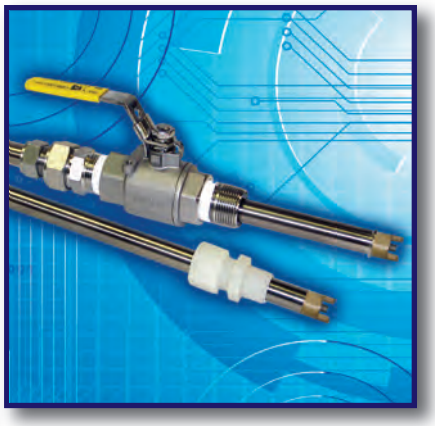
Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

Cupric (Copper) 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
Cupric 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 Cupric Ion Electrode is a combination electrode with a copper sulfide (CuS) solid state pressed crystal sensing element and a double junction reference electrode. The Cupric Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of free cupric ions, Cu^{+2} not Cu^{+}, in the measured solution. The typical output is 25mV to 30mV 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 Cupric Ion sensors are used with the Model T80 Transmitter with its dual channel mix and match capabilities. This analyzer will measure copper ions from 1.0 ppb to 6,300 ppm autoranging the display between the ppb, ppm and ppt (parts per thousand) scales.

The copper ion electrode is poisoned by silver and mercury ions in solution. Silver and mercury must be absent from the measured solution. Chloride and Bromide ions will also react with the membrane if present in high enough concentrations. Polishing the sensor with the supplied polishing strips will restore the function if a mercury amalgam or silver layer forms on the electrode. In basic solutions, copper reacts with hydroxide and precipitates as $Cu(OH)_2$, cupric hydroxide. This can be avoided by keeping the solutions acidic, pH 6 or lower. 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.

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

Cupric (Copper) Ion Sensors

Specifications

Model S80 Cupric Sensors
Combination electrode cartridge with a copper sulfide measurement cell and a double junction, KNO_3/KCl /AgCl, reference electrode, signal conditioner, ATC

Electrode Slope
27 ± 3 mV per decade of concentration change

Measurement Range
Cupric ion: 1.0 ppb to 6,300 ppm (2-6 pH)
10^{-8} molar to 0.1 molar

Temperature Range
0° C to 80° C (32° F to 176° F)

Pressure Range
0 - 50 psig (0 - 3.5 barg)

Response Time
T90 in 10 seconds

Electrode Life
6 to 12 months

Interfering ions
Silver, Mercury must be absent, Chloride and Bromide

Wetted Materials
Radel, epoxy, CuS, 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
S80-00-0002-0100-076	S80 Cupric, Cu^{+2} insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-076	S80 Cupric, Cu^{+2} insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-076	S80 Cupric, Cu^{+2} Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-076	S80 Cupric, Cu^{+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
2005058.VIT	Cupric Ion Electrode, Radel body, double junction Teflon Ref, 1.0 ppb -6,300 ppm, 0°-80°C
2010463	Cupric Ion Calibration Solution, 10 ppm, 500 ml
2010464	Cupric Ion Calibration Solution, 100 ppm, 500 ml
2000250-1	Polishing Strip Kit, abrasive cleaning strips for Ion electrodes

Specifications subject to change without notice.

Represented by:

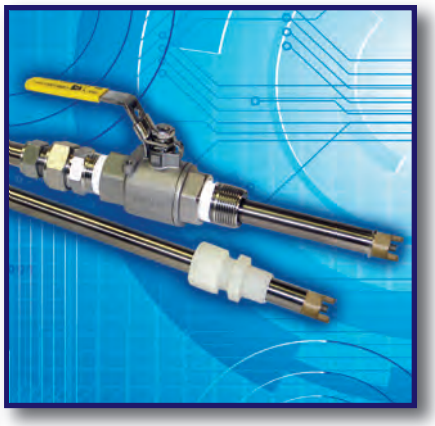
Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Cyanide 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
Cyanide 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 Cyanide Ion Electrode is a combination electrode with a silver cyanide/silver sulfide (AgCN/AgS) solid state pressed crystal sensing element and a double junction reference electrode. The Cyanide Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of free cyanide ions in the measured solution. The typical output is 54mV 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 Cyanide Ion sensors are used with the Model T80 Transmitter with its dual channel mix and match capabilities. This analyzer will measure cyanide from 0.2 ppm to 260 ppm autoranging the display between the ppb and ppm scales.

All silver sulfide based solid state ion electrodes are sensitive to the silver and sulfide ions in solution in addition to the primary ion of interest. Both ions must be absent from the measured solution. Strong reducing solutions like photographic developer, thiosulfate, ammonia, will attack the sensor depositing silver on the sensing crystal surface. Bromide, sulfide, iodide will form insoluble precipitates on the crystal surface diminishing the response. Polishing the sensor with the supplied polishing strips will restore the function.

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.

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

Cyanide Ion Sensors

Specifications

Model S80 Cyanide Sensors
Combination electrode cartridge with a silver cyanide measurement cell and a double junction, KNO_3/KCl /AgCl, reference electrode, signal conditioner, ATC

Electrode Slope
54 ± 5 mV per decade of concentration change

Measurement Range
Cyanide: 0.2 to 260 ppm (10-14 pH)
8×10^{-6} molar to 10^{-2} molar

Temperature Range
0° C to 80° C (32° F to 176° F)

Pressure Range
0 - 50 psig (0 - 3.5 barg)

Response Time
T90 in 10 seconds

Electrode Life
6 to 12 months

Interfering ions
sulfide, iodide, strong reducing agents

Wetted Materials
Radel, epoxy, AgS/AgCN, 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
S80-00-0002-0100-077	S80 Cyanide, CN^- insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-077	S80 Cyanide, CN^- insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-077	S80 Cyanide, CN^- Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-077	S80 Cyanide, CN^- 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
2005142.VIT	Cyanide Ion Electrode, Radel body, double junction Teflon Ref, 0.2 -260 ppm, 0°-80°C
2000250-1	Polishing Strip Kit, abrasive cleaning strips for Ion electrodes
2005145.VIT	General Purpose pH electrode cartridge, double junction reference, 0-14 pH, 0°-100°C

Specifications subject to change without notice.

Represented by:

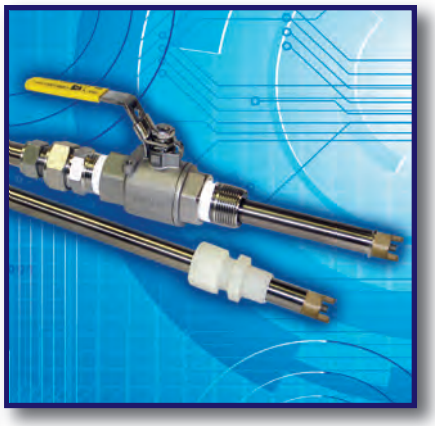
Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Fluoride 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
• Available with pH compensation	• Wide range of service from 2 pH to 8 pH



Model S80 Sensors
Fluoride 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 Fluoride Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of free fluoride ions in the measured solution. The model S80 Fluoride Ion sensors are used with the Model T80 Transmitter with its dual channel and pH compensation capabilities. These analyzers will measure free fluoride ions from 0.02 ppm to 2,000 ppm in the optimum pH range of 5-8 pH. Outside this pH range, large errors will occur in the acid range and small errors will occur in the alkaline pH ranges.

In acidic solutions fluoride ions react to form hydrofluoric acid, HF, pKa = 3.2, at 3.2 pH half of the available fluoride ions are HF and half are the measureable F^-. This characteristic can be compensated for by adding a pH sensor into the measurement loop. The T80 analyzer will report the total Fluoride ion concentration by measuring the available free fluoride and adjusting the value in accordance with the measured pH value. Hydroxide ions, OH^-, interfere with the fluoride measurement, 10 hydroxide ions generate the same signal as 1 fluoride ion. This accounts for an error of 1.7 ppb at pH 8, 17 ppb at pH 9 and 0.17 ppm at pH 10.

Fluoride ions will complex with aluminum, silicon, iron (+3), and other polyvalent cations as well as hydrogen and these fluoride ion complexes will not be “seen” by the sensor. If any of these chemicals are present in the measured solution the analyzer will report a lower concentration than the true 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 will affect the zero potential of the fluoride sensor but not the slope causing an offset in the measurement. The offset is eliminated by performing a process standardization. When the sensor has stabilized in the process solution take a grab sample of the process and determine the fluoride ion concentration and the adjust the analyzer to read this laboratory determined value.

Fluoride Ion Sensors

Specifications

Model S80 Fluoride Sensors
Combination electrode cartridge with a Lanthanum Fluoride measurement cell and a single junction, KCl/AgCl, reference electrode

Electrode Slope
54 ± 5 mV per decade of concentration change

Measurement Range
Fluoride: 0.02 to 2,000 ppm
pH: 2 to 8 pH

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
Hydroxide, 0.1 selectivity (10 OH^- = 1 F^-)

Wetted Materials
PEEK, epoxy, LaF crystal, 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
S80-00-0002-0100-078	S80 Fluoride, F^- insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-078	S80 Fluoride, F^- insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-078	S80 Fluoride, F^- Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-078	S80 Fluoride, F^- 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
2005063.VIT	Fluoride Ion Electrode, PEEK body, dbl junction Teflon Ref, 0.02-2,000 ppm, 0°-80°C
2010400	Fluoride Ion Calibration Solution, 50% TISAB II, 1.0 ppm
2010401	Fluoride Ion Calibration Solution, 50% TISAB II, 10.0 ppm
2010431	Fluoride Ion Calibration Solution, 50% TISAB II, 100 ppm
2000250-1	Polishing Strip Kit, abrasive cleaning strips for Ion electrodes
S80-00-0002-0100-010	S80 pH, insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable with General Purpose pH electrode (for pH compensated measurement)
2005103.VIT	pH electrode cartridge, fluoride resistant, PEEK body, dbl junction Teflon Reference

Specifications subject to change without notice.

Represented by:

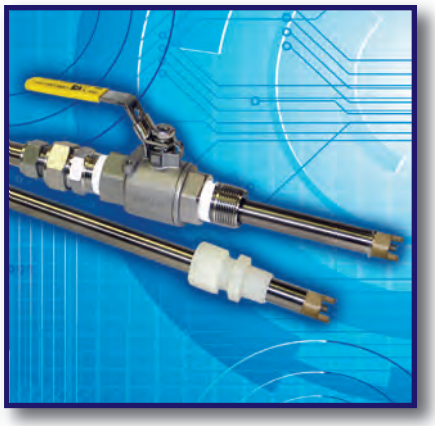
Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Lead 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
Lead 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 Lead Ion Electrode is a combination electrode with a lead sulfide (PbS) solid state pressed crystal sensing element and a double junction reference electrode. The Lead Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of free Lead ions, Pb^{+2}, in the measured solution. The typical output is 25mV to 30mV 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 Lead Ion sensors are used with the Model T80 Transmitter with its dual channel mix and match capabilities. This analyzer will measure Lead ions from 2.0 ppm to 20,700 ppm autoranging the display between the ppb, ppm and ppt (parts per thousand) scales.

The Lead ion electrode is poisoned by silver, cadmium, ferric and mercury ions in solution. Silver and mercury must be absent from the measured solution. Ferric and cadmium must be at a $^{1}/_{10}$ lower concentration than the Lead. Polishing the sensor with the supplied polishing strips will restore the function if the sensing tip becomes poisoned.

In basic solutions, Lead reacts with hydroxide and precipitates as $Pb(OH)_2$, Lead hydroxide is not measured by the sensor. The Hydrogen ion interferes with the Lead measurement at low ppm levels, limiting the pH range to values greater than pH4 and less than pH8.

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.

In many cases the process solution's ionic strength, temperature and pH value will differ widely from the calibration solution. These factors will affect the zero potential of the Lead sensor causing an offset. To eliminate the offset perform a standardization, a single point in-line calibration. Once the sensor has stabilized in the process, take a grab sample and determine the Pb^{+2} value. Adjust the analyzer to read this laboratory determined value, verify weekly.

Specifications

Model S80 Lead Sensors
Combination electrode cartridge with a Lead sulfide sensing cell and a double junction, KNO_3/KCl /AgCl, reference electrode, signal conditioner, ATC

Electrode Slope
27 ± 3 mV per decade of concentration change

Measurement Range
Lead ion: 2.0 ppm to 20,700 ppm (4-8 pH)
10^{-6} molar to 0.1 molar

Temperature Range
0° C to 80° C (32° F to 176° F)

Pressure Range
0 - 50 psig (0 - 3.5 barg)

Response Time
T90 in 10 seconds

Electrode Life
6 to 12 months

Interfering ions
Silver, Mercury, Cadmium, Ferric must be absent

Wetted Materials
Radel, epoxy, PbS, 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
S80-00-0002-0100-079	S80 Lead, Pb^{+2} insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-079	S80 Lead, Pb^{+2} insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-079	S80 Lead, Pb^{+2} Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-079	S80 Lead, Pb^{+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
2005141.VIT	Lead Ion Electrode, Radel body, double junction Teflon Ref, 0.1 ppm -11,200 ppm, 0°-80°C
2010470	Lead Ion Calibration Solution, 10 ppm, 500 ml
2010471	Lead Ion Calibration Solution, 100 ppm, 500 ml
2000250-1	Polishing Strip Kit, abrasive cleaning strips for Ion electrodes

Specifications subject to change without notice.

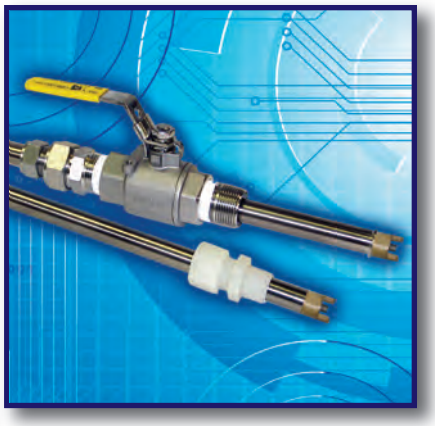
Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

Nitrate 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
Nitrate 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 Nitrate 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 nitrate Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of nitrate 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 Nitrate Ion sensors are used with the Model T80 Transmitter with its dual channel mix and match capabilities. These analyzers will measure nitrate ions from 0.1 ppm to 14,000 ppm autoranging the display between the ppb, ppm and ppt (parts per thousand) scales.

The Nitrate Ion Electrode is an ion exchange sensor that is selective for nitrate ions but many anions also interact with the sensing membrane. Chlorate, iodide, cyanide and chlorite ions all strongly interfere with the measurement. Bromide, bisulfide and nitrite interact at 20 to 40:1 with chloride, carbonate and bicarbonate interacting 250 to 500:1. The chloride ion is very common in water and with 250 chloride ions generating the same signal as 1 nitrate ion, care must be taken in low level measurements, Chloride Compensation is available on the T80 dual channel analyzer.

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 nitrate 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.

Nitrate Ion Sensors

Specifications

Model S80 Nitrate 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

54 ± 5 mV per decade of concentration change

Measurement Range

Nitrate: 0.1 ppm to 14,000 ppm (3-11 pH)
7 x 10^{-6} molar to 1 molar NO_3

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 10 seconds

Electrode Life

3 to 6 months

Interfering ions

ClO4, ClO3, I, CN, Br, NO2, HS, HCO3, CO3, Cl,

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
S80-00-0002-0100-080	S80 Nitrate, NO_3^- insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-080	S80 Nitrate, NO_3^- insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-080	S80 Nitrate, NO_3^- Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-080	S80 Nitrate, NO_3^- 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
2005086.VIT	Nitrate Ion Electrode, Radel body, double junction Teflon Ref, 0.1 ppm -14,000 ppm, 0°-80°C
2010451	Nitrate Ion Calibration Solution, 1 ppm, 500 ml
2010465	Nitrate Ion Calibration Solution, 10 ppm, 500 ml
2010452	Nitrate 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.

Represented by:

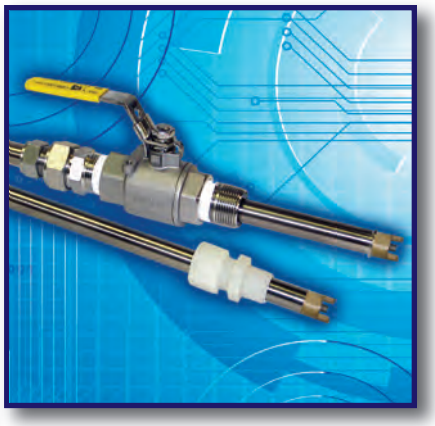
Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

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.

Nitrite Ion Sensors

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.

Represented by:

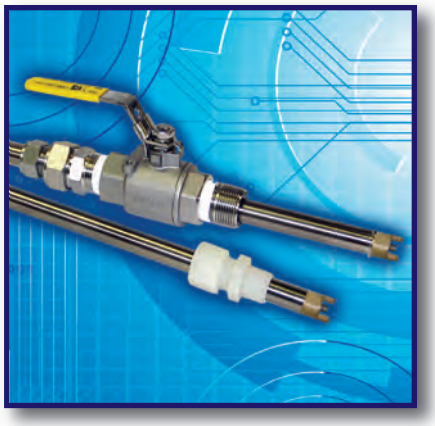
Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Potassium 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
Potassium 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 Potassium Ion Electrode is a combination electrode with a sensing element made of a PVC membrane containing an ion selective ionophore, valinomycin, and a double junction reference electrode. The Potassium Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of potassium ions in the measured solution. The typical output is 50mV to 60mV per decade of change in concentration. The Potassium Ion sensors are used with the Model T80 Transmitter with its dual channel mix and match capabilities The analyzer will measure potassium ions from 20 ppb to 39,000 ppm in the optimum pH range of 4-11 pH. In the acidic solutions the potassium ion electrode, K^+, is interfered by the hydrogen ions, H^+, and in alkaline pH solutions, above pH 11, the active ionophore in the membrane is attacked by the caustic deminishing response and destroying the electrode. For measurements below 1 ppm potassium the pH of the solution should be above pH 4.5.

Ammonium ions, cesium ions, thallium ions and hydrogen ions all interfere with the potassium measurement. Cesium ions are the worst with 10 cesium ions generating the same signal as 1 potassium ion, ammonium is around 30:1 and thallium is around 300:1. Other ions also interfere but to a much lower level, lithium at 3500:1, sodium at 12,000:1 and silver at 30,000:1.

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 potassium 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 potassium ion concentration. Adjust the analyzer to read this laboratory determined value. It is recommended to verify the readings on a weekly basis.

Potassium Ion Sensors

Specifications

Model S80 Potassium Sensors
Combination electrode cartridge with an ion selective PVC membrane and a double junction, NaCl/KCl-AgCl, reference electrode, signal conditioner, ATC

Electrode Slope
54 ± 5 mV per decade of concentration change

Measurement Range
Potassium: 20 ppb to 39,000 ppm
pH: 2.5 to 11 pH

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 10 seconds

Electrode Life
6 to 12 months

Interfering ions
Cesium, 10:1, Ammonium 30:1, sodium 12,000:1

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
S80-00-0002-0100-082	S80 Potassium, K^+ insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-082	S80 Potassium, K^+ insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-082	S80 Potassium, K^+ Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-082	S80 Potassium, K^+ 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
2005034.VIT	Potassium Ion Electrode, Radel body, double junction Teflon Ref, 20 ppb -39,000 ppm, 0°-40°C
2010443	Potassium Ion Calibration Solution, 1 ppm
2010441	Potassium Ion Calibration Solution, 10 ppm
2010444	Potassium Ion Calibration Solution, 100 ppm

Specifications subject to change without notice.

Represented by:

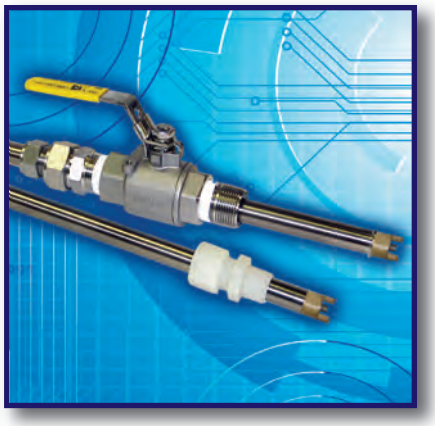
Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Silver 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
Silver 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 Silver Ion Electrode is a combination electrode with a silver sulfide (AgS) solid state pressed crystal sensing element and a double junction reference electrode. The Silver Ion Selective Electrode cartridge develops a millivolt potential proportional to the concentration of free silver ions in the measured solution. The typical output is 54mV 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 Silver Ion sensors are used with the Model T80 Transmitter with its dual channel mix and match capabilities. These analyzers will measure silver from 0.01 ppm to 108,000 ppm autoranging the display between the ppb, ppm and ppt (parts per thousand) scales.

All silver sulfide based solid state ion electrodes are poisoned by mercury ions in solution. Mercury must be absent from the measured solution. Polishing the sensor with the supplied polishing strips will restore the function if a mercury amalgam forms on the electrode. In ammonia-free basic solutions, silver reacts with hydroxide ions to form a precipitate of Ag_2O, silver oxide. This can be avoided by keeping solutions slightly acidic, the pH of silver solutions should be below pH 8 for low ppm measurements.

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.

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

Specifications

Model S80 Silver Sensors
Combination electrode cartridge with a silver sulfide measurement cell and a double junction, KNO_3/KCl /AgCl, reference electrode, signal conditioner, ATC

Electrode Slope
54 ± 5 mV per decade of concentration change

Measurement Range
Silver: 0.01 to 108,000 ppm (2-12 pH)
10^{-7} molar to 1 molar

Temperature Range
0° C to 80° C (32° F to 176° F)

Pressure Range
0 - 50 psig (0 - 3.5 barg)

Response Time
T90 in 10 seconds

Electrode Life
6 to 12 months

Interfering ions
none, mercury must be absent

Wetted Materials
Radel, epoxy, AgS, 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
S80-00-0002-0100-083	S80 Silver, Ag^+ insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-083	S80 Silver, Ag^+ insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-083	S80 Silver, Ag^+ Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-083	S80 Silver, Ag^+ 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
2005016.VIT	Silver Ion Electrode, Radel body, double junction Teflon Ref, 0.01 -108,000 ppm, 0°-80°C
2010461	Silver Ion Calibration Solution, 10 ppm, 500 ml
2010462	Silver Ion Calibration Solution, 100 ppm, 500 ml
2000250-1	Polishing Strip Kit, abrasive cleaning strips for Ion electrodes

Specifications subject to change without notice.

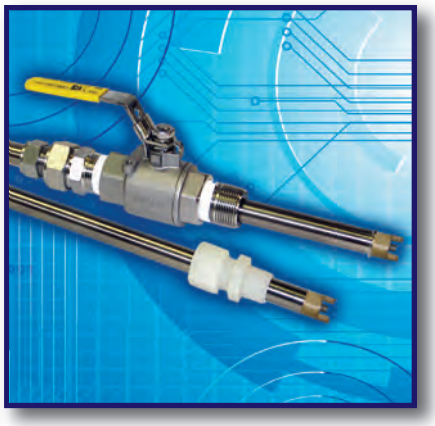
Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

Sodium 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
Sodium 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 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 are used with the Model T80 Transmitter with its dual channel mix and match 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 thalliumare 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.

Specifications

Model S80 Sodium 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
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
S80-00-0002-0100-084	S80 Sodium, Na^+ insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-084	S80 Sodium, Na^+ insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-084	S80 Sodium, Na^+ Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-084	S80 Sodium, Na^+ 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
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

Specifications subject to change without notice.

Represented by:

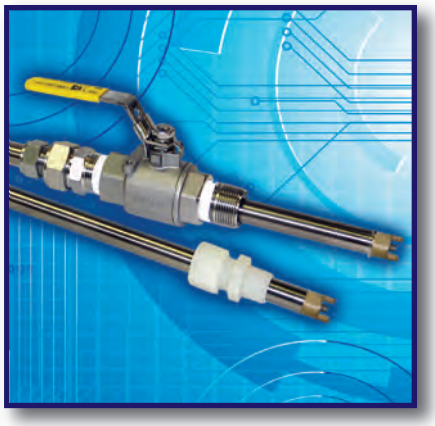
Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Sulfide 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
• Available with pH compensation	• Range, 12 pH to 14 pH with pH compensation



Model S80 Sensors
Sulfide 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 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 are used with the Model T80 Transmitter with its dual channel mix and match 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 $pKa_1 = 7.04$ and $pKa_2 = 11.9$. When the pH of a solution equals the pKa of an acid then half of the acid is dissociated and half is not. For the sulfide ion the $pKa_2 = 11.9$, so at 11.9 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 T80 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.

Specifications

Model S80 Sulfide Sensors

Combination electrode cartridge with a Silver Sulfide measurement cell and a double junction reference electrode, KNO_3 : 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, >13 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

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
S80-00-0002-0100-085	S80 Sulfide, S^{-2} insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable
S80-00-0002-0300-085	S80 Sulfide, S^{-2} insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 30 ft cable
S80-01-0131-0110-085	S80 Sulfide, S^{-2} Valve Retractable Style with 1" Ball Valve Assembly, 316 SS body, ¾" Diameter x 17" length, 10 ft cable
S80-01-0131-0310-085	S80 Sulfide, S^{-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
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
S80-00-0002-0100-007	S80 pH, insertion style sensor with ¾" 316 SS compression fitting, 316 SS body, ¾" Diameter. x 10" length, 10 ft cable with Sulfide Resistant pH electrode (for pH compensated measurement)
2005130.VIT	Sulfide resistant Electrode cartridge, PEEK body, double junction reference, 0°-80°C

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Hazardous Location Products - Sensors and Electrodes

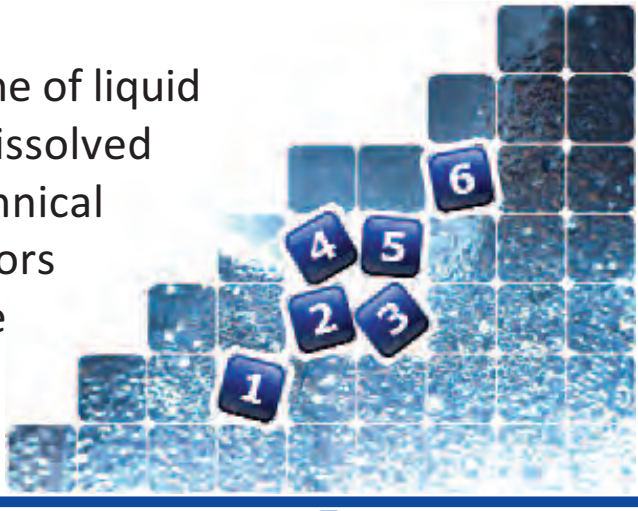
Model S88 Intelligent Sensors for Hazardous Locations

Measure pH, ORP, Specific Ion, Dissolved Oxygen, Chlorine, Conductivity or Resistivity with

Model X80 Universal Transmitter

ELECTRO-CHEMICAL DEVICES

Electro-Chemical Devices offers a complete line of liquid analytical sensors: pH, ORP, Specific Ion, Dissolved Oxygen, Conductivity & Resistivity. The technical advantage of the Model S88 Intelligent Sensors are the 6 points of design flexibility to configure a sensor that best fits your application.



6 Point Advantage

1. **Intelligent sensor design with digital communication** Digital communications for better installations and Calibration data, sensor identity and parameters that are stored in the sensor.

2. **Multiple individual measurement parameters** in the same mechanical configuration- pH, ORP, Specific Ion, Dissolved Oxygen, Conductivity & Resistivity

3. Readily available **application specific electrode cartridges**. Many unique pH electrode design formulations and materials of construction which are field proven and selected for long life and accuracy.

4. Long life **replaceable electrode cartridges** lower the over all operating cost.

5. **Submersible and Retractable Sensors** Various process fittings with adjustable insertion lengths - threaded fittings, sanitary fittings, flanges and valve retractable fittings.

6. **Industrial housing materials for compatibility with process fluid.** Stainless Steel, Hastelloy C-22, Polypropylene or PVDF (Kynar™). Standard 10” or 17” lengths additional lengths available.

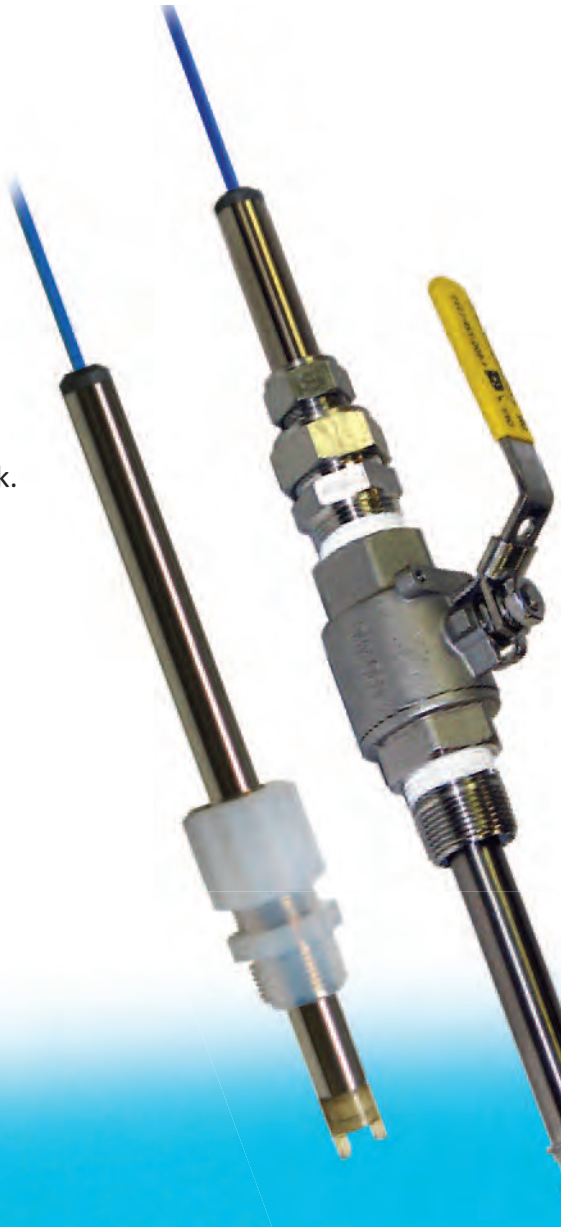
Model S88 Intelligent Sensors

ECD Model S88 Sensor Overview - The hazardous location sensor choice to fit your application. The S88 sensors have two Universal Sensor Designs; Insertion/Submersion or Valve Retractable with flaired end to prevent blow out. The standard Model S88 sensors have a rugged ¾" O.D. 316 stainless steel body with a 10 ft. cable or an optional waterproof detachable cable assembly.

S88 Sensor

Insertion/Submersion

The S88 Sensor uses a ¾" MNPT compression fitting as the process connection. This allows a variable insertion length to accommodate installation in pipe tees, flow cells, or through tank walls. If the fitting is reversed the sensor can be installed in a stand pipe for submersion into a tank.



S88 Sensor

Valve Retractable

The S88 Sensor uses a 1" ball valve with a 1" NPT process connection. Loosening the rear compression fitting allows the sensor to slide freely through the ball valve for either insertion into the process or retraction from the process. Once retracted, the ball valve can be closed and the sensor removed for maintenance or replacement without shutting down the process line.

pH and ORP Electrodes

The Model S88 Intelligent Sensors use replaceable electrode cartridges to provide application specific solutions for the most demanding pH measurements.

- Radel (PES) or PEEK construction
- Single tine, double tine or full crown style pH bulb protection.
- Spherical bulbs (best response), hemispherical bulbs (more durable) or a slightly radiused flat surface (easily cleaned)
- Platinum tip ORP electrodes.
- Double or Triple junction reference cells
- Porous Teflon® and ceramic junctions with various reference electrolytes.

One of these three widely used pH electrode cartridges will satisfy most installations, Consult our technical support staff for additional configurations.

6 Point Advantage

2005145 – This **General Purpose Electrode** has a two tine Radel body, double junction reference and slightly radiused pH bulb. While suitable for higher temperatures it is optimized for fast and stable readings in ambient temperature applications. Neutralizations, waste effluent monitoring, rinse applications and potable water are just a few of the suggested applications.

2005157 – This **High Temperature Electrode** has a two tine PEEK body, triple junction reference and hemispherical pH bulb. This electrode is designed for the process control or neutralization of most mineral acids and bases in applications up to 130°C. The triple junction design is resistant to sulfide ion poisoning making it ideal for use in petroleum refineries and metal processing plants.

2005066 – This **Chemically Resistant Electrode** has a two tine PEEK body, double junction reference and slightly radiused pH bulb. The PEEK body is suitable for use in most aggressive solvents, oxidizing solutions and acids or bases. This electrode is optimized for a harsh chemical environment and is suitable for service up to 130°C. Chemical separations and solvent recovery in the CPI and pharmaceutical industries along with chlorine production and flotation in mining are suggested applications.

2005167 – This **ORP (Oxidation Reduction Potential) Electrode** has a two tine PEEK body, double junction reference and a platinum tip. This general purpose sensor can be used for monitoring the oxidant level of cooling towers, swimming pools, aquariums or the de-chlorination of waste water. Metal finishing and mining also provide applications such as cyanide destruction and monitoring chrome plating baths.

Specific Ion & Dissolved Oxygen Electrodes

Ion selective electrodes are not limited to laboratory use; some are suitable for continuous online measurement. ECD offers Specific Ion Electrode cartridges to measure the various ions listed below. Specific Ion electrodes measure the activity (concentration) of the ion in solution, the "free" ion, not a complexed version. Cyanide, Fluoride and Sulfide ions only exist in a specific pH range as free ions and outside this pH range some percentage of the total concentration is complexed as H(X) which is not seen by the sensor. These measurements can be pH compensated using the dual channel transmitter or controller with a pH sensor to determine the total ion concentration. Most pIon sensors are subject to interfering ion errors. A positive interference caused by similar ions in the solution. Consult with the factory on all new installations to determine the suitability of the measurement.

Specific Ion (pIon) Electrodes

Part#	Type	Measurement Range	pH Range	Temperature Range
2005083	Ammonium	0.05 - 18,000 ppm	2-10 pH	0°-40°C
2005062	Bromide	1 - 80,000 ppm	2 - 12pH	0°-50°C
2005140	Cadmium	0.1 - 11,200 ppm	3 - 9 pH	0°-80°C
2005143	Calcium	0.1 - 40,000 ppm	2.5 - 10 pH	0°-40°C
2005008	Chloride	2 - 35,000 ppm	2 - 12 pH	0°-50°C
2005142	Cyanide	0.1 - 260 ppm	11 - 13 pH	0°-80°C
2005058	Cupric	1.0 ppb -6,300 ppm	2 - 6 pH	0°-80°C
2005163	Fluoride	0.02 - 2,000 ppm	5 - 8 pH	0°-80°C
2005141	Lead	2.0 - 20,700 ppm	4 - 8 pH	0°-80°C
2005086	Nitrate	0.1 - 1000 ppm	2 - 12 pH	0°-40°C
2005161	Nitrite	0.5 - 500 ppm	4.5 - 8 pH	0°-40°C
2005034	Potassium	0.1 - 40,000 ppm	2 - 12 pH	0°-40°C
2005031	Sodium	0.2 - 23,000 ppm	2 - 14 pH	0°-80°C
2005122	Sulfide	0.01 - 32,000 ppm	11 - 14 pH	0°-80°C
2005016	Silver	0.1 - 107,000 ppm	2 - 14 pH	0°-80°C

Dissolved Oxygen Electrodes

The ECD Dissolved Oxygen electrodes are galvanic cells with a lead anode, silver cathode and either the quick response 2 mil or rugged 5 mil Teflon membrane. The electrode is ready to use as received, there are no solutions or membranes to install before the electrode can be used. The membrane is protected by a double tine PEEK body allowing for easy cleaning. Designed for ppm level measurements it is ideal for environmental water measurements and aerobic waste treatment.

Part#	Type	Range	Pressure Range	Temperature Range
2005622 (2 mil)	Dissolved or Gaseous Oxygen	0 - 20 ppm (mg/L) 250% Saturation	0 - 50 psig	-5°- 80°C
2005623 (5 mil)	Dissolved or Gaseous Oxygen	0 - 20 ppm (mg/L) 250% Saturation	0 - 50 psig	-5°- 80°C

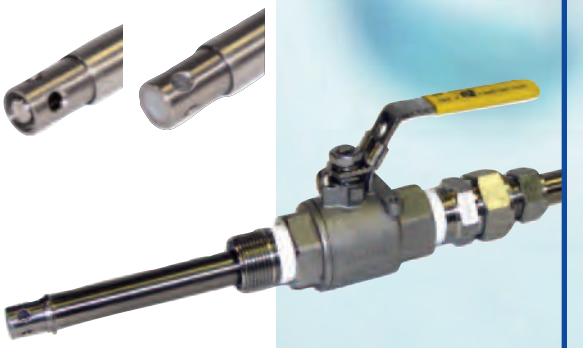
Conductivity Measurements

Contacting technology is used to measure Conductivity and Resistivity. **Contacting Conductivity** is an impedance measurement made between two metal contacts in the solution. Contacting sensors can measure from very low conductivities, (resistivity measurements) to very high conductivities but they are subject to coating and corrosion issues, conditions where the inductive sensors excel. The Contacting Conductivity S88 sensors come in two ranges, Typical Conductivity Ranges are 0.5µS to 50mS and typical Resistivity Range, 0 – 20MΩ or 0 to 2 uS.

6 Point Advantage

Conductivity and Resistivity Sensors

The Model S88 Conductivity sensor is available for measurements typically from 0.05µS to 50mS. The **Model S88 Resistivity** sensor measures typically from 0 - 20 MΩ or 0 to 2 uS. The design of the inner electrode defines the measurement range of the sensor. The Open Style with its large surface area inner electrode and short path length is best for resistivity and low conductivity measurements while the Closed Style is best suited to high conductivity measurements. The standard wetted materials are 316 Stainless Steel, PEEK insulators and VITON o-rings.



Model X80 Universal Transmitters

The ECD Model X80 transmitter is an ATEX / IECEx Certified or FM approved single or dual channel transmitter for the measurement of pH, ORP, pION, Conductivity, Resistivity, Dissolved Oxygen and Chlorine. The Model X80 transmitter digitally communicates with any ECD intelligent S88 digital sensor, automatically configuring the transmitter's menus and display screens to the measured parameter. The ECD S88 digital sensors facilitate two way communication with the Model T80 transmitters. The type of sensor, identity and serial number are stored in the sensor's memory along with calibration registers.

Fittings and Accessories

The proper installation and calibration of an analytical loop is critical for a successful measurement. Using the flow of the sample in an insertion application to maximize the cleaning potential can be as simple as changing the size of the Pipe Tee, changing the insertion depth or using an ECD Flow Cell with a spray cleaning port in the most difficult applications. Spray Cleaning heads are also available for immersion applications where the sample velocity is much lower and fouling is more common. Valve retractable units allow the sensor to be removed, serviced and installed without shutting down the sample flow in a pipe or emptying a tank. A compression gland fitting seals the sensor into a ball valve, loosening the gland fitting allows the sensor to be retracted through the ball valve which is then closed, isolating the process solution, before removing the sensor for service. Materials of construction for the Valves, Glands, Flanges and Immersion Assemblies vary from PVC, PVDF and polypropylene plastics to 316 SS, and Hastelloy C-22. Contact our application specialists for the most cost effective solution to your application.

Calibration Solutions

All of the S88 sensors require periodic calibration and ECD offers a full range of calibration solutions. For pH applications we offer pH 4.00, 7.00 and 10.00 buffers. ORP calibrations can be accomplished with a +465 mV ferric-ferrous solution or by adding quinhydrone to pH 4 and pH 7 buffer solutions creating +267 mV ORP and +90 mV ORP respectively. Specific ion calibration solutions are standardly 10 ppm and 100 ppm although any value can be formulated at no extra cost. Conductivity solutions are made with KCl and Deionized water, values from 10 µS to 500 mS are available. Solutions to simulate % acid or % caustic are labelled as the actual solution, i.e. 4% NaOH, even though the solution is made from KCl with an equivalent conductivity providing a safe and accurate calibration system.

Fittings and Flow cells

The Model S88 sensors are offered with a wide array of fittings, flow cells, immersion assemblies and valve retraction assemblies. ¾" MNPT compression fittings are available for S80 insertion into pipe Tees or flow cells and when reversed, for coupling with Stand Pipes for immersion applications. Flow cells of PVC, PVDF or 316 SS have ⅜" or ½" FNPT ports on a 2" O.D.by 5" body. 316 SS Sanitary 3A Flanges and 150# Flanges can be adapted for insertion or valve retractable service.Contact our Technical support staff for other configurations.

Product Specifications

S88
All Sensors

Hazardous Location Approvals

ATEX Certified:
Certification No: ITS16ATEX101458X
IECEx Certified:
Certification No: ETL 16.0049X
X80 Transmitter:

0359

II 2 G Ex db mb [ia IIC Ga] IIC T4 Gb

Model X80 Transmitter is intended for installation in hazardous locations with Zone 1, Ex db mb Gb classification, -20°C < Ta < 55°C

S88 Sensor:

0359

II 2 G Ex ia IIC T4 Ga

Model S88 Sensor is intrinsically safe and intended for installation in hazardous locations with Zone 0, Ex ia Ga classification, -20°C < Ta < 85°C

S88 Sensors:
Designed to meet or exceed IP68

or:
FM Approved:
Class I, DIV 1, Groups B, C and D, CLASS II, DIV 1, GROUPS E, F and G, CLASS III, DIV 1

Dimensions:
S88 Insertion - ¾"OD x 10" Length
S88 Valve Retractable - ¾" OD x 17"

Cable Length:
10 ft. standard, optional lengths in 10 ft increments, optional Detachable cable connection

Housing Materials:
Standard: 316 Stainless Steel
Optional: Hastelloy C-22 (H),
PVDF (K)
Polypropylene (P)

O-Ring Materials:
Standard: Viton® (VIT)
Optional: Ethylene Propylene (EPR),
VITON® 75 (VIT75)
Kalrez® (KLZ)
CV75 (CV)

Process Connections:
S88 Insertion/Immersion
-75 ¾" 316 SS gland fitting with nylon ferrule
-75HT ¾" 316 SS gland fitting with Teflon® ferrule
-75SF ¾" 316 SS gland fitting with stainless steel ferrule
-75TFE ¾" Teflon® gland fitting with Teflon™ ferrule
-100P 1" Polypropylene gland fitting for Polypropylene housing only
S80 Valve Retractable
-VSS 1" 316 SS valve retraction assembly
-VSSE 1" 316 SS valve retraction assembly for Inductive sensors
-VKY 1" PVDF valve retraction assembly
-VPP 1" Polypropylene Valve Retraction assembly

pH measurement
Measurement Range:
0-14 pH
Temperature Range:
0˚- 85˚ C
Pressure Range:
0 - 100 psig
Temperature Compensation:
Automatic 0˚- 100˚C
Accuracy ± 0.2˚C

ORP & Specific Ion
Measurement Range:
ORP: -2000 mV to 2000 mV
pIon: Sensor Specific, ppb, ppm&ppt
Temperature Range:
ORP -0˚- 85˚ C, or per pIon electrode
Pressure Range:
0 - 100 psig or per pIon electrode
Temperature Compensation:
Automatic 0˚- 100˚C
Accuracy ± 0.2˚C

Dissolved Oxygen
Measurement Range:
0-20 ppm, 0-250% SAT
Temperature Range:
0˚- 85˚ C
Pressure Range:
0 - 50 psig @ 80˚C
Temperature Compensation:
Automatic 0˚- 100˚C
Accuracy ± 0.2˚C

Conductivity/Resistivity
Measurement Ranges:
Conductivity: 0.5µS to 50 mS
Resistivity: 0 - 20 MΩ
Temperature Range:
-5˚ to 85˚C
Pressure Range:
0 - 100 psig
Temperature Compensation:
Automatic 0˚- 100˚C
Accuracy ± 0.2˚C,100K thermistor
Wetted Materials:
316 SS and PEEK

Shipping Weight:
S88 (10")	2.5 lbs (1.2 kg)
S88 (17")	2.75 lbs (1.25 kg)
S88-VSS	5.8 lbs (2.65 kg)

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

TRITON® DO82 Dissolved Oxygen Sensor

The ECD 6 Point Advantage

ELECTRO -CHEMICAL DEVICES

1. **Optical Dissolved Oxygen Sensor** that uses Fluorescence Quenching Method to determine oxygen concentration in water eliminating the need for frequent calibration and membrane replacement
2. **Intelligent Sensor with Stored Calibration Data**, advanced 2nd generation software algorithms for noise free, stable output
3. **ULTRA Long Life Membrane Cap** provides years of service, there is no required/recommended annual membrane cap replacement
4. **Membrane Cap is Easily Replaceable** if physically damaged, there is no need to return the sensor for factory repair or replacement, saving time and money
5. **Universal Design with Waterproof Fixed or Detachable Cable** assemblies. Available with hand rail mounted immersion assemblies, flow through cells and automatic spray cleaning systems
6. **Interfaces with T80 Transmitter:** 4-20 mA with MODBUS RTU or HART®on the T80 transmitter, single or dual channel models

Description

The Triton® DO82 Optical Dissolved Oxygen sensor uses fluorescence quenching to determine the oxygen concentration in water. The use of this optical method by the Triton® DO82 minimizes maintenance, increases reliability and improves the long term accuracy of the measurement. Combine this improved measurement technology with the rugged, easy to install design and the Triton® DO82 provides the best solution for long term measurements in aeration basins, aquaculture and all types of environmental water.

A circular layer of optically active, oxygen sensitive molecules is integrated into an easily replaceable cap. This durable layer is highly permeable to oxygen and rapidly equilibrates to its surroundings. The cap aligns the optically active fluorescence layer above the emitter and detector inside the sensor. The emitter flashes a green light at the layer and the layer fluoresces back a red light. The duration and intensity of the fluorescence are directly dependent on the amount of oxygen in the layer. With little to no oxygen in the layer the response is longer and more intense. Oxygen, however, quenches the fluorescence response so the response decreases to shorter times and lower intensities as the oxygen level increases. Both the time and intensity values are used to calculate the oxygen level and various diagnostics functions associated with the measurement.

The optical signals are continuously monitored and analyzed to calculate the dissolved oxygen value. The O_2 level and diagnostic values, including the aging of the sensor cap are digitally communicated to the instrument. The digital communication provides a stable, trouble free connection that is immune to the RFI and EMI noise common at waste water treatment plants.

The Triton® DO82 is unaffected by changes in the flow, pH or conductivity of the sample. Unlike many amperometric dissolved oxygen sensors, there are no membranes to replace, electrolytes to refill or anode/cathode assemblies to service or replace. The only serviceable part of the Triton® DO82 sensor is the easily replaceable sensor cap and it should provide greater than two years of service in an aeration basin.

The standard installation method for **The Triton® DO82** sensor is immersion into a basin or stream with the sensor mounted at the end of a PVC extension pipe. Rail Mounting Brackets and Wall Mounting Brackets are available. For installations where immersion mounting is not convenient or possible, a flow through assembly is also available.

ELECTRO-CHEMICAL DEVICES

The TRITON® DO82

Specifications

Measurement Range
0 - 20 mg/l (0 - 20 ppm)
0 - 200 % Saturation
0 - 400 hPa (0 - 6 psi)

Pressure Range
Maximum Pressure 10 bar (145 psi)

Temperature Range
-5˚ - 50˚C (20˚ - 120˚F) Measuring
-20˚ - 60˚C (0˚ - 140˚F) Ambient

Response Time
T_{90} = 60 sec

Accuracy
Max. error < 0.02 ppm below 12 ppm, 0.04 ppm >12 and <20 ppm
Temperature Element Class B Pt RTD: ±0.3˚C

Repeatability
±0.5 % of measured range

Resolution
0.01 ppm or 0.01 % Saturation

Wetted Materials
316 SS, CPVC, Silicone

Sensor Cable
Shielded 4 core cable
10 ft (3 m), 20 ft (6.1 m), 30 ft (9.1 m), 40 ft (12.2 m),
50 ft (15.25 m) lengths
Optional Detachable cable assembly, IP68 rating

Process Connection
¾" NPT, rear facing thread or G1 rear facing thread

Maximum Cable Length
100 m maximum from T80 transmitter

Dimensions
Length 8.0" (200 mm, rear thread to front)
Diameter 1.6" (40 mm)

Weights
Cable length 10 ft (3 m): 0.7 kg (1.5 lbs)
Cable length 50 ft (15.2 m): 1.1 kg (2.4 lbs)

Part Number Configurator

DO82	TRITON DO82 Optical Dissolved Oxygen Sensor				
Sensor Style	0	(I) Immersion Style Sensor - ¾" MNPT			
	1	(IM) Immersion Style Sensor - G1 thread			
	2	(F) Flow Cell Style Sensor - ¾" FNPT entries			
	3	(FM) Flow Cell Style Sensor - DN25 entries			
	Spray Cleaner	00	No Spray Cleaner		
		01	(SC) Spray Cleaner		
		02	(SC2) Spray Cleaner for Flow Cell Style		
		03	PVC Compression Fitting, DO82 to 1¼" MNPT		
		Cable Style	-0	Fixed Cable	
			-1	(DA) Axially Detachable Cable	
			Cable Length	00	No Cable
				10	10 ft
				20	20ft (Standard)
				30	30 ft
				40	40 ft
				50	50 ft
				X0	Specify Length
DO82 -	0	00	-1	20	

Accessories and SpareParts

1000334-XX (X=length in ft), -99 (user supplied 1" pipe)	Immersion assembly, (¾" FNPT to 1" pipe adapter, 1" Cable feed thru, 5 ft x 1" PVC pipe down tube)
1000234-XX (X=length in ft), -99 (user supplied 1" pipe)	Immersion assembly, (G1 to 1" pipe adapter, 1" Cable feed thru, 5 ft x 1" PVC pipe down tube)
1000450-1 (¾" FNPT entries), -2 (G¾ entries)	Flow thru assembly, PVC, ¾" FNPT or G¾ entries with DO82 compression fitting
2500207-1	Replacement Membrane Cap (optically active component)
1000255	O-Rings (2) sealing o-rings for sensor cap

Engineering Specification

1. The dissolved oxygen sensor shall use Fluorescence Quenching as the method for continuously monitoring the dissolved oxygen.
2. The sensor should meet an ingress protection rating of IP68.
3. The sensor shall be housed in 316 SS and the body shall be constructed of chlorinated polyvinyl chloride, CPVC plastic.
4. The optically active surface shall be coated with silicone rubber.
5. The operation of the sensor should not be affected by changes in the pH of the solution or changes in the flow or air bubbles at the sensing tip.
6. The operation of the sensor should not be affected by H_2S or other reducing agents in the sample, or chlorine and other oxidizing chemicals in the sample.
7. The sensor shall facilitate either immersion (pipe) mounting or flow through designs.
8. The sensor shall be 8.0" L x 1.6" diameter with rear facing ¾" MNPT or G1 threaded connection.
9. The sensor shall have a threaded, replaceable, optically active cap that does not require annual/yearly replacement.
10. The sensor shall be available with a fixed cable or an optional waterproof IP68 detachable cable assembly.
11. The analyzer shall be an ECD Triton® Series DO82 dissolved oxygen sensor and T80 transmitter manufactured by Electro-Chemical Devices, Inc.

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Triton® TR80

Turbidity Measurement

Drinking Water, Industrial Water, Water Treatment

Suspended Solids

Waste Water Treatment Paper and Pulp Processing
Environmental Run-Off

ELECTRO-CHEMICAL DEVICES

Triton® TR80 Series Turbidity/SS Sensors

Applications

Clear Water Sensor

- All phases of drinking water processing
- Control of Clear Rinse Water
- Filter rupture or backwash
- Monitoring WWTP discharge
- Monitoring Surface Waters

Suspended Solids Sensor

- Actvated sludge WWTP
- Return & Digested Sludge WWTP
- Filtrate in paper manufacturing
- Blending Mixing Applications
- Monitoring Environmental runoff

Features and Benefits

- Intelligent Sensor Technology
  Factory Calibration Stored in Sensor
  Self Monitoring Diagnostics. Interfaces with T80 Universal Transmitter with Modbus, HART, 4 to 20 mA and/or Relay outputs.
- Multiple Installation Methods
  Immersion assembly
  Flow through assembly
  Gas debubbler assembly
- Self Cleaning Design
  Automated wiper design - can be programed for frequency and duration

Description

The Triton®TR80 is a nephelometric turbidity sensor designed for use in water and wastewater. Turbidity, the cloudiness or haziness of a water sample, is caused by particles suspended in the water, tupically caly and silt. Since bacteria and viruses can be atttached to these particles, turbidity has become a critical indicator of the overall water quality. The Triton®TR80 uses and optical method for determining the turbidity, a light beam is directed into thr sample where it is scattered by suspended particles in the water. The amount of scattering depends on the amount of material in the water, the wavelength of light, and the size and composition of the suspended particles. The Triton®TR80 uses a near infrared LED light source and the 90° scattered light method in accordance with ISO 7027 / EN 27027 to assure accurate turbidity values under standardized and comparable conditions.

The TR80 incorporates an automated mechanical wiper design which can be programed for frequency and duration. This can be controlled by the T80 Transmitter or manually activated by a remote swich.

The TR80 response depends on the size, shape and composition of the suspended particles. For this reason, mg/L, ppm and % Solids measurements must be calibrated with suspended solids from the waters to be monitored. Turbidity measurements (NTU, FNU) can be calibrated with calibration standards such as Formazin, StablCal or SDVB beads.

The Triton®TR80 sensors are available in (4) different ranges. The sensors are 10 inches long by 1 inch diameter with a reference line scored into the PVC body. This indicates the proper insertion depth of the sensor when used with the ECD compression fitting on the flow through Tee. Triton® TR80 sensor ranges are: **For other ranges please contact the factory**

< 40 NTU
0-1000 NTU
0-4000 NTU
0-5000 mg/l
5000-10,000 mg/l (MUD)
50,000-100,000 mg/l (SAND)

The Triton®TR80 sensors are designed to work with the T80 transmitter. The T80 is a single or dual channel transmitter with one or two 4-20 mA outputs with MODBUS RTU and optional (3) Alarm Relays or HART 7 communication. The T80 Transmitter allows the suspended solids measurement to be combined with any of it's other standard measurements using the S80 pH, S80 ORP, S80 pIon, S80 Conductivity or S80 Dissolved Oxygen or DO 82 sensors.

Triton® TR80 Series Turbidity/SS Sensors

Immersion Holder Flow Through Assembly Debubbler Assembly

The Triton TR80 uses an optical method for determining the turbidity, a light beam is directed into the sample where it is scattered by suspended particles in the water. The amount of scattering depends on the amount of material in the water, the wavelength of light used and the size and composition of the suspended particles. Designed for use in environmental water, the Triton TR80 is suitable for most aqueous applications. It is not suitable for use in organic solvents or in solutions with an extreme pH value, only use when the pH is between 2-12 pH. The temperature range for the sensor is 0˚ to 50˚C. Turbidity, the cloudiness or haziness of a water sample, is caused by particles suspended in the water, typically clay and silt. Since bacteria and viruses can be attached to these particles, turbidity has become a critical indicator of the overall water quality.

TR80 Installation is accomplished with a 1" stand pipe for immersion service, PVC flow cell for an in line flow through application, or De-Bubbler for Micro air bubble applications. Either optical configuration is suitable for immersion service while only the Side Mounted optical configuration is suitable for in line service. Applications of < 40 NTU range must use the Side Mounted optical configuration, and for best accuracy, must be calibrated in a Flow Cell or De-Bubbler Assembly. The standard cable is a water resistant 4 conductor cable. It is available with 10 ft, 20 ft or 30 ft (9.1 meters) lengths.

The Optical Surface must remain clean for accurate measurements. The included sensor face of the TR82 should be oriented into the flow cell for optimum self cleaning. Periodic cleaning is required for all turbidity sensors, which could entail simply removing the sensor and wiping the optical surface with a soft cloth to remove any dirt or biofilms. The Flow Through Assembly provides a port for accommodating a spray cleaning capability.

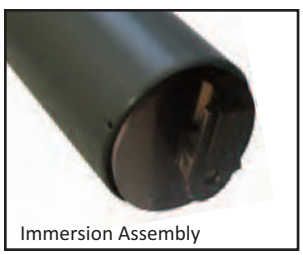
Air bubbles in the water reflect light and will interfere with the measurement. Micro air bubbles can form when a water sample is depressurized. Care must be taken to ensure the water sample at the measurement point has a higher head pressure than the incoming sample. Water siphoning out from the measurement point can release dissolved gases in the flow cell and create noisy erratic readings. If air bubbles cannot be removed from the sample then the optional wiper assembly effectively removes air bubbles that form on or cling to the optical window. The De-Bubbler flow cell removes air bubbles that are entrained in the sample flow.

The Triton TR80 sensors are factory calibrated in formazine, NTU (Nephelometric Turbidity units) and are ready to use in most clean water applications. The factory calibration is permanently stored in the sensor's memory and these values are also used for diagnostic purposes throughout the sensor's life. Two other nonvolatile memory banks are available to store user initiated calibration data.

The TR80 Turbidity Sensor is easy to install, it is easy to use with NTU factory calibration, it is Plug and Play. With the rugged construction including a tough sapphire optical window, self monitoring diagnostics with plausibilty checking and an automatic wiper based cleaner the TR82 Turbidity sensor is reliable, accurate and requires minimal maintenance, it is the solution.

9" x 0.98" (229 mm x 25 mm)

Flow Through Cell



Immersion Assembly

Triton® TR80 Series Turbidity/SS Sensors

Specifications

Measuring principle:

Particle caused back scattering of near infrared light

90° scattered light method in accordance with ISO 7011/EN27087

Measuring Range:

-0 sensor

0.00-1000 mg/l or 0 ... 1000 NTU, FNU

-2 sensor

0.00-5000 or greater mg/l or 0 ... 4000 NTU, FNU, ppm,mg/L and %solids

-4 sensor

0.00-40 mg/l or 0 ... 40 NTU, FNU

Process Temperature Range:

–5 ... 50°C

Temperature Compensation:

Internal Temperature compensation

Process pressure range:

50 psi max. in Flow Cell.

Wetted Materials

Sensor body: CPVC, Polypro optional

Sensing end: epoxy

Process Connection:

3/4" NPT on back end of sensor

Electrical connection

Water Resistant 5-wire measuring cable(Standard)

Cable Length:

10 ft (3.0 m), 20 ft (6.1 m), 30 ft(9.1 m) cables

Model Triton®TR80 Turbidity Sensor, Part # Guide					
TR80	Sensor Style (optical configuration)				
	1	Front optics			
		Process Connection			
		0	None		
		1	1" MNPT Nylon Gland Fitting		
		2	Flow Through Cell, 2 x 2" FNPT entries, 1 x sensor port		
		5	Flow Through Cell, 2 x 2" FNPT entries, 1 x sensor port with spray cleaner		
		8	De-Bubbler 3/4" FNPT entries		
		9	Sensor fitted with collar used with De-Bubbler Assembly		
			Cable Length		
			04	10 ft (3.0 m)	
			05	20 ft (6.1 m)	
			06	30 ft (9.1 m)	
				Measurement Ranges	
				0	0-1000 NTU
				2	0-4000 NTU (mg/L SS)
				4	<40 NTU (Calibration in Flow Cell/DB)
TR80-	**1**	**0**	**04**	**2**	

Model Triton® TR80 Installation Assemblies	
Part #	**Description**
1000264-5	Immersion Assembly, 5 ft x 1"OD standpipe, with fitting and T-Handle
1000264-99	Immersion Assembly, User supplied standpipe, with fitting and T-Handle
1000280	Flow Through Tee, 4" PVC tee base reduced to 2" FNPT entries

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Drive
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

Triton TR82

Turbidity Measurement

Drinking Water, Industrial Water, Water Treatment

Suspended Solids

Waste Water Treatment Paper and Pulp Processing
Environmental Run-Off

ELECTRO-CHEMICAL DEVICES

Triton TR82 Series Turbidity/SS Sensors

Applications

Clear Water Sensor

- All phases of drinking water processing
- Control of Clear Rinse Water
- Filter rupture or backwash
- Monitoring WWTP discharge
- Monitoring Surface Waters

Suspended Solids Sensor

- Activated sludge WWTP
- Return & Digested Sludge WWTP
- Filtrate in paper manufacturing
- Blending Mixing Applications
- Monitoring Environmental runoff

Features and Benefits

- Intelligent Sensor Technology
  Factory Calibration Stored in Sensor, Self Monitoring Diagnostics, Interfaces with T80 Universal Transmitter, with MODBUS, HART, 4 to 20 mA and/or Relay outputs and LQ800 Multi-Channel Controller.
- Multiple Installation Methods
  Immersion assembly
  Flow through assembly
  Gas debubbler assembly
- Self Cleaning Design
  Parallel sensor surface design to enhance self cleaning with moderate flow. Sensor with spray cleaning option or with flow cells that can be fitted with spray cleaners.

Description

The Triton TR82 is a nephelometric turbidity sensor designed for use in water and wastewater. Turbidity, the cloudiness or haziness of a water sample, is caused by particles suspended in the water, typically clay and silt. Since bacteria and viruses can be attached to these particles, turbidity has become a critical indicator of the overall water quality. The Triton TR82 uses and optical method for determining the turbidity, a light beam is directed into the sample where it is scattered by suspended particles in the water. The amount of scattering depends on the amount of material in the water, the wavelength of light, and the size and composition of the suspended particles. The Triton TR82 uses a near infrared LED light source and the 90° scattered light method in accordance with ISO 7027 / EN 27027 to assure accurate turbidity values under standardized and comparable conditions.

The TR82 response depends on the size, shape and composition of the suspended particles. For this reason, mg/L, ppm and % Solids measurements must be calibrated with suspended solids from the waters to be monitored. Turbidity measurements (NTU, FNU) can be calibrated with calibration standards such as Formazine, StablCal or SDVB beads.

The Triton TR82 sensors are available in (4) different ranges. The sensors are 10 inch by 1 inch diameter with CPVC sensor body. This Triton TR82 sensor ranges are: **For other ranges please contact the factory**

< 30 NTU
0-1000 NTU
0-4000 NTU
0-5000 mg/l
5000-10,000 mg/l (MUD)
50,000-100,000 mg/l (SAND)

The Triton TR82 sensors can interface with the ECD T80 transmitter or the ECD LQ800 multi-channel controller. The T80 is a single or dual channel transmitter with one or two 4-20 mA outputs with MODBUS RTU and optional (3) Alarm Relays or HART 7 communication. The T80 Transmitter allows the turbidity or suspended solids measurement to be combined with other measurements using the ECD S80 pH, ORP, pIon, Conductivity or Dissolved Oxygen, DO82 sensors and other ECD sensors. The LQ800 is an 8 channel controller interfacing with all ECD analytical sensors and analyzers and other process sensors such as level, flow or pressure.

Triton TR82 Series Turbidity/SS Sensors

Sensor with Process Fitting | Flow Through Assembly | Debubbler Assembly

The Triton TR82 uses a nephelometric 90˚ NIR scattered light optical method for determining turbidity or suspended solids. A light beam is directed into the sample where it is scattered by suspended particles in the water. The amount of scattering depends on the amount of material in the water, the wavelength of light used and the size and composition of the suspended particles. Designed for use in environmental, water treatment, or drinking water, the Triton TR82 is suitable for most aqueous applications. It is not suitable for use in organic solvents or in solutions with an extreme pH value, only use when the pH is between 2-12 pH. The temperature range for the sensor is 0˚ to 50˚C. Turbidity, the cloudiness or haziness of a water sample, is caused by particles suspended in the water, typically clay and silt. Since bacteria and viruses can be attached to these particles, turbidity has become a critical indicator of the overall water quality.

TR82 Installation is accomplished with a 1" stand pipe for immersion service, PVC flow cell for an in line flow through application, Valve Retractable, or De-Bubbler for Micro air bubble applications. Typically, applications of < 30 NTU range use a flow cell or de-bubbler assembly and must be calibrated as an assembly with the sensor for best accuracy. The standard cable is a 4 conductor cable available with 10 ft (3m), 20 ft (3.1m) or 30 ft (9.1) lengths, longer cable is available for special order.

The Optical Surface must remain clean for accurate measurements. The sensor sensing face of the TR82 should be oriented so that the flow of the water can clean remove particles that could adhere to the sensor face. Optional self cleaning functions are available, such as, spray cleaning attachments and flow cell with automated spray cleaning. In simple immersion applications, periodic cleaning is required for all turbidity sensors, which could entail simply removing the sensor and wiping the optical surface with a soft cloth to remove any dirt or biofilms.

Air bubbles in the water reflect light and will interfere with the measurement. Micro air bubbles can form when a water sample is depressurized. Care must be taken to ensure the water sample at the measurement point has a higher head pressure than the incoming sample. Water siphoning out from the measurement point can release dissolved gases in the flow cell and create noisy erratic readings. If air bubbles cannot be removed from the sample, an optional De-Bubbler flow cell can be used which removes air bubbles that are entrained in the sample flow.

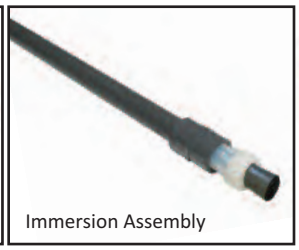
The Triton TR82 sensors are factory calibrated in formazine, NTU (Nephelometric Turbidity units) and are ready to use in most clean water applications. The factory calibration is permanently stored in the sensor's memory and these values are also used for diagnostic purposes throughout the sensor's life. Additional nonvolatile memory are used to log user initiated calibration data.

The TR82 Turbidity Sensor is easy to install, it is easy to use with NTU factory calibration, it is Plug and Play. With the rugged construction including a rugged optical window, self monitoring diagnostics and nephelometric 90˚ NIR scattered measurement method, the TR82 Turbidity sensor is reliable, accurate and requires minimal maintenance, it is the solution.

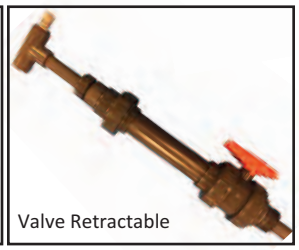
Sensor sensing surface area

Flow Through Cell with optional spray cleaner

De-Bubbler Flow Cell



Immersion Assembly



Valve Retractable

Triton® TR82 Series Turbidity/SS Sensors

Specifications

Measuring principle:

Particle caused back scattering of near infrared light

90° scattered light method in accordance with ISO 7027/EN27027

Measuring Range:

-1 sensor,

0.00-1000 mg/l or 0 ... 1000 NTU, FNU

-3 sensor

0.00-5000 or greater mg/l or 0 ... 4000 NTU, FNU, ppm,mg/L and % solids

-4 sensor

0.00-30 mg/l or 0 ... 30 NTU, FNU

Process Temperature Range:

23 to 122°F / 5 to 50°C

Process pressure range:

50 psi / 3.5 bar max. in Flow Cell.

Wetted Materials

Sensor body: CPVC, Polypro optional

Sensing end: epoxy

Process Connection:

1" NPT Nylon compression fitting

Electrical connection

4-wire measuring cable(Standard)

Cable Length:

10 ft (3.0 m), 20 ft (6.1 m), 30 ft(9.1 m) cables

Model Triton TR82 Turbidity Sensor, Part # Guide					
TR82	Sensor Housing Material				
	1	Front Mounted Optics / CPVC Sensor Body			
	2	Front Mounted Optics / Polypropylene Body			
		Process Connection			
		0	None		
		1	1" MNPT Nylon Gland Fitting		
		2	Flow Through Cell, 2 x 2" FNPT entries, 1 x 1" FNPT sensor port		
		5	Flow Through Cell, 2 x 2" FNPT entries, 1 x 1" FNPT sensor port with spray cleaner		
		8	De-Bubbler 3/4" FNPT entries		
			Cable Length		
			01	10 ft (3.0 m) Waterproof/Submersible Cable	
			02	20 ft (6.1 m) Waterproof/Submersible Cable	
			03	30 ft (9.1 m) Waterproof/Submersible Cable	
			04	10 ft (3.0 m) Water Resistant Outdoor Cable	
			05	20 ft (6.1 m) Water Resistant Outdoor Cable	
			06	30 ft (9.1 m) Water Resistant Outdoor Cable	
				Measurement Ranges	
				0	0-1000 NTU
				2	0-4000 NTU (mg/L SS)
				4	<30 NTU (Calibration in Flow Cell/DB)
(Example) TR82-	**1**	**0**	**01**	**2**	

Model Triton TR82 Installation Assemblies	
Part #	**Description**
1000260-5	Immersion Assembly, 5 ft x 1"OD standpipe, with 1" compression fitting and T-Handle
1000260-99	Immersion Assembly, User supplied standpipe, with 1" Compression fitting and T-Handle
1000280-1	Flow Through Tee, 4" PVC tee base reduced to 2" FNPT entries
3600066.NY	1" MNPT Nylon Gland Fitting

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices

1500 North Kellogg Drive

Anaheim, California, USA 92807

Phone: +1-714-695-0051

+1-800-729-1333

Fax: +1-714-695-0057

email: sales@ecdi.com

web: www.ecdi.com

Triton EV82 Environmental Sensors

The ECD 6 Point Advantage

ECD ELECTRO -CHEMICAL DEVICES

1. **Fluorescence Sensing Technology** to measure in vivo Chlorophyll, Algae, phytoplankton, Cyanobacteria and other plant matter in marine and fresh water applications
2. **Intelligent Sensor with Stored Calibration Data**, advanced generation software algorithms for fast settling time & stable output
3. **Built in Light Scatter Rejection** limits the effect that external reflected light sources have on the measurement
4. **Multiple Optical Configurations in standard sensor format** which are interchangeable sensors to match the application requirement, just select the sensor configuration at time of order
5. **Universal Design with Waterproof Fixed Cable** assemblies. Available with immersion assemblies, standpipes, flow through cells and automatic spray cleaning systems
6. **Interfaces with T80 Transmitter an LQ800 Multi-Channel controllers:** 4-20 mA with MODBUS RTU or HART®, Relay outputs on the transmitter and controllers, single, dual or 8 channel models and remote monitoring systems

Description

The Triton EV82 environmental Sensor Series measure Chlorophyll, Algae, Phytoplankton, Cyanobacteria and other plant matter. The sensors utilize the state-of-the-art Fluorescence technology in four unique optical configurations for water quality and environmental applications. The EV82 sensors are of the ECD Intelligent Sensor design with Digital Communication. Calibration data is stored in the sensor allowing field installation of a pre-calibrated sensor. The EV82 sensors directly connect to the ECD T80 Universal Transmitter, the LQ800 Multi-Channel Controller or directly with a control system/PLC via the sensor serial communication.

Applications include: Drinking water, Aquaculture, Ocean/River/Lake Studies, River and surface water quality, and Water Desalination Plants. Sensor configurations include: Chlorophyll/Algae/Phytoplankton using either Blue Excitation optics for typically marine water application or Red Excitation for dissolved organics in Freshwater applications.

Also available is Cyanobacteria Sensors for blue-green Algae which measures phycocyanin for freshwater cyanobacteria or phycoerythrin for marine water cyanobacteria. Sensors are typically used to measure rising or lower trends of the desired measurement.

The most common application and sensor used is Chlorophyll measurement. Chlorophyll is bound within the living cells of algae, phytoplankton, and other plant matter found in water. Chlorophyll is a commonly used measure of water quality, and concentrations are an indicator of algae abundance and productivity in aquatic environments. Higher concentrations typically indicate poor water quality, usually when high algae production is maintained due to high nutrient concentrations.

In applications where cyanobacteria are most present or phytoplankton is needed to be measured, the phycocyanin or phycoerythrin sensor configurations are the appropriate sensor for the application. The EV82 Sensors provide real time measures of relative changes in phytoplankton biomass. Where quantitative values using laboratory methods are needed (typically in ug/L), the EV82 sensor can be standardize or correlated by the use of grab samples for in quantitative lab analysis and the correlated or standardized to these values to determine this measured relationship.

ELECTRO-CHEMICAL DEVICES

Triton EV82

Specifications

Measurement Technology
Fluorescence

Measurement Parameter
-1 Chlorophyll - Algae - Blue Excitation
-3 Chlorophyll - Algae - Red Excitation
-5 Phycocyanin
-7 Phycoerythrin

Measurement Range
-1 = 0 to 500 ug/L
-3 = 0 to 500 ug/L
-5 = 0 to 4000 ppb
-7 = 0 to 750 ppb

Minimum Detection Limit
-1 = 0.03 ug/L
-3 = 0.3 ug/L
-5 = 2 ppb
-7 = 0.1 ppb

Temperature Range
-0˚ - 50˚C (32˚ - 120˚F) Measuring
-0˚ - 60˚C (32˚ - 140˚F) Ambient

Wetted Materials
CPVC, Epoxy Coating

Sensor Cable
Shielded 4 core cable
10 ft (3 m), 20 ft (6.1 m), 30 ft (9.1 m), 40 ft (12.2 m),
50 ft (15.25 m) lengths
Optional Detachable cable assembly, IP68 rating

Ingress Protection
IP68

Process Connection
1" MNPT

Maximum Cable Length
100 m maximum from T80 transmitter

Dimensions
Length 10" (250 mm)
Diameter 1.0" (25 mm)

Weights
Cable length 10 ft (3 m): 0.7 kg (1.5 lbs)
Cable length 50 ft (15.2 m): 1.1 kg (2.4 lbs)

Part Number Configurator

EV82	TRITON EV82 Series Environmental Sensor				
Sensor Style	1	Chlorophyll - Algae - Blue Excitation 0-500 ug/L (Standard)			
	3	Chlorophyll - Algae - Red Excitation 0 -500 ug/L			
	5	Phycocyanin - 0 - 4000 ppb			
	7	Phycoerythrin - o - 750 ppb			
	Process Fitting	00	No Process Fitting		
		01	1" MNPT PP Gland Fitting		
		02	Flow Through Cell, 2 x 2" FNPT Entries, 1 x 1" FNPT sensor port		
		03	De-Bubbler 3/4" FNPT Entries		
		Cable Style	-0	Fixed Cable (Waterproof Submersible Cable Style)	
			-1	(DA) Axially Detachable Cable (consult factory)	
			Cable Length	00	No Cable (consult factory)
				10	10 ft
				20	20ft (Standard)
				30	30 ft
				40	40 ft
				50	50 ft
				X0	Specify Length
EV82 -	0	00	-1	20	

Accessories and Spare Parts

2000260-XX (X=length in ft), -99 (user supplied 1" pipe)	Immersion assembly, (1" FNPT to 1" pipe diameter, 1" Cable feed thru, PVC pipe down tube with Tee Handle)
1000300-1	Data Logger - USB
1000251-4	Retractable Valve Assembly
3600066.PP	1" MNPT Polypropylene Gland Fitting
Calibration Solutions	Consult Factory for Calibration Solutions

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Ammonium HYDRA®-DS

ELECTRO-CHEMICAL DEVICES

Features

- Ammonium ISE electrode
- K+, pH and Temp. electrodes
- Rugged PVC design
- Integral Spray Head Cleaner
- Calibration stored in Digital Sensor

Benefits

- Fast and Accurate Ammonium Measurement NH_4+ or NH_4+-N
- Fully compensated for pH, K+ interferences & Temperature
- Removable electrode guard for easy maintenance
- Clean sensor in situ with pressurized water or air
- Digital Sensor for use with T80 Universal Transmitter

NH4-N HYDRA®-DS

Description

The Ammonium HYDRA®-DS Analyzer measures the concentration of dissolved ammonium as nitrogen (NH_4^+-N) in water. The sensor uses three electrodes to determine the NH_4^+-N concentration, an Ammonium Ion Electrode, a Potassium Ion Electrode and a pH Electrode. It is designed for use in all kinds of water. Typical applications include monitoring environmental waters, lakes, streams and wells as well as wastewater treatment in aeration basins and effluent.

The Ammonium Ion Electrode provides the primary measurement. Any potassium ion in the sample generates a positive interference in the measurement, due to its similar size and charge to the ammonium ion. A Potassium Ion Electrode measures the amount of potassium ion present in the sample and T80 Transmitter subtracts the appropriate amount of signal from the Ammonium Measurement.

The Ammonium Ion Electrode only measures the ammonium ion (NH_4^+) not ammonia (NH_3). Ammonium ion and ammonia coexist in a pH dependent ratio in solution. The more acidic pH values favor the NH_4^+ and the more basic values favor dissolved ammonia gas, NH_3. The pH Electrode measures the pH and the T80 Universal Transmitter calculates the total NH_4+-N concentration based on the pH vs. NH_4^+ concentration profile stored in the instrument.

Temperature is measured and used to compensate each of thethree electrode measurements. While the pH Electrode's response is well defined with respect to temperature, the ion electrodes, NH_4^+ and K^+, tend to be less well behaved. For the best results, calibrate the sensors near the process temperature.

The Ammonium HYDRA®-DS Analyzer is configured to periodically actuate a cleaning cycle using the integral spray cleaner in the sensor. This minimizes the formation of biofilms or other coatings on the electrodes which keeps maintenance to a minimum. The period and duration of the cleaning cycles are user configurable. During the cleaning cycle the 4-20 mA output is held at either the last value or a preset value.

The rugged HYDRA®-DS Sensor has 1 ¼" NPT rear facing threads for attaching an extension/immersion tube for easy installation from catwalks or handrails. The HYDRA sensor is submersible with an IP68 degree of ingress protection. The HYDRA sensor can not be supported by the cable and the cable must not be immersed in the water.

A removable electrode guard facilitates easy electrode replacement when necessary. The HYDRA-DS is a digital sensor that allows any size length of cable.

Ammonium HYDRA®-DS

Specifications

Sensor

Sensor
Three Electrode system with spray cleaner, Ammonium ISE (NH_4^+- N) is the primary measurement. The Potassium ISE and pH glass electrodes are used to compensate the NH_4^+ signal. The Sensor is waterproof with an ingress rating of IP 68.

Measurement Range
NH_4^+- N: 0.1 to 14,000 ppm

Operating Temperature
0° C to 50° C (32° F to 122° F)

Min/Max Flow Rate
Minimum 0.1 m/s
Maximum 3.0 m/s

Wetted Materials
PVC, PES, PVDF, PTFE, Viton, Glass, 316 SS

Accuracy
± 2% of reading, dependent on Calibration

Response Time
T90 1 minute

Electrode Life
ISEs: 4- 6 months, typical
pH electrode: 6-12 months, typical

T80 Transmitter

Measurements
Ammonium: 0.01 to 14,000 ppm as NH_4^+- N
Potassium: 0.01 to 40,000 ppm
pH: 0 to 14 pH
Temperature: 0° C to 100° C (32° F to 212° F)

Compensation
pH 4 - 10 pH
Potassium: 0.1 to 1000 ppm

Display
2.5" X 1.75" backlit LCD

Enclosure
NEMA 4X, LxWxD: 5.7" x 5.7" x 3.5"

Outputs
(2) 4-20 mA & MODBUS
Configured: 0.1 to 50 mg/l NH_4^+- N
0 - 100 mg/l K^+

Optional HART configuration

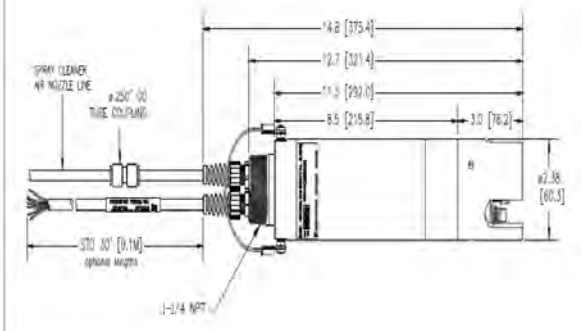
Input Power
110/220 VAC @ 50/60 Hz

Alarm Relay Ratings
(3) SPDT 230 VAC/5A
Relay(1) Spray Cleaner

Part No.	Model and Product Description
1290130-1	HYDRA®-DS NH_4-N Sensor, complete, NH_4, K^+, pH, Temp, Spray Cleaner head and 30 ft. cable
1290130-2	HYDRA®-DS NH_4-N Sensor, complete, NH_4, pH, Temp, Spray Cleaner head and 30 ft. cable (No K+ Sensor)
T80-11-212-01	T80 Transmitter NH_4-N Analyzer, K^+ compensated, (2) 4-20 mA output, 0.1 - 50 ppm NH_4-N and (3) relays*

* Consult Factory for Part# and pricing of optional configurations.

Part No.	Spare Parts and Accessories Description
2005083.VIT	Ammonium Electrode Cartridge (recommended spare)
2005034.VIT	Potassium Electrode Cartridge (recommended spare)
2005145.VIT	pH Electrode Cartridge (recommended spare)
3300854-1	Replacement Spray Nozzle
3501050-1	PVC Front Sensor Guard
2010449-1	Ammonium Calibration solution, NH_4-N 10 ppm
2010446-1	Ammonium Calibration solution, NH_4-N 100 ppm
2010441-1	Potassium Calibration solution, 10 ppm
2010444-1	Potassium Calibration solution, 100 ppm
2010100	pH 4 Buffer Calibration solution
2010101	pH 7 Buffer Calibration solution
1000300-1	4-20 mA USB Data Logger



Ammonium Hydra-DS Dimensions

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Nitrate HYDRA®-DS

ELECTRO-CHEMICAL DEVICES

Features

- Nitrate ISE electrode
- Cl -and Temp. electrodes
- Nitrate, Ammonium Option
- Rugged PVC design
- Integral Spray Head Cleaner
- Calibration stored in Sensor

Benefits

- Fast and Accurate Nitrate Measurement NO_3- or NO_3--N
- Fully compensated for Cl- interferences & Temperature
- Follow nitrification progress
- Removable electrode guard for easy maintenance
- Clean sensor in situ with pressurized water or air
- Digital Sensor for use with T80 Universal Transmitter

NO3- N HYDRA®-DS

Description

The HYDRA® Nitrate Analyzer measures the concentration of dissolved nitrate as nitrogen (NO_3^--N) in water. The sensor uses two electrodes to determine the NO_3^--N concentration, a Nitrate Ion Electrode and a Chloride Ion Electrode. It is designed for use in all kinds of water. Typical applications include monitoring environmental waters, lakes, streams and wells as well as wastewater treatment in aeration basins and effluent.

Nitrogen primarily enters a municipal wastewater treatment plant as ammonia/ammonium compounds. Nitrification oxidizes the toxic ammonium ion into much less toxic nitrate ion using an aerobic activated sludge process. De-nitrification reduces the nitrate ion (NO_3^-) to nitrogen gas (N_2) by an anoxic reaction in the same treatment basin or in a separate anaerobic digester. The NO_3^--N measurement can optimize the methanol being fed to the digester, minimizing cost, and also provide a trend of the total nitrogen (TN) in the effluent.

The Nitrate Ion Electrode provides the primary measurement. A second electrode measures the Chloride ions in the sample. The chloride ion due to its similar size and charge to the nitrate ion, causes a positive interference in the measurement. The Chloride Ion Electrode measures the amount of chloride ion present in the sample and the T80 transmitter subtracts the appropriate amount of signal from the Nitrate Measurement.

An optional pH or NH_4^+electrode is also available in the HYDRA®-NO3 sensor. While not required for the measurement an optional pH or ammonium electrode can provide valuable information about the process. Temperature is measured and used to compensate each of the measurements. Ion electrodes tend to be less well behaved than pH electrodes so for the best results, calibrate the sensor near the process temperature. The rugged Nitrate HYDRA®-DS sensor has a 1 ¼" NPT rear facing thread for attaching an extension/immersion tube for easy installation from catwalks or handrails. The Nitrate HYDRA-DS sensor is submersible with an IP68 degree of ingress protection. A removable electrode guard facilitates easy electrode replacement when necessary. The Nitrate HYDRA-DS sensor is a digital sensor that allows any size length of cable.

The Nitrate HYDRA®-DS Analyzer displays the required measurements on the Home Screen. Provides (2) 4-20 mA outputs and three Alarm Relays. It is configured to periodically actuate a cleaning cycle using the integral spray cleaner in the sensor. This minimizes the formation of biofi lmsand other coatings on the electrodes, keeping maintenance to a minimum. The period and duration of the cleaning cycle is user configurable. The 4-20 mA output is held at either the last value or a preset value during the cleaning.

Nitrate HYDRA®-DS

Specifications

Sensor

Sensor
A Three Electrode system with spray cleaner, Nitrate ISE (NO_3^-- N) is the primary measurement. The Chloride ISE is used to compensate the NO_3^- signal. An optional pH or NH4 electrode is available for additional measurements. The Sensor is waterproof with an ingress rating of IP 68.

Measurement Range
NO_3^-- N: 0.1 to 14,000 ppm
NH_4^+- N: 0.1 to 14,000 ppm

Operating Temperature
0° to 50° C (32° F to 122° F)

Min/Max Flow Rate
Minimum 0.1 m/s
Maximum 3.0 m/s

Wetted Materials
PVC, PES, PVDF, PTFE, Viton, Glass, 316 SS

Accuracy
± 3% of reading, dependent on Calibration

Response Time
T90 1 minute

Electrode Life
ISEs: 4- 6 months, typical
pH electrode: 6-12 months, typical

T80 Analyzer

Measurements
Nitrate: 0.1 to 14,000 ppm as NO_3^-- N
Chloride: 2.0 to 35,000 ppm
Ammonium: 0.01 to 14,000 ppm as NH_4^+- N
Temperature: 0° to 100° C (32° F to 212° F)

Compensation
Chloride: 0.1 to 1000 ppm
pH: No pH compensation

Display
2.5" X 1.75" backlit LCD

Enclosure
NEMA 4X, LxWxD: 5.7" x 5.7" x 3.5"

Outputs
(2) 4-20 mA
Configured: 0.1 to 50 mg/l NO_3^-- N
0 - 14 pH

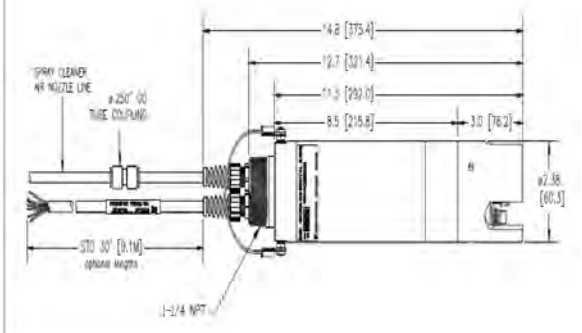
Input Power
110/220 VAC @ 50/60 Hz

Alarm Relay Ratings
(2) SPDT 230 VAC/5A
Relay(1) Spray Cleaner, Relay(2) Alarm

Part No.	Model and Product Description
1290130-3	HYDRA® NO_3-N Sensor, complete, NO_3, Cl^-, pH, Temp, Spray Cleaner head and 30 ft. cable
1290130-4	HYDRA® NO_3-N Sensor, complete, NO_3, Cl^-, Temp, Spray Cleaner head and 30 ft. cable (No pH Electrode)
T80-11-212-01	T80 Transmitter NO3-N Analyzer, Cl-, pH, (2) 4-20 mA output, 0.1 - 50 ppm NO3-N and (3) relays*

Part No.	Spare Parts and Accessories Description
2005086.VIT	Nitrate Electrode Cartridge (recommended spare)
2005008.VIT	Chloride Electrode Cartridge (recommended spare)
2005145.VIT	pH Electrode Cartridge (recommended spare)
3300854-1	Replacement Spray Nozzle
3501078-1	PVC Front Sensor Guard
2010465	Nitrate Calibration solution, NO_3-N 10 ppm
2010452	Nitrate Calibration solution, NO_3-N 100 ppm
2010460	Chloride Calibration solution, 10 ppm
2010454	Chloride Calibration solution, 100 ppm
2010100	pH 4 Buffer Calibration solution
2010101	pH 7 Buffer Calibration solution
1000300-1	4-20 mA USB Data Logger

* Consult Factory for Part# and pricing of other configurations



Ammonium Hydra-DS Dimensions

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

MODEL UV80 – UV254 SENSOR

Intelligent Sensor Design for online measurement of Organic Load – Including correlated equivalent for COD, BOD & TOC For use with the ECD Universal T80 Transmitter

APPLICATION FIELDS

- Drinking water
- Municipal waste water
- Industrial waste water
- Effluent monitoring
- Power Plants
- River and surface water
- Rain overflow basin
- Dissolved organics in water

ADVANTAGES / FEATURES

Sensor Design with Digital Communication
Calibration data is stored in the sensor allowing field installation of a pre-calibrated sensor, Detachable cable simplifies the installation of pre-calibrated sensors.

High and Low Measuring Ranges
The sensor can be configured for High or Low measuring ranges

Advanced Wiper Design
Direct insertion UV sensors must have an advanced automated wipe system to avoid continuous manual maintenance cleanings

Easy Calibration
One- or two-point calibration that can be easily done in the field if needed.
.

ADVANCED SENSOR SURFACE WIPER DESIGN

Both sides of the optical path are kept clean with automatic wiper function

UV 254 nm Optical Technology
Utilizes the state-of-the-art UV 254 nm optical absorbance technology to measure organics in water

Rugged Sensor Material
Sensor housing construction utilizing strong corrosion resistant Stainless-Steel Material or optional Titanium

Factory tested, ready for installation
Just connect the transmitter or controller and sensor is fully operational.

Directly Interfaces with Transmitters and Controllers
The OIW80 works with the ECD T80 Universal Transmitter, with the LQ800 Multi-Channel Controller or directly with a control system/PLC via the sensor serial communication.

ABOUT UV ABSORBTION TECHNOLOGY

Many dissolved organic substances have spectral characteristics capable of absorbing UV light at the wavelength of 254 nm. A UV source produces UV light radiation that passes through the optical path. The receiver analyzes the UV pulses at two different wave lengths, a measurement wavelength (254 nm) and a reference wavelength which is not influenced by the presence of organic compounds.

TECHNICAL SPECIFICATIONS

Measured Parameter	UV 254nm, Abs254, COD eq, BOD eq, TOC eq
Measuring Principle	UV 254nm absorption
Measuring Range	Low Range Configuration - up to 370 mg/L CODeq High Range Configuration – up to 1000 mg/L CODeq
Mounting	¾” MNPT Threads at back of sensor
Operating Temperature	41 to 113°F (5 to 45°C)
Dimensions	8.6 in H x 1.98 in Dia / 218 mm H x 50.2 mm Dia
Weight	1.7 lbs / 0.8 kg
Power supply	Internal from T80 Transmitter or LQ800 Controller Direct DC power
Outputs / Digital Communication	Modbus RTU RS485
Installation	Flow Cell, Fast Loop Reservoir, or Direct Immersion Standpipe
Ingress Protection	IP68

MODEL OIW80 – Oil in Water Sensor

Intelligent Sensor Design with digital communication for continuous online measurement of Oil in Water
For use with the ECD Universal T80 Transmitter

APPLICATION FIELDS

- Drinking water
- Industrial effluent monitoring
- Ocean, River, Lake Studies
- River and surface water
- Waste water

ADVANTAGES / FEATURES

Sensor Design with Digital Communication
Calibration data is stored in the sensor allowing field installation of a pre-calibrated sensor, Detachable cable simplifies the installation of pre-calibrated sensors.

Multiple Measuring Ranges
The sensor can be easily configured for various ranges of up to 30 ppm

Advanced Wiper Design
Direct insertion Oil in Water sensors must have an advanced automated wipe system to avoid continuous manual maintenance cleanings

Easy Calibration
One or two point calibration that can be easily done in the field if needed.
.

Fluorescence Sensing Technology
Utilizes the state-of-the-art Fluorescence technology to measure oil in water, which is typically proportional to its concentration

Rugged Sensor Material
Sensor housing construction utilizing strong corrosion resistant Stainless Steel Material or optional Titanium

Factory tested, ready for installation
Just connect the transmitter or controller and sensor is fully operational.

Directly Interfaces with Transmitters and Controllers
The OIW80 works with the ECD T80 Universal Transmitter, with the LQ800 Multi-Channel Controller or directly with a control system/PLC via the sensor serial communication.

ABOUT OIL in WATER FLUORESCENCE TECHNOLOGY

The measuring principle is based on fluorescence: when lighted at a specific wavelength (excitation), some chemicals re-emit light (emission) at a longer wavelength.
Very few chemicals are fluorescent giving a highly selective measurement.

TECHNICAL SPECIFICATIONS

Measured Parameter	Oil in Water
Measuring Principle	Fluorescence
Measuring Range	0 to 30 ppm (mg/L)
Flow rate in fast loop reservoir or ECD Flow Cells	80-500 mL/minute
Operating Temperature	41 to 113°F (5 to 45°C)
Dimensions	5.8 in H x 1.98 in Dia / 147 mm H x 50.2 mm Dia
Weight	1.4 lbs / 0.6 kg
Power supply	Internal from T80 Transmitter or LQ800 Controller Direct power 8 to 24 VDC
Outputs / Digital Communication	Modbus RTU RS485
Installation	Flow Cell, Fast Loop Reservoir, or Direct Immersion Standpipe
Ingress Protection	IP68

Model T80 Universal Transmitter

Measure pH, ORP, Specific Ion, Dissolved Oxygen,
Turbidity, Conductivity or Resistivity with
Model S80 Intelligent Sensors

ECD ELECTRO-CHEMICAL DEVICES

Model T80 Universal Transmitter

The ECD 6 Point Advantage

1. **Universal Transmitter:** single or dual channel, measures pH, ORP, DO, Specific Ion, Turbidity, Conductivity or Resistivity
2. **Graphic LCD Display:** Easy to Read Graphical and Numerical Information
3. **Simple Menu Structure:** Intuitive, Easy to navigate and Configure
4. Use with ECD **Digital Intelligent Sensors** that are factory calibrated sensors and store data
5. **4-20 mA output with MODBUS RTU and Alarm Relays:** Flexible configurations for all applications
6. **HART® communication**

Description

The ECD Model T80 Universal Transmitter is a single or dual channel transmitter designed for the continuous measurement of pH, ORP, pION, Dissolved Oxygen, Turbidity, Conductivity or Resistivity in a general purpose industrial environment. The Model T80 transmitter digitally communicates with any ECD Model S80 Intelligent Sensor, automatically configuring the transmitter's menus and display screens to the measured parameter. The same transmitter can be used for any of the measurements, i.e. plug an S80 Conductivity Sensor into a Model T80 pH transmitter and it will automatically reconfigure into a conductivity transmitter. There is no longer any need to inventory multiple instrument types, the one Model T80 transmitter will automatically configure to any of the listed measurements.

SENSORS

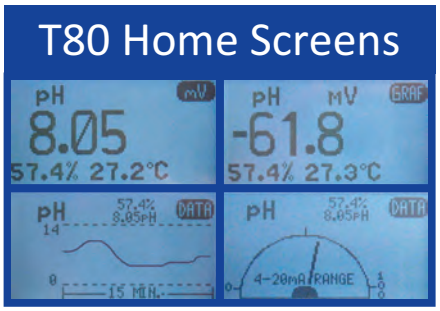
The Model S80 Intelligent Sensors facilitate two way communication with the Model T80 transmitters. The type of sensor, identity and serial number are stored in the sensor's memory along with calibration registers. The Model S80 sensors are calibrated at the factory so they are ready to use when connected to a Model T80 transmitter. The Model S80 sensors are waterproof and submersible with all internal components epoxy encapsulated inside the ¾" O.D. housing. The Model S80 sensors use the same field proven, easily replaceable electrodes as the Model S10 and S17 sensors saving time and money. A digital converter option is available for the Model T80 transmitter to allow the use of non-digital sensors. The digital converter is only available on line powered instruments.

DISPLAY

The Model T80 Transmitter features a large easily viewed LCD display. Loop powered instruments have Black lettering on a Grey background, while 100-240 VAC and 24 VDC powered instruments have Blue lettering on a White background when the LED backlight is on. The Model T80 display is easily switched between the single and dual channel display modes. It has three

Model T80 Universal Transmitter

Main Display screens; the Data Screen, the Millivolt Screen and the Graphical Display screen. The Data Screen displays the measurement type, the measured value with units, the % milliamp output of the 4-20 mA channel and the temperature. The mV Screen displays the measurement type, the raw millivolt signal from the sensor, the % milliamp output of the 4-20 mA channel and the temperature. The Graphical Screens display the measurement type, the measured value with units and a graphical representation of the % milliamp output. Three graphical styles are available; a Trend line, a Bar graph or a Gauge. The status of alarm relays, energized/de-energized is displayed on transmitters with relays.



MENUS

Menu navigation is accomplished using membrane switch buttons. Soft keys display the function associated with each button. Pressing any of the buttons twice within 2 seconds activates the Model T80 soft key menus. The primary selections are the Calibration menu, Configuration menu, Info Screens and Simulate menu.

CALIBRATION

Model S80 sensors come precalibrated from the factory. Field calibrations are easily performed with the Model T80. The Calibration menu includes the Auto Cal function, a two point calibration, the Standardize function, a single point calibration or the Manual Calibration, where previously determined Offset and Slope values are entered manually into the Model T80 transmitter.

CONFIGURATION

The Configuration menus allow the Model T80 transmitter's Display and Output functions and the Model S80 sensor's characteristics to be configured or adjusted. Display screens include the Hold function, Graphical Display Style, Back Light and Contrast adjustments, Labels/Tags for naming the transmitter, Password Protection and a Factory Default reset. Output screens include setting the addresses for MODBUS or HART® outputs, setting the 4-20 mA Range and fault settings and configuring the Alarm Relays.

INFO

The Info screens provide Transmitter and Sensor Information. The transmitter screens display the Name, Power, Serial#, Firmware version and the output configuration. The sensor screens display the Name, Part #, Serial # and stored Calibration data.

SIMULATE

The Simulate Menu allows the input and output signals to be simulated. The outputs are easily tested by entering a 4-20 mA output value or energizing and de-energizing a relay. The Ramp function cycles the signal across the configured 4-20 mA range, i.e. the transmitter generates a signal from 0 pH to 14 pH and back to 0 pH activating relays and generating a 4-20 mA output. The cycle time and the duration are adjustable allowing sufficient time for an individual to walk to the control room to verify the output.

POWER SUPPLY and OUTPUTS

The Model T80 transmitter is available as a loop powered (single channel only), a 24 VDC or a 100/240 VAC powered transmitter. The loop powered version is available with an optional HART® output. The line powered instruments have one 4-20 mA output per channel and MODBUS RTU. Available options include HART®communication and an Alarm Relay package. The (3) relays can be configured as Alarm (set point) relays, timer activated relays or Fault relays.

HART COMMUNICATION PROTOCOL

C US

CE

Specifications

Input Specification

Digital protocol, all ECD S80 sensors, Liquid, Gas, Process sensors (Optional analog to digital input board for mV sensors)

Input Ranges

pH	-1.00 – 15.00 pH
ORP	-1500 - +1500 mV
pION	000.1 – 999.9, Auto Ranging: ppb ↔ ppm ↔ppthousand
Dissolved Oxygen	000.1 – 999.9 Auto Ranging: ppb,ppm, % SAT, mg/L
Conductivity	0.055 µS – 2.00S Auto Ranging: µS, mS, S
Resistivity	0.001 - 20.00 meg-ohms
Turbidity	000.0 - 4000NTU Auto Ranging: NTU, FNU, mg/L, ppm, % Solids
Temperature	-30°C - 140°C

Accuracy

pH	0.02 pH
ORP	± 1 mV
pION	Specific for ion type
Dissolved Oxygen	2% of calibrated range
Conductivity	2% of calibrated range
Resistivity	2% of calibrated range
Turbidity	4% of calibrated range
Temperature	± 0.3°C

Enclosure

Polycarbonate, NEMA 4X, weatherproof, ½ DIN, (L xWx D) 5.7” X 5.7” X 3.5” (14.4cm X 14.4cm X 9.0cm)

Environmental Conditions

Ambient Temperature	-20°C - 70°C
Storage Temperature	-30°C - 85°C
Relative Humidity	0 – 90% NC

Display

128 x 64 pixels (2.75” x 1.5”) LCD, 0.001 resolution, Black/Grey background on loop powered instruments, Blue/White background LED backlight on 100-240 VAC and 24 VDC powered instruments

Input Power

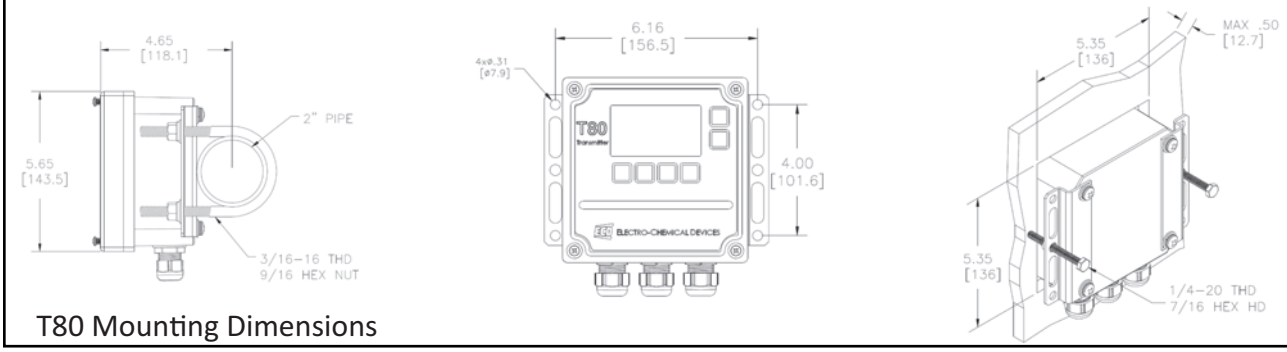
Code -0	Loop powered, 24 VDC, 600 Ω maximum load (18-36VDC @ 35 mW minimum)
Code -1	24 VDC (18-36 VDC @ 250 mW minimum)
Code -2	100-240 VAC, 50/60 Hz, 4W

Outputs

4-20 mA output (standard), Fault Condition: 3.5 mA, 22 mA or none
Modbus RTU (standard)
HART® (optional)
Alarm Relays (Optional) Three (3) SPDT, form 1C, 250 VAC, 3 Amp resistive maximum relays, user configurable as Hi/Lo or Fault alarms

Shipping

Size	8” x 8” x 5”(20.5 x 20.5 x 12.7 cm)
Weight	1.6 lbs. (0.75 kg)



T80 Mounting Dimensions

Model T80-	Transmitter Part Number Guide					
Ch 1 Inputs	1 S80 Sensor, pH, ORP, pION, Conductivity, Resistivity and galvanic Dissolved Oxygen, TRITON® DO82 Optical DO & TR86 Turbidity					
	Ch 2 Inputs	0 No Input for Channel 2				
		1 S80 Sensor, pH, ORP, pION, Conductivity, Resistivity and galvanic Dissolved Oxygen, DO82 & TR86 Turbidity				
		Power Supply	-0 Loop Powered Transmitter (not available for DO82 or TR86 sensors)			
			-1 24 VDC Powered Transmitter			
			-2 100/240 VAC, 50/60Hz, 4W powered Transmitter			
			Alarm Relays	0 No Relays		
				1 (3) formC 250 V 3A relays		
				Output	0 4-20 mA output and MODBUS RTU	
					1 HART®	
					2 2 x 4-20 mA with MODBUS RTU	
					Mounting Hardware	-00 No Mounting Hardware
						-01 Universal Mount
						-02 Panel Mount
						-03 Handrail Mount
						-04 Sunshield Vertical Rail Mount
						-05 Sunshield Horizontal Rail 1
Model T80-	1	1	-0	0	1	-01

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Hazardous Location Products

Model X80 Universal Transmitters
S88 Intelligent Sensors
for Hazardous Locations

Measure pH, ORP, Specific Ion, Dissolved Oxygen,
Turbidity, Conductivity, Resistivity and Chlorine with
Model S88 and S80 Intelligent Sensors

ELECTRO-CHEMICAL DEVICES

Model X80 Universal Transmitter

The ECD 6 Point Advantage

1. **Universal Transmitter:** Single or dual channel measures pH, ORP, DO, Specific Ion, Turbidity, Chlorine, Conductivity and/or Resistivity
2. **Hazardous Location Approved**
3. **Graphic LCD Display & Intuitive Menu Structure:** Easy Navigate
4. Use with ECD **Digital Intelligent Sensors** that are factory calibrated sensors and store data
5. **4-20 mA output with MODBUS RTU or HART® communication:** Flexible configurations for all applications
6. **Rugged Corrosion Resistant 316 Stainless Steel Housing**

Description

The ECD Model X80 Universal Transmitter is a single or dual channel transmitter designed for the continuous measurement of pH, ORP, pION, Dissolved Oxygen, Turbidity, Conductivity or Resistivity in a general purpose industrial environment. The Model X80 transmitter digitally communicates with any ECD Model S88 or S80 Intelligent Sensor, automatically configuring the transmitter's menus and display screens to the measured parameter. The same transmitter can be used for any of the measurements, i.e. plug an S88 Conductivity Sensor into a Model X80 pH transmitter and it will automatically reconfigure into a conductivity transmitter. There is no longer any need to inventory multiple instrument types, the one Model X80 transmitter will automatically configure to any of the listed measurements.

ATEX / IECEx Approved X80 Transmitter and S88 Sensors

SENSORS

The Model S88 Intelligent Sensors facilitate two way communication with the Model X80 transmitters. The type of sensor, identity and serial number are stored in the sensor's memory along with calibration registers. The Model S88 sensors are calibrated at the factory so they are ready to use when connected to a Model X80 transmitter. The Model S80/S88 sensors are waterproof and submersible with all internal components epoxy encapsulated inside the ¾" O.D. housing. The Model S88 sensors use the same field proven, easily replaceable electrodes as the Model S10,S17, S80 sensors saving time and money.

Optional Sensor Process Fittings

DISPLAY

The Model X80 Transmitter features a large easily viewed LCD display. Loop powered instruments have Black lettering on a Grey background, while the 24 VDC powered instruments have blue lettering on a white background when the LED backlight is on. The Model X80 has three easily switchable Main Display screens; the Data Screen, the Millivolt Screen and the Graphical Display screen. (six screens for two channel units) The Data Screen displays the

Model X80 Universal Transmitter

measurement type, the measured value with units, the % milliamp output of the 4-20 mA channel and the temperature. The mV Screen displays the measurement type, the raw millivolt signal from the sensor, the % milliamp output of the 4-20 mA channel and the temperature. The Graphical Screens display the measurement type, the measured value with units and a graphical representation of the % milliamp output. Three graphical styles are available; a Trend line, a Bar graph or a Gauge. The status of alarm relays, energized/de-energized is displayed on transmitters with relays.

MENUS

Menu navigation is accomplished using magnetic switchs. Soft keys display the function associated with each button. Pressing any of the buttons twice within 2 seconds activates the Model X80 soft key menus. The primary selections are the Calibration menu, Configuration menu, Info Screens and Simulate menu.

CALIBRATION

Model S80/S88 sensors come precalibrated from the factory. Field calibrations are easily performed with the Model X80. The Calibration menu includes the Auto Cal function, a two point calibration, the Standardize function, a single point calibration or the Manual Calibration, where previously determined Offset and Slope values are entered manually into the Model X80 transmitter.

CONFIGURATION

The Configuration menus allow the Model X80 transmitter's Display and Output functions and the Model S88 sensor's characteristics to be configured or adjusted. Display screens include the Hold function, Graphical Display Style, Back Light and Contrast adjustments, Labels/Tags for naming the transmitter, Password Protection and a Factory Default reset. Output screens include setting the addresses for MODBUS or HART® outputs, setting the 4-20 mA range and fault settings and configuring the Alarm Relays.

INFO

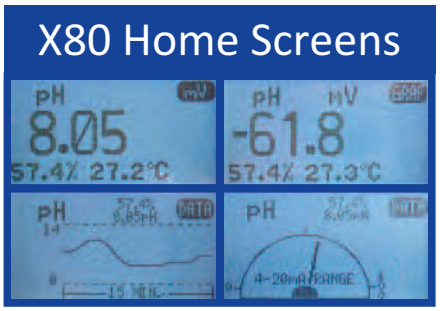
The Info screens provide Transmitter and Sensor Information. The transmitter screens display the Name, Power, Serial#, Firmware version and the output configuration. The sensor screens display the Name, Part #, Serial # and stored Calibration data.

SIMULATE

The Simulate Menu allows the input and output signals to be simulated. The outputs are easily tested by entering a 4-20 mA output value or energizing and de-energizing each of the relays. The Ramp function cycles the signal across the configured 4-20 mA range, i.e. the transmitter generates a signal from 0 pH to 14 pH and back to 0 pH generating a 4-20 mA output. The cycle time and the duration are adjustable allowing sufficient time for an individual to walk to the control room to verify the output.

POWER SUPPLY and OUTPUTS

The Model X80 transmitter is available as a loop powered transmitter or a 24 VDC powered transmitter. The loop powered version has a 4-20 mA output with an optional HART® output. The line powered instruments have a 4-20 mA output with MODBUS RTU (standard) or the optional HART® output. The 24 VDC Transmitter is also available with (3) Alarm Relays that can be configured as Alarm relays (setpoint), Timed Relays or as a Fault relay.



S88 Sensors for
Class I, Div 1, Groups B, C and D

HART COMMUNICATION PROTOCOL

Specifications

Input Specification

Digital protocol, ECD S80/S88 sensors, Liquid, Gas, Process sensors

Input Ranges

pH	-1.00 – 15.00 pH
ORP	-1500 - +1500 mV
pION	000.1 – 999.9, Auto Ranging: ppb ↔ ppm ↔ppthousand
Dissolved Oxygen	000.1 – 999.9 Auto Ranging: ppb,ppm, % SAT, mg/L
Conductivity	0.055 µS – 2.00S Auto Ranging: µS, mS, S
Resistivity	0.001 - 50.00 meg-ohms
Turbidity	000.0 - 4000NTU Auto Ranging: NTU, FNU, mg/L, ppm, % Solids
Chlorine (Free or Total)	Auto Ranging: ppb ↔ ppm
Temperature	-30°C - 140°C

Electrical / Mechanical

Materials:
Electro Polished 316 SS
Mounting:
2 x M4 (3⁄16”) and 3 x ¾” FNPT

Environmental Conditions

Ambient Temperature	-20°C - 70°C
Storage Temperature	-30°C - 85°C
Relative Humidity	0 – 90% NC

Display

128 x 64 pixels (2.75” x 1.5”) LCD, Black/Grey background on loop powered instruments, Blue/White background LED backlight on 24 VDC powered instruments

Input Power

Code -0: Loop powered, 24 VDC, 600 Ω maximum load (18-36VDC @ 35 mW min)
Code -1 24 VDC (18-36 VDC @ 250 mW minimum)

Outputs

4-20 mA output(s) standard single channel or an optional second channel
Modbus RTU (standard)
HART® (optional)
Alarm Relays (Optional) Three (3) SPDT, form 1C, 250 VAC, 3 Amp resistive maximum relays, user configurable as Hi/Lo or Fault alarms

Shipping

Size: 8” x 8” x 5”(20.5 x 20.5 x 12.7 cm)
Weight: 316 SS, 8.0 lbs. (3.65 kg)

Hazardous Location Approvals

ATEX Certified:
Certification No: ITS16ATEX101458X
IECEx Certified:
Certification No: ETL 16.0049X

X80 Transmitter:
CE 0359
Ex II 2 G Ex db mb [ia IIC Ga] IIC T4 Gb

Model X80 Transmitter is intended for installation in hazardous locations with Zone 1, Ex db mb Gb classification, -20°C < Ta < 55°C

S88 Sensor:
CE 0359
Ex II 2 G Ex ia IIC T4 Ga

Model S88 Sensor is intrinsically safe and intended for installation in hazardous locations with Zone 0, Ex ia Ga classification, -20°C < Ta < 85°C

X80 Transmitter with S88 Sensors:
Designed to meet or exceed IP66/NEMA4X

CSA Certified Explosion Proof Enclosure:
X80 Enclosure:
Class I, Zone 1, Ex d IIB+H2, IP68
FM Approved Explosion Proof Enclosure:
X80 Enclosure:
Class I, DIV 1, Groups B, C and D, CLASS II, DIV 1, GROUPS E, F and G, CLASS III, DIV 1 NEMA 4X, IP66

Model X80-	Transmitter Part Number Guide				
Number of Channels	10 Single Channel, pH, ORP, pION, Conductivity, Resistivity, Dissolved Oxygen, Chlorine & other measurements				
	11 Dual Channel, pH, ORP, pION, Conductivity, Resistivity, Dissolved Oxygen, Chlorine & other measurements				
	Power Supply	-0 Loop Powered Transmitter (Single Channel only)			
		-1 24 VDC Powered Transmitter			
		Alarm Relays	0 No Relays		
			1 (3) formC 250 V 3A relays		
			Output	0 4-20 mA output and MODBUS RTU	
				1 HART®	
				2 2 x 4-20 mA with MODBUS RTU	
				3 2 x 4-20 mA with HART®	
				Approvals	-00 CSA and FM Enclosure Approvals only
					-01 FM Approved (pending)
					-02 ATEX & IECEx Approved Single Channel
					-03 ATEX & IECEx Approved Dual Channel
(Example) Model X80-	**10**	**-0**	**0**	**1**	**-00**

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Drive
Anaheim, CA, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ECDanalytical.com

CERTIFIED ISO9001 QUALITY SYSTEM

Hazardous Location Products

Model X80 Universal Transmitter
S88 Intelligent Sensor
for Hazardous Locations
FM Approved

Measure pH, ORP, Specific Ion, Dissolved Oxygen, Turbidity, Conductivity, Resistivity and Chlorine with

Model S88 Intelligent Sensors and B88 Barrier

ECD ELECTRO-CHEMICAL DEVICES

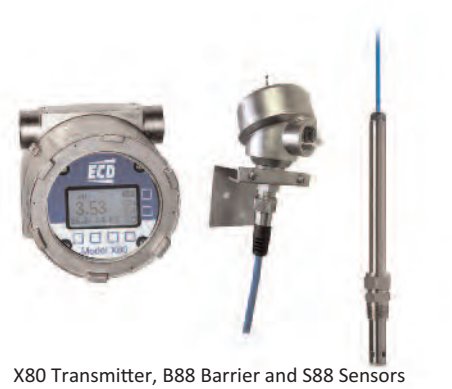
Model X80 Universal Transmitter

The ECD 6 Point Advantage

1. **Universal Transmitter:** Single or dual channel measures pH, ORP, DO, Specific Ion, Turbidity, Chlorine, Conductivity and/or Resistivity
2. **Hazardous Location Approved**
3. **Graphic LCD Display & Intuitive Menu Structure:** Easy Navigate
4. Use with ECD **Digital Intelligent Sensors** that are factory calibrated sensors and store data
5. **4-20 mA output, relays, MODBUS RTU or HART® communication:** Flexible configurations for all applications
6. **Rugged Corrosion Resistant 316 Stainless Steel Housing**

Description

The ECD Model X80 Universal Transmitter is a single or dual channel transmitter designed for the continuous measurement of pH, ORP, pION, Dissolved Oxygen, Turbidity, Conductivity or Resistivity in a hazardous location industrial environment. The Model X80 transmitter digitally communicates with any ECD Model S88 Intelligent Sensor, automatically configuring the transmitter's menus and display screens to the measured parameter. The same transmitter can be used for any of the measurements, i.e. plug an S88 Conductivity Sensor into a Model X80 pH transmitter and it will automatically reconfigure into a conductivity transmitter. There is no longer any need to inventory multiple instrument types, the one Model X80 transmitter will automatically configure to any of the listed measurements. Each S88 Sensor contains a B88 Barrier comprising energy limiting devices to comply with hazardous location requirements. Connection between the X80 and B88 Barrier is accomplished using flameproof conduit and installation practices recognized by National, State, and Local codes (NFP, NEC, etc.). The S88 Sensor connects to the B88 Barrier with a MiniFast Connector with tamper-proof lockout guard.



X80 Transmitter, B88 Barrier and S88 Sensors

FM C US APPROVED

SENSORS

The Model S88 Intelligent Sensors facilitate two way communication with the Model X80 transmitters. The type of sensor, identity and serial number are stored in the sensor's memory along with calibration registers. The Model S88 sensors are calibrated at the factory so they are ready to use when connected to a Model X80 transmitter. The Model S88 sensors are waterproof and submersible with all internal components epoxy encapsulated inside the ¾" O.D. housing. The Model S88 sensors use the same field proven, easily replaceable electrodes as the Model S10,S17, S80 sensors saving time and money.

Optional Sensor Process Fittings

DISPLAY

The Model X80 Transmitter features a large easily viewed LCD display. Loop powered instruments have Black lettering on a Grey background, while the 24

Model X80 Universal Transmitter

VDC powered instruments have blue lettering on a white background when the LED backlight is on. The Model X80 has three easily switchable Main Display screens; the Data Screen, the Millivolt Screen and the Graphical Display screen. (six screens for two channel units) The Data Screen displays the measurement type, the measured value with units, the % milliamp output of the 4-20 mA channel and the temperature. The mV Screen displays the measurement type, the raw millivolt signal from the sensor, the % milliamp output of the 4-20 mA channel and the temperature. The Graphical Screens display the measurement type, the measured value with units and a graphical representation of the % milliamp output. Three graphical styles are available; a Trend line, a Bar graph or a Gauge. The status of alarm relays, energized/de-energized is displayed on transmitters with relays.

MENUS

Menu navigation is accomplished using magnetic switchs. Soft keys display the function associated with each button. Pressing any of the buttons twice within 2 seconds activates the Model X80 soft key menus. The primary selections are the Calibration menu, Configuration menu, Info Screens and Simulate menu.

CALIBRATION

Model S88 sensors come precalibrated from the factory. Field calibrations are easily performed with the Model X80. The Calibration menu includes the Auto Cal function, a two point calibration, the Standardize function, a single point calibration or the Manual Calibration, where previously determined Offset and Slope values are entered manually into the Model X80 transmitter.

CONFIGURATION

The Configuration menus allow the Model X80 transmitter's Display and Output functions and the Model S88 sensor's characteristics to be configured or adjusted. Display screens include the Hold function, Graphical Display Style, Back Light and Contrast adjustments, Labels/Tags for naming the transmitter, Password Protection and a Factory Default reset. Output screens include setting the addresses for MODBUS or HART® outputs, setting the 4-20 mA range and fault settings and configuring the Alarm Relays.

INFO

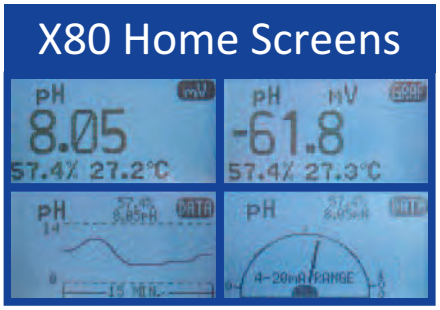
The Info screens provide Transmitter and Sensor Information. The transmitter screens display the Name, Power, Serial#, Firmware version and the output configuration. The sensor screens display the Name, Part #, Serial # and stored Calibration data.

SIMULATE

The Simulate Menu allows the input and output signals to be simulated. The outputs are easily tested by entering a 4-20 mA output value or energizing and de-energizing each of the relays. The Ramp function cycles the signal across the configured 4-20 mA range, i.e. the transmitter generates a signal from 0 pH to 14 pH and back to 0 pH generating a 4-20 mA output. The cycle time and the duration are adjustable allowing sufficient time for an individual to walk to the control room to verify the output.

POWER SUPPLY and OUTPUTS

The Model X80 transmitter is available as a loop powered transmitter or a 24 VDC powered transmitter. The loop powered version has a 4-20 mA output with an optional HART® output. The line powered instruments have a 4-20 mA output with MODBUS RTU (standard) or the optional HART® output. The 24 VDC Transmitter is also available with (3) Alarm Relays that can be configured as Alarm relays (setpoint), Timed Relays or as a Fault relay.



B88 Barrier for
Class I, Div 1, Groups B, C and D
Class I, Zone 1 IIB+H_2 T5

S88 Sensors Intrinsically Safe For
Class I, Div 1, Groups B, C, D
Class I, Zone 0 IIB+H_2 T5

HART COMMUNICATION PROTOCOL

Specifications

Input Specification

Digital protocol, ECD S80/S88 sensors, Liquid, Gas, Process sensors

Input Ranges

pH	-1.00 – 15.00 pH
ORP	-1500 - +1500 mV
pION	000.1 – 999.9, Auto Ranging: ppb ↔ ppm ↔ppthousand
Dissolved Oxygen	000.1 – 999.9 Auto Ranging: ppb,ppm, % SAT, mg/L
Conductivity	0.055 µS – 2.00S Auto Ranging: µS, mS, S
Resistivity	0.001 - 50.00 meg-ohms
Free Chlorine	Auto Ranging: ppb ↔ ppm

Electrical / Mechanical

Materials:
Electro Polished 316 SS
Mounting:
2 x M4 (3⁄16”) and 3 x ¾” FNPT

Environmental Conditions

Ambient Temperature	-20°C - 85°C
Storage Temperature	-30°C - 85°C
Relative Humidity	0 – 90% NC

Display

128 x 64 pixels (2.75” x 1.5”) LCD, Black/Grey background on loop powered instruments, Blue/White background LED backlight on 24 VDC powered instruments

Input Power

Code -0: Loop powered, 24 VDC, 600 Ω maximum load (18-36VDC @ 35 mW min)
Code -1 24 VDC (18-36 VDC @ 250 mW minimum)

Outputs

4-20 mA output(s) standard single channel or an optional second channel
Modbus RTU (standard)
HART® (optional)
Alarm Relays (Optional) Three (3) SPDT, form 1C, 250 VAC, 3 Amp resistive maximum relays, user configurable as Hi/Lo or Fault alarms

Shipping

Size: 8” x 8” x 5”(20.5 x 20.5 x 12.7 cm)
Weight: 316 SS, 8.0 lbs. (3.65 kg)

Hazardous Location Approvals

FM Approved X80 Transmitter:
Class I, Division 1, Groups B, C, D, E, F, and G, T4 -40°C to +85°C
Class I, Zone 1 IIB+H_2 T4 -40°C to +85°C Type 4X; IP66;

FM Approved B88 Barrier:
Explosion-Proof with Associated Intrinsically Safe Connections For:
Class I, Division 1, Group B, C and D, T5 -40°C to +80°C
Class I, Zone 1 IIB+H_2 T5 -40°C to +80°C

FM Approved S88 Sensor:
Intrinsically Safe For:
Class I, Division 1, Groups B, C, D, T5 -40°C to +80°C
Class I, Zone 0 IIB+H_2 T5 -40°C to +80°C

FM Approved Explosion Proof Enclosure:
X80 Enclosure:
Class I, Division 1, Groups B, C and D
Class II, Division 1, Groups E, F and G
Class III, Division 1
NEMA 4X, IP66

Model X80-	Transmitter Part Number Guide				
Number of Channels	10 Single Channel, pH, ORP, pION, Conductivity, Resistivity, Dissolved Oxygen, Chlorine & other measurements				
	11 Dual Channel, pH, ORP, pION, Conductivity, Resistivity, Dissolved Oxygen, Chlorine & other measurements				
	Power Supply	-0 Loop Powered Transmitter (Single Channel only)			
		-1 24 VDC Powered Transmitter			
		Alarm Relays	0 No Relays		
			1 (3) formC 250 V 3A relays		
			Output	0 4-20 mA output and MODBUS RTU	
				1 HART®	
				2 2 x 4-20 mA with MODBUS RTU	
				3 2 x 4-20 mA with HART®	
				Approvals	-00 CSA and FM Enclosure Approvals only
					-01 FM Approved
					-02 ATEX & IECEx Approved Single Channel
					-03 ATEX & IECEx Approved Dual Channel
(Example) Model X80-	**10**	**-0**	**0**	**1**	**-00**

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Drive
Anaheim, CA, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ECDanalytical.com

LQ800 Multi-Channel Controller

ELECTRO-CHEMICAL DEVICES

ECDANALYTICAL.COM

Multi-Parameter Controller	
• Multiple Analytical & Process Measurements	**Complete Measuring & Control System:** Up to 8 Smart Digital Analytical & Process Sensors
• Built-in Analytical Calculations	**Easy Selectable Mathematic Functions:** Automatic measurement conversions for dissociation, cross-sensitivity, concentration
• Multiple Outputs	**Field Programmable Outputs:** Digital Communication, Multiple Relays, Discrete Digital Outputs, 4-20 mA Outputs, Data Logging
• Expandable	**Create Larger Control Systems:** Inter-Connect to other LQ800 Systems and ECD On-Line Analyzers
• Web Enabled	**Access via Web:** Remote Monitoring and Interface with Personal Handheld Devices

Description

The Model LQ800 multi-Channel Controller provides a complete analytical measurement and process solution. The LQ800 platform is designed to operate with up to eight digital analytical and process sensors. The measurement parameters include well over 50 unique separate liquid measure sensors. These measurement include: pH, ORP, Conductivity, Resistivity, Dissolved Oxygen, Selective Ion, Turbidity, Flow, Level, and many others in varying configurations for a given application. A complete list is found on the following page. The LQ800 Controllers digitally communicates with any ECD Intelligent Sensor, automatically configuring the transmitter's menus and display screens to the measured parameter.

SENSORS - The Model S80 Family of Intelligent Sensors facilitate two way communication with the LQ800. The type of sensor, identity and serial number are stored in the sensor's memory along with calibration registers. Sensors are calibrated at the factory so they are ready to use when connected, are waterproof and submersible with all internal components epoxy encapsulated inside the housing and have various process fittings and configurations.

DISPLAY & INTERFACE- The LQ800 features a large easily viewed color touchscreen display. The display and interface can be Web Enabled with remote monitoring and activation with personal handheld devices and computers with access via the Web.

MENUS - Menu navigation is intuitive and accomplished using the large touchscreen display. The primary selections are the Multichannel Main Display, Single Channel Detail Screen, Calibration menu, Configuration menu, Info Screens and Simulate menu.

CALIBRATION - The ECD S80 sensors come precalibrated from the factory. Field calibrations are easily performed with the LQ800. The Calibration menu includes the Auto Cal function, a two point calibration, the Standardize function, a single point calibration or the Manual Calibration, where previously determined Offset and Slope values are entered manually into the LQ800.

CONFIGURATION - The Configuration menus allow the Display and Output functions and the sensor's characteristics to be configured or adjusted. Display screens include the Hold function, Graphical Display Style, Back Light and Contrast adjustments, Labels/Tags for naming the transmitter, Password Protection and a Factory Default reset. Output screens include setting the digital comm output, setting the 4-20 mA Ranges and fault settings and configuring the Alarm Relays.

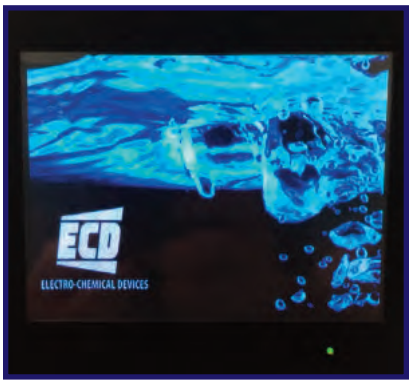
POWER SUPPLY and OUTPUTS - The LQ800 is available as a 24 VDC or 100/240 VAC powered controller. Available options include: (8) 4 to 20 mA outputs, (8) configurable Relays (for Alarm, activated timers, control, and Fault), and Ethernet communication.

LQ800 Multi-Channel Controller

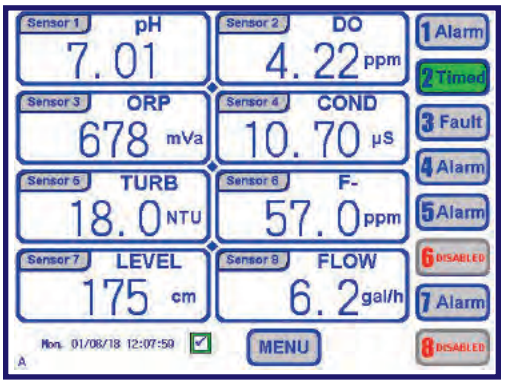
Product Specifications

Part Number (Standard)	LQ800-80-288-01			
Measurements Available (consult factory for additional liquid analytical measurements and process sensors)	pH	Ammonium	Fluoride	Sodium
	ORP	Ammonia	Chloride	Cadmium
	Conductivity	Total Chlorine	Bromide	Sulfide
	Resistivity	Free Chlorine	Silica	Sulfate
	Dissolved Oxygen	Chlorine Dioxide	Chromium VI	Calcium
	Turbidity	Peracetic Acid	Silver	Cyanide
	Total Suspended Solids	Ozone	Copper	BOD/COD
	Total Dissolved Solids	Hydrogen Peroxide	Zinc	TOC
	Salinity	Nitrate	Iron	Temperature
	Phosphate	Nitrite	Nickel	Level
	Total Phosphate	Potassium	Manganese	Flow
Mounting	Wall Mounting Standard - optional Handrail, Stand, and/or Sunshield			
Sensor Temperature	Varies - Consult ECD Sensor Data Sheets for full specifications			
Display	Color Touchscreen - 4.6 in W x 3.5 in H / 120 mm W x 90 mm H - TFT Color 640 x 480 pixel			
Ambient temperature	15˚ to 130˚ F / -10˚ to 55˚ C			
Weather Rating	NEMA 4X / IP65			
Alarm relays	8 Configurable Relays SPDT, 15 A at 250 VAC for resistive loads.			
Analog Output	Up to (8) 4-20 mA outputs, 600 Ω maximum load			
Communication	Ethernet Digital Communication			
Data Logging	Integrated, Selectable, download via USB			
Power Supply	110-240 VAC /80VA / 50-60Hz or 24 VDC Nominal			
Dimensions	17 in W x 11.7 in H x 9 in D / 43cm x 30cm x 23cm			
Weight	20 lbs / 9 kg			

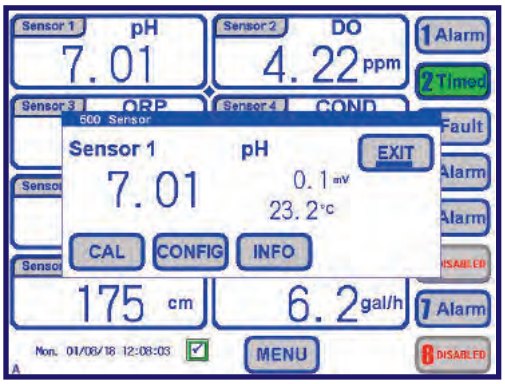
Start up Display Screen



8 Channel Home Screen



Channel 1 Detail Screen



Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

CA-6 OnLine Analyzers

ELECTRO-CHEMICAL DEVICES

Colorimetric Analyzers

- **Simple**
  - Easy Installation
  - User Friendly Menu Structure
  - Touchscreen Interface
  - Easy Process Configuration
- **Reliable**
  - Epoxy Powder Coated
  - Rugged Cold Rolled Steel Cabinet
  - Two separate Compartments (Electronics and Hydraulics)
  - Loss of Sample and Low Reagent Alarms
- **Cost Effective**
  - Low Maintenance
  - Adjustable Cycle Time to minimize Reagent usage

Aluminum
Ammonia
Chloride
Chlorine
Chromium VI
Copper
Cyanide
Hardness
Hydrazine
Iron
Manganese
Nickel
Nitrite
Phenoyl
Phosphate
Total Phosphate
Silica
Sulfate
Zinc

Description

The CA-6 Series Analyzers are a family of on-line sequential sampling analyzers that use Colorimetric technology to perform an analysis. The analyzers can be configured to perform most colorimetric analysis that use up to four reagents.

The CA-6 Analyzers are easy to start up and use, simply connect the sample, waste and reagent lines and then power up the Factory Calibrated analyzer. Wall mounting hardware is standard but an optional benchtop stand with reagent holder is also available. Accessing information or customizing an analysis routine are easily accomplished with the simple, user friendly menu structure and touch screen interface.

The analyzer has two separated enclosures with lockable doors. The Top enclosure, called the ELECTRICAL enclosure, includes the main power supply, the controller PCB assembly and the touchscreen interface. The Bottom enclosure, called the LIQUIDS enclosure, includes all the components involved in the sample and reagent flow, mixing and reaction stages (sampling pump, reagent Micro Pumps and colorimetric reaction cell). Numerous analysis configurations can be programmed, depending on the accessories and the number of micropumps mounted in the Liquids enclosure.

The colorimetric analysis are based on the measurement of color formation in the sample after the addition of reagents. The absorbance of the solution is measured though a Quartz Reaction Cell at a specific wavelength using a long life LED light source and a photometer. The absorbance is related to the sample concentration according to 'Lambert-Beer Law'.

The CA-6 Colorimeters make two measurements during an analysis cycle. The first measurement, the Reference, sets the base line for the raw sample, measuring the color, turbidity and optical characteristics of the cell. The second measurement, the Reading, occurs after the color forming reagents have been added to the sample, mixed and adequate time has past to allow for color formation. The concentration is calculated using the difference between the two absorbance measurements and the stored calibration information in the analyzer.

The CA-6 analyzers typically make a single measurement per analysis cycle, although a user defined calibration or cleaning sequence, an Extra Cycle, can be added to preceed the measurement every “X” number of measurement cycles. A standard program sequence consists of a drain cycle, 3 rinse cycles, sample acquisition, reference measurement, addition of reagents, mixing time, waiting period and measurement. Higher Range samples are accomodated using the optional Dilution Module providing 10:1 or 50:1 dilution ratios.

The CA-6 Analyzer home screen displays the measured parameter, the status or operation being performed, % reagent volumes and Menu choices, RUN, DISPLAY, PROGRAM, SERVICE and HELP. The on screen HELP menu includes information on how to Start Up, Shut Down and Calibrate the CA6. It also defines each of the analyzer’s Functions, the Start/Stop Commands, Maintenance and Troubleshooting. Outputs include two Alarm Relays and a 4-20 mA channel.

CA-6 OnLine Analyzers

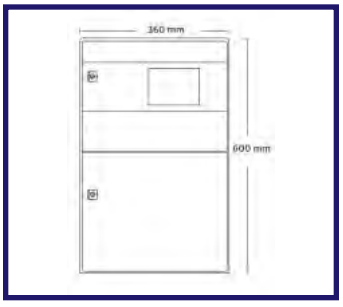
Parameter	Range	Model #	Parameter	Range	Model #
Aluminum	(A) 0-1.00 mg/L (B) 0-10.0 mg/L (C) 0-50.0 mg/L	CA6-01-X X = A,B or C	**Nickel**	(A) 0-3.0 mg/L (B) 0-30.0 mg/L (C) 0-150.0 mg/L	CA6-11-X X = A,B or C
Ammonia	(A) 0-1.0 mg/L (B) 0-10.0 mg/L (C) 0-50.0 mg/L	CA6-02-X X = A,B or C	**Nitrite**	(A) 0-600 µg/L (B) 0-6.0 mg/L (C) 0-30.0 mg/L	CA6-13-X X = A,B or C
Chloride	(A) 0-3.0 mg/L (B) 0-30.0 mg/L (C) 0-150.0 mg/L	CA6-03-X X = A,B or C	**Hydrazine**	(A) 0-500 µg/L (B) 0-5.0 mg/L (C) 0-20.0 mg/L	CA6-14-X X = A,B or C
Chlorine (free-total)	(A) 0-3.0 mg/L (B) 0-30.0 mg/L (C) 0-150.0 mg/L	CA6-04-X X = A,B or C	**Phosphate**	(A) 0-5.0 mg/L (B) 0-50.0 mg/L (C) 0-200 mg/L	CA6-15-X X = A,B or C
Chromium VI	(A) 0-1.0 mg/L (B) 0-10.0 mg/L (C) 0-50.0 mg/L	CA6-05-X X = A,B or C	**Total Phosphorus**	(A) 0-2.0 mg/L (B) 0-20.0 mg/L (C) 0-100 mg/L	CA6-16-X X = A,B or C
Copper	(A) 0-5.0 mg/L (B) 0-50.0 mg/L (C) 0-250.0 mg/L	CA6-06-X X = A,B or C	**Silica**	(A) 0-1.0 mg/L (B) 0-10.0 mg/L (C) 0-50.0 mg/L	CA6-17-X X = A,B or C
Cyanide (free)	(A) 0-200 µg/L (B) 0-2.0 mg/L (C) 0-10.0 mg/L	CA6-07-X X = A,B or C	**Sulfate**	(A) 0-50 mg/L (B) 0-500 mg/L (C) 0-2500 mg/L	CA6-18-X X = A,B or C
Hardness	(A) 0-1.0 mg/L (B) 0-10.0 mg/L (C) 0-50.0 mg/L	CA6-08-X X = A,B or C	**Zinc**	(A) 0-1.0 mg/L (B) 0-20.0 mg/L (C) 0-100 mg/L	CA6-20-X X = A,B or C
Iron	(A) 0-0.1 mg/L (B) 0-1.0 mg/L (C) 0-5.0 mg/L	CA6-09-X X = A,B or C	**Phosphate & Total Phosphorus**	(A) 1.0 - 100 mg/L	CA6-21-A
Manganese	(A) 0-100 µg/L (B) 0-1.0 mg/L (C) 0-5.0 mg/L	CA6-10-X X = A,B or C	**Phenoyl**	(A) 1.0 - 100 mg/L (B) 0 - 200.0 mg/L	CA6-22-X

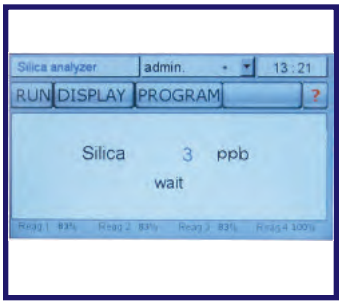
Ranges (B) and (C) require the addition of the Dilution Module Option

CA-6 Analyzers Specifications:

Method: Photometric differential absorbance or ISE
Measuring range: Refer to the specific parameter for the colorimetric measurement range
Response time: Dependent on the specific colorimetric measurement
Repeatability: +/- 2% on absorbance value with turbidity < 80 NTU
Drift: +/- 2% per month on the absorbance measurement
Power supply: 110-220VAC, 50-60 Hz, 80 VA
Mounting: Wall mounting or with optional bench support
Operating temperature: 5-50°C
Cabinet: Cold rolled steel epoxy powder coated

Dimensions: 380L x 600H x 210D mm (15"x 24"x 8.25"in.)
Weight: Approx. Kg. 17 kg.(37.5 lbs)
Reagent consumption: Dependent on the specific colorimetric measurement, approximately 2500 tests per liter of reagent.
Analog output: 4-20 mA
Alarms: 2 configurable relays
Sample
Inlet sample pressure: Atmospheric
Outlet sample pressure: Atmospheric, waste tubing O.D.⅜
Sample flow for the fast loop reservoir: 100-500 ml / min
Connections: To the fast loop reservoir with flexible tubing O.D.1/4"





Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

MODEL CA6 - ALUMINUM ANALYZER

Compact online colorimeter for the automatic measurement of Aluminum in water

APPLICATION FIELDS

- Drinking water
- Industrial waste water
- Municipal waste water
- Surface water

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

Low reagent consumption
Minimum operating cost by small reagent consumption, only 1.7L (0.45 US.gal) for the 16 mm cell / 2.5L (0.66 US.gal) for the 26 mm cell of each reagent every 30 days with 15 minute analysis frequency.

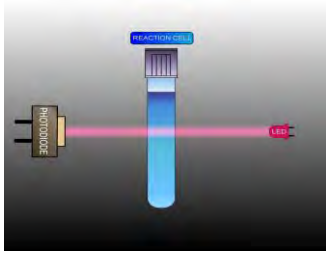
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Aluminum Analyzer vary from trace µg/L to 20 mg/L Al^{3+} using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



MEASUREMENT PRINCIPLE

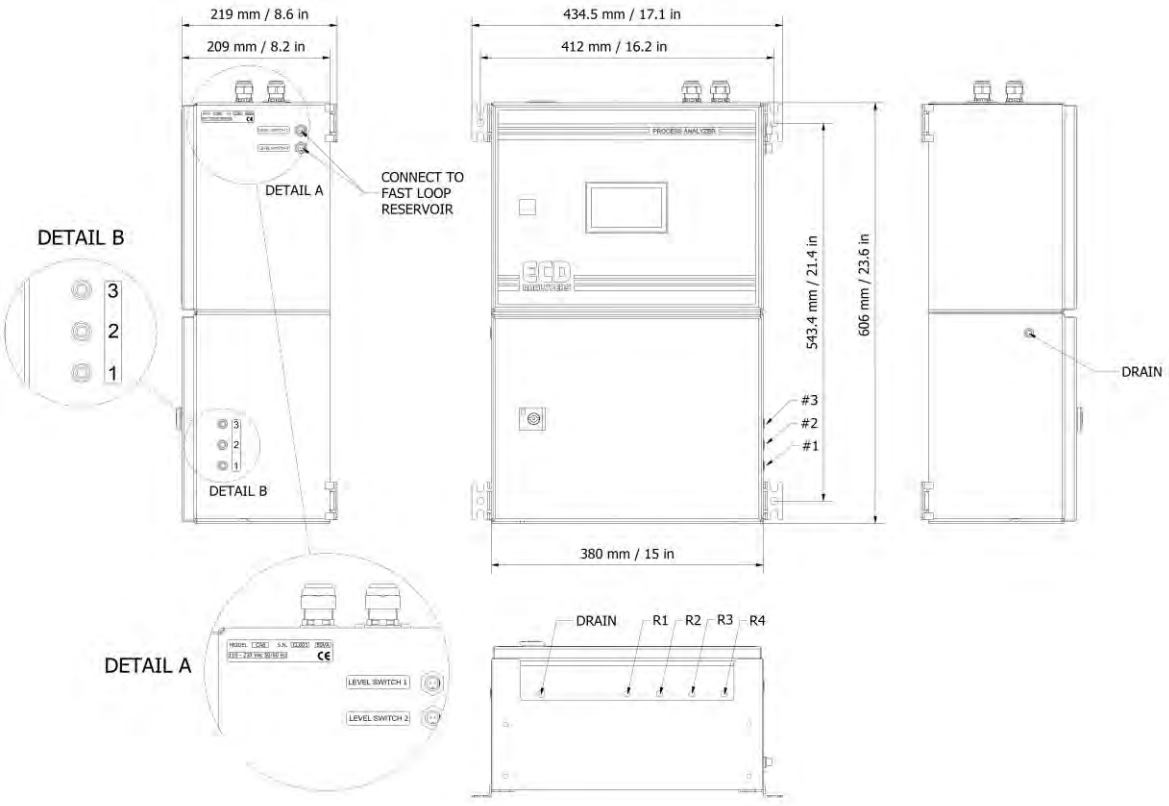
In a pH 6.2 to 6.4 buffered solution pyrocatechol violet and Al (III) ions form a blue dye.

The absorbance intensity is proportional to the aluminum concentration in the sample and is measured at 572 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	Al^{3+} (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance. Pyrocatechol violet method
Measuring range:	5 to 150 ppb Al^{3+} for the 26 mm cell, 10 to 500 ppb Al^{3+} for the 16 mm cell; up to 20 ppm Al^{3+} with internal dilution.
Reproducibility:	± 5 ppb or ± 5%, whichever is greater (26 mm cell) ± 10 ppb or ± 5% up to 250 ppb; ± 20 ppb or ± 5% (250-500 ppb), whichever is greater (16 mm cell)
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	8-10 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



MODEL CA6 - AMMONIUM ANALYZER

Compact online colorimeter for the automatic measurement of Ammonium

APPLICATION FIELDS

- Boiler feed
- Cooling water
- Drinking water
- Surface water
- Municipal wastewater
- Industrial wastewater

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.
Optional fridge
To maintain the chemicals at optimal temperature

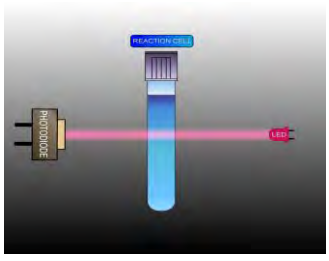
Low reagent consumption
Minimum operating cost by small reagent consumption, only 1L (0.26 US.gal) for the 16 mm cell / 2L (0.53 US.gal) for the 26 mm cell of each reagent every 30 days with 25 minutes analysis frequency for low range.

Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring ranges achieved with alternate chemistries
The measuring ranges of the CA6 Ammonium Analyzer can vary from trace µg/L to 500 mg/L utilizing internal dilution module and multiple chemistries to fit the required application.
Temperature heated cell
To reduce reaction time and overall measuring cycle time

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.
Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



MEASUREMENT PRINCIPLE

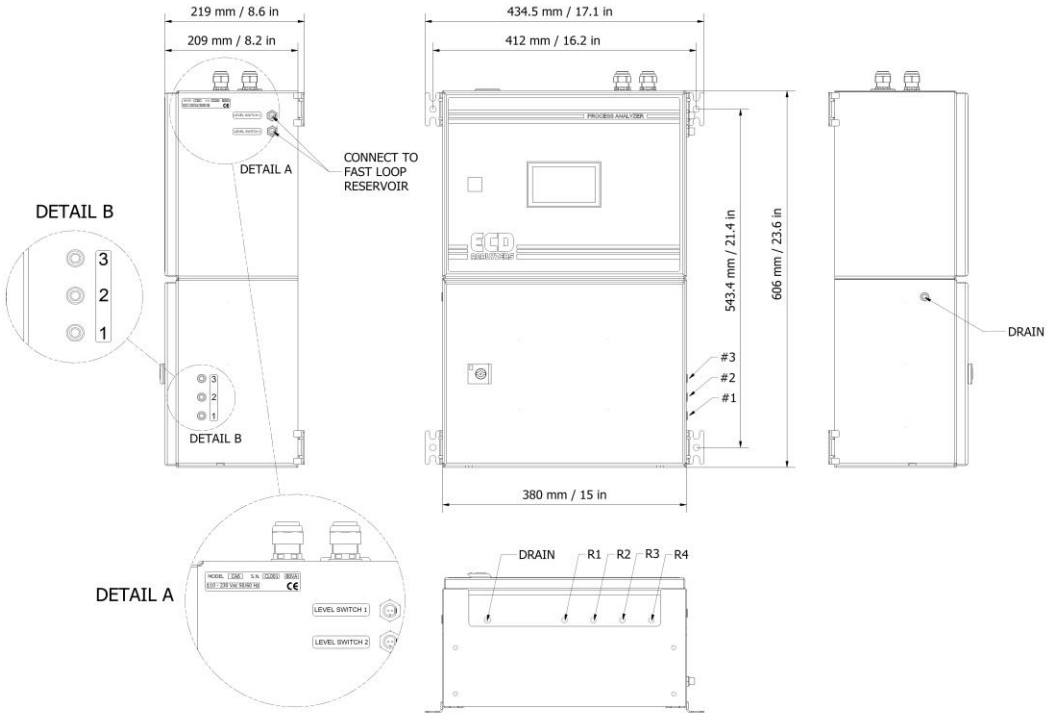
Ammonium reacts with salicylate and hypochlorite ions in the presence of ferricyanide ions to form the salicylic acid analog of indophenol blue.

The resulting color is directly proportional to the concentration of ammonium present and is determined at 660 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	NH_4-N (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance. Multiple chemistries available (Berthelot, salycilate, Indophenol, Nessler,...).
Measuring range:	1 to 500 ppb (26 mm cell) – 5 to 1000 ppm (16 mm cell) with low range chemistry; 0.2 to 20 ppm (16 mm cell) with high range chemistry; up to 500 mg/L with internal dilution.
Reproducibility:	Up to 1000 ppb, ± 5 ppb or ± 5%, whichever is greater ≥ 1 ppm to 500 ppm: better than ± 2% full scale range for standard test solutions
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	18-20 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



MODEL CA6 - CHLORIDE ANALYZER

Compact online colorimeter for the automatic measurement of Chloride in water

APPLICATION FIELDS

- Boiler feed
- Cooling water
- Drinking water
- Industrial waste water
- Surface water

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

One reagent configuration, reduced running costs
Minimum operating cost, low maintenance solution.

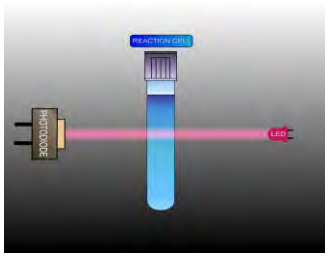
Wide measuring range
The determination ranges of the CA6 Chloride Analyzer vary from 0.2 to 5000 mg/L Cl^- using internal dilution module.

Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available.
External Sequencer, switching up to 4 sample streams.



MEASUREMENT PRINCIPLE

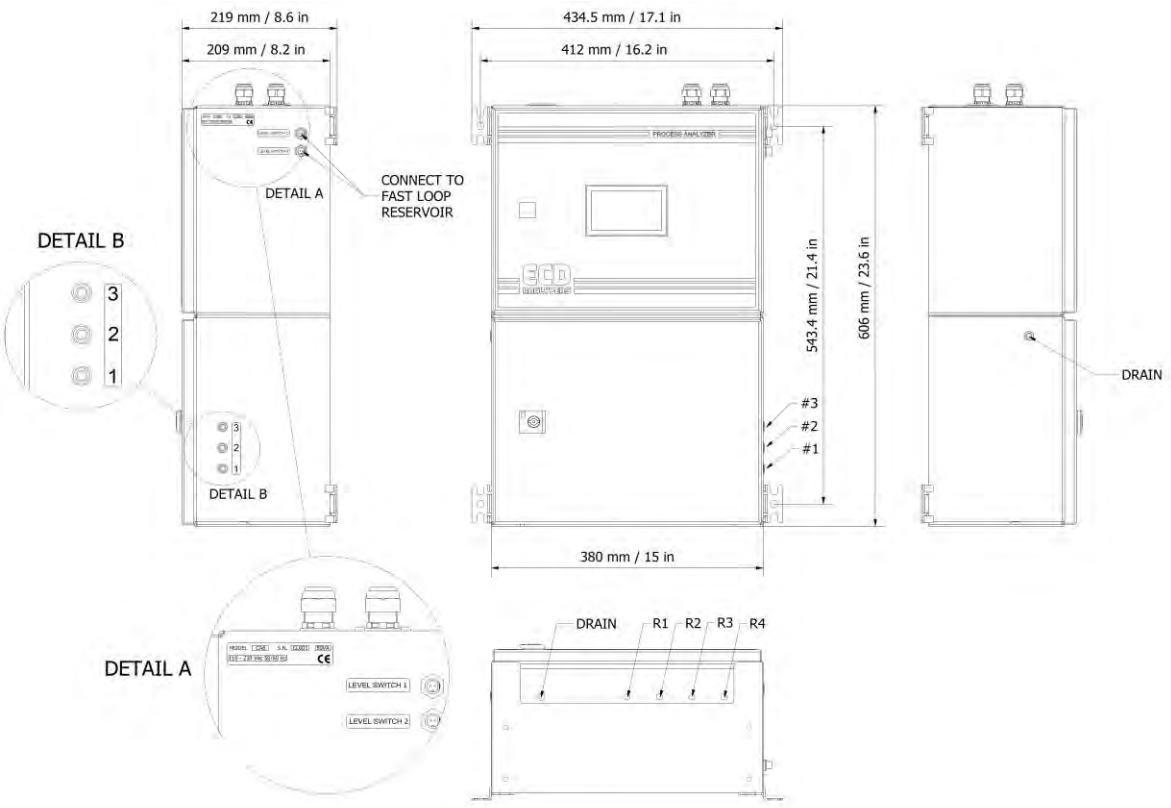
The CA6 analyzer uses an adaptation of the mercury thiocyanate method to measure chloride.

Chloride reacts with mercury thiocyanate and iron based reagents to produce an orange-brown ferric thiocyanate complex. The absorbance intensity is proportional to the chloride concentration in the sample and is measured at 470 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	Cl^- (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance.
Measuring range:	0.2 to 50 ppm Cl^- for the 26 mm cell, 0.5 to 100 ppm Cl^- for the 16 mm cell; up to 5000 ppm Cl^- with internal dilution.
Reproducibility:	± 0.3 ppm or ± 5%, whichever is greater up to 20 ppm; ≥ 20 up to 50 ppm: ± 0.5 ppm or ± 5%, whichever is greater (26 mm cell) ± 1 ppm or ± 5%, whichever is greater (16 mm cell).
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	6-8 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



ECD ANALYZERS, LLC 1500 N Kellogg Dr Anaheim, CA 92807 USA - Phone: +1-714-695-0051 Fax: +1-714-695-0057
Email: support@ECDanalyzers.com www.ECDanalyzers.com

MODEL CA6 - CHROMIUM ANALYZER

Compact online colorimeter for the automatic measurement of Hexavalent Chromium in water

APPLICATION FIELDS

- Drinking water
- Industrial wastewater, discharge limit monitoring or process optimization
- Surface water

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

Low reagent consumption
Minimum operating cost by small reagent consumption, only 0.7L (0.18 US.gal) for the 16 mm cell / 1L (0.26 US.gal) for the 26 mm cell of each reagent every 30 days with 15 minute analysis frequency.

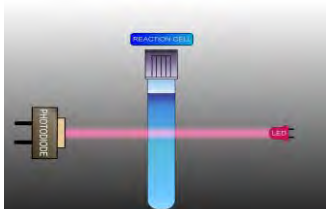
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Chromium Analyzer vary from trace µg/L to 50 mg/L Cr(VI) using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



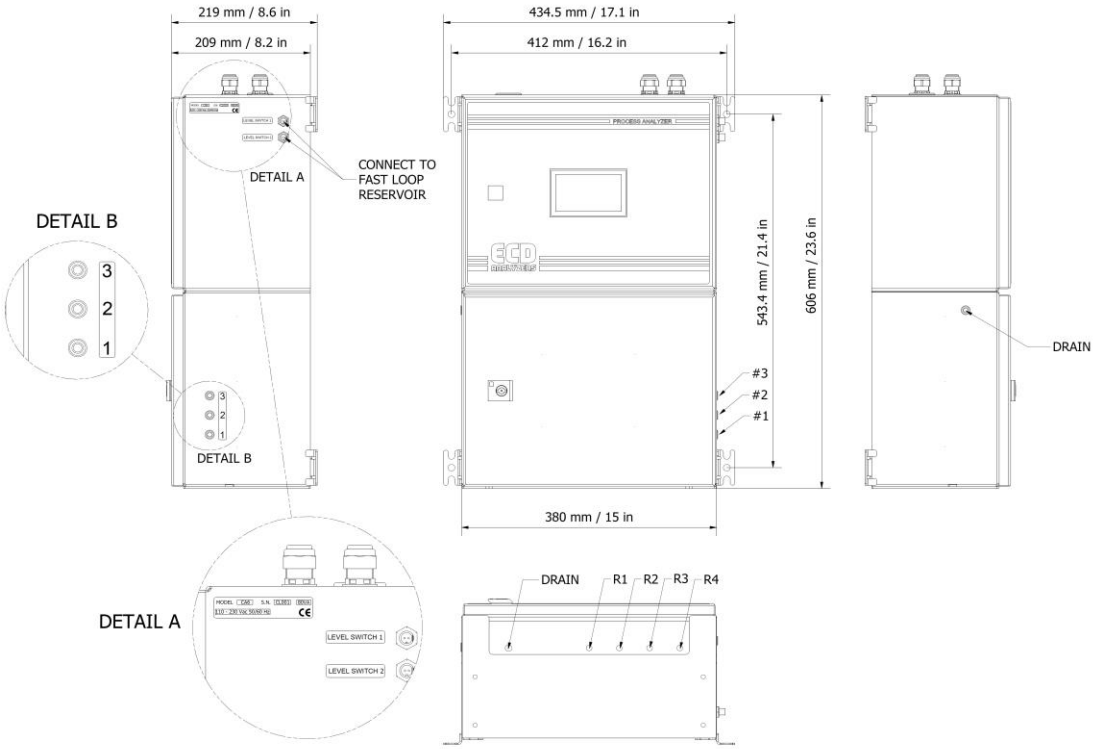
MEASUREMENT PRINCIPLE

The determination is based on the reaction of 1,5-Diphenylcarbazide with Chromium(VI) in an acid medium. The absorbance intensity is proportional to the chromium concentration in the sample and is measured at 525 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	Cr(VI) (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance. 1,5-Diphenylcarbazide (DPC)
Measuring range:	0.5 to 300 ppb Cr(VI) for the 26 mm cell - 0.01 to 1 ppm Cr(VI) for the 16 mm cell; up to 50 ppm Cr(VI) with internal dilution.
Reproducibility:	up to 50 ppb: ± 1 ppb or ± 5%, whichever is greater ≥ 50 ppb to 300 ppb: ± 2 ppb ± 5%, whichever is greater (26 mm cell) ≥ 300 ppb: ± 5 ppb or ± 5%, whichever is greater (16 mm cell).
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	6-8 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



MODEL CA6 – TOTAL CHROMIUM ANALYZER

Compact online colorimeter for the automatic measurement of Total Chromium in water

APPLICATION FIELDS

- Drinking water
- Industrial wastewater, discharge limit monitoring or process optimization
- Surface water

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

High sensitivity for low measurements
The limit of detection of the analyzer is in the low ppb range.

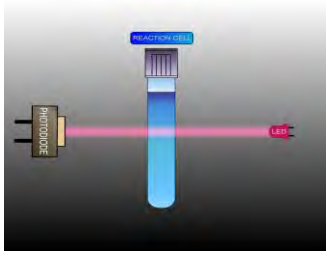
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Chromium Analyzer vary from trace µg/L to 150 mg/L Cr(VI) using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.

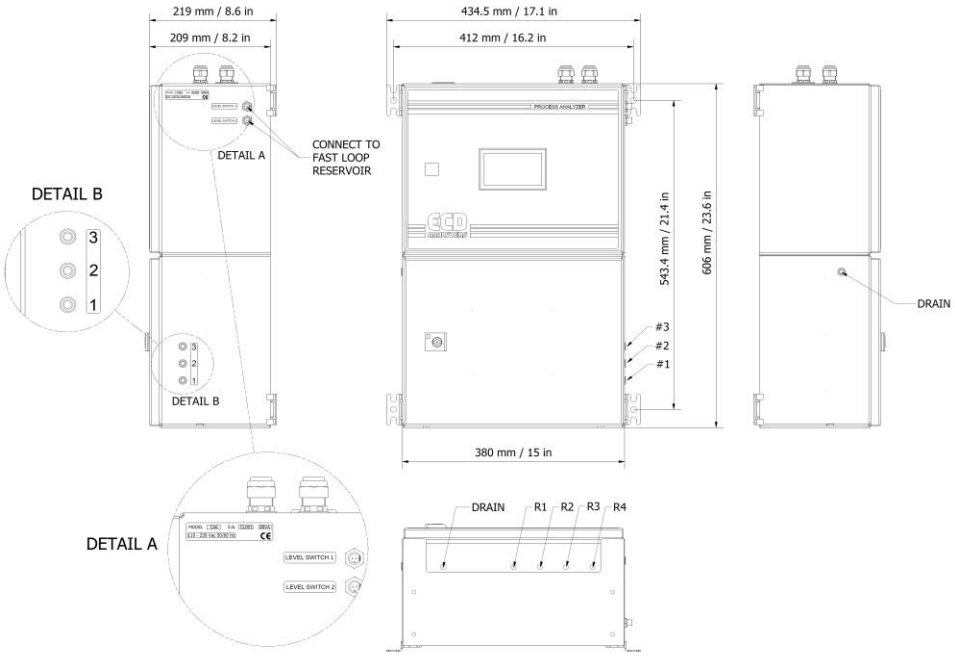


MEASUREMENT PRINCIPLE

Total chromium is the sum of Chromium (III) and Chromium (VI) compounds. This method oxidizes all Chromium (III) to Chromium (VI). The reaction of 1,5-Diphenylcarbazide with Chromium (VI) in an acid medium results in a red-violet color. The absorbance intensity is proportional to the total chromium concentration in the sample and is measured at 572 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	Total Chromium (Sum of Cr(III) and Cr(VI)) (ppb, ppm, mg/l).	Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Measuring principle:	Differential photometric absorbance. 1,5-Diphenylcarbazide (DPC)	Weight:	Approx. 44 lbs (20 Kg)
Measuring range	0.6 to 2.0 ppm Total Cr for the 26 mm cell 0.3 to 4.0 ppm Total Cr for the 16 mm cell up to 150 ppm Total Cr with internal dilution	Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Reproducibility:	± 10 ppb ± 5%, whichever is greater (26 mm cell) ± 15 ppb or ± 5%, whichever is greater (16 mm cell).	Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Analysis frequency:	Freely programmable, batch near-continuous analysis.	Alarms:	4 SPDT programmable potential free relays
Cycle time:	11 minutes, including conditioning before analysis cycle and rinsing after measuring.	Digital input:	Remote start / stop
Reaction cell:	Temperature heated	Operating Temperature:	41 - 113 °F (5 - 45 °C)
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)	Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)	Installation:	Wall mount (standard), bench top support or panel mount (options).
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer	Ingress Protection:	IP54



www.ECDanalyzers.com

ECD ANALYZERS, LLC 1500 N Kellogg Dr Anaheim, CA 92807 USA - Phone: +1-714-695-0051 Fax: +1-714-695-0057
Email: support@ECDanalyzers.com www.ECDanalyzers.com

MODEL CA6 - COPPER ANALYZER

Compact online colorimeter for the automatic measurement of Copper in water

APPLICATION FIELDS

- Wastewater
- Process water
- Industrial sewage treatment plants
- Ultrapure water treatment

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

Low reagent consumption
Minimum operating cost by small reagent consumption, only 1L (0.26 US.gal) R1, R2 and 2L (0.53 US.gal) R3 for the 16 mm cell / 2L (0.53 US.gal) R1, R2 and 4L (1.06 US.gal) R3 for the 26 mm cell of each reagent every 30 days with 15 minute analysis frequency.

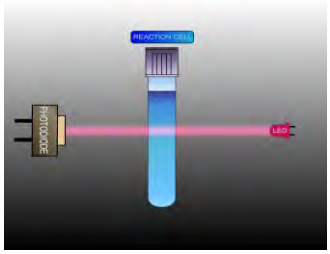
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Copper Analyzer vary from trace µg/L to 150 mg/L using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



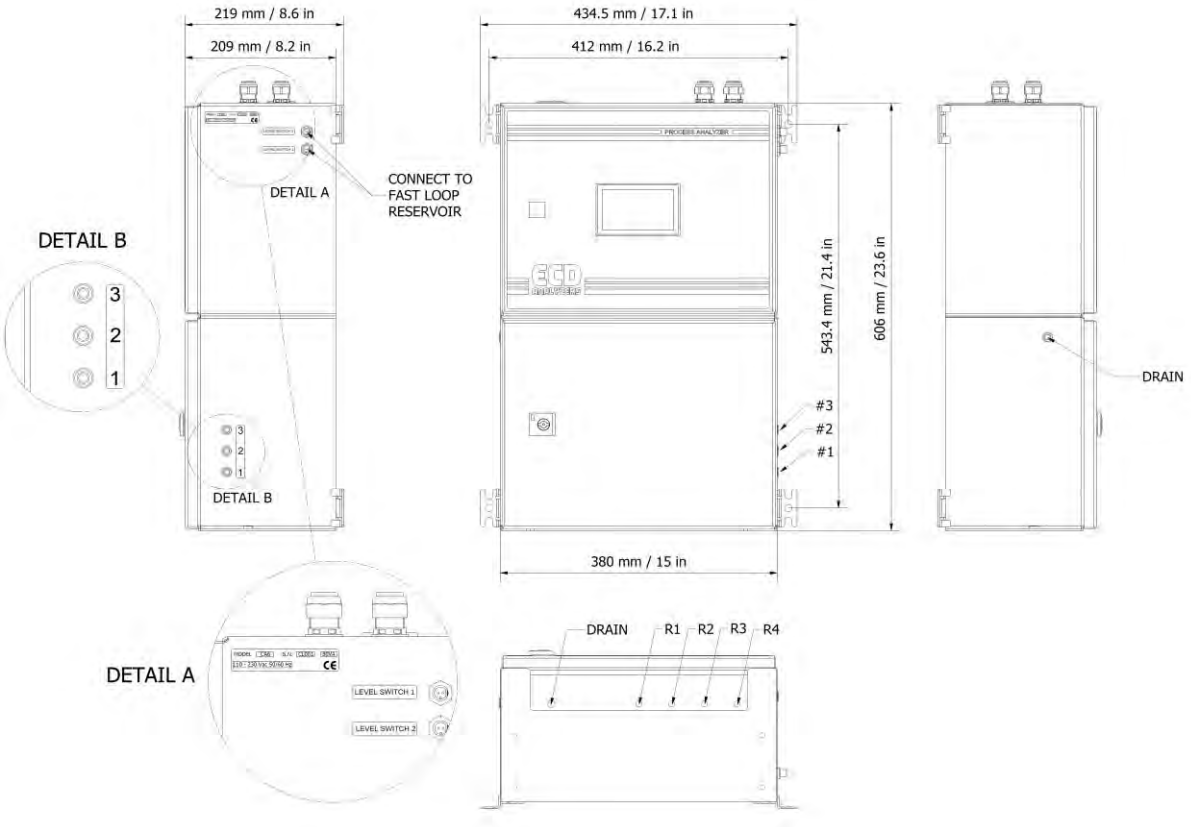
MEASUREMENT PRINCIPLE

Copper (I) ions form an orange-colored complex with the bathocuproine in a buffered solution at pH 4,5. Any copper (II) ions present in the water sample are previously reduced to copper (I) ions before the complex is formed. The absorbance intensity is proportional to the silica concentration in the sample and is determined at 470 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	Cu^{+} / Cu^{2+} (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance. Bathocuproine Method
Measuring range:	0.05 to 1 mg/L (26 mm cell) 0,1 to 3 mg/L (16 mm cell) up to 150 mg/L with internal dilution.
Reproducibility:	± 20 ppb or ± 5%, whichever is greater (26 mm cell) ± 50 ppb or ± 5%, whichever is greater (16 mm cell)
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	8-10 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



MODEL CA6 - CYANIDE ANALYZER

Compact online colorimeter for the automatic measurement of Cyanide in water

APPLICATION FIELDS

- Drinking water
- Industrial waste water
- Municipal waste water
- Surface water

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

Low reagent consumption
Minimum operating cost by small reagent consumption, only 1.7L (0.45 US.gal) for the 16 mm cell / 2.5L (0.66 US.gal) for the 26 mm cell of each reagent every 30 days with 15 minute analysis frequency.

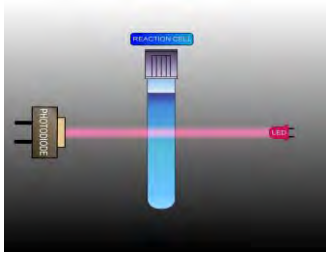
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Cyanide Analyzer vary from trace µg/L to 10 mg/L CN^- using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



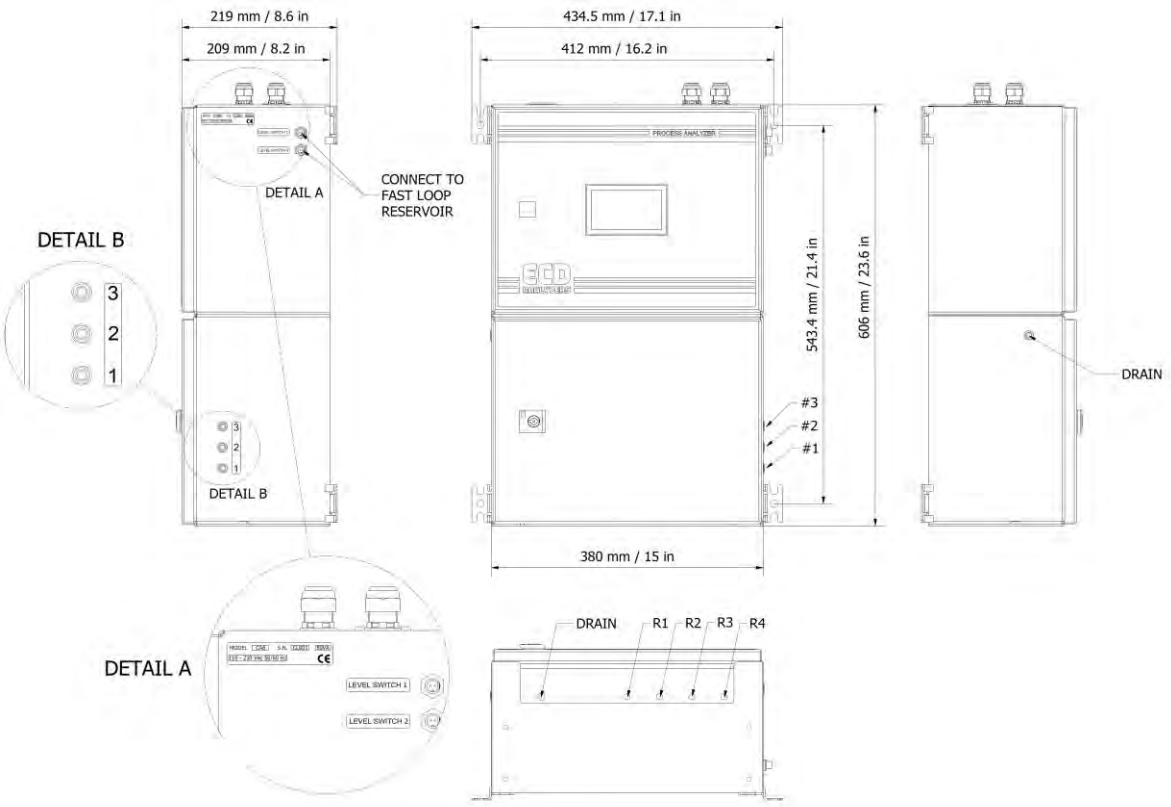
MEASUREMENT PRINCIPLE

The cyanide ions present in the sample reacts with the chloramine-T and pyridine/barbituric acid reagents. The absorbance intensity is proportional to the cyanide concentration in the sample and is measured at 572 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	CN^- Cyanide, free (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance.
Measuring range:	2 to 100 ppb CN^- for the 26 mm cell, 10 to 200 ppb CN^- for the 16 mm cell; up to 15 ppm CN^- with internal dilution.
Reproducibility:	± 4 ppb or ± 5%, whichever is greater (26 mm cell) ± 10 ppb or ± 5%, whichever is greater (16 mm cell).
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	15-18 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



MODEL CA6 - HARDNESS ANALYZER

Compact online colorimeter for the automatic measurement of Hardness in water

APPLICATION FIELDS

- Power plants
- Cooling water
- Water steam cycle
- Boiler feedwater
- Reversed osmosis
- Ion exchangers
- Ultrapure water
- Drinking water

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

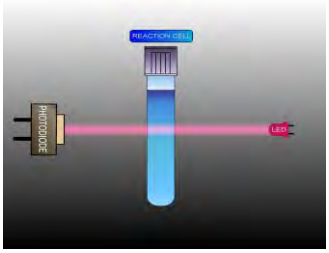
Low reagent consumption
Minimum operating cost by small reagent consumption, only 1.7L (0.45 US.gal) for the 16 mm cell / 2.5L (0.66 US.gal) for the 26 mm cell of each reagent every 30 days with 15 minute analysis frequency.

Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



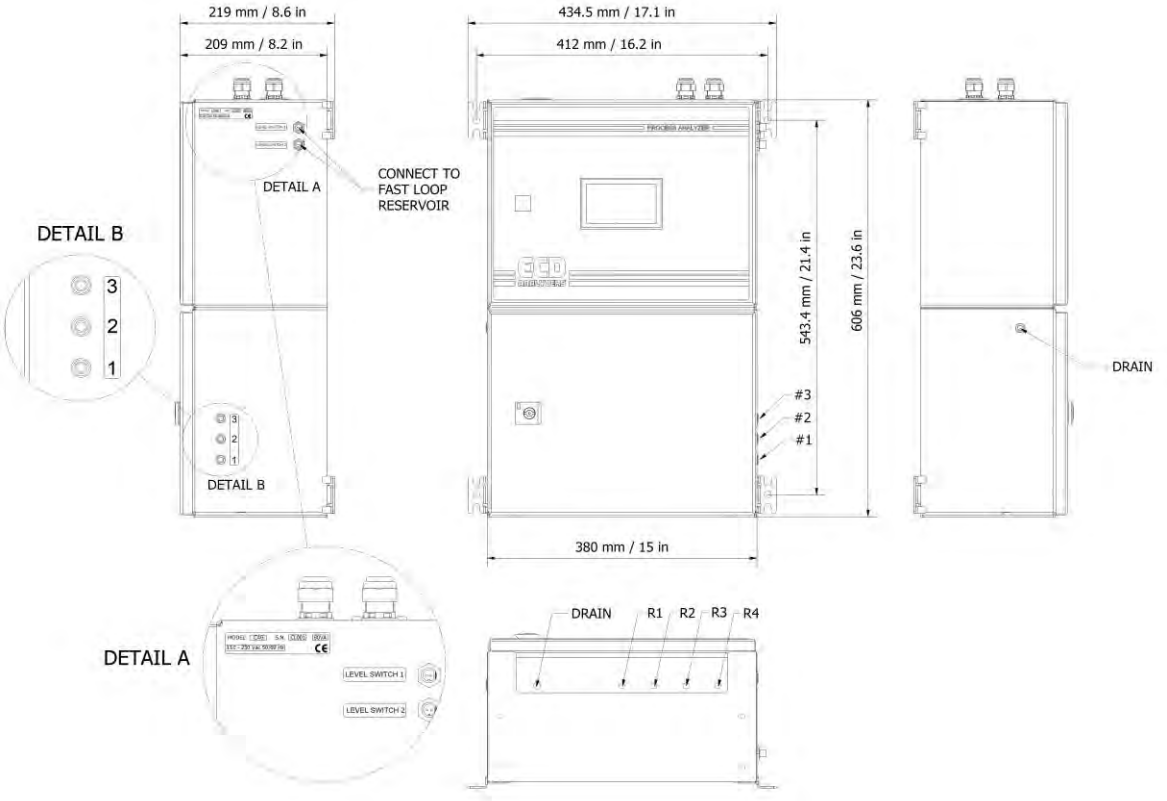
MEASUREMENT PRINCIPLE

The photometric determination is based on the reaction of calcium with O-cresolphalein Complexone solution, which yields a violet colored complex. The intensity of the color formed is proportional to the calcium concentration in the sample. Absorbance of the complex is measured at 572 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	Hardness as $CaCO_3$ (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance. O-cresolphalein Complexone.
Measuring range:	0-500 ppb (26 mm cell) – 0-1000 ppb (16 mm cell), up to 50 ppm with internal dilution.
Reproducibility:	± 5 ppb or ± 5%, whichever is greater (26 mm cell) ± 10 ppb or ± 5%, whichever is greater (16 mm cell).
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	6 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 113 °F (5 to 45 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



www.ECDanalyzers.com

ECD ANALYZERS, LLC 1500 N Kellogg Dr Anaheim, CA 92807 USA - Phone: +1-714-695-0051 Fax: +1-714-695-0057
Email: support@ECDanalyzers.com www.ECDanalyzers.com

MODEL CA6 - HYDRAZINE ANALYZER

Compact online colorimeter for the automatic measurement of Hydrazine

APPLICATION FIELDS

- Power plants
- Cooling water
- Water steam cycle
- Boiler feedwater
- Control and optimization of oxygen scavenger systems

Hydrazine is widely used in power generation plants to remove dissolved oxygen in boiler feed water and as a corrosion inhibitor.

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

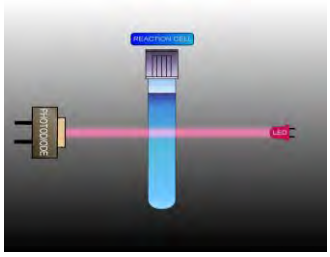
One reagent configuration, low reagent consumption
Minimum operating cost by small reagent consumption.

Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



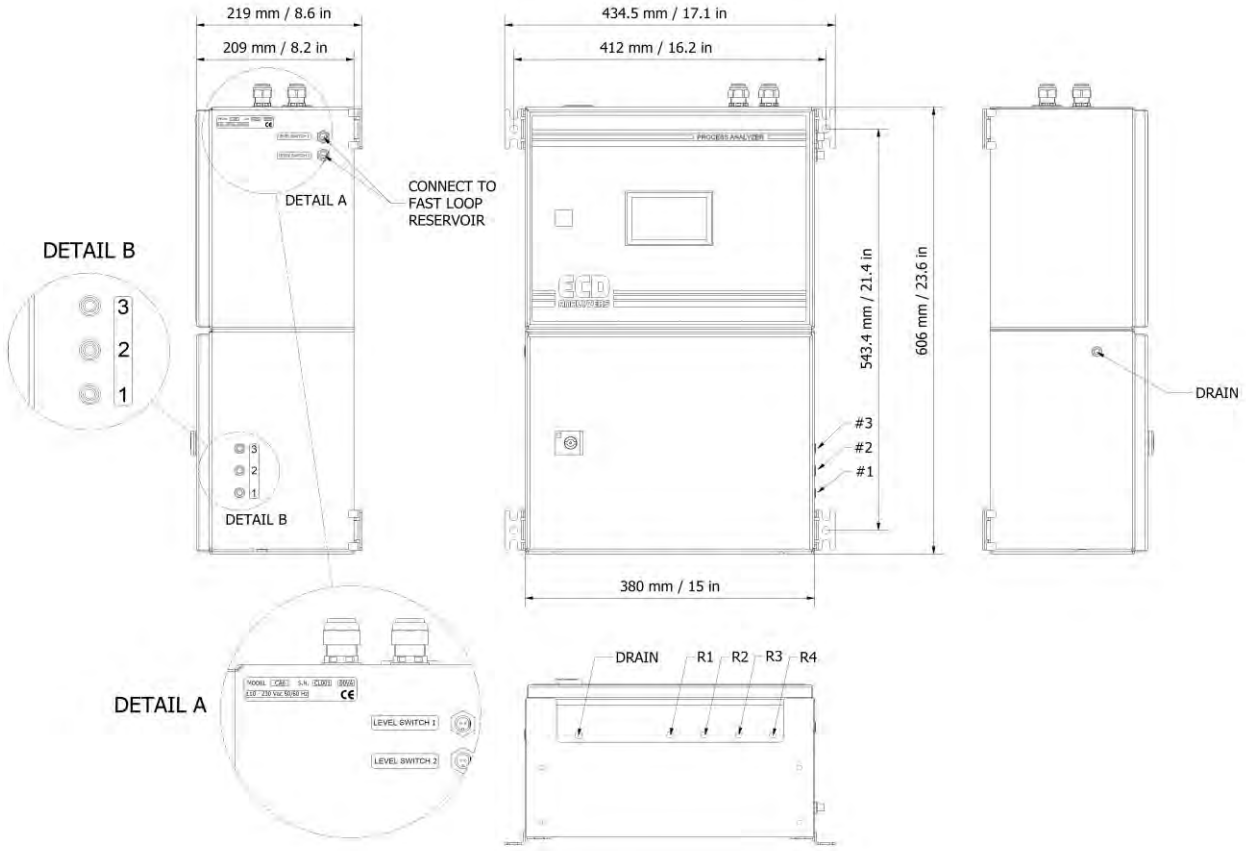
MEASUREMENT PRINCIPLE

Under acid conditions, hydrazine reacts with p-Dimethylaminobenzaldehyde to form a yellow-colored azine complex. The absorbance intensity is proportional to the hydrazine concentration in the sample and is determined at 430 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	N_2H_4 (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance.
Measuring range:	0-500 ppb (µg/l) without dilution.
Reproducibility:	± 1 ppb or ± 3%, whichever is greater
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	10 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 113 °F (5 to 45 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



MODEL CA6 - MANGANESE ANALYZER

Compact online colorimeter for the automatic measurement of Manganese in water

APPLICATION FIELDS

- Drinking water
- Industrial waste water
- Municipal waste water

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

Low reagent consumption
Minimum operating cost by small reagent consumption, only 1.2L (0.32 US.gal) for the 16 mm cell / 2.5L (0.66 US.gal) for the 26 mm cell of each reagent every 30 days with 15 minute analysis frequency.

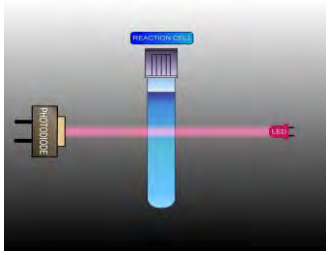
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Manganese Analyzer vary from trace µg/L to 50 mg/L Mn^{2+} using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



MEASUREMENT PRINCIPLE

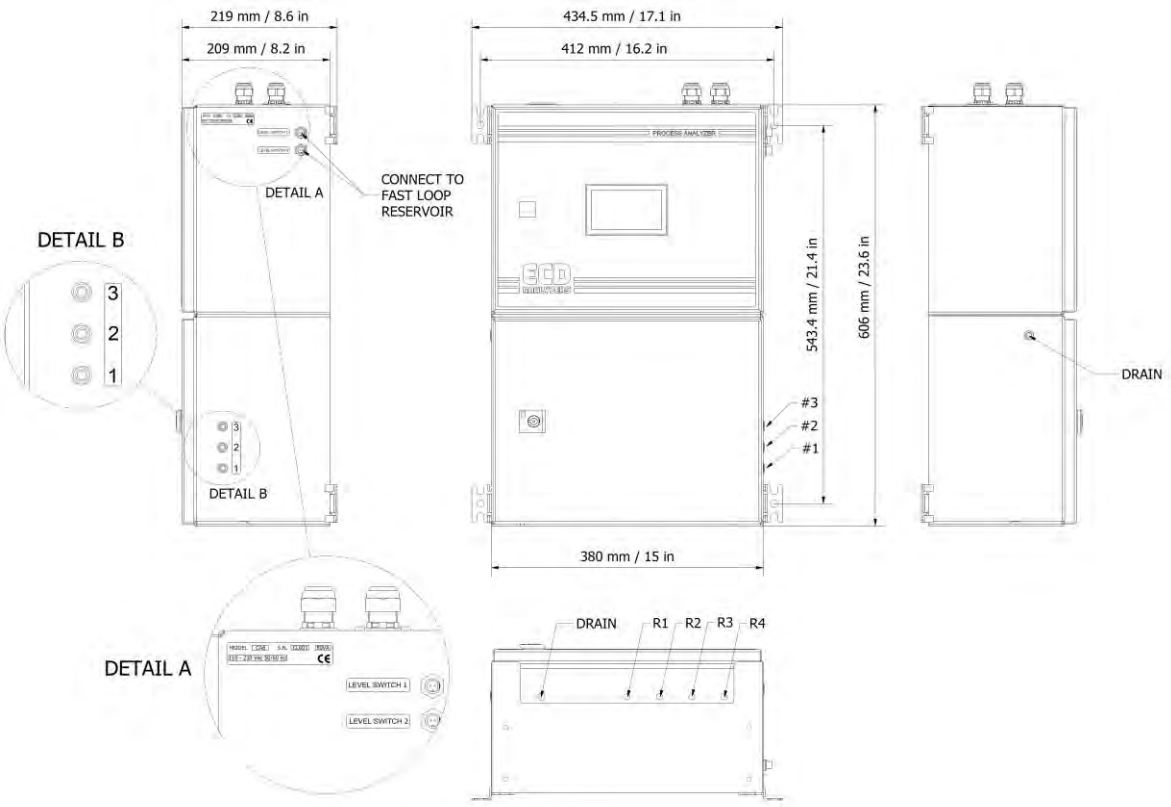
The determination of manganese is performed photometrically using PAN method.

The PAN reagent is suspended in water by use of a surfactant and forms a color complex with manganese. The absorbance intensity is proportional to the manganese concentration in the sample and is measured at 572 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	Mn^{2+} (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance.
Measuring range:	1 to 200 ppb Mn^{2+} for the 26 mm cell, 5 to 1000 ppb Mn^{2+} for the 16 mm cell; up to 50 ppm Mn^{2+} with internal dilution.
Reproducibility:	± 3 ppb or ± 5%, whichever is greater (26 mm cell) ± 10 ppb or ± 5%, whichever is greater (16 mm cell).
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	8-10 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



MODEL CA6 - NICKEL ANALYZER

Compact online colorimeter for the automatic measurement of Nickel in water

APPLICATION FIELDS

- Wastewater
- Process water
- Industrial sewage treatment plants
- Boiler feed and cooling water
- Automotive

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

Low reagent consumption
Minimum operating cost by small reagent consumption, only 1L (0.26 US.gal) R1, R2 and R3 for the 16 mm cell, 2L (0.53 US.gal) R1, R2 and R3 for the 26 mm cell of each reagent every 30 days with 15 minute analysis frequency.

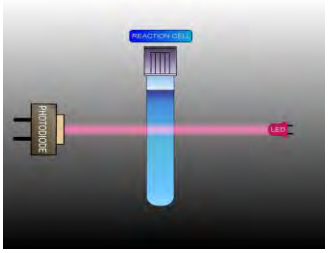
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Copper Analyzer vary from trace µg/L to 200 mg/L using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



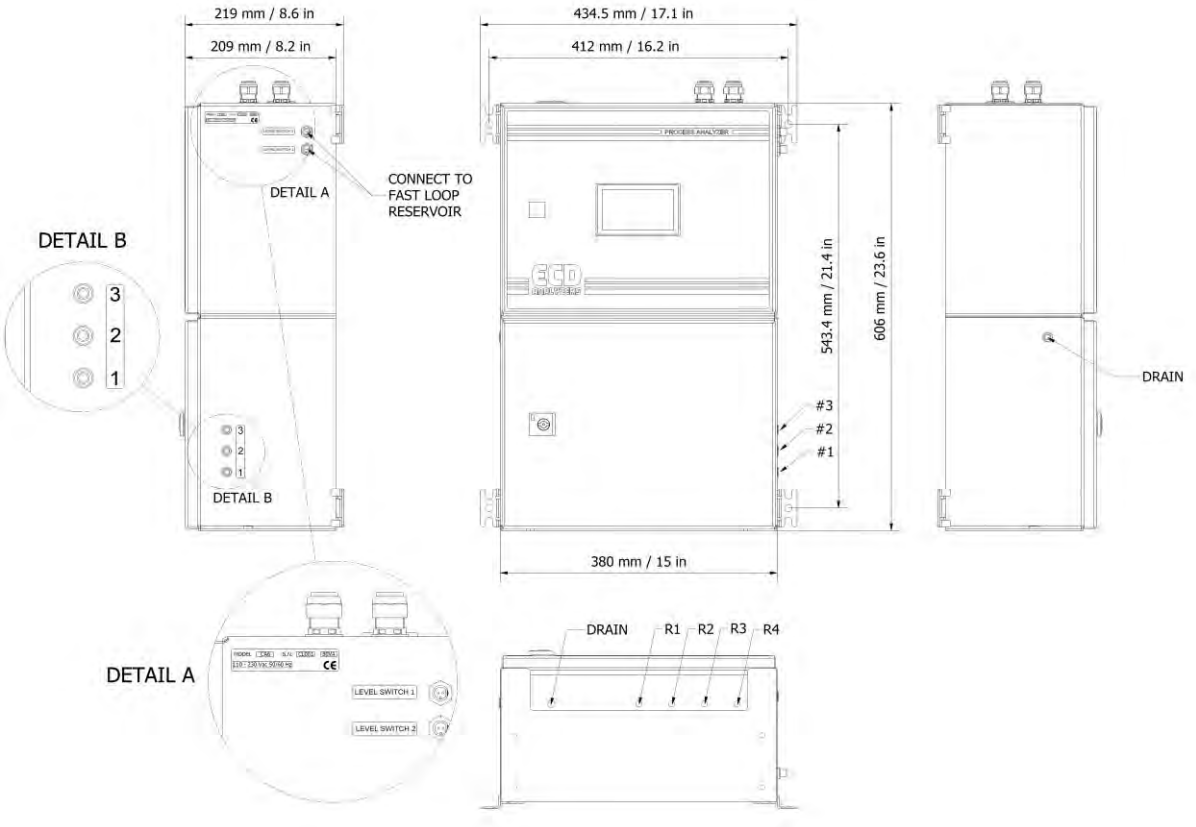
MEASUREMENT PRINCIPLE

In the presence of an oxidizing agent, nickel ions react with dimethylglyoxime in an alkaline solution to form an orange-brown colored complex. The absorbance intensity is proportional to the nickel concentration in the sample and is determined at 470 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	Ni^{2+} (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance. Dimethylglyoxime Method
Measuring range:	0.01 to 3 mg/L (26 mm cell) 0.02 to 6 mg/L (16 mm cell) up to 200 mg/L with internal dilution.
Reproducibility:	± 10 ppb or ± 5%, whichever is greater (26 mm cell) ± 30 ppb or ± 5%, whichever is greater (16 mm cell)
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	8-10 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



ECD ANALYZERS, LLC 1500 N Kellogg Dr Anaheim, CA 92807 USA - Phone: +1-714-695-0051 Fax: +1-714-695-0057
Email: support@ECDanalyzers.com www.ECDanalyzers.com

MODEL CA6 - NITRITE ANALYZER

Compact online colorimeter for the automatic measurement of Nitrite in water

APPLICATION FIELDS

- Drinking water
- Process optimisation of wastewater treatment plants
- Industrial and municipal wastewater
- Mineral water monitoring
- Surface water

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

Low reagent consumption
Minimum operating cost by small reagent consumption, only 0.7L (0.18 US.gal) for the 16 mm cell / 1L (0.26 US.gal) for the 26 mm cell of each reagent every 30 days with 15 minute analysis frequency.

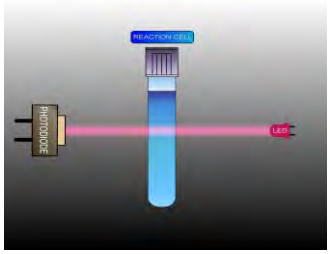
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Nitrite Analyzer vary from trace µg/L to 125 mg/L NO_2 using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



MEASUREMENT PRINCIPLE

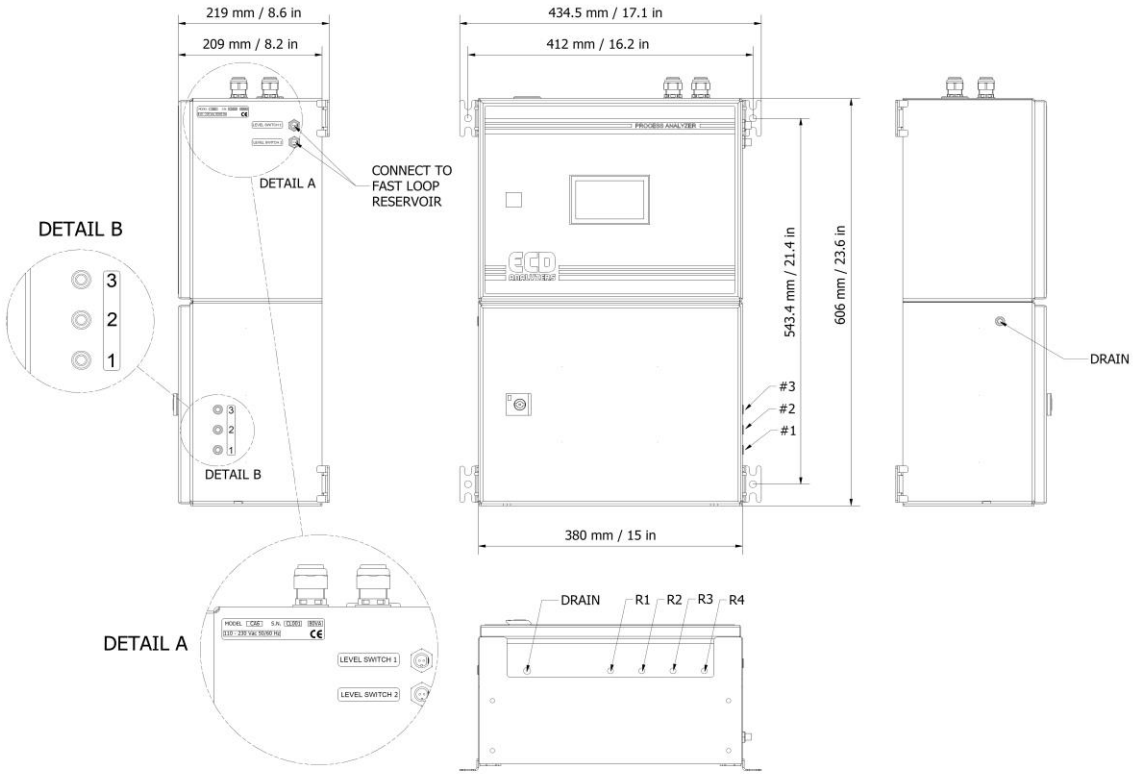
Nitrite forms with sulfanilamide and N-(1-naphthyl)-ethylene diammonium dichloride in acidic medium a purple colored dye.

The absorbance intensity is proportional to the nitrite concentration in the sample and is determined at 525 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	NO_2 / N-NO_2 (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance. Diazotization.
Measuring range:	5 to 500 ppb N-NO_2 (1.6 ppm NO_2) for the 26 mm cell - 0.02 to 1 ppm N-NO_2 / (3.2 ppm NO_2) for the 16 mm cell; up to 40 ppm N-NO_2 / 125 ppm NO_2 with internal dilution.
Reproducibility:	± 5 ppb or ± 5%, whichever is greater up to 150 ppb (26 mm cell) ≥ 150 ppb to 600 ppb: ± 10 ppb ≥ 600 µg/l: ± 20 ppb or ± 5%, whichever is greater (16 mm cell).
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	6-8 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



MODEL CA6 - PHENOL ANALYZER

Compact online colorimeter for the automatic measurement of Phenol in water

APPLICATION FIELDS

- Industrial wastewater – where the presence of phenolic compounds in the industrial waste water adversely affects aquatic and human life directly or indirectly when discharged into public waterways, water sources or surface water.

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

Low reagent consumption
Minimum operating cost by small reagent consumption, only 1L (0.26 US.gal) for the 16 mm cell / 2L (0.52 US.gal) for the 26 mm cell of each reagent every 30 days with 15 minute analysis frequency.

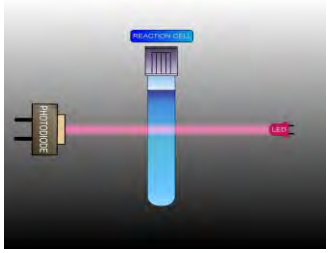
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Phenol Analyzer vary from trace µg/L to 250 mg/L Phenol using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



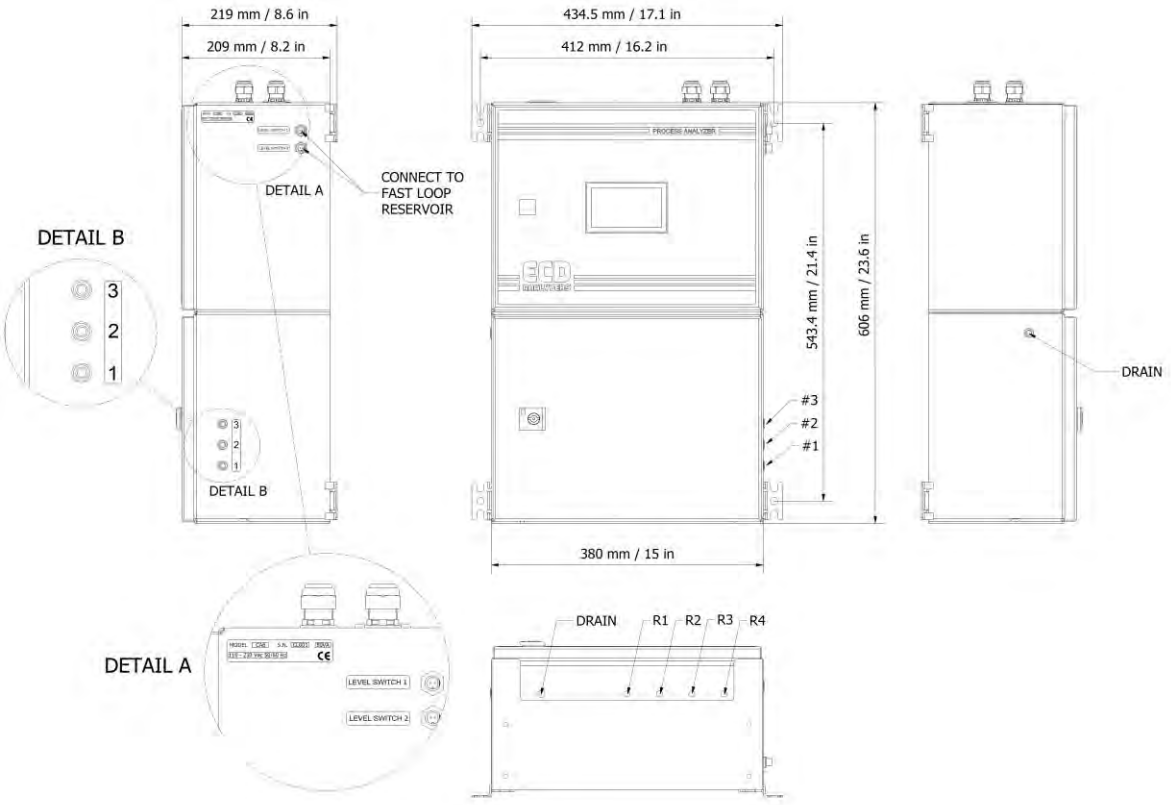
MEASUREMENT PRINCIPLE

The colorimetric determination of phenol in water is based on the reaction of phenol with 4-amino-antipyrine in the presence of potassium hexacyanoferrate(III) buffer solution to form a red colored antipyrine complex. The absorbance intensity is proportional to the phenol concentration in the sample and is measured at 525 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	Phenol (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance. 4-amino-antipyrine
Measuring range:	5 to 1000 ppb Phenol for the 26 mm cell, 0.1 to 5 ppm Phenol for the 16 mm cell; up to 250 ppm Phenol with internal dilution.
Reproducibility:	± 20 ppb or ± 5%, whichever is greater (26 mm cell) ± 50 ppb or ± 5%, whichever is greater (16 mm cell).
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	6-8 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



ECD ANALYZERS, LLC 1500 N Kellogg Dr Anaheim, CA 92807 USA - Phone: +1-714-695-0051 Fax: +1-714-695-0057
Email: support@ECDanalyzers.com www.ECDanalyzers.com

MODEL CA6 - PHOSPHATE ANALYZER

Compact online colorimeter for the automatic measurement of Phosphates

APPLICATION FIELDS

- Power Utility
- Cooling water
- Drinking water
- Boiler feedwater
- Industrial and municipal wastewater
- Surface water

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

Low reagent consumption
Minimum operating cost by small reagent consumption, only 2.5L (0.66 US.gal) for the 16 mm cell / 5L (1.32 US.gal) for the 26 mm cell of each reagent every 90 days with 15 minute analysis frequency.

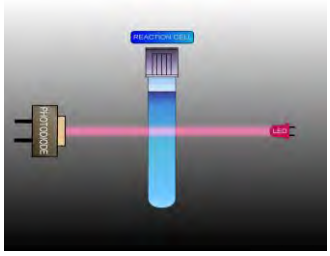
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Phosphate Analyzer vary from trace µg/L to 1200 mg/L PO_4 using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



MEASUREMENT PRINCIPLE – BLUE METHOD

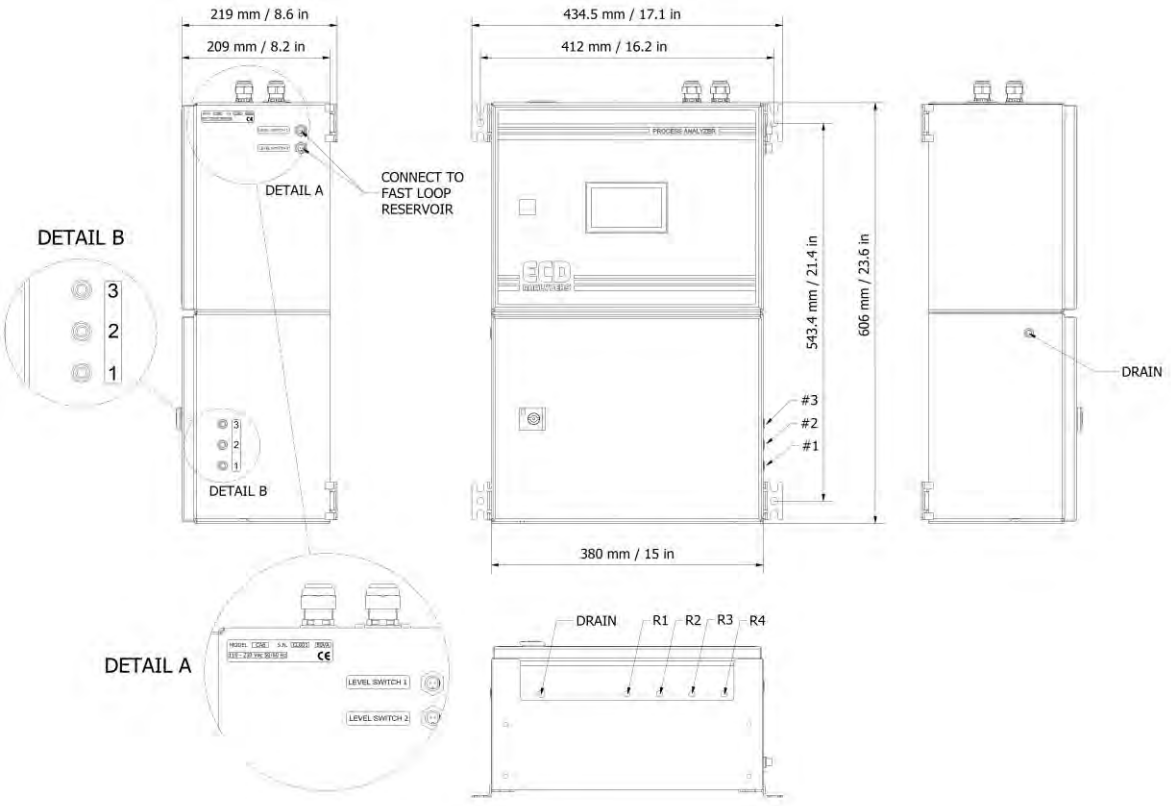
Molybdate reacts in acid medium with orthophosphate to form phosphomolybdic acid, which is then reduced to intensely colored molybdenum blue.

The absorbance intensity is proportional to the phosphate concentration in the sample and is determined at 850 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	PO_4 / P-PO_4 (ppb, ppm, mg/l). Phosphates / reactive phosphorus
Measuring principle:	Differential photometric absorbance. Blue Method.
Measuring range:	0.01 to 4 ppm P-PO_4 (12.5 ppm PO_4) for the 26 mm cell - 0.05 to 10 ppm P-PO_4 / (30 ppm PO_4) for the 16 mm cell; up to 400 ppm P-PO_4 / 1200 ppm PO_4 with internal dilution.
Reproducibility:	± 5 ppb or ± 5%, whichever is greater (26 mm cell) ± 10 ppb or ± 5%, whichever is greater (16 mm cell).
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	8-10 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



ECD ANALYZERS, LLC 1500 N Kellogg Dr Anaheim, CA 92807 USA - Phone: +1-714-695-0051 Fax: +1-714-695-0057
Email: support@ECDanalyzers.com www.ECDanalyzers.com

MODEL CA6 - PHOSPHATE ANALYZER

Compact online colorimeter for the automatic measurement of Phosphates

APPLICATION FIELDS

- Power Utility
- Cooling water
- Drinking water
- Boiler feedwater
- Industrial and municipal wastewater
- Surface water

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

One reagent configuration, low reagent consumption
Minimum operating cost by small reagent consumption, only 2.5L (0.66 US.gal) for the 16 mm cell / 5L (1.32 US.gal) for the 26 mm cell of each reagent every 90 days with 15 minute analysis frequency.

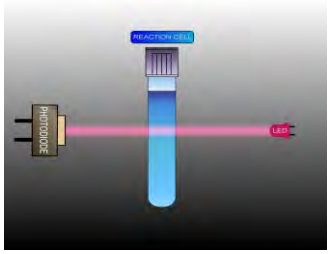
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Phosphate Analyzer vary from trace µg/L to 2000 mg/L PO_4 using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



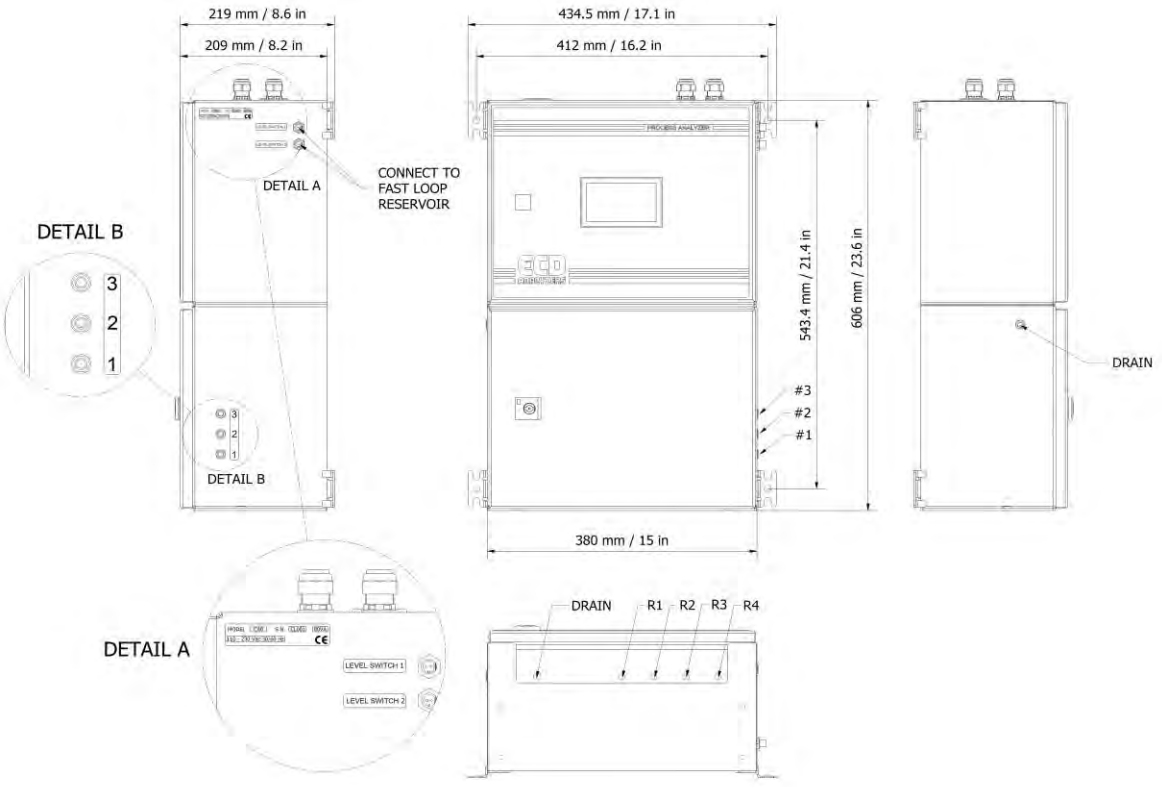
MEASUREMENT PRINCIPLE – YELLOW METHOD

The reagent, containing sodium molybdate and ammonium meta-vanadate in an acid medium, reacts with the orthophosphate to form a yellow coloured phospho-vanado-molybdate compound. The absorbance intensity is proportional to the phosphate concentration in the sample and is determined at 430 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	PO_4 / P-PO_4 (ppb, ppm, mg/l). Phosphates / reactive phosphorus
Measuring principle:	Differential photometric absorbance. Yellow Method.
Measuring range:	0.05 to 10 ppm P-PO_4 (30 ppm PO_4) for the 26 mm cell - 0.1 to 16 ppm P-PO_4 / (50 ppm PO_4) for the 16 mm cell; up to 640 ppm P-PO_4 / 2000 ppm PO_4 with internal dilution.
Reproducibility:	± 200 ppb or ± 5%, whichever is greater (26 mm cell) ± 500 ppb or ± 5%, whichever is greater (16 mm cell).
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	8-10 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



MODEL CA6 - IRON ANALYZER

Compact online colorimeter for the automatic measurement of Iron

APPLICATION FIELDS

- Drinking water
- Iron removal processes and residual coagulant monitoring
- Industrial wastewater
- Measurement of effluents and wastewaters
- Boiler feed water
- Corrosion control
- Cooling water
- Surface water

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

One reagent configuration, low reagent consumption
Minimum operating cost by small reagent consumption, only 2.5L (0.66 US.gal) for the 16 mm cell / 5L (1.32 US.gal) for the 26 mm cell of each reagent every 60 days with 15 minute analysis frequency. Very long shelf life of the reagent.

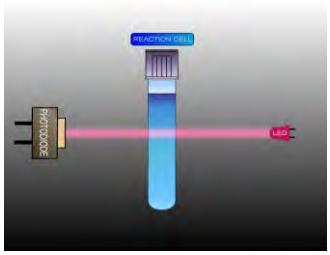
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Iron Analyzer vary from trace µg/L to 10 mg/L using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.

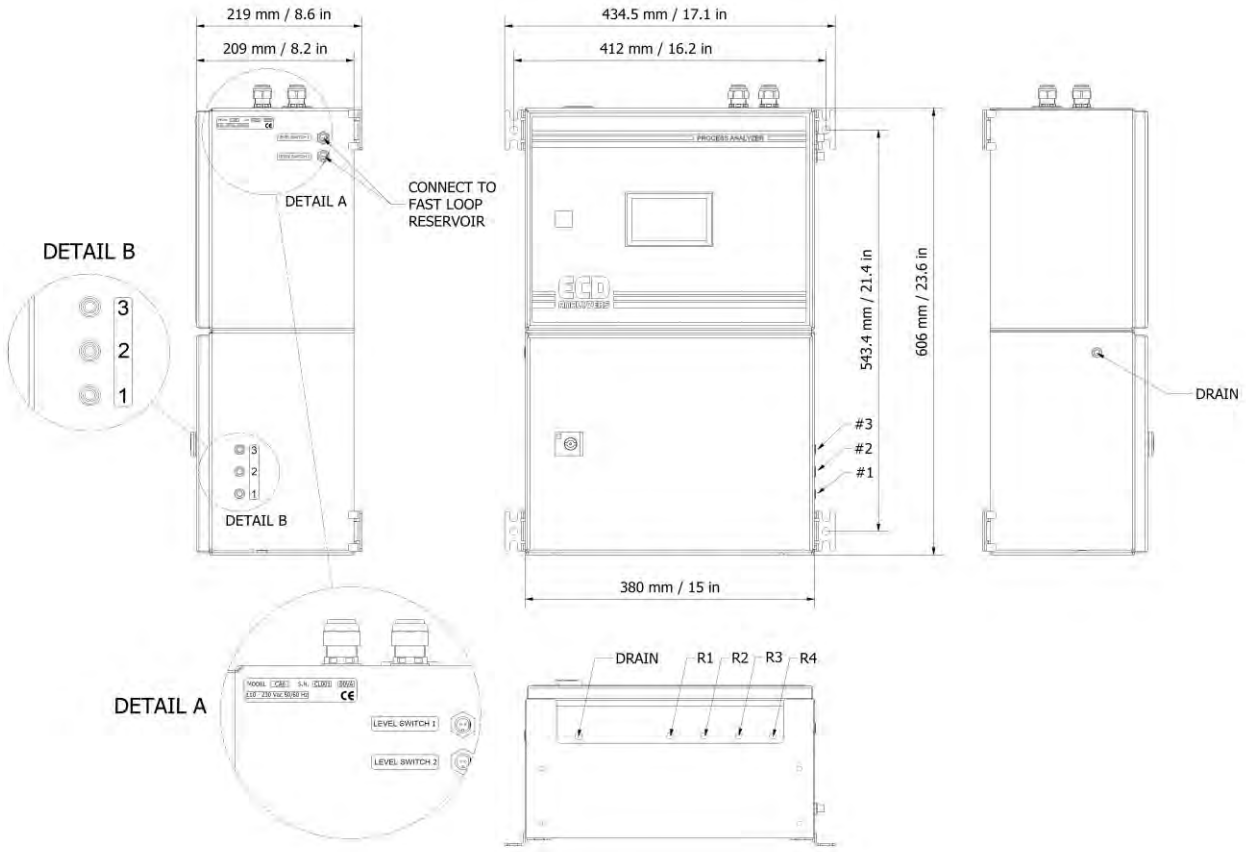


MEASUREMENT PRINCIPLE In an acid buffered solution, ferrozine and iron react to form a purple colored complex measured at 572 nm. The absorption intensity is proportional to the iron concentration in the sample.

TECHNICAL SPECIFICATIONS

Measured parameter:	Fe^{2+}, Fe^{3+}, Total Dissolved Iron (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance.
Measuring range:	2 to 250 ppb (26 mm cell) 9 to 500 ppb (16 mm cell) up to 10 mg/L with internal dilution.
Reproducibility:	± 1 ppb or ± 5%, whichever is greater (26 mm cell) ± 5 ppb or ± 5%, whichever is greater (16 mm cell)
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	8-10 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



MODEL CA6 - SILICA ANALYZER

Compact online colorimeter for the automatic measurement of Silica

APPLICATION FIELDS

- Power plants
- Ultrapure water treatment
- Cooling water
- Water steam cycle
- Condensate analysis
- High-pressure boiler feedwater
- Reversed osmosis
- Turbine protection
- Demineralization plants

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

Low reagent consumption
Minimum operating cost by small reagent consumption, only 2.5L (0.66 US.gal) for the 16 mm cell / 5L (1.32 US.gal) for the 26 mm cell of each reagent every 90 days with 15 minute analysis frequency.

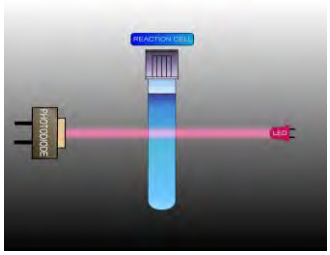
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Silica Analyzer vary from trace µg/L to 150 mg/L using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



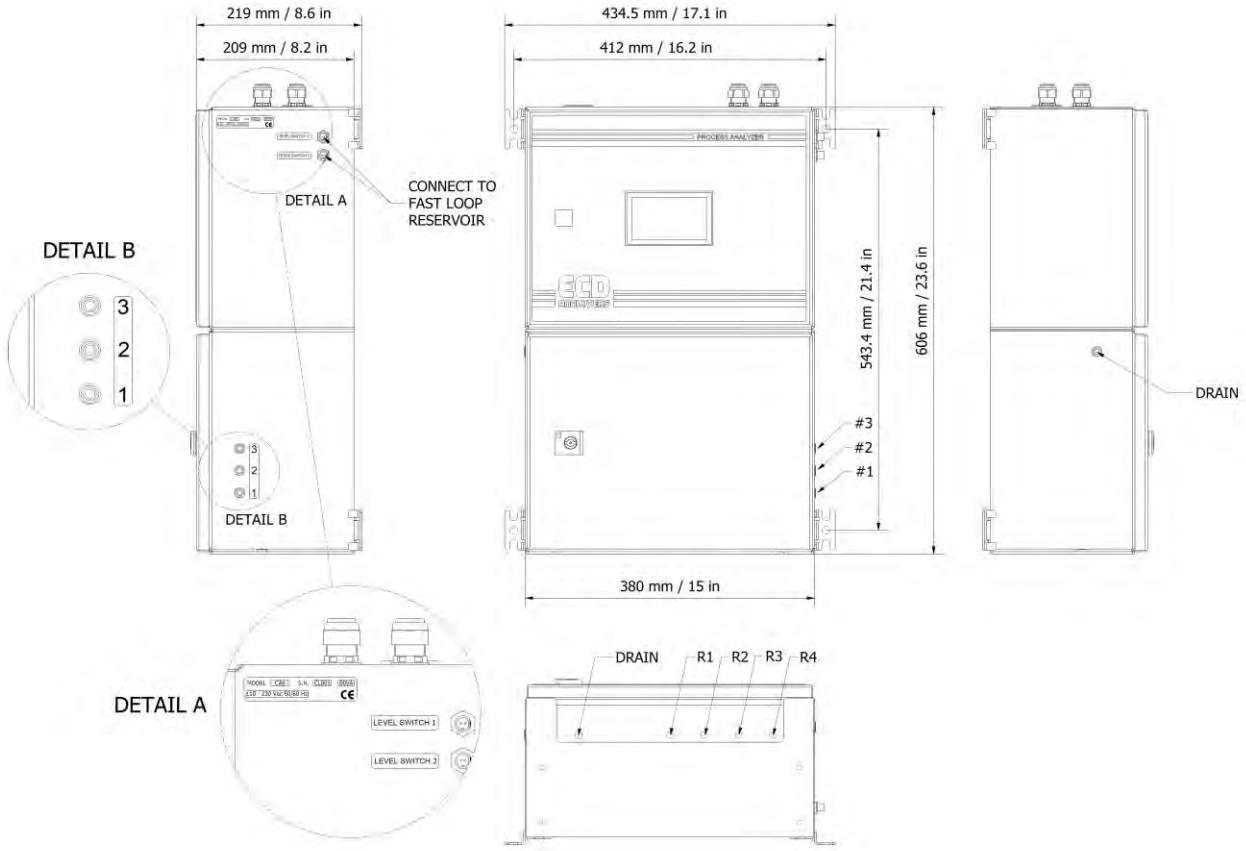
MEASUREMENT PRINCIPLE

Soluble silica reacts with the molybdate ion in an acid medium to form a green-yellow colored silico-molybdic acid complex that in its turn is converted to a blue complex with the addition of the reducing reagent. Oxalic acid is added to minimize the phosphate interference. The absorbance intensity is proportional to the silica concentration in the sample and is determined at 850 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	Si^{4+} / SiO_2 (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance.
Measuring range:	0.5 to 1000 ppb (26 mm cell) 1 to 5000 ppb (16 mm cell) up to 150 mg/L with internal dilution.
Reproducibility:	± 0.5 ppb or ± 5%, whichever is greater (26 mm cell) ± 1 ppb or ± 5%, whichever is greater (16 mm cell)
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	8-10 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



www.ECDanalyzers.com

ECD ANALYZERS

ECD ANALYZERS, LLC 1500 N Kellogg Dr Anaheim, CA 92807 USA - Phone: +1-714-695-0051 Fax: +1-714-695-0057

Email: support@ECDanalyzers.com www.ECDanalyzers.com

MODEL CA6 - SULFATE ANALYZER

Compact online colorimeter for the automatic measurement of Sulfate in water

APPLICATION FIELDS

- Drinking water
- Waste water
- Raw water
- Process control

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

Low reagent consumption
Minimum operating cost by small reagent consumption, only 2.0L (0.53 US.gal) for the 16 mm cell / 3.0L (0.79 US.gal) for the 26 mm cell of each reagent every 30 days with 15 minute analysis frequency.

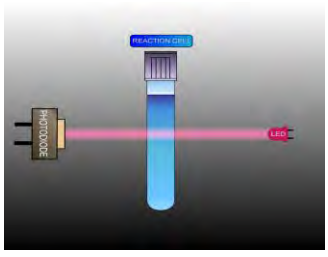
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Sulfate Analyzer vary from 0.5 to 5000 mg/L SO_4^{2-} using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



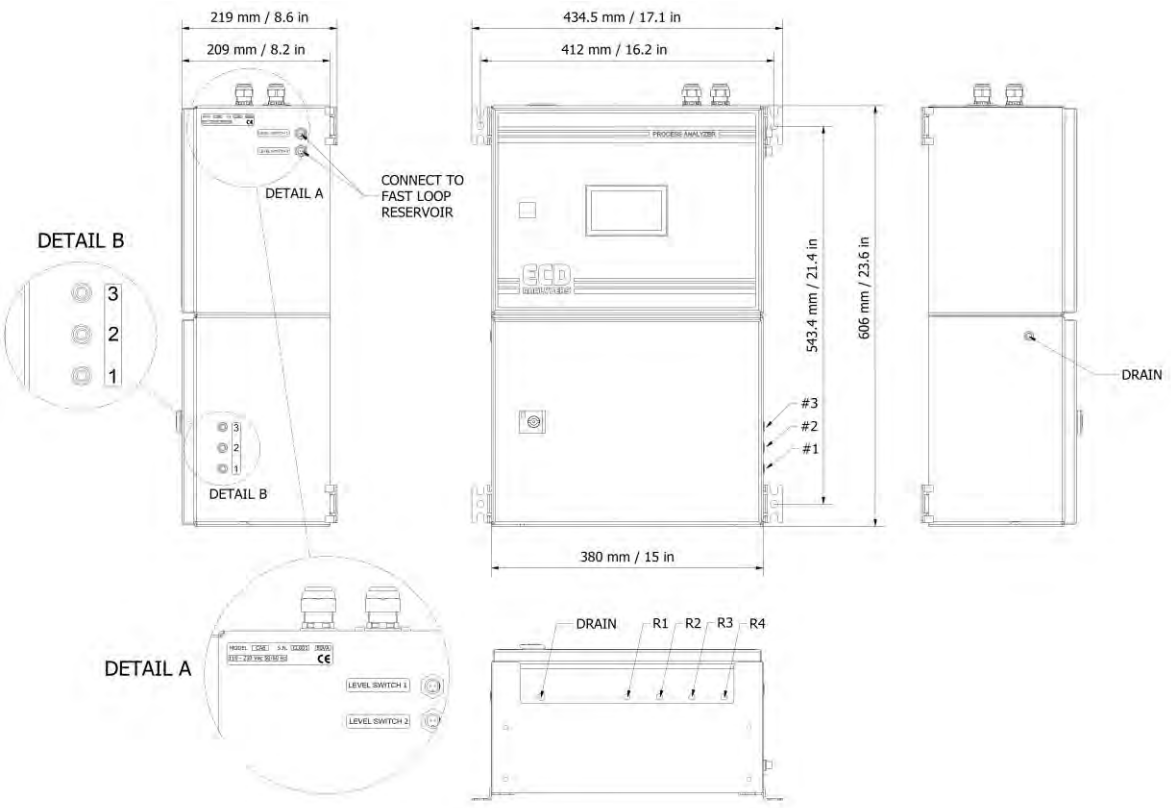
MEASUREMENT PRINCIPLE

The CA6 analyzer uses an adaptation of the turbidimetric method to measure Sulfate. The Sulfate is precipitated as barium sulfate with an excess of barium chloride. A conditioning reagent is added to maintain the barium Sulfate suspension. When the reagent is added to a sample containing Sulfate, it will cause turbidity in the sample. The absorbance (turbidity) intensity is proportional to the Sulfate concentration in the sample and is measured at 430 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	SO_4^{2-} (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance. Turbidimetric method.
Measuring range:	0.5 to 50 ppm SO_4^{2-} for the 26 mm cell, 1 to 150 ppm SO_4^{2-} for the 16 mm cell; up to 5000 ppm SO_4^{2-} with internal dilution.
Reproducibility:	± 0.5 ppm or ± 5%, whichever is greater (26 mm cell) ± 1 ppm or ± 5%, whichever is greater (16 mm cell).
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	6-8 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



ECD ANALYZERS, LLC 1500 N Kellogg Dr Anaheim, CA 92807 USA - Phone: +1-714-695-0051 Fax: +1-714-695-0057
Email: support@ECDanalyzers.com www.ECDanalyzers.com

MODEL CA6 - ZINC ANALYZER

Compact online colorimeter for the automatic measurement of dissolved Zinc in water

APPLICATION FIELDS

- Drinking water
- Industrial waste water
- Effluent water
- Surface water
- Boilers and cooling towers

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

Low reagent consumption
Minimum operating cost by small reagent consumption, only 1.1L (0.29 US.gal) for the 16 mm cell / 2.0L (0.53 US.gal) for the 26 mm cell of each reagent every 30 days with 15 minute analysis frequency.

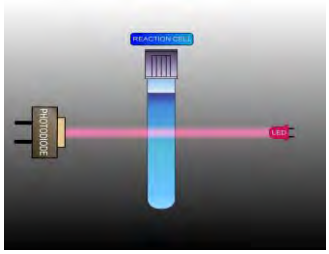
Automatic calibration / validation / cleaning
Validation, cleaning and calibration are standard features which significantly reduce downtime and operator intervention ensuring the most accurate results are obtained.
Free selectable validation, cleaning and calibration intervals.

Wide measuring range
The determination ranges of the CA6 Zinc Analyzer vary from trace µg/L to 125 mg/L Zn^{2+} using internal dilution module.

Color touchscreen user interface
The CA6 Colorimeter is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

Multiple streams
Dual streams version available. External Sequencer, switching up to 4 sample streams.



MEASUREMENT PRINCIPLE

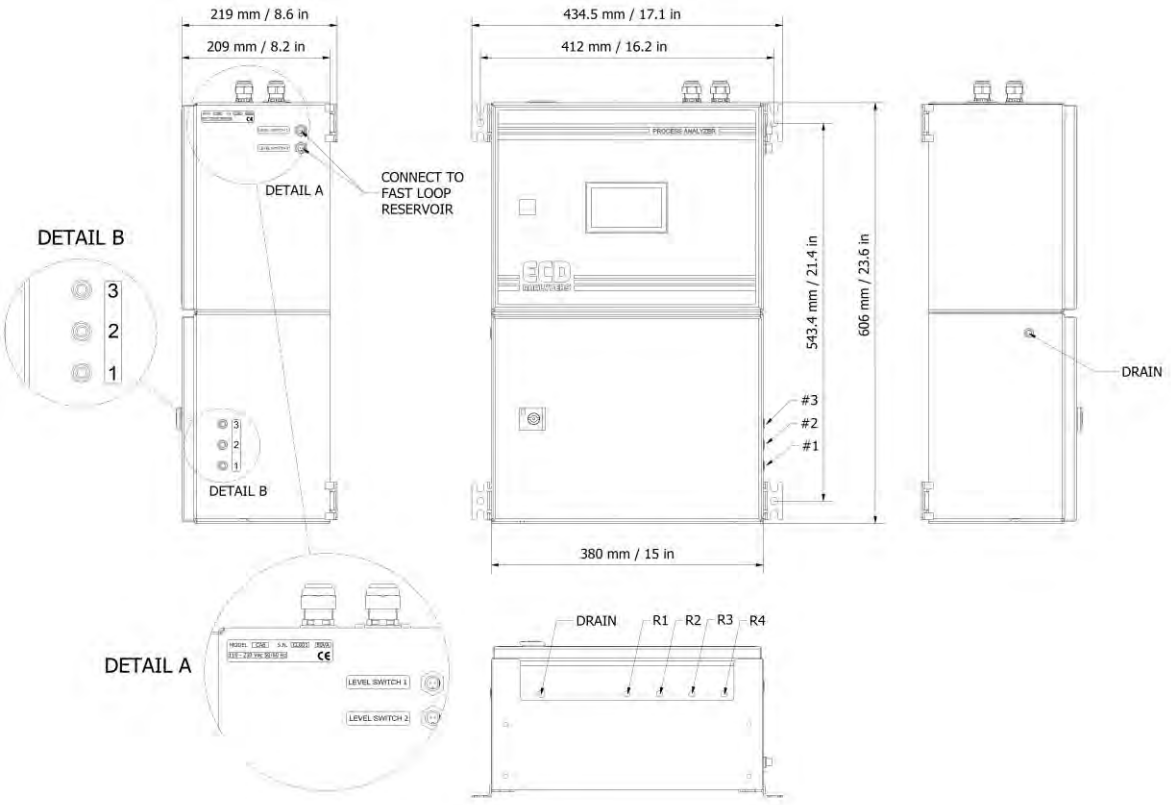
Zinc reacts with the reagent zincon in a buffered alkaline solution to form a blue complex.

The absorbance intensity is proportional to the zinc concentration in the sample and is measured at 660 nm.

TECHNICAL SPECIFICATIONS

Measured parameter:	Zn^{2+} (ppb, ppm, mg/l).
Measuring principle:	Differential photometric absorbance. Zincon method.
Measuring range:	0.01 to 1 ppm Zn^{2+} for the 26 mm cell, 0.02 to 2.5 ppm Zn^{2+} for the 16 mm cell; up to 125 ppm Zn^{2+} with internal dilution.
Reproducibility:	± 10 ppb or ± 5%, whichever is greater (26 mm cell) ± 20 ppb or ± 5%, whichever is greater (16 mm cell).
Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	6-8 minutes, including conditioning before analysis cycle and rinsing after measuring.
Reaction cell:	Temperature heated
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
N° of streams:	1, 2 with integrated switching valve 3, 4 with external sequencer

Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



ECD ANALYZERS, LLC 1500 N Kellogg Dr Anaheim, CA 92807 USA - Phone: +1-714-695-0051 Fax: +1-714-695-0057
Email: support@ECDanalyzers.com www.ECDanalyzers.com

FC80 Free Chlorine Analyzer

ELECTRO-CHEMICAL DEVICES

Features

- **Panel Mounted System Plumb and Play Design**
- **Automatic pH Compensation**
- **Automatic Flow Control**
- **T80 Transmitter Capability**
- **Compliant with EPA Method 334.0**

Benefits

- **Complete System, Easy Installation, Ready to Use**
- **No Expensive Reagents**
- **Eliminates Pressure Regulators and Rotameters**
- **Dual Measurements, Single parameter or Dual parameter Displays, MODBUS RTU, Spray Cleaner (optional for fouling applications)**

Model FC80
Free Chlorine Analyzer

Description

The FC80 is a panel mounted, ready to use Free Chlorine Analyzer. It is designed to monitor free chlorine in drinking water, rinse water, cooling water or other fresh water samples from 0.05 – 20 ppm chlorine as the standard range or 0.01 - 5.00 ppm with the low range sensor. The FC80 Free Chlorine Analyzer is compliant with EPA method 334.0.

The FC80 features a plug and play design that incorporates a constant head flow control device, a pH sensor, a chlorine sensor and the T80 analyzer/ transmitter conveniently mounted on a PVC panel. Connect the sample and drain lines, connect the power and outputs and it is ready to use. Calibration is accomplished by DPD comparison.

Free chlorine exists in solution as a pH dependent ratio of hypochlorous acid (~100% at pH 5) and hypochlorite ion (~100% at pH 10). The Free Chlorine Sensor measures only the hypochlorous acid component of the free chlorine and the analyzer calculates the balance using either the measured pH or a user defined fixed value. The use of the pH sensor provides accurate compensation for samples between pH 6 and pH 9 eliminating the need for expensive sample conditioning systems to control the pH of the solution.

The T80 is 110-240 VAC or 24 VDC powered and allows either parameter to be graphically displayed with user defined Line, Bar or Guage style graphs. The standard configuration has (2) 4-20 mA outputs, (3) alarm relays and MODBUS RTU.

Amperometric chlorine sensors are flow sensitive, the minimum required flow by the sensor is 0.5 ft/sec, above this value the output is virtually flow independent. A “Constant head” Flow control Device (CFD) maintains the optimum flow past the sensor over a wide range of incoming sample flow rates. The minimum flow required for the CFD is 10 gal/hr and the maximum flow is 80 gal/hr with the sample going to drain at atmospheric pressure.

The Auto Clean option includes a solinoid actuated spray cleaner that uses either 30 psi process water or air. An easily adjusted timer controls the period and duration of the cleaning cycle.

FC80 Free Chlorine Analyzer

Specifications

Sensor and Flow Train

Sensor

Polarographic, Gold/Silver, PTFE membrane, Digital communiucation

Measurement Range

Chlorine: 0.05 to 20 ppm (Standard Range)
0.01 to 5.00 ppm (Low Range)
For range up to 200 ppm refer to Model FC80HR

pH: 0 to 14 pH

Operating Temperature

0° C to 50° C (32° F to 122° F)

Min/Max Flow

38 L/hr to 300 L/hr (10 gal/hr to 80 gal/hr)

Wetted Materials

PVC, PP, PVDF, PTFE, Glass, 316 SS

Process Connections

Input ¼" barb fitting (¼"FNPT), Drain ¾" FNPT

Electrolyte Life

Up to 12 months

T80 Analyzer/Transmitter

Measurements

Chlorine: 000.0 to 999.9 ppb, ppm auto ranging
pH: 0 to 14 pH
Temperature: 0° C to 100° C (32° F to 212° F)

pH Compensation

pH 5 - 10 (accuracy degrades above 9 pH)

Display

128 x 64 pixels (2.75" x 1.5") LCD, Black on Grey background, Blue on White background with LED backlight

Enclosure

IP65, weatherproof, ½ DIN, (L x W x D) 5.7" X 5.7" X 3.5"

Outputs

(1) 4-20 mA for Free Chlorine, set to Sensors Range
(1) 4-20 mA for pH (Optional) , set 0-14 pH

Alarm Relay Ratings

Three (3) SPDT, 1 form C, 250 VAC, 10 Amp

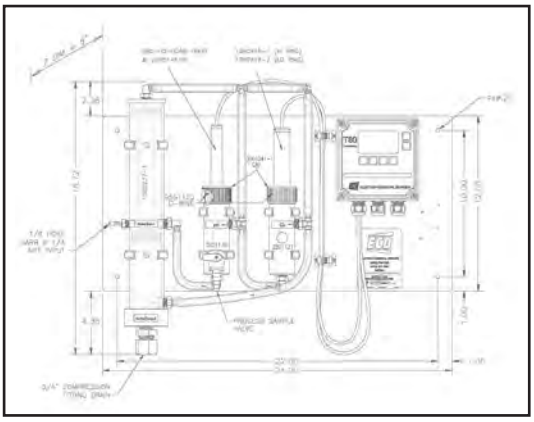
Input Power

Code -1 24 VDC (18-36 VDC @ 250 mW minimum)
Code -2 100-240 VAC, 50/60 Hz, 4W, protected with 250V, 1A, Slow Blow fuse

CE

Part No.	Model and Product Description
FC80-01-2200	Free Chlorine Analyzer (FC80), complete, 0.05-20.00 ppm, 100-240 VAC
FC80-01-2210	Free Chlorine Analyzer (FC80), complete, 0.05-20.00 ppm, with spray cleaner, 100-240 VAC
FC80-11-2200	Free Chlorine Analyzer (FC80), complete, 0.01-5.00 ppm, 100-240 VAC
FC80-11-2210	Free Chlorine Analyzer (FC80), complete, 0.01-5.00 ppm, with spray cleaner, 100-240 VAC

Part No.	Spare Parts and Accessories Description
1390918-1	Free Chlorine Sensor, Standard Range, 0.05-20 ppm
1390918-2	Free Chlorine Sensor, Low Range, 0.01-5.00 ppm
1000238	Membrane Replacement Kit with electrolyte
S80-00-0C66-0B00	pH Sensor, 316L SS body with Flange, 4' cable
2005145.VIT	Replacement pH Cartridge
3501131	Chlorine Flow Cell
3501130	pH Flow Cell
3501041-1	Flow Cell Threaded Cap



Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

FCX80 Free Chlorine Analyzer

ELECTRO-CHEMICAL DEVICES

Features	Benefits
• Panel Mounted System Plumb and Play Design	• Complete System, Easy Installation, Ready to Use
• Automatic pH Compensation	• No Expensive Reagents
• Automatic Flow Control	• Eliminates Pressure Regulators and Rotameters
• X80 Transmitter Capability	• Hazardous Location Approved Instruments
• Compliant with EPA Method 334.0	• Approved method type for Free Chlorine Measurement

Model FCX80
Free Chlorine Analyzer for Hazardous Locations

Description

The FCX80 is a panel mounted, ready to use Free Chlorine Analyzer intended for hazardous locations. It is designed to monitor free chlorine in drinking water, rinse water, cooling water or other fresh water samples from 0.05 – 20 ppm chlorine as the standard range or 0.01 - 5.00 ppm with the low range sensor. The FC80 is compliant with EPA method 334.0 for measuring drinking water.

The FCX80 features a plug and play design that incorporates a constant head flow control device, a pH sensor, a chlorine sensor and the X80 analyzer/ transmitter conveniently mounted on a panel. Connect the sample and drain lines, connect the power and outputs and it is ready to use. Calibration is accomplished by DPD comparison.

Free chlorine exists in solution as a pH dependent ratio of hypochlorous acid (~100% at pH 5) and hypochlorite ion (~100% at pH 10). The Free Chlorine Sensor measures only the hypochlorous acid component of the free chlorine and the analyzer calculates the balance using either the measured pH or a user defined fixed value. The use of the pH sensor provides accurate compensation for samples between pH 6 and pH 9 eliminating the need for expensive sample conditioning systems to control the pH of the solution.

The X80 is 24 VDC powered and allows either parameter to be graphically displayed with user defined Line, Bar or Guage style graphs. The standard configuration has (2) 4-20 mA outputs, (3) alarm relays and MODBUS RTU.

Amperometric chlorine sensors are flow sensitive, the minimum required flow by the sensor is 0.5 ft/sec, above this value the output is virtually flow independent. A “Constant head” Flow control Device (CFD) maintains the optimum flow past the sensor over a wide range of incoming sample flow rates. The minimum flow required for the CFD is 10 gal/hr and the maximum flow is 80 gal/hr with the sample going to drain at atmospheric pressure.

Hazardous Locations - Refer to X80 Transmitter Data Sheets for ATEX or IECEx or FM approvals and hazardous location information.

FCX80 Free Chlorine Analyzer

Specifications

Sensor and Flow Train

Sensor

Polarographic, Gold/Silver, PTFE membrane, Digital communiucation

Measurement Range

Chlorine: 0.05 to 20 ppm (High Range)
0.01 to 5.00 ppm (Low Range)
pH: 0 to 14 pH

Operating Temperature

0° C to 50° C (32° F to 122° F)

Min/Max Flow

38 L/hr to 300 L/hr (10 gal/hr to 80 gal/hr)

Wetted Materials

PVC, PP, PVDF, PTFE, Glass, 316 SS

Process Connections

Input ¼" barb fitting (¼"FNPT), Drain ¾" FNPT

Response Time

T90 in 2 minutes

Electrolyte Life

Up to 12 months

X80 Analyzer/Transmitter

Measurements

Chlorine: 000.0 to 999.9 ppb, ppm auto ranging
pH: 0 to 14 pH
Temperature: 0° C to 100° C (32° F to 212° F)

pH Compensation

pH 5 - 10 (accuracy degrades rapidly above 9 pH)

Display

128 x 64 pixels (2.75" x 1.5") LCD, Black on Grey background, Blue on White background with LED backlight

Outputs

(1) 4-20 mA for Free Chlorine, set to Sensors Range
(1) 4-20 mA for pH (Optional) , set 0-14 pH

Alarm Relay Ratings

Three (3) SPDT, 1 form C, 250 VAC, 10 Amp

Input Power

Code -1 24 VDC (18-36 VDC @ 250 mW minimum)

Hazardous Locations

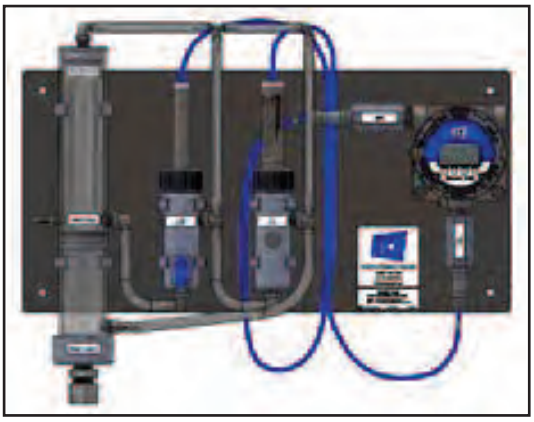
Refer to X80 Transmitter Data Sheet for ATEX or IECEx or FM approvals and hazardous location information

X80 Transmitter with S88 Sensors

Designed to meet or exceed IP66/NEMA4X

Part No.	Model and Product Description
FCX80-01-13001	Free Chlorine Analyzer (FCX80), complete, 0.05-20.00 ppm, FM Approved X80 and sensors
FCX80-01-13003	Free Chlorine Analyzer (FCX80), complete, 0.05-20.00 ppm, ATEX / IECEx Approved X80 and sensors
FCX80-11-12001	Free Chlorine Analyzer (FCX80), complete, 0.01-5.00 ppm, FM Approved X80 and sensors
FCX80-33-13003	Free Chlorine Analyzer (FCX80), complete, 0.01-5.00 ppm, Sea Water, ATEX/IECEx Approved X80 and sensors

Part No.	Spare Parts and Accessories Description
S88-E0-0C66-5B00	Free Chlorine Sensor, Standard Range, 0.05-20 ppm
S88-D0-0C66-5B00	Free Chlorine Sensor, Low Range, 0.01-5.00 ppm
1000238	Membrane Replacement Kit with electrolyte
2005145.VIT	Replacement pH Cartridge
3501131	Chlorine Flow Cell
3501130	pH Flow Cell
3501041-1	Flow Cell Threaded Cap



Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Drive
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

TC80 Total Chlorine Analyzer

Electro-Chemical Devices

Features	Benefits
• Panel Mounted System Plumb and Play Design	• Complete System, Easy Installation, Ready to Use
• Automatic pH Compensation	• No Expensive Reagents
• Automatic Flow Control	• Eliminates Pressure Regulators and Rotameters
• T80 Analyzer Capability	• Dual Measurements, (2) 4-20 mA and (3) Alarm Relays, 24VDC or 110/220 VAC Power, Auto clean option
• Compliant with EPA Method 334.0	

Model TC80
Total Chlorine Analyzer

Description

The Model TC80 is a panel mounted, ready to use Total Chlorine Analyzer. It is designed to monitor total chlorine in drinking water, rinse water, cooling water or other fresh water samples from 0.05 – 20 ppm Cl_2 with the High Range sensor and 0.005 to 2.000 ppm with the Low Range sensor. The TC80 features a plug and play design that incorporates a flow control device, a pH sensor, a chlorine sensor and the T80 transmitter are conveniently mounted on a PVC panel. Connect the sample and drain lines, connect the power and outputs and it is ready to use. The TC80 is calibrated at the factory before shipment, additional Calibrations are accomplished by DPD comparison.

Total Chlorine is the combined amount of Free Chlorine, Chloramine, Organic and Bound Chlorine in the sample. The TC Sensor is a three electrode amperometric sensor with a Gold cathode, Silver Halide anode and 304 SS counter electrode. The Counter electrode provides a stable base potential that minimizes drift. The Total Chlorine sensor has a micro-porous membrane that allows ions to diffuse in and out of the sensor. The various chlorine species in the measured solution diffuse into the sensor and react with the acidic potassium iodide electrolyte to form iodine. The iodine is reduced at the cathode back to iodide and the current flow between the cathode and silver iodide anode is proportional to the Total Chlorine. The pH sensor provides accurate compensation for samples between pH 4 and pH 12 and eliminates the need for an expensive sample conditioning system. The T80 graphically displays both the Total Chlorine and pH allowing easy trend analysis.

Amperometric chlorine sensors are flow sensitive, the minimum required flow by the sensor is 0.5 ft/sec, above this value the output is virtually flow independent. A “Constant head” Flow controller maintains the optimum flow by the sensor over a wide range of incoming sample flow rates. The minimum flow required is 10 gal/hr and the maximum flow is 80 gal/hr with the sample going to drain at atmospheric pressure.

The Auto Clean option includes a solinoid actuated spray cleaner that uses either 30 psi process water or compressed air to clean the electrode surfaces. An easily adjusted timer controls the period and duration of the cleaning cycle. (shown above)

TC80 Total Chlorine Analyzer

Specifications

Sensor and Flow Train

Sensor
Amperometric, Three Electrode, Gold-Cathode/Silver-Silver Halide-Anode/ 304 SS counter electrode, Digital

Measurement Range
Chlorine: 0.05 to 20.00 ppm (High Range)
0.005 to 2.000 ppm (Low Range)
pH: 4 to 12 pH

Operating Temperature
0° C to 45° C (32° F to 113° F)

Min/Max Flow
38 L/hr to 300 L/hr (10 gal/hr to 80 gal/hr)

Wetted Materials
PVC, PP, PVDF, PTFE, Glass, 304 & 316 SS

Process Connections
Input ¼" barb fitting (¼"FNPT), Drain ¾" FNPT fitting

Response Time
T90 approximately 2 minutes

Electrolyte Life
Up to 6 months

T80 Transmitter

Measurements
Chlorine: 0.001 to 999.9 ppb, ppm, auto ranging
pH: 0 to 14 pH
Temperature: 0° C to 100° C (32° F to 212° F)

pH Compensation
pH 4 - 12

Display
2.5" X 1.75" backlit LCD, 4 lines for Text & Graphical

Enclosure
NEMA 4X, LxWxD: 5.7" x 5.7" x 3.5"

Outputs
(1) 4-20 mA for Total Chlorine, set to Sensors Range
(1) 4-20 mA for pH (Optional) , set 0-14 pH

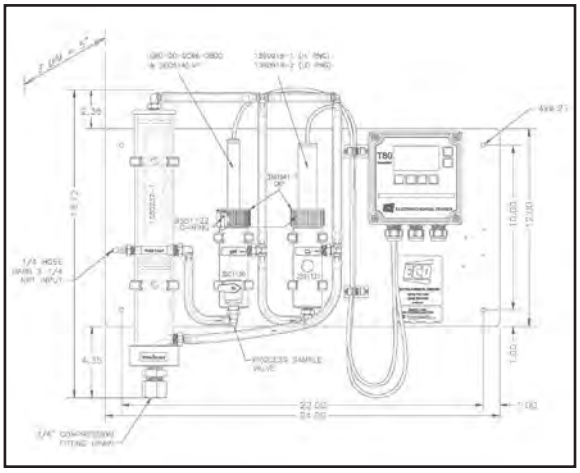
Alarm Relay Ratings
(3) SPDT 230 VAC/5A

Input Power
110/220 VAC @ 50/60 Hz
Optional 24 VDC (12 to 50 VDC) @ 0.25A

Part No.	Model and Product Description
TC80-01-2200 (HR), TC80-11-2200 (LR)	TC80, complete, panel mounted, auto pH compensation, 110/220 VAC
TC80-01-1200 (HR), TC80-11-1200 (LR)	TC80, complete, panel mounted, auto pH compensation, 24 VDC
TC80-01-2210 (HR), TC80-11-2210 (LR)	TC80, complete, panel mounted, auto pH comp, 110/220 VAC, with spray cleaner
TC80-01-1210 (HR), TC80-11-1210 (LR)	TC80, complete, panel mounted, auto pH comp, 24 VDC, with spray cleaner

(HR) = High Range,0.05-20.00 ppm
(LR) = Low Range, 0.005-2.000 ppm

Part No.	Spare Parts and Accessories Description
1391005-1	Total Chlorine Sensor (High Range)
1391005-2	Total Chlorine Sensor (Low Range)
1000248-1	Recharge Kit, (membrane and refill sol'n)
1000245-1	Membrane Replacement Kit
1000246-1	Electrolyte Refill Kit
S80-00-0C00-0C00	S80 pH Sensor, Complete
2005145.VIT	Replacement pH Cartridge
3501131	Flow Cell, Chlorine
3501130	Flow Cell, pH
1000263	Cable assembly,Total Chlorine sensor, 2 meter



Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

HP80 Hydrogen Peroxide Analyzer

Electro-Chemical Devices

Features

- Panel Mounted System Plumb and Play Design
- Multiple H2O2 ranges
- Automatic Flow Control
- T80 Transmitter Capability
- pH measurement for added process information

Benefits

- Complete System, Easy Installation, Ready to Use
- 0-200 ppm, 0-20.0%
- Eliminates Pressure Regulators and Rotameters
- Dual Measurements, Single parameter or Dual parameter Displays, MODBUS RTU, Spray Cleaner (optional for fouling applications)

Model HP80
Hydrogen Peroxide Analyzer

Description

The HP80 is a panel mounted, ready to use Hydrogen Peroxide (H2O2) analyzer. It is available in several ranges to suit its various applications, 0-200 ppm for oxidation and disinfection processes and 0-20% for bleaching applications. Hydrogen Peroxide is a colorless liquid that in high concentrations gives off an irratating acidic odor. It is a strong oxidizer, stronger than either chlorine or chlorine dioxide. Hydrogen peroxide reacts very fast. It will then disintegrate into oxygen gas and water, without the formation of byproducts and also increases the amount of oxygen in water.

Hydrogen Peroxide is widely used in the Paper and Pulp industries as a bleaching agent and as an oxidizer for removing metals from well water. It is also used as a disinfectant in cooling towers and municipal waste water treatment plants. H2O2 is an effective bactericide that does not form any harmful Disinfection By Products (DBP) like many chlorine products do. It decomposes naturally into oxygen and water and does not form a residual that has to be removed from the treated water before it is released to the environment.

The HP80 features a plug and play design that incorporates a constant head flow control device, a pH sensor, a hydrogen peroxide sensor and the T80 analyzer/ transmitter conveniently mounted on a PVC panel. Simply connect the sample and drain lines, connect the power and outputs and it is ready to use. Calibration is accomplished by a grab sample comparison.

The T80 is 110-240 VAC or 24 VDC powered and allows either parameter to be graphically displayed with user defined Line, Bar or Guage style graphs. The standard configuration has (2) 4-20 mA outputs, (3) alarm relays and MODBUS RTU.

Amperometric H2O2 sensors are flow sensitive, the minimum required flow by the sensor is 0.5 ft/sec, above this value the output is virtually flow independent. A “Constant head” Flow control Device (CFD) maintains the optimum flow past the sensor over a wide range of incoming sample flow rates. The minimum flow required for the CFD is 10 gal/hr and the maximum flow is 80 gal/hr with the sample going to drain at atmospheric pressure.

The Auto Clean option includes a solinoid actuated spray cleaner that uses either 30 psi process water or air. An easily adjusted timer controls the period and duration of the cleaning cycle.

HP80 Hydrogen Peroxide Analyzer

Specifications

Sensor and Flow Train

Sensor

Polarographic, Gold/Silver, micro-porous membrane, Digital communiucation

Measurement Range

H2O2: 0.00 to 200 ppm (2000 ppm, 2%, 20% optional)

pH: 2 to 11 pH

Accuracy

0.1 ppm, +/- 1% full scale

Operating Temperature

0° C to 45° C (32° F to 113° F)

Automatic temperature compensation in H2O2 sensor

Min/Max Flow

38 L/hr to 300 L/hr (10 gal/hr to 80 gal/hr)

Wetted Materials

PVC, PP, PVDF, PTFE, Glass, 316 SS

Process Connections

Input ¼" barb fitting (¼"FNPT), Drain ¾" FNPT

Response Time

T90 in 8 minutes

Electrolyte Life

Up to 6 months

T80 Analyzer/Transmitter

Measurements

Hydrogen Peroxide: 000.0 to 999.9 ppm

pH: 0 to 14 pH

Temperature: 0° C to 100° C (32° F to 212° F)

pH Compensation

none, measurement between 2-11 pH

Display

128 x 64 pixels (2.75" x 1.5") LCD, Black on Grey background, Blue on White background with LED backlight

Enclosure

IP65, weatherproof, ½ DIN, (L x W x D) 5.7" X 5.7" X 3.5"

Outputs

(1) 4-20 mA for H2O2, set to 0 - 2.00%

(1) 4-20 mA for pH (Optional) , set 0-14 pH

Alarm Relay Ratings

Three (3) SPDT, 1 form C, 250 VAC, 10 Amp

Input Power

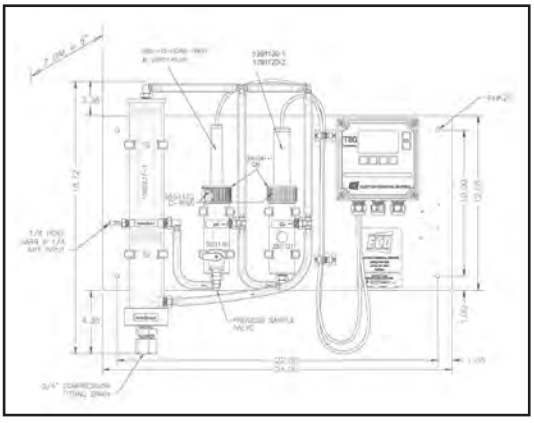
Code -1 24 VDC (18-36 VDC @ 250 mW minimum)

Code -2 100-240 VAC, 50/60 Hz, 4W, protected with 250V, 1A, Slow Blow fuse (Standard)

CE

Part No.	Model and Product Description
HP80-01-2200	Hydrogen Peroxide Analyzer (HP80), complete, 0.00-200 ppm, 100-240 VAC
HP80-01-2210	Hydrogen Peroxide Analyzer (HP80), complete, 0.00-200 ppm, with spray cleaner, 100-240 VAC

Part No.	Spare Parts and Accessories Description
1391115-1	Hydrogen Peroxide Sensor, 0.00-200 ppm
1000267-1	Membrane Replacement Kit with electrolyte
S80-00-0C66-0B00	pH Sensor, 316L SS body with Flange, 4' cable
2005145.VIT	Replacement pH Cartridge
3501131	HP Flow Cell
3501130	pH Flow Cell
3501041-1	Flow Cell Threaded Cap



Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices

1500 North Kellogg Dr.

Anaheim, California, USA 92807

Phone: +1-714-695-0051

+1-800-729-1333

Fax: +1-714-695-0057

email: sales@ecdi.com

web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

CD80 Chlorine Dioxide Analyzer

Electro-Chemical Devices

Features

- **Panel Mounted System Plumb and Play Design**
- **Amperometric Design**
- **Automatic Flow Control**
- **T80 Transmitter Capability**
- **Compliant with EPA Method 334.0**

Benefits

- **Complete System, Easy Installation, Ready to Use**
- **No Expensive Reagents**
- **Eliminates Pressure Regulators and Rotameters**
- **Dual Measurements, Single parameter or Dual parameter Displays, MODBUS RTU, Spray Cleaner (optional for fouling applications)**

Model CD80
Chlorine Dioxide Analyzer

Description

The CD80 is a panel mounted, ready to use Chlorine Dioxide Analyzer. It is designed to monitor free chlorine in drinking water, rinse water, cooling water or other fresh water samples from 0.05 – 20 ppm chlorine as the standard range or 0.01 - 5.00 ppm with the low range sensor. The CD80 is compliant with EPA method 334.0 for measuring drinking water.

The CD80 features a plug and play design that incorporates a flow control device, a chlorine dioxide sensor, optional pH sensor and the T80 analyzer/controller conveniently mounted on a PVC panel. Connect the sample and drain lines, connect the power and outputs and it is ready to use. Factory calibrated, calibration is accomplished by DPD comparison.

Chlorine Dioxide (ClO_2) exists as a gas in solution, it does not dissolved like other chlorine compounds and is therefore not affected by the pH of the solution. ClO_2 is approximately 10 times more soluble than chlorine in water but it is extremely volatile and can be easily removed from dilute aqueous solutions with minimal aeration. Chlorine Dioxide diffuses through the PTFE membrane of the sensor and is reduced to chloride ion by the addition of electrons from the cathode. Silver from the anode is then oxidized to silver chloride. The electrons released from the gold cathode and the electrons accepted on the silver anode result in a current flow which is proportional to the chlorine dioxide concentration in the medium.

Temperature affects the ClO_2 permeability of the PTFE membrane, increasing the temperature increases the output of the sensor about 4% per C˚. The chlorine flow cell includes a temperature sensor that allows the T80 analyzer to perform automatic temperature compensation of the measurement

The T80 is 110-240 VAC or 24 VDC powered and allows either parameter to be graphically displayed with user defined Line, Bar or Guage style graphs. The standard configuration has (2) 4-20 mA outputs, (3) alarm relays and MODBUS RTU.

Amperometric chlorine sensors are flow sensitive, the minimum required flow by the sensor is 0.5 ft/sec, above this value the output is virtually flow independent. A “Constant head” Flow control Device (CFD) maintains the optimum flow past the sensor over a wide range of incoming sample flow rates. The minimum flow required for the CFD is 10 gal/hr and the maximum flow is 80 gal/hr with the sample going to drain at atmospheric pressure.

The Auto Clean option includes a solenoid actuated spray cleaner that uses either 30 psi process water or air. An easily adjusted timer controls the period and duration of the cleaning cycle.

CD80 Chlorine Dioxide Analyzer

Specifications

Sensor and Flow Train

Sensor

Polarographic, Gold/Silver, PTFE membrane, Digital communiucation

Measurement Range

Chlorine: 0.05 to 20 ppm (High Range)
0.01 to 5.00 ppm (Low Range)
pH: 0 to 14 pH

Operating Temperature

0° C to 50° C (32° F to 122° F)

Min/Max Flow

38 L/hr to 300 L/hr (10 gal/hr to 80 gal/hr)

Wetted Materials

PVC, PP, PVDF, PTFE, Glass, 316 SS

Process Connections

Input ¼" barb fitting (¼"FNPT), Drain ¾" FNPT

Response Time

T90 in 2 minutes

Electrolyte Life

Up to 12 months

T80 Analyzer/Transmitter

Measurements

Chlorine: 000.0 to 999.9 ppb, ppm auto ranging
pH: 0 to 14 pH
Temperature: 0° C to 100° C (32° F to 212° F)

pH Compensation

Not needed, ClO_2 is not pH dependent

Display

128 x 64 pixels (2.75" x 1.5") LCD, Black on Grey background, Blue on White background with LED backlight

Enclosure

IP65, weatherproof, ½ DIN, (L x W x D) 5.7" X 5.7" X 3.5"

Outputs

(1) 4-20 mA for Chlorine Dioxide, set to Sensors Range
(1) 4-20 mA for pH (Optional) , set 0-14 pH

Alarm Relay Ratings

Three (3) SPDT, 1 form C, 250 VAC, 10 Amp

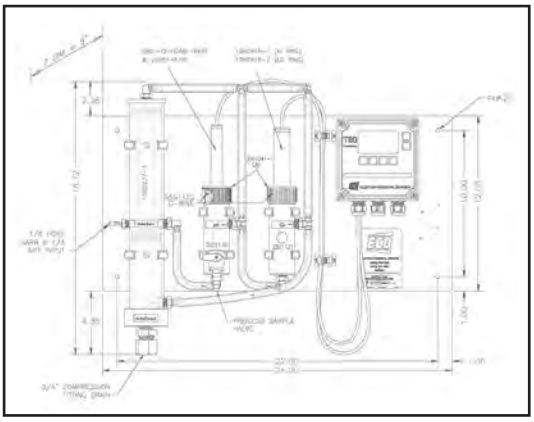
Input Power

Code -1 24 VDC (18-36 VDC @ 250 mW minimum)
Code -2 100-240 VAC, 50/60 Hz, 4W, protected with 250V, 1A, Slow Blow fuse

CE

Part No.	Model and Product Description
CD80-01-2200	Chlorine Dioxide Analyzer (CD80), complete, pH, ClO_2 0.05-20.00 ppm, 100-240 VAC
CD80-01-2210	Chlorine Dioxide Analyzer (CD80), complete, pH, ClO_2 0.05-20.00 ppm, with spray cleaner, 100-240 VAC
CD80-11-2200	Chlorine Dioxide Analyzer (CD80), complete, pH, ClO_2 0.01-5.00 ppm, 100-240 VAC
CD80-11-2210	Chlorine Dioxide Analyzer (CD80), complete, pH, ClO_2 0.01-5.00 ppm, with spray cleaner, 100-240 VAC

Part No.	Spare Parts and Accessories Description
1390920-3	Chlorine Dioxide Sensor, Std Range, 0.05 – 20.0 ppm
1390920-4	Chlorine Dioxide Sensor, Low Range, 0.01-5.00 ppm
1000256-1	Membrane Replacement Kit with electrolyte
S80-00-0C66-0B00	pH Sensor, 316L SS body with Flange, 4' cable
2005145.VIT	Replacement pH Cartridge
3501131	Chlorine Flow Cell
3501130	pH Flow Cell
3501041-1	Flow Cell Threaded Cap



Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

DC-80 De-Chlorination Analyzer

Electro-Chemical Devices

Features	Benefits
• Zero Shift method, 0.00 ppm to 20.00 ppm	• Chlorine metered into flow cell subtracted from measurement
• Automatic pH Compensation	• No Expensive Reagents
• Automatic Flow Control	• Eliminates Pressure Regulators and Rotameters
• T80 Analyzer Capability	• Dual Measurements, (2) 4-20 mA and (3) Alarm Relays, 24VDC or 110/220 VAC Power, Auto clean option
• Panel Mounted System Plumb and Play Design	• Complete System, Easy Installation, Ready to Use

Model DC-80
De-Chlorination Analyzer

Description

The Model DC-80 is a panel mounted, ready to use De-Chlorination Analyzer. Since amperometric chlorine sensors are unstable when measuring near zero amounts of chlorine, the DC80 Analyzer uses the "zero shifted" strategy to make the measurement. A TC80 Total chlorine Analyzer is fitted with a chlorine dosing pump that feeds a metered amount of chlorine into the outfall of the Constant Head Flow Controller. An "Offset" feature allows the zero point to be shifted by the amount of chlorine that is added. The Total Chlorine sensor is now measuring 3-5 ppm of total chlorine which provides for a stable and reliable measurement and the analyzer displays the concentration of Total Chlorine present in the sample. Calibrations are accomplished by DPD comparison.

The TCA Sensor is a three electrode amperometric sensor with a Gold cathode, Silver Halide anode and 304 SS counter electrode. The Counter electrode provides a stable base potential that minimizes drift. The TCA sensor has a micro-porous membrane that allows ions to diffuse in and out of the sensor. The various chlorine species in the measured solution diffuse into the sensor and react with the acidic potassium iodide electrolyte to form iodine. The iodine is is reduced at the cathode back to iodide and the current flow between the cathode and silver iodide anode is proportional to the Total Chlorine. The pH sensor provides accurate compensation for samples between pH 4 and pH 12 and eliminates the need for an expensive sample conditioning system. The T80 graphically displays both the Total Chlorine and pH allowing easy trend analysis.

Amperometric chlorine sensors are flow sensitive, the minimum required flow by the sensor is 0.5 ft/sec, above this value the output is virtually flow independent. A "Constant head" Flow controller maintains the optimum flow by the sensor over a wide range of incoming sample flow rates. The minimum flow required is 10 gal/hr and the maximum flow is 80 gal/hr with the sample going to drain at atmospheric pressure.

The Auto Clean option includes a solenoid actuated spray cleaner that uses either 30 psi process water or compressed air to clean the electrode surfaces. An easily adjusted timer controls the period and duration of the cleaning cycle. (shown above)

DC-80 De-Chlorination Analyzer

Specifications

Sensor and Flow Train

Sensor
Amperometric, Three Electrode, Gold-Cathode/Silver-Silver Halide-Anode/ 304 SS counter electrode, Digital

Measurement Range
Chlorine Zero Shift: 0.00 - 20.00 ppm and < 0.00 ppm
Chlorine: 0.05 to 20.00 ppm
pH: 4 to 12 pH

Operating Temperature
0° C to 45° C (32° F to 113° F)

Min/Max Flow
38 L/hr to 300 L/hr (10 gal/hr to 80 gal/hr)

Wetted Materials
PVC, PP, PVDF, PTFE, Glass, 304 & 316 SS

Process Connections
Input ¼" barb fitting (¼"FNPT), Drain ¾" FNPT fitting

Response Time
T90 approximately 2 minutes

Electrode Life
Total Chlorine Sensor Refill electrolyte every 6 months
pH Sensor Replace yearly

T80 Transmitter

Measurements
Chlorine: 0.001 to 999.9 ppb, ppm, auto ranging
pH: 0 to 14 pH
Temperature: 0° C to 100° C (32° F to 212° F)

pH Compensation
pH 4 - 12

Display
2.5" X 1.75" backlit LCD, 4 lines for Text & Graphical

Enclosure
NEMA 4X, LxWxD: 5.7" x 5.7" x 3.5"

Outputs
(1) 4-20 mA for Total Chlorine, set 0-20 ppm
(1) 4-20 mA for pH, set 0-14 pH

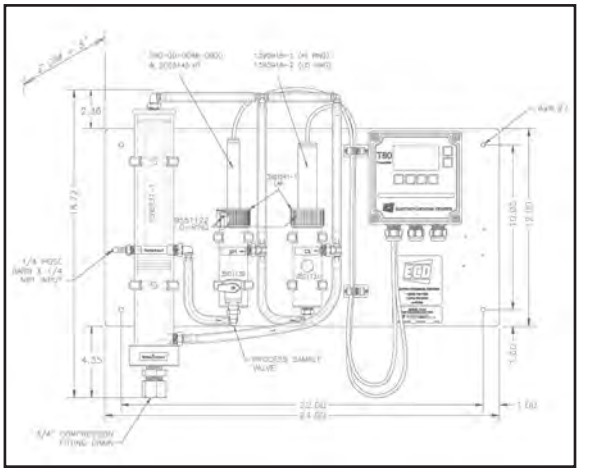
Alarm Relay Ratings
(3) SPDT 230 VAC/5A

Input Power
110/220 VAC @ 50/60 Hz
Optional 24 VDC (12 to 50 VDC) @ 0.25A

Chlorine Dosing Pump
Peristaltic, 110/220 VAC 50/60 Hz, 10 ft. (3 m) tubing

Part No.	Model and Product Description
DC80-01-2200	DC-80, complete, panel mounted, dosing pump, auto pH compensation, 110/220 VAC
DC80-01-1200	DC-80, complete, panel mounted, dosing pump, auto pH compensation, 24 VDC
DC80-01-2210	DC-80, complete, panel mounted, dosing pump, auto pH comp, 110/220 VAC, with spray cleaner
DC80-01-1210	DC-80, complete, panel mounted, dosing pump, auto pH comp, 24 VDC, with spray cleaner

Part No.	Spare Parts and Accessories Description
1391005-1	Total Chlorine Sensor
1000248-1	Recharge Kit, (membrane and refill sol'n)
1000245-1	Membrane Replacement Kit
1000246-1	Electrolyte Refill Kit
S80-00-0C00-0C00	S80 pH Sensor, Complete
2005145.VIT	Replacement pH Cartridge
3501131	Flow Cell, Chlorine
3501130	Flow Cell, pH
1000263	Cable assembly,Total Chlorine sensor, 2 meter
2000205-1	Chlorine Dosing Pump, peristaltic
2000108	10 ft. (3m) tubing with injection fitting



Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

OZ80 Ozone Analyzer

Electro-Chemical Devices

Features

- **Panel Mounted System Plumb and Play Design**
- **Multiple O3 ranges**
- **Automatic Flow Control**
- **T80 Transmitter Capability**
- **pH measurement for added process information**

Benefits

- **Complete System, Easy Installation, Ready to Use**
- **0-2.00 ppm, 0-20.0 ppm**
- **Eliminates Pressure Regulators and Rotameters**
- **Dual Measurements, Single parameter or Dual parameter Displays, MODBUS RTU, Spray Cleaner (optional for fouling applications)**

Model OZ80
Ozone Analyzer

Description

The OZ80 is a panel mounted, ready to use Ozone (O3) analyzer. It is available in several ranges to suit its various applications, 0-2.00 ppm for disinfection processes and 0-20.00 ppm for oxidation and bleaching applications. Ozone is a colorless to pale blue gas that in low concentrations gives off an irratating acidic odor. It is a strong oxidizer, stronger than either chlorine or chlorine dioxide. Ozone reacts quickly and disintegrates into oxygen gas, without the formation of harmful byproducts common to most chlorine chemistries. It also increases the amount of oxygen in water.

Ozone is widely used in the drinking water and waste water industries. It can be used at several points in the processing of drinking water, as an oxidizer for removing metals from well water and organics, odors and color from surface water. It is also used as a disinfectant in cooling towers and municipal waste water treatment plants. Ozone is an effective bactericide that does not form any harmful Disinfection By Products (DBP) like many chlorine products do. It decomposes naturally into oxygen and water and does not form a residual that has to be removed from the treated water before it is released to the environment.

The OZ80 features a plug and play design that incorporates a constant head flow control device, a pH sensor, an ozone sensor and the T80 analyzer/transmitter conveniently mounted on a PVC panel. The large bore tubing and fittings rarely if ever get clogged. Simply connect the sample and drain lines, connect the power and outputs and it is ready to use. Calibration is accomplished by a grab sample comparison.

The T80 is 110-240 VAC or 24 VDC powered and allows either parameter to be graphically displayed with user defined Line, Bar or Guage style graphs. The standard configuration has (2) 4-20 mA outputs, (3) alarm relays and MODBUS RTU.

Amperometric Ozone sensors are flow sensitive, the minimum required flow by the sensor is 0.5 ft/sec, above this value the output is virtually flow independent. A “Constant head” Flow control Device (CFD) maintains the optimum flow past the sensor over a wide range of incoming sample flow rates. The minimum flow required for the CFD is 10 gal/hr and the maximum flow is 80 gal/hr with the sample going to drain at atmospheric pressure.

The Auto Clean option includes a solinoid actuated spray cleaner that uses either 30 psi process water or air. An easily adjusted timer controls the period and duration of the cleaning cycle.

OZ80 Ozone Analyzer

Specifications

Sensor and Flow Train

Sensor

Polarographic, Gold/Silver, micro-porous membrane, Digital communiucation

Measurement Range

Ozone: 0.00 to 2.00 ppm, 0.00 to 20.00 ppm

pH: 2 to 11 pH

Operating Temperature

0° C to 45° C (32° F to 113° F)

Automatic temperature compensation in ozone sensor

Min/Max Flow

38 L/hr to 300 L/hr (10 gal/hr to 80 gal/hr)

Wetted Materials

PVC, PP, PVDF, PTFE, Glass, 316 SS

Process Connections

Input ¼" barb fitting (¼"FNPT), Drain ¾" FNPT

Response Time

T90 in 8 minutes

Electrolyte Life

Up to 6 months

T80 Analyzer/Transmitter

Measurements

Ozone: 000.0 to 999.9 ppm

pH: 0 to 14 pH

Temperature: 0° C to 100° C (32° F to 212° F)

pH Compensation

none, measurement between 2-11 pH

Display

128 x 64 pixels (2.75" x 1.5") LCD, Black on Grey background, Blue on White background with LED backlight

Enclosure

IP65, weatherproof, ½ DIN, (L x W x D) 5.7" X 5.7" X 3.5"

Outputs

(1) 4-20 mA for H2O2, set to 0 - 2.00%

(1) 4-20 mA for pH (Optional) , set 0-14 pH

Alarm Relay Ratings

Three (3) SPDT, 1 form C, 250 VAC, 10 Amp

Input Power

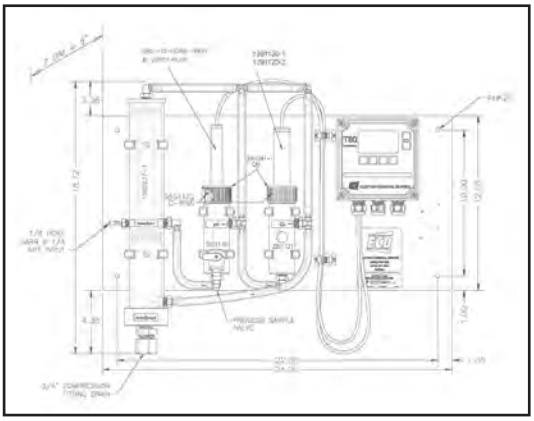
Code -1 24 VDC (18-36 VDC @ 250 mW minimum)

Code -2 100-240 VAC, 50/60 Hz, 4W, protected with 250V, 1A, Slow Blow fuse (Standard)

CE

Part No.	Model and Product Description
OZ80-01-2200	Ozone Analyzer (OZ80), complete, 0.00-2.00 ppm, 100-240 VAC, 2x4-20 mA, 3 Alarm Relays
OZ80-01-2210	Ozone Analyzer (OZ80), complete, 0.00-2.00 ppm, with spray cleaner, 100-240 VAC, 2x4-20 mA, 3 Alarm Relays
OZ80-11-2200	Ozone Analyzer (OZ80), complete, 0.00-20.00 ppm, 100-240 VAC, 2x4-20 mA, 3 Alarm Relays
OZ80-11-2210	Ozone Analyzer (OZ80), complete, 0.00-20.00 ppm, with spray cleaner, 100-240 VAC, 2x4-20 mA, 3 Alarm Relays

Part No.	Spare Parts and Accessories Description
1391116-2	Ozone Sensor, 0.00-2.00 ppm
1391116-1	Ozone Sensor, 0.00-20.00 ppm
1000268-1	Membrane Replacement Kit with electrolyte
S80-00-0C66-0B00	pH Sensor, 316L SS body with Flange, 4' cable
2005145.VIT	Replacement pH Cartridge
1000040-6	Photometric Ozone Test Kit, HCA1 test kit for Ozone
9260104	Reagent Test strips for Ozone HCA1 Tester, Qty. 100 strips
3501130	pH Flow Cell



Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices

1500 North Kellogg Dr.

Anaheim, California, USA 92807

Phone: +1-714-695-0051

+1-800-729-1333

Fax: +1-714-695-0057

email: sales@ecdi.com

web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

PA80 Peracetic Acid Analyzer

Electro-Chemical Devices

Features	Benefits
• Panel Mounted System Plumb and Play Design	• Complete System, Easy Installation, Ready to Use
• Multiple PAA ranges	• 0-20, 0-200, 0-2000 ppm
• Automatic Flow Control	• Eliminates Pressure Regulators and Rotameters
• T80 Transmitter Capability	• Dual Measurements, Single parameter or Dual parameter Displays, MODBUS RTU, Spray Cleaner (optional for fouling applications)
• pH measurement for added process information	

Model PA80
Peracetic Acid Analyzer

Description

The PA80 is a panel mounted, ready to use peracetic acid (PAA) analyzer. Peracetic acid is a colorless liquid with a characteristic pungent odor similar to vinegar. PAA is produced by a reaction between hydrogen peroxide and acetic acid and is typically supplied as an equilibrium solution of the three with a concentration between 5-15%. It is a strong oxidizer, stronger than either chlorine or chlorine dioxide.

Peracetic acid is widely used in the Food and Beverage, Pharmacuetical and Medical industries as a cleaner and sanitizer of process equipment, medical instruments and for bottle washing. It is also widely used as a disinfectant in cooling towers and municipal waste water treatment plants. PAA is a highly effective bactericide that does not form any harmful Disinfection By Products (DBP) like many chlorine products do. It decomposes naturally into acetic acid and water and does not form a residual that has to be removed from the treated water before it is released to the environment.

The PA80 features a plug and play design that incorporates a constant head flow control device, a pH sensor, a peracetic acid sensor and the T80 analyzer/ transmitter conveniently mounted on a PVC panel. Simply connect the sample and drain lines, connect the power and outputs and it is ready to use. Calibration is accomplished by a grab sample comparison.

The T80 is 110-240 VAC or 24 VDC powered and allows either parameter to be graphically displayed with user defined Line, Bar or Guage style graphs. The standard configuration has (2) 4-20 mA outputs, (3) alarm relays and MODBUS RTU.

Amperometric PAA sensors are flow sensitive, the minimum required flow by the sensor is 0.5 ft/sec, above this value the output is virtually flow independent. A “Constant head” Flow control Device (CFD) maintains the optimum flow past the sensor over a wide range of incoming sample flow rates. The minimum flow required for the CFD is 10 gal/hr and the maximum flow is 80 gal/hr with the sample going to drain at atmospheric pressure.

The Auto Clean option includes a solinoid actuated spray cleaner that uses either 30 psi process water or air. An easily adjusted timer controls the period and duration of the cleaning cycle.

PA80 Peracetic Acid Analyzer

Specifications

Sensor and Flow Train

Sensor

Polarographic, Gold/Silver, micro-porous membrane, Digital communiucation

Measurement Range

PAA: 0.00 to 200 ppm
0.0 to 2000 ppm
pH: 0 to 14 pH

Operating Temperature

0° C to 50° C (32° F to 122° F)

Min/Max Flow

38 L/hr to 300 L/hr (10 gal/hr to 80 gal/hr)

Wetted Materials

PVC, PP, PVDF, PTFE, Glass, 316 SS

Process Connections

Input ¼" barb fitting (¼"FNPT), Drain ¾" FNPT

Response Time

T90 in 2 minutes

Electrolyte Life

Up to 12 months

T80 Analyzer/Transmitter

Measurements

PAA: 000.0 to 999.9 ppb, ppm auto ranging
pH: 0 to 14 pH
Temperature: 0° C to 100° C (32° F to 212° F)

pH Compensation

none, measurement degrades above pH 8

Display

128 x 64 pixels (2.75" x 1.5") LCD, Black on Grey background, Blue on White background with LED backlight

Enclosure

IP65, weatherproof, ½ DIN, (L x W x D) 5.7" X 5.7" X 3.5"

Outputs

(1) 4-20 mA fo rPAA, set to Sensors Range
(1) 4-20 mA for pH (Optional) , set 0-14 pH

Alarm Relay Ratings

Three (3) SPDT, 1 form C, 250 VAC, 10 Amp

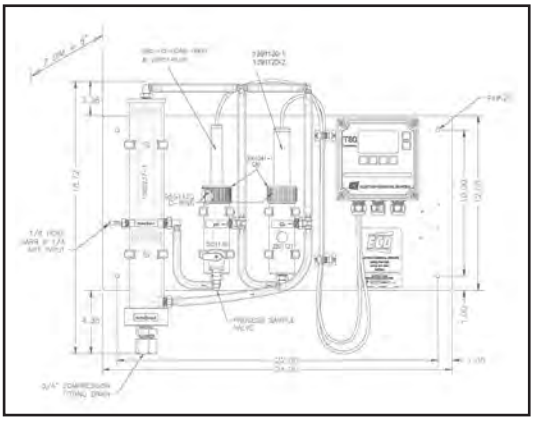
Input Power

Code -1 24 VDC (18-36 VDC @ 250 mW minimum)
Code -2 100-240 VAC, 50/60 Hz, 4W, protected with 250V, 1A, Slow Blow fuse

CE

Part No.	Model and Product Description
PA80-01-2200	Peracetic Acid Analyzer (PA80), complete, 0.00-200 ppm, 100-240 VAC
PA80-01-2210	Peracetic Acid Analyzer (PA80), complete, 0.00-200 ppm, with spray cleaner, 100-240 VAC
PA80-11-2200	Peracetic Acid Analyzer (PA80), complete, 0.0-2000 ppm, 100-240 VAC
PA80-11-2210	Peracetic Acid Analyzer (PA80), complete, 0.0-2000 ppm, with spray cleaner, 100-240 VAC

Part No.	Spare Parts and Accessories Description
1391120-1	PAA Sensor, 0.00-200 ppm
1391120-2	PAA Sensor, 0.0-2000 ppm
1000273-1	Membrane Replacement Kit with electrolyte
S80-00-0C66-0B00	pH Sensor, 316L SS body with Flange, 4' cable
2005145.VIT	Replacement pH Cartridge
3501131	PAA Flow Cell
3501130	pH Flow Cell
3501041-1	Flow Cell Threaded Cap



Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Model DO90 Trace DO_2 Sensor

Electro-Chemical Devices

Features	Benefits
• Large Measurement Range	• 0.001 to 20.00 mg/L
• Lead Silver Galvanic Cell	• Long term stability
• Minimal maintenance	• Drift < 1% per Month
• Replaceable Electrode	• No membrane or fill solutions to mess with
• Easy Calibration	• Air Calibration and Zero Calibration
• Digital Signal	• Noise Free signal, Calibration Stored in the Sensor

Model DO90
ppb Dissolved Oxygen

Description

The Model DO90 Trace DO_2 is designed for the continuous measurement of trace levels of dissolved oxygen in aqueous systems. The primary application of the Model DO90 trace dissolved oxygen sensor is in the monitoring of boiler feedwater. Oxygen should only be present in trace quantities, excessive concentrations of oxygen can result in corrosion damage to the components of the Steam Cycle.

Boiler feed water is thermally and chemically degassed to achieve oxygen-free water. This state must be maintained throughout the Steam Cycle.

Using periodic grab samples to measure the ppb oxygen concentration introduces the risk of significant sampling errors. The Model S80 DO will continuously measure the ppb level of dissolved oxygen directly in the process eliminating grab sampling errors and providing highly reliable information.

The Model DO90 Trace DO_2 is a Lead Silver Galvanic sensor with a durable PFA Teflon®membrane. Oxygen diffusing through the membrane is reduced at the cathode producing hydroxide ions which react with the lead ions in the electrolyte to form lead hydroxide. The anode dissolves more lead ions into the electrolyte sending electrons to the cathode to reduce any oxygen present. The current flows from the Lead anode dissolving into the electrolyte to the cathode where electrons react with the Oxygen which reacts with the lead ions in solution. Under constant conditions, the current is proportional to the oxygen concentration of the medium.

The Model DO90 Trace DO_2 is a digital sensor, all of the signal conditioning, calibration and diagnostic functions are performed inside the sensor. The DO90 sensor has an easily replaceable electrode cartridge eliminating the need for messy electrolyte/membrane replacement kits. The Model T80 Analyzer is compatible with both the Model DO90 trace dissolved oxygen sensor and other Model S80 sensors.

The Model DO90 flow cell has been specially designed for use with the Model DO90 trace dissolved oxygen sensor. The orientation of the inlet and outlet sample lines automatically purge air from the flow cell. The measurement chamber is optimized for fast response and all wetted parts are 316L stainless steel.

Installation of the flow cell is easy, using either the clamp style holders for wall mount or the two 10 x 32 threaded ports on the backside of the flowcell for panel mounting. Simply connect the input and output sample lines to the ¼" tube fittings and insert the sensor into the flow cell, tighten it in place with the the threaded cap and it is ready to go. The 316 SS flange fitting allows for easy removal of the Model DO90 sensor from the flow cell for air calibration.

The Model DO90 Trace DO_2 is available as separate components, sensor, fittings, flowcell, Model T80 Transmitter or as a complete panel mounted system. The Panel mounted system is a complete plumb and play device, mount the panel (17" x 12" panel), plumb ¼" sample tubing to the tube fittings and power to the analyzer either Loop Powered or 110/220 VAC. The system is also available as a complete kit, less the panel, for mounting to an existing water panel.

Model DO90 Trace DO_2 Sensor

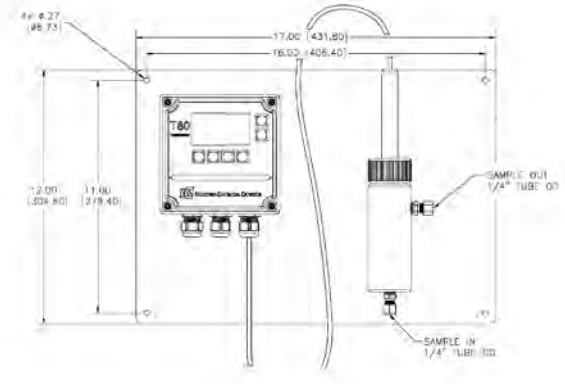
Specifications

Measuring principle:
Galvanic, Silver cathode, Lead anode, self polarizing
Measured Parameter:
Oxygen partial pressure-proportional current signal
Measuring Range:
0.001 ... 20.00 mg/l or ppm/ppb auto-ranging
Process Temperature Range:
–5 °C ... 50 °C
Process pressure range:
0-15 psi maximum overpressure
Vacuum operation is not permitted
Slope:
approx. 1.5nA/ppbO_2 at 20 °C and 1013 hPa
Temperature Compensation:
NTC temperature sensor 100 kΩ, 0 ... 50 °C
Response time:
t90: 30 sec / t99: 90 sec
Polarization time:
< 60 minutes
Minimum Flow Rate:
(200 ml/min with PN 1000008-1 flow cell

Drift:
With continuous polarization: < 1% / month
Materials of Construction:
Sensor body: Flanged stainless steel AISI 316 Ti
Electrode body: PEEK
Membrane: PFA Teflon®
Cathode: Silver
Anode: Lead
Process Connection:
¼" 316 SS tube fittings
Electrical connection (transmitter side)
Digital signal on a shielded 4-wire cable
Membrane:
2 mil thickness (approx.)
Maximum Total Cable Length:
100 m cable extension
Shipping Weight:
Model DO90 sensor with 10' cable length, 0.7 kg
Stainless Steel Flow cell, 2.0 kg

Part No.	Model and Product Description
1200200-1 (1200200-98)	DO90 Trace DO System, Loop Powered w/ PVC Panel, complete system, plumb and play ready (Kit with no panel)
1200200-2 (1200200-99)	DO90 Trace DO System, AC Powered & Relays w/ PVC Panel,complete system, plumb and play ready (Kit with no Panel)

Part No.	Spare Parts and Accessories Description
2005621.VIT	Dissolved Oxygen Electrode, ppb
1000008-1	DO90 Flow cell , 316 SS, ¼" Tube fittings
3501041-1	Replacement Threaded Cap for Flow cell
9310051-1	¼" 316 SS Tube fitting
DO90-01-0000-0B	Model DO90 ppb Dissolved Oxygen Sensor, 4' cable, complete with electrode
DO90-01-0001-0B	Model DO90 ppb Dissolved Oxygen Sensor, as above with Flow Cell



DO90 Trace DO System

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

MODEL NA6 - SODIUM ANALYZER

Compact online analyzer for the automatic measurement of Sodium

APPLICATION FIELDS

- Power utilities
- Cooling water
- Water steam cycle
- Condensate analysis
- Boiler feedwater
- Reversed osmosis
- Turbine protection
- Demineralization plants
- High Purity water
- Process water

ADVANTAGES / FEATURES

Different compartments
To ensure complete separation between the electronics (upper case) , standard solutions (middle case) and the wet part (lower case). The reagent bottle is located in the wet part.

Automatic calibration
Automatic 1, 2 points calibration minimizes operator intervention ensuring the most accurate results are obtained.
Free selectable calibration intervals. Results of the last ten calibration are stored in the internal datalogger.

Reduced operating costs
Low reagent consumption.
The design with no moving parts reduces maintenance requirements and minimizes cost of ownership.

Grab sample capability
Enables unattended analysis of manually collected samples. Results of external samples are stored in the datalogger, including time and date information.

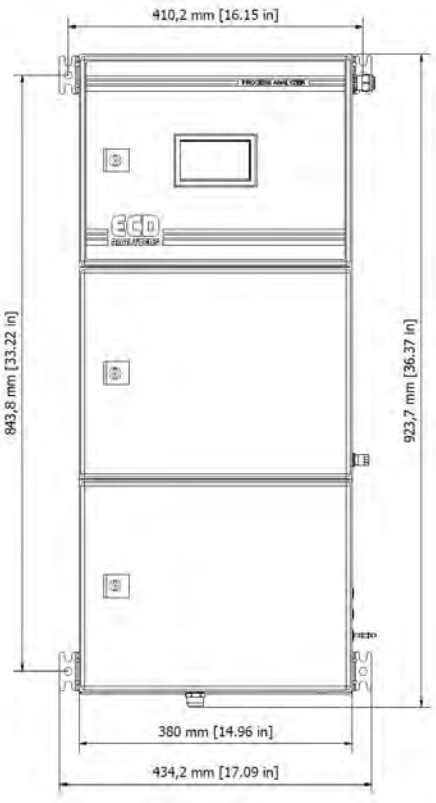
Color touchscreen user interface
The NA6 analyzer is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

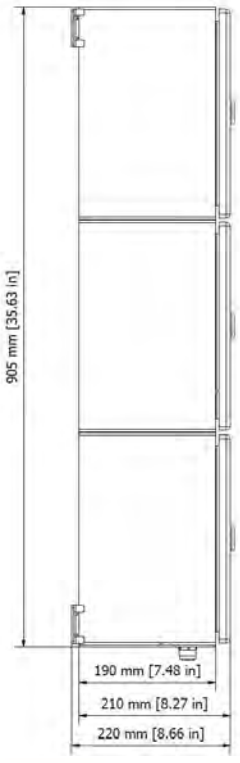
Factory tested, ready for installation and operation
Just connect the power, sample, and reagent lines and the analyzer is fully operational.

MEASUREMENT PRINCIPLE
The sodium measurement is based on the proven accuracy of the glass sodium electrode for the online potentiometry detection of low ppb traces of sodium. The sodium sensor develops a potential proportional to the log of the sodium concentration, after the pH of the sample is raised to 11 to eliminate pH and ammonium interferences. This is obtained using reagent vapor addition.

TECHNICAL SPECIFICATIONS

Measured parameter:	Na^+ (ppb, ppm, mg/l).
Measuring principle:	Online potentiometric ISE
Measuring range:	0.1 ppb to 10 ppm
Reproducibility:	± 0.2 ppb or ± 5%, whichever is greater, at constant temperature
Analysis frequency:	Continuous operation, delay time T90 180 sec (0 to 10 ppb)
Sample:	Temperature: 41 - 113 °F (5 - 45 °C) pH in the range 4-11 Flow to internal reservoir: min 3 L /h – max 12 L/h Pressure: 5-15 psig Inlet connection: 6 mm (1/8-in.) barbed fittin for flexible tubing Outlet connection: 12 mm OD (½-in.)
Calibration:	NA6-1: manual calibration (1 or 2 points) NA6-2: 2 points automatic calibration, Grab sample
Installation:	Wall or rack mounting, in vertical position by fixing hinges.
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 30 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	3 SPDT programmable potential free relays, N.O. or N.C.
Operating Temperature:	41 - 122 °F (5 to 50 °C)
Humidity:	10 to 85% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Dimensions analyzer (H x W x D):	35.63 x 14.96 x 8.27 in / 905 x 380 x 210 mm
Weight:	Approx. 66 lbs (30 Kg)
Ingress Protection:	IP54





www.ECDanalyzers.com
ECD ANALYZERS
ECD ANALYZERS, LLC 1500 N Kellogg Dr Anaheim, CA 92807 USA - Phone: +1-714-695-0051 Fax: +1-714-695-0057
Email: support@ECDanalyzers.com www.ECDanalyzers.com

CA900 Alkalinity Analyzers

ELECTRO-CHEMICAL DEVICES

Alkalinity Measurement

- **Simple**
  - Easy Installation
  - User Friendly Menus & Configurations
  - Touchscreen Interface
  - Web Enabled Functionality
- **Reliable**
  - Automated Titration Technology
  - Complete System Non-Metallic Enclosure
  - Two separate Compartments (Electronics and Hydraulics Liquids)
  - Multiple Output Selections
- **Cost Effective**
  - Low Maintenance
  - Data Logging
  - Adjust Cycle Times lowers Reagent usage

Description

The CA900 Series Analyzers are a family of on-line sequential sampling analyzers that use various automated analytical technologies to perform an analysis. When configured for alkalinity measurements, titration technology is used for the most cost effective, ease of use and low maintenance method.

The CA900 Alkalinity Analyzers are easy to start up and use, simply connect the sample, waste and reagent lines and then power up the Factory Calibrated analyzer. Wall mounting hardware is standard but an optional bench top stand with reagent holder is also available. Accessing information or customizing an analysis routine are easily accomplished with the simple, user friendly menu structure and touch screen interface. The analyzer can be "web enabled" for remote monitoring and interfacing with personal handheld devices and computers.

The analyzer has two separated enclosures with lockable doors. The Top enclosure, called the ELECTRICAL enclosure, includes the main power supply, the controller PCB assembly and the touchscreen interface. The Bottom enclosure, called the LIQUIDS enclosure, includes all the components involved in the sample collection and analysis: pH sensor, reagent pump, sample pump, and sample reaction cell. Up to 4 different sample lines can be connected to the analyzer. Numerous analysis configurations can be easily setup and programmed depending on the specific application for control and/or compliance requirements.

Alkalinity is a measure of the capacity of water to neutralize acids. Alkaline compounds such as bicarbonates,carbonates, and hydroxides remove hydrogen ions and lower the acidity of the water. This is done by combining the Hydrogen ions to make new compounds. Alkalinity is influenced by rocks and soils, salts, certain plant activities , and possible industrial wastewater discharges.

CA900 Alkalinity Analyzers

Total alkalinity is measured by measuring the amount of acid needed to bring the sample to a specified pH endpoint. At this pH, all the alkaline compounds in the sample are “used up”. The result is reported as ppm or milligrams per liter of calcium carbonate(ppm or mg/l CaCO3).

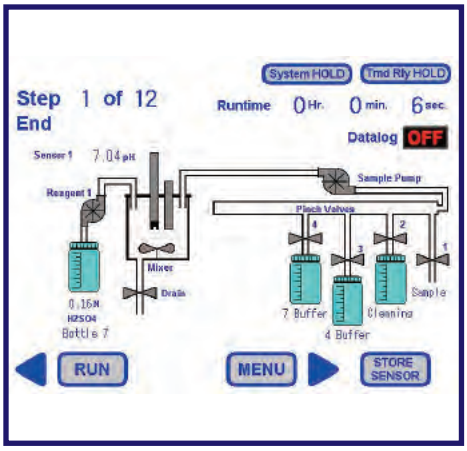
The CA900 Alkalinity Analyzer calculates alkalinity by accurately dispensing “shots” of a known concentration of titrant into the reaction cell. An accurately prepared sulfuric acid solution is typically used as the titrant. The pH is monitored throughout the analysis cycle by using the included pH sensor, and this is done until the sample reaches the pH endpoint. The CA900 analyzer uses the titrant concentration and the amount dispensed to calculate the result.

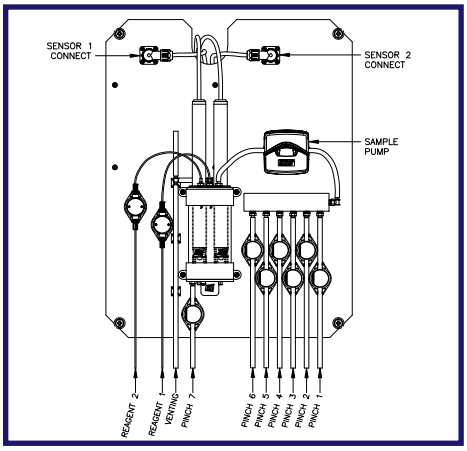
The CA900 Alkalinity Analyzer typically makes a single measurement per analysis cycle. A Standard Program sequence consists of a cleaning cycle, sample acquisition, monitoring of pH, addition of titrant, mixing, calculation of results and data storage. Frequency of analysis between each cycle can easily be configured. Accessing information or customizing an analysis routine are easily accomplished with the simple user friendly menu structure and touch screen interface. 4 different ranges can ce configures 0-50ppm, 50-200ppm, 200-1000ppm, and 0 to >1000ppm. The analyzer comes with four 4-20 analog output, Ethernet digital output, and 4 relays.

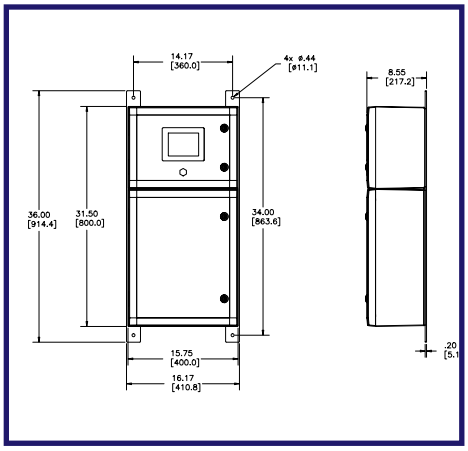
CA900 Analyzer Specifications:

Method: Titration of Single or Dual endpoints, pH inflection
Measuring range: 0 to >1000, 200 to 1000, 50 to 200, and 0 to 50 ppm or mg/l
Response time: Dependent on the specific titration measurement
Repeatability: +/- 2%
Power supply: 110-220VAC, 50-60 Hz, 80 VA
Mounting: Wall mounting or with optional bench support
Operating temperature: 5-50°C
Cabinet: Non Metallic
Dimensions: 17”L x 32”H x 9”D (43cm x 81cm x 23cm)
Weight: Approx. 30 lbs (14 kg)

Reagent Used: Up to 2
Data Logging: Configurable Data Recording, Storage and Output
Analog output: Four 4-20 mA outputs
Alarms:
4 configurable relays SPDT 15A 250VAC
Sample Temperature: 5 to 70 °C
Inlet sample pressure: Atmospheric
Outlet sample pressure: Atmospheric, waste tubing O.D.⅜
Sample flow for the fast loop reservoir:
100-500 ml / min
Connections:
To the fast loop reservoir with flexible tubing O.D.1/4”







Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

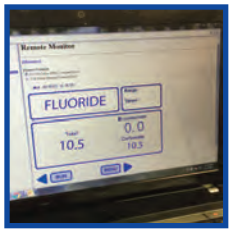
CERTIFIED ISO9001 QUALITY SYSTEM

CA900 Fluoride Analyzer

The ECD 6 Point Advantage

ECD ELECTRO -CHEMICAL DEVICES

1. **Compact all in one measurement system,** conditions the sample to measure the Fluoride concentration.
2. **ISE based Fluoride Measurement** provides a wide measurement range, 0 to 200 using economical, easily replaceable electrode cartridges.
3. **Ionic Strength adjusted and compensated measurement** for accurate total Fluoride concentration.
4. **Auto Calibration** at user defined internals.
5. **Reliable Design – Touchscreen Interface**
   User-friendly menus and configurations, two separate compartments (Electronic and Hydralics Liquids).
6. **Cost effective Low Maintenance Cost**
   Low reagent consumption and easily replaceable electrode cartridges.



Description

The ECD CA900 Fluoride Analyzer is an all in one analyzer for the continuous measurement of fluoride concentration in aqueous media. Applications include: drinking water effluent, industrial waste water, semi-conductor manufacturing and waste water discharge compliance.

The CA900 Fluoride Analyzer are easy to start up and use, simply connect the sample, waste and reagent lines and then power up the factory calibrated analyzer. Wall mounting hardware is standard but and optional benchtop stand is also available. Accessing information or customizing an analysis routine are easily accomplished with the simple, user friendly menu structure and large color touch screen interface.

The analyzer has two separated enclosures with lockable doors. The top enclosure, called the ELECTRICAL enclosure, includes the main power supply, the controller PCB assembly, and the touch screen interface. The bottom enclosure, called the LIQUIDS enclosure, includes all the components involved in the sample and reagent flow, mixing, and measurement.

The fluoride measurement is based on ECD industrial grade ion-selective electrode technology. The analyzer mixing chamber contains ECD fluoride ion and pH electrodes for the measurement. The analyzer uses TISAB reagent for an ionic strength adjustment to the sample to be measured, which breaks weak complexes formed with fluoride and certain metals such as aluminum or Iron (+3), to provide the fluoride concentration measurement. Additionally, the analyzer utilizes a pH compensation technique to provide accurate fluoride measurement in varying pH ranges. The CA900 Fluoride Analyzer has a configurable automatic calibration feature utilizing fluoride calibration standards that can be programmed for routine calibration cycles.

The CA900 Fluoride Analyzers is powered by 100 – 230 VAC, provides (4) 4 to 20 mA outputs, (4) configurable relays, serial output and can be web enables for remote access.

The ECD CA900 is easy to start up and maintain. First connect the Sample feed line, reagent lines and Drain line to the analyzer. Mount the sensors in the flow cell. Next connect the outputs, and supply power, a switched 110/220 VAC line. Prime the peristaltic pumps and start the measurement cycle. The touch screen display and 4-20 mA outputs will indicate the fluoride concentration. A digital display indicates the measurement and the 4-20 mA output values are captured in the measurement cycle and displayed until the next measurement cycle. Configurable relays provide remote user alarms and control.

ELECTRO-CHEMICAL DEVICES

CA900 Fluoride Analyzer

Specifications

Principle of Operation
Sequential sampling, Fluoride Selective Electrode, sample conditioned measurement

Measurement Range
0.1 - 200 mg/l (0.1 - 200 ppm)

Temperature Range
0˚ - 50˚C (32˚ - 120˚F) Measuring

Cycle Response Time
3, 6, 12 or 30 minutes, user selectable

Accuracy
± 100 ppb or 5 % of reading, whichever is greater

Repeatability
± 2 % of reading

Operating Conditions
Temperature: 10˚- 50˚C
Humidity: 5 to 95% noncondensing humidity

Calibration Standards
1 ppm Fluoride
10 ppm Fluoride

Reagents
TISAB

Calibration Standards
1 ppm Fluoride
10 ppm Fluoride

Hydraulic Connections
Sample Inlet: 1/8" ID tubing barb fitting
Drain Outlet: 1/4" ID tubing barb Fitting

Power Requirement
100/240 Vac, 50/60 Hz, switch selectable

Data Logging
Configurable Data Recording, Storage, and Output

Analog output
Four 4-20 mA outputs

Alarms
4 configurable relays SPDT 15A 250VAC

Connections
2 x 4-20 mA, Line Neutral and Ground for Power
All connections are to a terminal strip, Access through IP65 1/2" cable glands

Enclosure
Gray hot-molded fiberglass reinforced polyester transparent polycarbonate cover with non-metallic hinges. NEMA 4X, Protection degree IP65

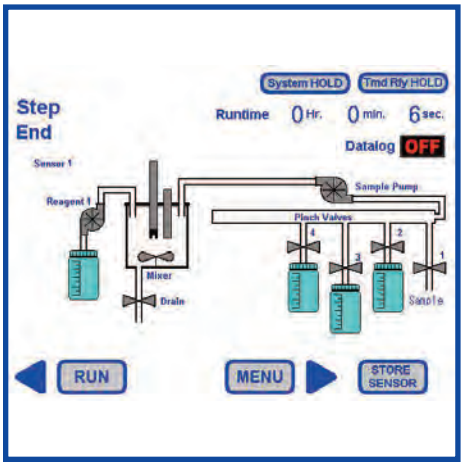
Mounting
Wall mounting or with optional bench support

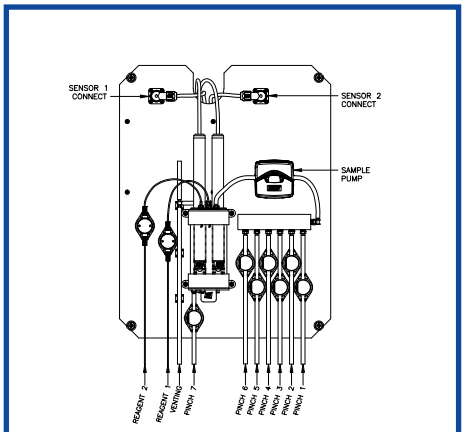
Operating temperature
5-50°C

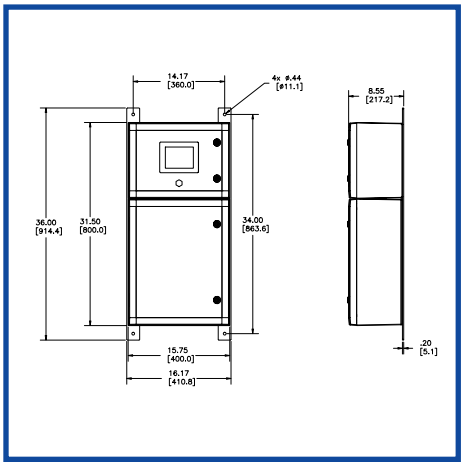
Cabinet
Non Metallic

Dimensions
17"L x 32"H x 9"D (43cm x 81cm x 23cm)

Weight
Approx. 30 lbs (14 kg)







Specifications subject to change without notice

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

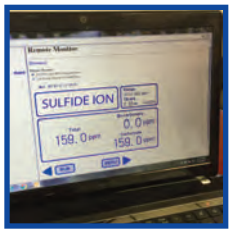
CERTIFIED ISO9001 QUALITY SYSTEM

CA900 Sulfide Ion Analyzer

The ECD 6 Point Advantage

ELECTRO -CHEMICAL DEVICES

1. **Compact all in one measurement system,** conditions the sample, measures the sulfide, neutralizes the sample, measures the pH, drains and rinses the cell.
2. **ISE based Sulfide Ion Measurement** provides a wide measurement range, 20 ppb to 500 ppm using economical, easily replaceable electrode cartridges
3. **pH adjusted and compensated measurement** the sample is optimized for the sulfide ion that only exists at high pH values
4. **Sample neutralized after measurement** the highly caustic sample pH is reduced to a safe level near pH 8
5. **Reliable Design – Touchscreen Interface**
   User-friendly menus and configurations, two separate compartments (Electronic and Hydralics Liquids)
6. **Cost effective Low reagent consumption**
   Less than 2 gallons per month of 10 % KOH and an equivalent amount of HCl at 10 samples per hour or 5 months at 2 samples per hour.



Description

The ECD CA900 Sulfide Analyzer is an all in one analyzer for the continuous measurement of sulfide ions in aqueous media. Sulfide is present in well water, municipal waste water and waste waters from refineries, tanneries, chemical plants and paper and pulp facilities.

Hydrogen sulfide (H_2S) is a gas that dissolves in water and gives it that "rotten egg" odor. H_2S exists in acidic water as a dissolved gas, at pH values above pH 7 bisulfide ions (HS^-) are the predominate form and at very high pH values, > pH13, sulfide ions (S^{-2}) predominate.

The ECD CA900 uses a sulfide ion selective electrode (ISE) to measure the total amount of sulfide present in the sample. The measurement must be made at high pH levels where S^{-2} exists. Potassium hydroxide (KOH) is added to raise the pH of the sample to around pH 13 and a pH electrode measures the actual pH. Sulfide and bisulfide exist in a pH dependent equilibrium with the ratio of each dependent on the pH. The sulfide ISE measures the sulfide present in the sample and the pH measurement infers what percentage of the total sulfide was measured. The analyzer calculates and displays the Total sulfide present.

The highly caustic sample is then neutralized with HCl and the pH is measured and displayed to verify the neutralization. The neutralization of KOH with HCl produces potassium chloride salt (KCl) and water. The neutralized sample can be disposed of as waste or returned to the water supply.

The ECD CA900 is a sequential sampling analyzer. It runs the following analysis cycle; fill the measurement cell with sample and drain, fill and drain, fill, add caustic, mix, measure S^{-2}, adjust 4-20 mA signal, add acid, mix, measure pH, adjust 4-20 mA signal, drain the flow cell and repeat the cycle. Each cycle uses about 1 ml of caustic and 1 ml of acid. The analyzer is set to run 6 minute analysis cycles but can easily be programmed to run 12 minute or 30 minute cycles. Running continuously at 10 cycles per hour, the CA900 uses 7.2 liters of each reagent per month, at 5 cycles per hour, 3.6 liters per month and at 2 cycles per hour less than 1.5 liters per month.

The ECD CA900 is easy to start up and maintain. First connect the Sample feed line, reagent lines and Drain line to the analyzer. Mount the sulfide and pH sensors in the flow cell. Next connect the two outputs, S^{-2} and pH and supply power, a switched 110/220 VAC line. Prime the peristaltic pumps and start the measurement cycle. The touch screen display and 4-20 mA outputs will indicate the total sulfide and the neutralized pH value. A digital display indicates the Sulfide measurement and the 4-20 mA output values are captured in the measurement cycle and displayed until the next measurement cycle.

ELECTRO-CHEMICAL DEVICES CA900 Sulfide Ion Analyzer

Specifications

Principle of Operation
Sequential sampling, Sulfide Ion Selective Electrode, pH compensated measurement, sample neutralization

Measurement Range
0.02 - 500 mg/l (0.02 - 500 ppm)

Temperature Range
-5˚ - 50˚C (20˚ - 120˚F) Measuring

Cycle Response Time
6, 12 or 30 minutes, user selectable

Accuracy
± 20 ppb or 5 % of reading, whichever is greater

Repeatability
± 2 % of reading

Operating Conditions
Temperature: 10˚- 50˚C
Humidity: 5 to 95% noncondensing humidity

Sample Requirements
Pressure: Sample should be drawn from atmospheric pressure
Flow: greater than 100 ml/minute
Temperature: 10˚- 50˚C

Reagents
16% KOH, Potassium Hydroxide
7.5 % HCl, Hydrochloric Acid, (Muriatic Acid)

Reagent Consumption:
6 minute cycle time: 7.2 liters/ month, (1.9 gallons) each
12 minute cycle time: 3.6 liters/month, (0.95 gallons) each
30 minute cycle time: 1.5 liters/month., (0.4 gallons) each

Hydraulic Connections
Sample Inlet: 1/8" ID tubing barb fitting
Drain Outlet: 1/4" ID tubing barb Fitting

Power Requirement
100/240 Vac, 50/60 Hz, switch selectable

Data Logging
Configurable Data Recording, Storage, and Output

Analog output
Four 4-20 mA outputs

Alarms
4 configurable relays SPDT 15A 250VAC

Connections
2 x 4-20 mA, Line Neutral and Ground for Power
All connections are to a terminal strip, Access through IP65 1/2" cable glands

Enclosure
Gray hot-molded fiberglass reinforced polyester transparent polycarbonate cover with non-metallic hinges. NEMA 4X, Protection degree IP66-11

Mounting
Wall mounting or with optional bench support

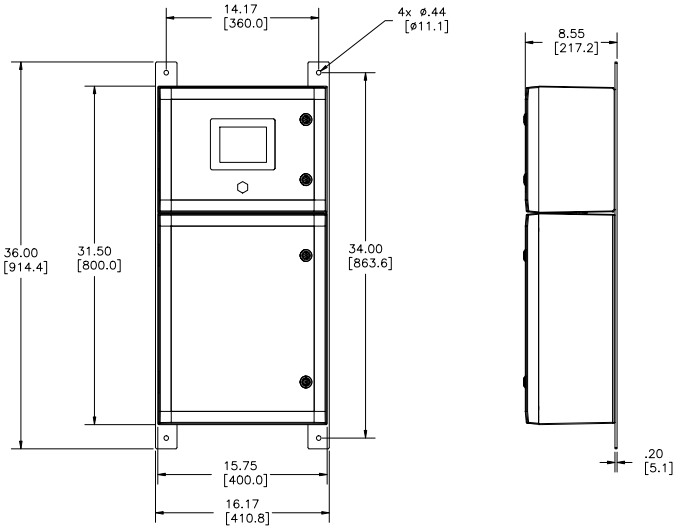
Operating temperature
5-50°C

Cabinet
Non Metallic

Dimensions
17"L x 32"H x 9"D (43cm x 81cm x 23cm)

Weight
Approx. 30 lbs (14 kg)

Dimensions



Order Information

Part #	Description
1200140-1	CA900 Sulfide Analyzer, Complete, No Reagents

Accessories and spare parts

2000027	Tubing Kit, replacement kit for all interior tubing, recommended every 3 months
2010040-1	Reagent Kit, 2.5 gallons each, 16 % KOH and 7.5 % HCl
2005122.VIT	Sulfide Ion Electrode
2005138.VIT	pH electrode for high pH
1000270-1	Fast loop reservoir (atmospheric sample conditioner, constant head overflow)

Specifications subject to change without notice

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi..com

CERTIFIED ISO9001 QUALITY SYSTEM

MODEL UV6 - UV254 ANALYZER

Compact online analyzer for the automatic measurement of Organic Load Including correlated equivalent for COD, BOD & TOC

APPLICATION FIELDS

- Drinking water
- Municipal waste water
- Industrial waste water
- Rivers and surface water
- Power plants
- Dissolved organic substances in water - THM (trihalomethanes) precursor alert
- Rain overflow basin

ADVANTAGES / FEATURES

Dual compartment enclosure
To ensure complete separation between the electronics and the wet part.

Low operating cost – no reagents
The UV spectroscopy measuring principle requires no chemical reagent resulting in very low operating and maintenance costs.

Xenon lamp – UV light source
The high stability and long operating life make them ideal as light sources for water quality analyzers.

Factory tested, ready for installation and operation
Just connect the power, sample and the analyzer is fully operational.

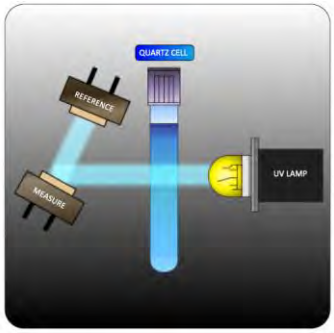
Automatic calibration / zeroing / cleaning
These automatic functions ensure optimum performance with the minimum of manual intervention.
Free selectable cleaning, zeroing and calibration intervals.

Wide measuring range
The determination ranges of the UV6 Analyzer vary from 0.05 to thousands mg/L (correlated KHP equivalent COD, BOD, TOC) using internal dilution module.

Two parameters version
Two parameters – one analyzer. For example, BOD and COD

Color touchscreen user interface
The UV6 is equipped with a graphic touchscreen interface showing measured values and status information. Easy access to menus and functions. Multiple languages. Integrated datalogger with USB download.

Dual streams version
Dual streams version gives two measurements in one instrument, each stream can be either high range or low range with different correlation factors (e.g. Inlet and Outlet of a WWTP).



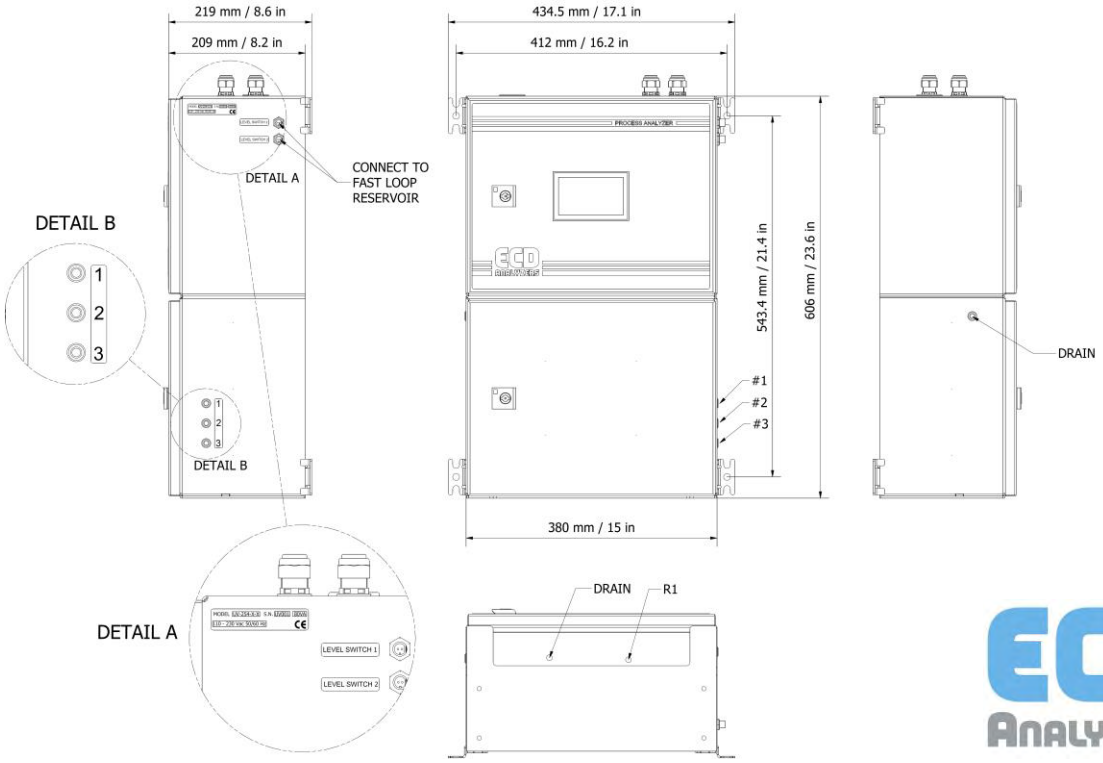
MEASUREMENT PRINCIPLE

Many dissolved organic substances have spectral characteristics capable of absorbing UV light at the wavelenght of 254 nm. The xenon lamp produces a UV light radiation that pass through the sample water in a quartz measuring cell. The receiver analyzes the light pulses at two different wavelenghts, the measurement wavelenght (254 nm) and the reference wavelenght (590 nm), at which the light is not influenced by the presence of organic compounds.

TECHNICAL SPECIFICATIONS

Measured parameter:	CODeq, DOCuv, TOCeq, BODeq, Abs254, SAC254, CODuv, TOCuv, BODuv, SAK254 (mg/l,cm^{-1},m^{-1},AU,mA.U.).
Measuring principle:	UV254 absorption measurement
Measuring range: The possible measuring correlated ranges for sum parameters such as COD, BOD, TOC, would depend to a large extent on the matrix characteristics. Typical COD measuring ranges: WWTP inlet – municipal water: 0 to 4000 mg/L WWTP inlet – industrial water: 0 to 10000 mg/L WWTP outlet - municipal water: 0 to 200 mg/L WWTP outlet - industrial water: 0 to 500 mg/L	22 mm cell: 0.01 – 50 m^{-1} SAC Correlated range (based on KHP): CODeq 0.15-100 mg/L TOCeq 0.06-40 mg/L BODeq 0.05-30 mg/L 6 mm cell: 0.1-250 m^{-1} SAC Correlated range (based on KHP): CODeq 0.75-370 mg/L TOCeq 0.3-150 mg/L BOD eq 0.25-120 mg/L 12 mm cell: 0.05-100 m^{-1} SAC Correlated range (based on KHP): CODeq 0.5-200 mg/L TOCeq 0.2-80 mg/L BODeq 0.2-65 mg/L 2 mm cell: 1.5-700 m^{-1} SAC Correlated range (based on KHP): CODeq 2.5-1000 mg/L TOCeq 1-410 mg/L BOD eq 0.8-300 mg/L All derivated higher range using internal dilution (up to 40 times dilution).
Reproducibility:	SAC 0.5 % of end of measuring range (for homogeneous media) Correlated range (based on KHP): 22 mm cell: ±0.15 mg/L C; 12 mm cell: ±0.5 mg/L C ; 6 mm cell: ±0.75 mg/L C; 2 mm cell: ±2.5 mg/L C

Analysis frequency:	Freely programmable, batch near-continuous analysis.
Cycle time:	Around 1 minute, including conditioning before analysis cycle and rinsing after measuring.
N° of streams:	1, 2 with integrated switching valve
Sample:	Pressure-free from overflow vessel Temperature: 41 - 122 °F (5 to 50 °C) Flow Rate: 80 to 500 mL/min Connection: 6 mm (¼-in.)
Drain:	Pressure-free, atmospheric drain Connection: 12 mm (½-in.)
Dimensions (H x W x D):	23.6 x 15.0 x 8.2 in / 606 x 380 x 209 mm
Weight:	Approx. 44 lbs (20 Kg)
Power supply:	Voltage: 100 - 240 VAC 50/60 Hz standard or 24 VDC (option) Power consumption: max. 80 VA
Outputs:	2 x 4-20 mA outputs for measured data Modbus RTU RS485
Alarms:	4 SPDT programmable potential free relays, N.O. Or N.C.
Digital input:	Remote start / stop
Operating Temperature:	41 - 113 °F (5 - 45 °C)
Humidity:	10 to 90% non-condensing (indoor use, outdoor installation only possible with protective cabinet or shelter not included)
Installation:	Wall mount (standard), bench top support or panel mount (options).
Ingress Protection:	IP54



ECD ANALYZERS, LLC 1500 N Kellogg Dr Anaheim, CA 92807 USA - Phone: +1-714-695-0051 Fax: +1-714-695-0057
Email: support@ECDanalyzers.com www.ECDanalyzers.com

TOC METER ANALYZER

TOTAL ORGANIC CARBON (TOC)

Organic compounds – present in almost all types of water ...

Organic compounds are found in almost all types of water – from natural and treated drinking water to process water, cooling water, and water used in pharmaceuticals and food production.

... and a challenge in many industrial processes

Too much organic contamination in the water interferes with many industrial processes. For example, an excess of organic matter can foster microbiological growth or, when disinfecting drinking water, encourage the presence of undesirable byproducts. On the other hand, there are numerous processes in the chemical and galvanic industries in which water is mixed with organic additives. In order to control and monitor these processes, it is important to measure the amount of organic substances in the water.

TOC – an important sum parameter

Given the huge numbers of organic compounds in water, it is practically impossible to identify and measure each one individually. Instead of analyzing individual substances, a fast and precise way to rate water quality is to measure sum parameters – this is especially helpful in the case of online monitoring. Measuring the total organic carbon (TOC) is particularly important for the evaluation of the total organic contents. The advantages of TOC analysis include the high levels of accuracy and precision that can be achieved, even with small sample amounts, plus the ease with which the process can be automated.

TOC APPLICATIONS

- In many industry sectors, measuring and checking the TOC is an essential factor in making processes more efficient and reducing costs as a result.

- Monitoring the TOC is a key part of the correct treatment of wastewater and is also crucial in ensuring compliance with the organic load limits involved in wastewater treatment.

- In the field of power plant analysis, the TOC value provides information on the quality of the boiler feed water. Following the purification of condensate/make-up water, the TOC value is used to determine whether the condensate/make-up water can be fed back into the water-steam line.

- Run-off and storm water from chemical and petrochemical plants as well as airports can contain high concentrations of organic compounds. Monitoring the TOC value at collection points makes it easier to decide whether the streams require post-treatment or whether they can be fed into the outfall or the communal sewage system.

Industry sectors

- Chemicals
- Pharmaceuticals
- Food & beverage
- Automotive
- Oil & gas
- Power & energy
- Petrochemicals
- Pulp & paper
- Airports
- Environmental monitoring

Sample types

- Drinking water
- Surface water
- Process control
- Boiler feed water/condensate
- Cooling water
- Run-off/storm water
- Wastewater

SAFE AND RELIABLE ONLINE TOC MEASUREMENTS

Measuring TOC continuously online is the perfect solution for monitoring contamination and discharges. The TOC Analyzer measures total organic carbon in liquid samples using the method of UV persulfate oxidation with subsequent carbon dioxide detection by nondispersive infrared absorption (NDIR). The analyzer can measure TOC in liquid samples ranging from 0–5 mg/L to 20,000 mg/L. The method conforms to EPA, DIN, CE, ASTM, and NAMUR regulations as well as meeting the requirements of ISO and EN directives.

Safe operation in case of sample loss

The fast loop reservoir has a floating level sensor. If no sample reaches the reservoir for more than a preset time, the analyzer switches automatically to standby mode. As soon as the sample flow restarts, the analyzer switches back to the analysis cycle automatically. Air bubbles are removed in the reservoir before the sample enters the analyzer.

Digital flowmeter

Unlike traditional analyzers where the flow is controlled by a glass tube rotameter, the carrier gas flow is controlled digitally and is displayed in cm3/min. The flow is monitored and in the case of an abnormal value such as a line blockage, the analyzer stops automatically and displays a «low carrier flow» message.

Valve-free sample line

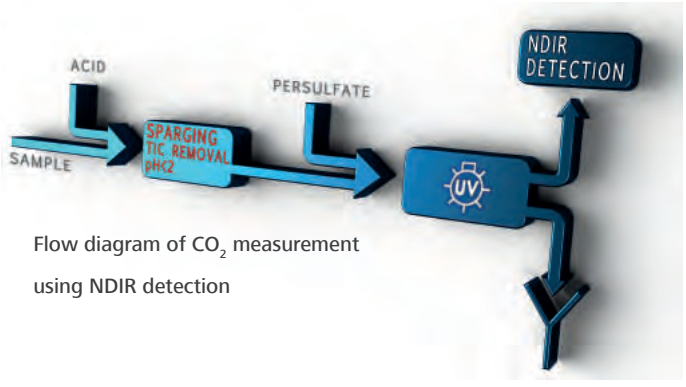
Samples are taken and reagents are added via the peristaltic pumps eliminating valves which risk being blocked. The autoclean, autocalibration, and autovalidation functions guarantee correct, reliable values that can be reproduced at any time without the need for manual intervention.

Dual compartment enclosure

The analyzer consists of two separate housing compartments in order to separate the electronics from the wet part.

Analysis process

The sample first is acidified and then sparged to remove inorganic carbon. The remaining liquid is mixed with sodium persulfate and digested by two high-performance reactors. The resulting CO2 is then stripped from the liquid and, after drying, its concentration is measured by a NDIR analyzer.



Flow diagram of CO_2 measurement using NDIR detection

Integrated carrier gas

An internal air compressor produces the carrier gas for the oxidation and detection stages. The air is purified using an internal soda lime filter which means that there is no need for external air treatment or a compressed air supply, as in traditional analyzers.

Autoclean

This function uses a dedicated peristaltic pump to clean the liquid lines of the analyzer, the sample line, and the external reservoir.

Separate lines for stripping gas and carrier gas

There are two separate gas lines, each with its own compressor. One is intended for the stripping gas for the TIC (total inorganic carbon) and one for the carrier gas (automatically monitored by a digital flowmeter).

Automatic ZEROGAS checks

The ZEROGAS value is expressed in ppm and specifies the residual CO_2 concentration value in the carrier gas (ambient air filtered through a soda lime filter). During a ZEROGAS cycle, the pumps and UV lamps are switched off and the carrier gas passes through all the wet cells to the IR detector. The detected CO_2 concentration is stored in the analyzer as the ZEROGAS value. A ZEROGAS cycle can be started manually or automatically at a time and interval selected by the operator. If the ZEROGAS value exceeds a certain preset limit, the alarm «ZEROGAS too high» will be activated and the analyzer will stop.

Materials used in the analyzer

All materials used are chosen for their long life and reliability. The design uses the minimum number of fittings. All of the materials used are resistant to the corrosive liquids used during operation.

TOC or TC

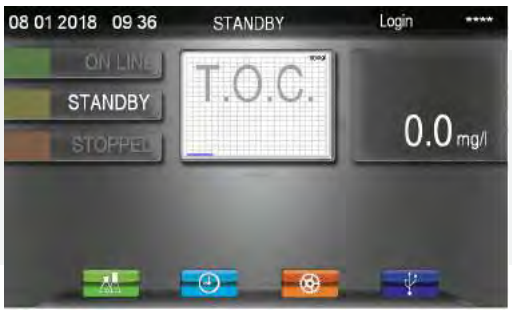
The Analyzer is also available as a total carbon (TC) analyzer. Here the step of sparging the acidified sample is omitted. Along with a high volume external pump, this offers faster response times when the total inorganic carbon (TIC) in the sample is considered insignificant.

SIMPLE OPERATION - FULL CONTROL

The user interface is a touchscreen located on the front of the analyzer. All output/input data, status information, alarms, and fault conditions are shown. Simply pressing the touchscreen buttons gives access to commands and settings; access to the system configuration and timings is protected by a password.

Main screen

During normal operation, the main screen shows a graphical display of the trend in measured concentration. Buttons are provided to select the operating modes and there are indicators of statuses and alarms.

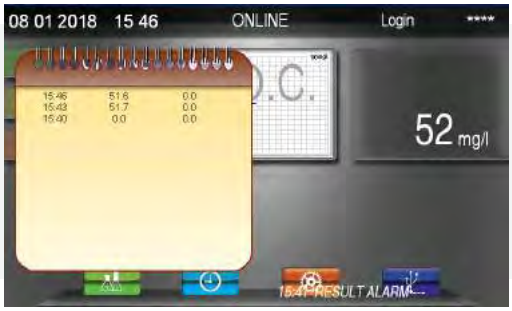


Main screen with process values

Simply press on the main screen to obtain the status of analyzer, sample, and relay; carrier gas flow, reagent fill levels, and measured CO_2 concentrations, and last validation result. This provides all the information needed to check the analyzer is operating correctly.

Integrated data logger

Tapping on the result graph opens a notepad where the day's results are recorded at 3-minute intervals. Results for the last 30 days are saved in the instrument at 15-minute intervals and can be downloaded onto a USB stick at any time for evaluation on a PC.



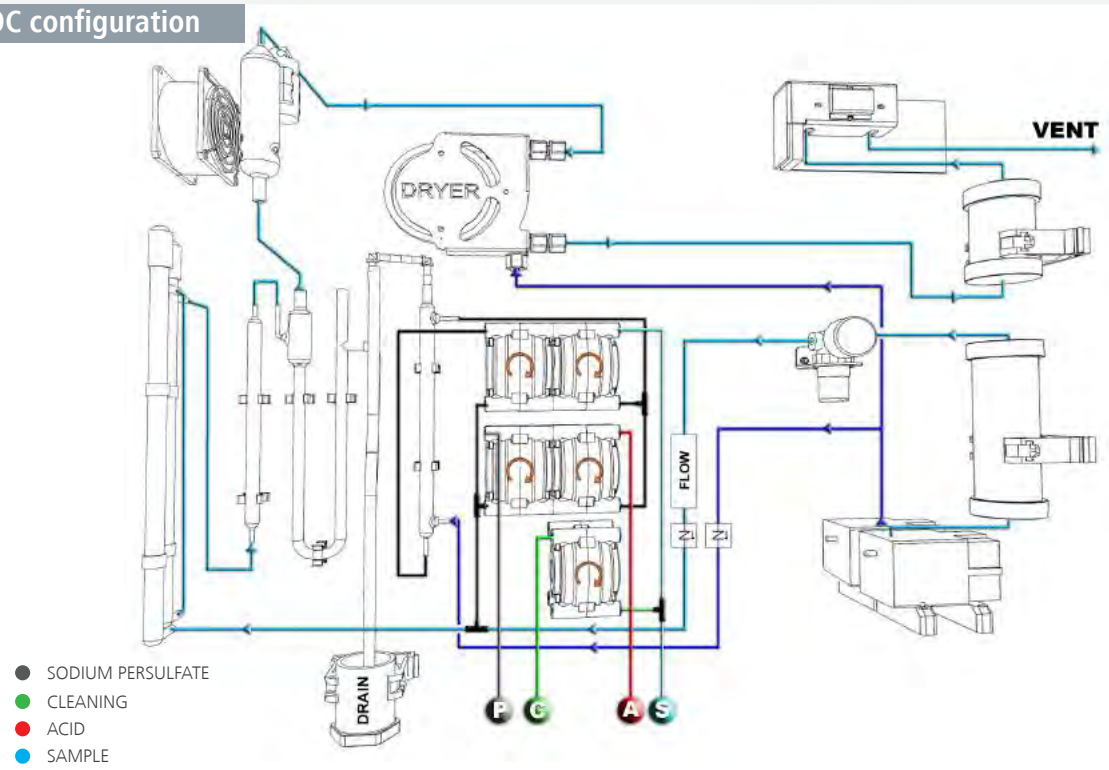
Calibration page

After logging into Advanced mode, the user can access the carrier gas (ZEROGAS), liquid zero, and calibration functions. An autocalibration cycle can be activated according to the times and intervals set by the user on the timing page.

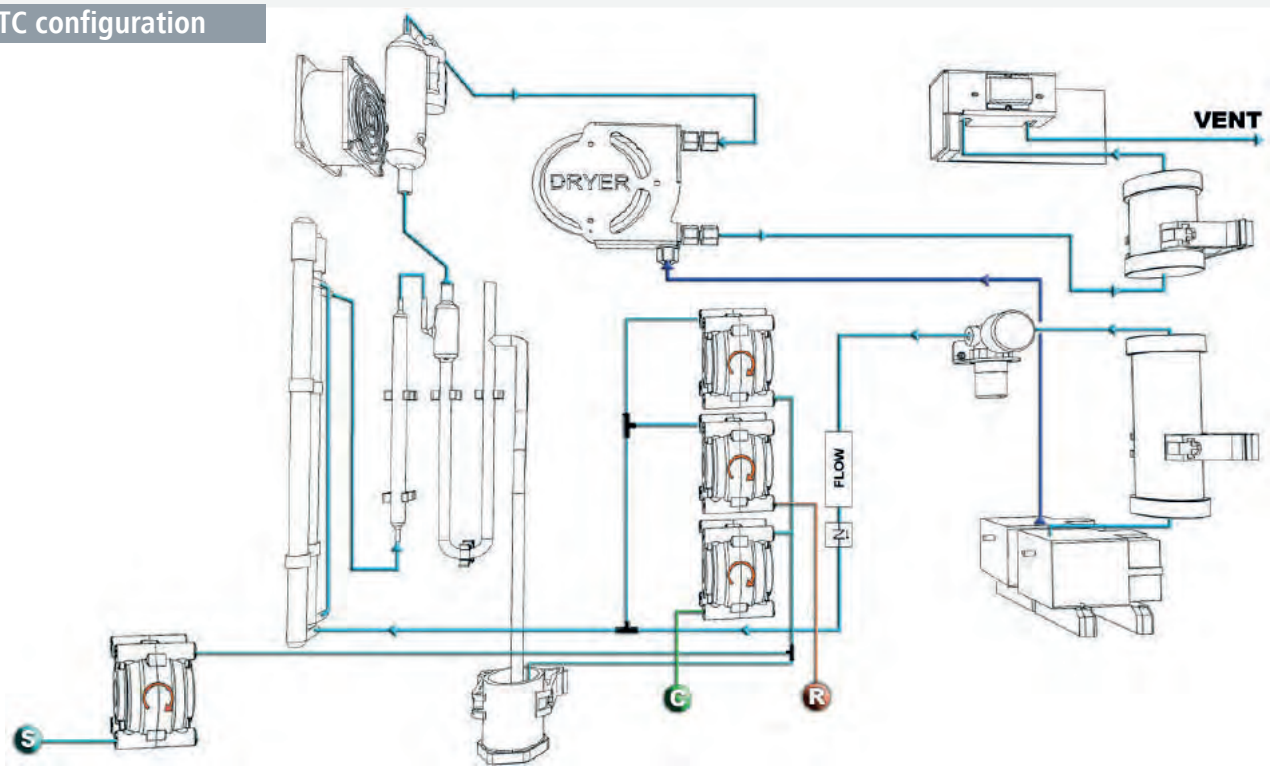
Timing page

The timing page can also be called up in Advanced mode. This page can be used to set timed automatic checks on the ZEROGAS, control the extra relay, set conditioning parameters, and schedule the selected automatic function.

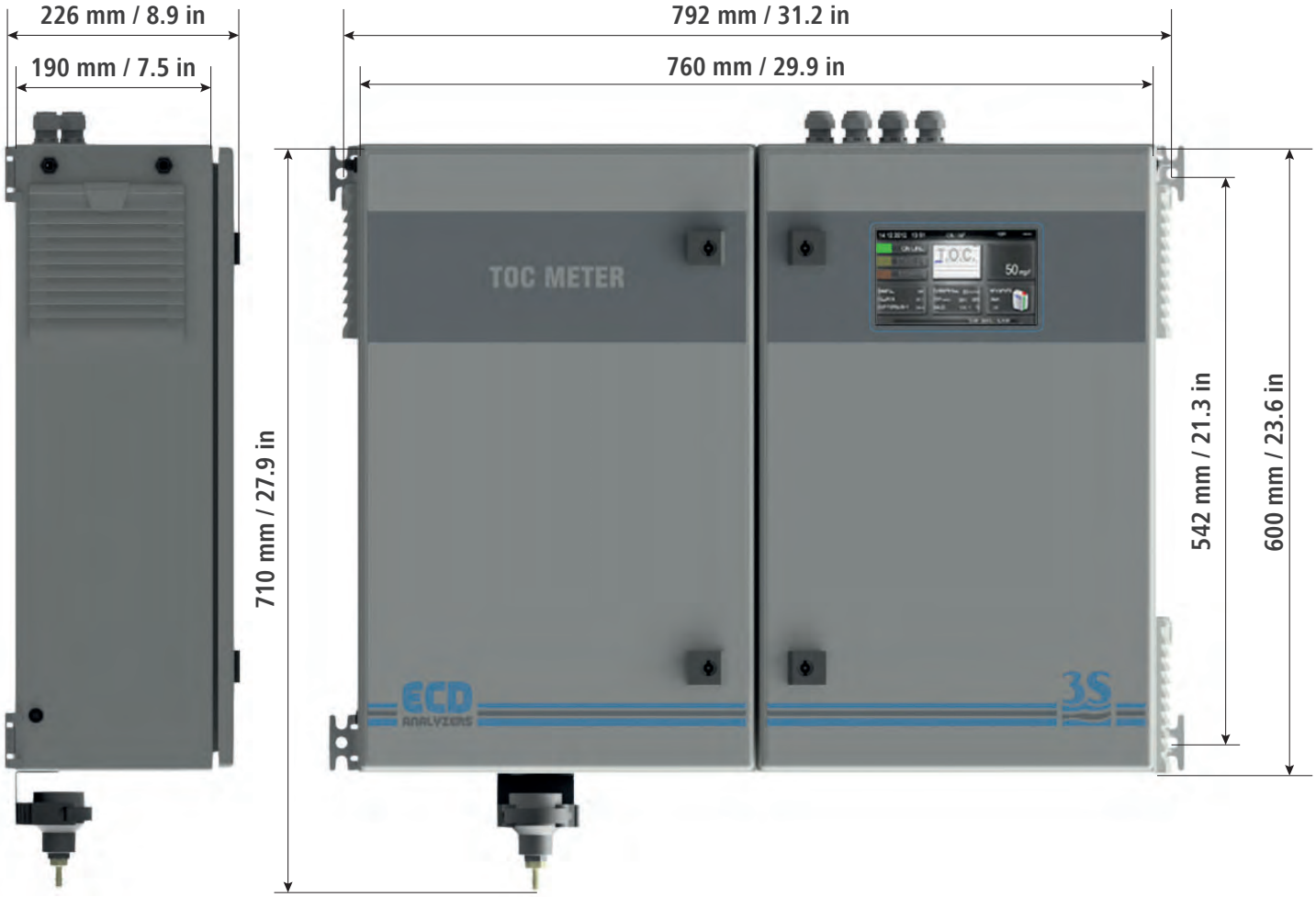
TOC configuration

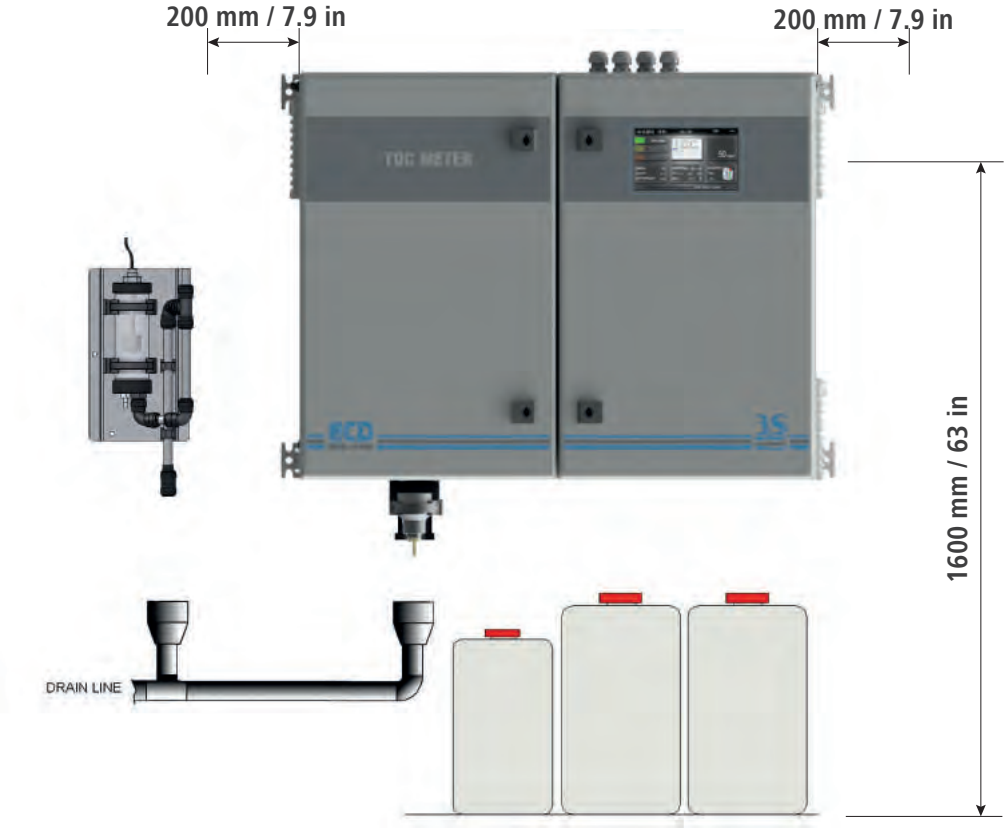


TC configuration



TOC DIMENSIONAL DRAWINGS





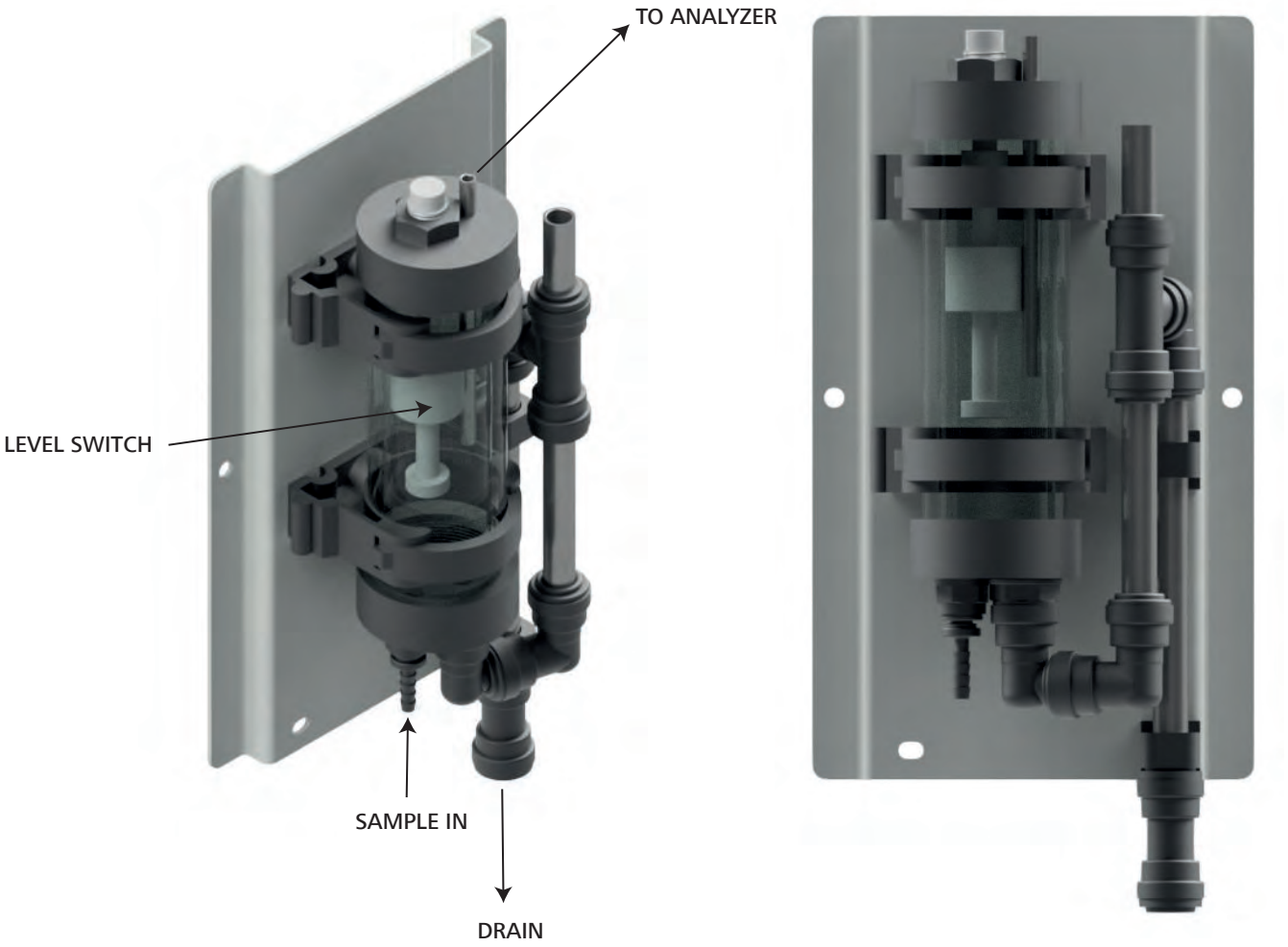
FAST LOOP RESERVOIR

The fast loop reservoir allows a fast circulation of the sample coming from the sampling point or from the optional filtration unit. Inside the fast reservoir, the sample is at atmospheric pressure allowing a constant delivery of the sample without any possible overpressure.

In addition to this, the fast-loop reservoir is a useful extra quantity of sample to avoid unnecessary fault alarms in case of short loss of sample as well as to eliminate air bubbles from sample coming the sample line or caused by the cleaning cycle of the optional filtration unit.

The stainless steel drain tubing keeps a constant water level inside the container and allows a proper sample circulation to avoid suspended solids accumulation.

The sample flow should be adjusted to have the complete sample overflow through the stainless steel tube, U shaped. A small hole at the stainless steel tubing allows to empty the fast-loop reservoir for cleaning purposes just with the finger pressure.



SPECIFICATIONS AND ACCESSORIES

Analyte	Total Organic Carbon (TOC), Total Carbon (TC)
Method	For TOC measurements, inorganic carbon is removed by acidification and sparging; this is followed by UV-promoted persulfate oxidation. This process oxidizes the total organic carbon into carbon dioxide which is measured in a nondispersive infrared (NDIR) analyzer. For TC measurements, the sparging step is omitted.
Range	0–5 mg/L to 20,000 mg/L
Measurement type	Continuous
Lower determination limit	0.2 mg/L (for range 0-5 mg/L using nitrogen as carrier gas)
Accuracy	± 2% of full scale nondiluted, ± 4% of full scale diluted ranges
Response time	From 6 minutes, depending on range
Ambient temperature	5-40°C / 41 - 104°F
Sample temperature	2–70°C / 36 - 158°F
Sample inlet pressure	Pressureless from overflow vessel (Fast Loop Reservoir)
User interface	Color touchscreen
Data logger	Integrated, data download via USB flash drive (USB stick)
Size	760 × 600 × 210 mm / 29.9 x 23.6 x 8.3 in
Weight	37 kg / 81.57 lbs (approx. depending on range)
Power supply	115 or 230 VAC 50/60 Hz, 350 VA (115 VAC), 250 VA (230 VAC)
Carrier gas	Air purifier integrated, supplied by an internal compressor. N_2 or CO_2 free air supply can be used as an option
Reagents	Phosphoric acid and sodium persulfate (approximately 10 L/month for continuous operation)
Analog outputs	2 × 4–20 mA outputs for measured data
Alarms	2 SPDT contacts. Relay A is programmable – online, offline, loss of sample, result alarm, validation alarm, reagent alarm, calibration alarm. Relay B is for the instrument fault alarm
Extra relay	Programmable for external operations
Digital input	Remote start/stop
Autoclean, autocalibration, autovalidation functions	Can be selected using the dedicated peristaltic pump
Dual channel	Dual channel integrated
Dual range (low/high)	Switches sample to an external dilutor for a higher range once a set-point is passed
Factor	Result multiplication factor, e.g., for converting TOC to equivalent COD value
Protection class	IP54 - NEMA 3
Conformity	EN 610004-2, EN 610004-4, C 46-022, EN 55022, EN 61326 (electromagnetic compatibility)

ACCESSORIES AVAIABLE

Fast loop reservoir	Maintains a constant sample flow and switches analyzer to standby in case of insufficient flow. As soon as the sample flow restarts, the measurement is resumed.
External diluters	Options of 2× to 40× dilution of one or two sample streams using 1 motor with dual pump heads or 2 motors with single pump head.
Filtration unit	Self-cleaning, at user selectable intervals and cleaning period

ECD ANALYZERS LLC
1500 North Kellogg Drive, Anaheim, CA 92807 USA - Phone: +1 714 695 0051
E-mail: support@ECDanalyzers.com - Website: www.ECDanalyzers.com

Model CE800 Cation Conductivity/pH

ELECTRO-CHEMICAL DEVICES

Features:

- Rugged Enclosure or panel mounted System Plumb and Play Design
- T80 Transmitter Capability
- Low Maintenance

Benefits:

- Complete System, Easy Installation, Ready to Use
- Ease of Maintenance
- Local Display, 4-20mA output, Alarm Relays, digital output (Modbus or Hart)

Description

The ECD Model CE800 Cation Conductivity/pH provides a reliable solution for the continuous monitoring of makeup, feed, and condensate water for use at power plants. In today's world, solar, wind, and other renewables are growing in popularity. Unfortunately, these sources of power are not always reliable. In order to provide energy to power homes and industries, we must still rely on existing coal and gas power plants. The life blood of coal and gas power is water. Water quality is essential to ensure the proper effectiveness of plant operations and reduce unexpected shut down.

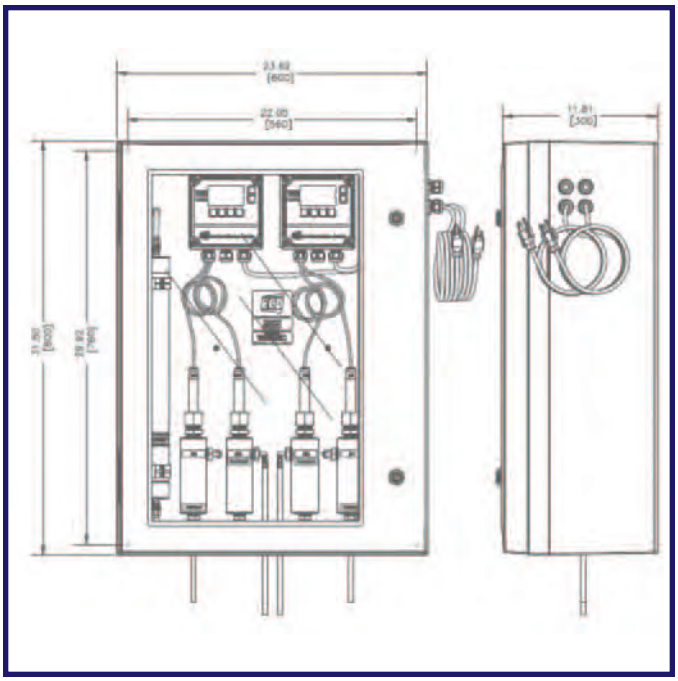
The CE800 Cation Conductivity/pH provides an additional parameter of importance for the power plant chemical to ensure water quality of the plant. The cation resin converts low conductive mineral ion such as NA+, Ca++ , and Mg++ to an acid form which has a high conductivity hydrogen ion H+. As the acid form has a conductivity that is 3 to 6 times greater than corresponding salt, the process is much more sensitive in measuring impurities than a standard conductivity measurement. Oxygen Scavengers, such as ammmonia and amines, which give high value, are removed after the cation resin. Provide s indication measurement of impurities in the medium. The CE800 also has the option to provide pH using ECD S80 High Purity Water electrode sensor. This also provides a secondary indication of possible water contamination to do a pH change before and after the cation resin.

CE800 is available as a panel mount or enclosure system with the option of one or two meausurement stream. The CE 800 is very customizable and can be tailored to meet the customer's needs. The CE800 using the ECD T80 transmitter and S80 sensor (Resitivity, conductivity, or pH) along with a refillable cation column. The CE800 is Plumb and Play Design and is ready to use out of the box. The system is available with the 24VDC or 110/220VAC with optional alarm relay and digitial communication (Modbus or Hart).

Model CE800 Cation Conductivity/pH

Product Specifications and Features

Enclosure or Panel Mounted System	Plumb and Play Design
Low Maintenance	Complete System
Easy Installation	Local Display
24VDC or 110/220 VAC	4-20mA output
Continuous Monitoring of water makeup, feed, and condensate	
Option of one or two measurement stream	
Optional: Alarm Relays and Digital Output (Modbus or Hart)	
Monitor Resitivity, Conductivity, or pH with addition of T80 Transmitter and S80 Sensor	



Parts

1290013-5	Assembly Cation exchange w/ pH & Resistivity Sensors T80 110 VAC 2mA Outputs in Enclosure

Spare Parts

9290024	Resin Bag Refill Cation Exchange
9680043	Clamp Mounting 1-1/2” Cation
9290025	Disk Porous Plastic 1.79” OD Cation Exchange
2000161	Kit, Quick Disconnect 1/4” Male/Female, 2-each
9552113	O-Ring 2-131 Buna N
2005005.VIT	Electrode pH High Purity Water
S80-00-0C00-0B00	S80 mV Sensor
S80-70-0C00-0B00	S80 Resitivity Sensor
S80-00-0C00-0B00-003	S80 mV Sensor w/ Electrode

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

Model 61 Boiler Blowdown System

ELECTRO-CHEMICAL DEVICES

Features

- Panel Mounted System Plumb and Play Design
- Sample conditioner reduces temperature prior to the conductivity measurement
- Sludge trap for easy removal of sludge build up
- C22 Analyzer Capability

Benefits

- Complete System, Easy Installation, Ready to Use
- Improves the accuracy and the longevity of the conductivity measurement
- Ease of Maintenance
- Local Display, 4-20 mA output, Alarm Relays, XY Graphical Plot

Model 61
Boiler Blowdown System

Description

The ECD Model 61 Boiler Blowdown System provides a reliable solution for the continuous control of the surface blowdown rate for commercial and industrial boilers.
Boilers concentrate dissolved solids in the water as the boiler operates. The increasing concentration of dissolved solids (TDS) may cause damage to piping, steam traps and other process equipment. It can also form sludge in the boiler, which impairs boiler efficiency and heat transfer capability. To avoid these problems the boiler water must be periodically discharged, Blown Down, and replenished with fresh feedwater. There are two types of blowdown, surface blowdown pulls the water from the top to middle of the boiler while bottom blowdown removes the sludge from the bottom of the boiler.
The Model 61 Boiler Blowdown System is a rack mounted modular design that includes: a 316 SS sediment trap, 316 SS sample cooler, temperature gauge, sample control valve and safety relief valve. Tubing and fittings are 316 SS.
The Conductivity (TDS) measurement is made with the Model C22 controller or one of the optional two wire transmitters, the T80 or T28, and the field proven Model CS10 conductivity sensor with 316 SS sensor body and integral preamplifier.
The Model C22 Controller is a line powered instrument with PID control functions, logic functions and timers. The standard instrument is supplied with one 4-20 mA output and two alarm relays, options include up to 4 outputs and 8 relays.
The Model C22 4-20 mA Output can be configured as a PID control output. The proportional/integral signal can modulate a control valve to keep the surface blowdown rate uniformly close to the maximum allowable dissolved solids level, regardless of load conditions. This lowers the operating costs of the boiler when compared to manual blowdown by minimizing the blowdown rate which lowers the fuel and make up water consumption. Timers in the C22 can be configured to periodically trigger a relay for bottom blowdown which may only be needed on a weekly or monthly basis.
If a controller is not needed, the General Purpose NEMA 4X Model T80 two wire transmitter can provide a 4-20 mA signal to the DCS or PLC. The FM and CSA approved intrinsically safe and/or explosion proof Model T28 two wire transmitter and sensor can be used in hazardous locations.

Model 61 Boiler Blowdown System

Specifications

Measurement range

Conductivity Range:
0-10,000 µS (standard range)
use sensor CS10-C22-CBL-5mS-75
0-1,000 µS (optional)
use sensor CS10-C22-CBL-500µS-75
0-100 mS (optional)
use sensor CS10-C22-CBL-50mS-75

Process Connection:
Compression fitting, ¾" NPT to fit CS10

Temperature Range:
0-100˚C

Pressure Range:
0-75psig

Wetted materials:
316 SS, Ryton, VITON

Sample Assembly

Part#: Model 6122-SA
Includes Sludge trap, Sample Cooler*, Temperature Gauge, Sample control valve, 75 psi Pressure Relief Valve, Tubing and Piping, all parts are 316 SS, U-Channel Rack is carbon steel
*Sample cooler requires 3-5 gpm water for cooling

Part#: Model 6122-SA-PH
Includes all features of the Model 6122-SA plus an addition port for a PHS10 pH sensor

Model C22 Controller

(see C22 Data Sheet for detailed specifications)

Part#: C22-CDH-1mA-C/2-UM
C22 conductivity controller, line powered 110 VAC, ½ DIN NEMA 4X, backlit display, (1) 4-20 mA output, (2) Form C relay contacts, universal mounting bracket

Part#: C22-CDH/pH-2mA-C/2-UM
Same as above with a 2nd channel for pH measurement and an additional 4-20 mA output for the pH signal

Model T80 Transmitter

(see T80 Data Sheet for detailed specifications)

Part#: T80-01-100-01
T80 conductivity transmitter, 24V loop powered, ½ DIN NEMA 4X, (1) 4-20 mA output, universal mounting bracket

Part#: T80-01-100-01
T80 pH transmitter, 24V loop powered, ½ DIN NEMA 4X, (1) 4-20 mA output, universal mounting bracket

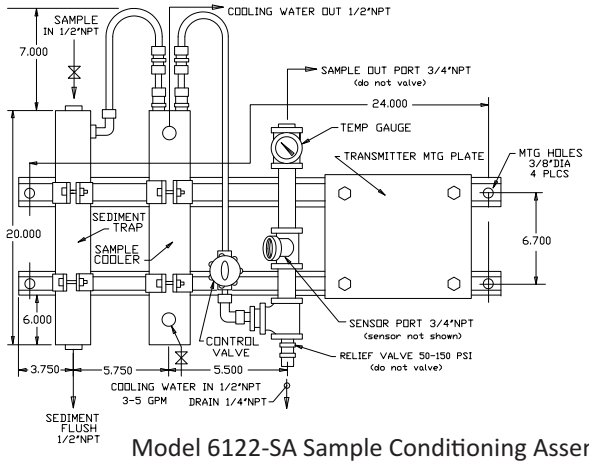
Model T28 Transmitter

(see T28 Data Sheet for detailed specifications)

Part#: T28-CDH/MA-UM
T28 conductivity transmitter, 24V loop powered, NEMA 7C, CSA & FM approved Explosion Proof for use in Class I, Division I, Groups C through G, CSA & FM approved intrinsically safe in Class I, II and III Division I Groups A-G

Part#: T28-pH/MA-UM
T28 pH transmitter, specifications are the same as above

Part #	Description
Model 6122-SA	Rack mounted assembly, conductivity only
Model 6122-SA-PH	Rack mounted assembly, conductivity & pH
C22-CDH-1mA-C/2-UM	Model C22 controller conductivity only
C22-CDH/pH-2mA-C/2-UM	Model C22 controller conductivity & pH
T80-01-100-01	Model T80 Transmitter conductivity only
T80-01-100-01	Model T80 Transmitter pH only
T28-CDH/MA-UM	Model T28 controller conductivity only
T28-PH/MA-UM	Model T28 controller pH only
CS10-C22-CBL-5mS	Conductivity Sensor, 0-10,000 µS range
CS10-C22-CBL-500µS	Conductivity Sensor, 0-1000 µS range
CS10-C22-CBL-50mS	Conductivity Sensor, 0-100 mS range
PHS10-C22-CBL-EG	pH Sensor, 0-14 pH, 5˚-90˚C, 0-75 psig



Model 6122-SA Sample Conditioning Assembly

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM

HCA2 Photometric Test Kit

Electro-Chemical Devices

HCA2 Photometric Test Kit

- Measures Free and Total Chlorine, Chlorine Dioxide, Hydrogen Peroxide, Ozone, or Peracetic Acid
- USEPA, DIN and ISO compliant Test Method
- Photometric measurement using a 525 nm LED
- 4 ml sample cell uses 60% less chemical per test
- Easy to use, Fast and Accurate

Description

The Electro-Chemical Devices Photometric Test Kit is ideal for testing Free and Total Chlorine in drinking water, wastewater, environmental waters, cooling towers and rinse waters in the food and beverage industry. In addition, the HCA2 can meausre Hydrogen Peroxide, Ozone, or Peracetic Acid in various applications. The HCA2 photometer is designed to use the Micro Test Strips. Each kit is supplied with test strips for your chosen parameter.

This DPD test system is accepted by most health departments because this test is USEPA (DIN Standard 38 408 G4, ISO 7393/2) accepted for testing requirements for Free and Total Chlorine. All tests have been calibrated using certified reference standards and standard analytical spectro-photometric methods. The algorithm in the software of the HCA2 meter mirrors the AWWA, US EPA , DIN, and ISO reference test methods for chlorine. Studies show that the HCA2 Chlorine meter repeatedly agrees with an EPA Compliant reference method greater than 99% (R2= 0.9989, 0 - 6.0 ppm). The HCA2 meter has been factory calibrated for your convenience. You can expect the fixed calibrations in the meter to be valid for the life of the meter due to the long life LED, the photo cell and the software.

A Calibration Verification Solution Kit is available to verify the working condition of your HCA2 photometer.

The **HCA2** meter is easy to use and is controlled by just three buttons:

ZERO/ON When first pressed,it turns the meter ON. When pressed again, it zeroes the sample in the cell. Once the meter is zeroed, this zero value applies to all parameters and is stored and retained even when meter turns off. However, it is recommended that each new water sample analyzed is zeroed before testing, to maximize sensitivity and accuracy.

MENU: With each press, the MENU button advances through the tests in the following sequence: CL, CLH, HP, O3, PA, PH, TC, BR, Cd. Each test menu can store up to 20 results. To retrieve the stored results, go to the desired test using the MENU key. When the desired test is displayed, press and hold down the MENU key. Continue holding down the MENU key to scroll the stored results for that test, starting with the most recent result. The meter will display, from memory, the last 20 readings in sequence beginning with -20, which is the latest result, followed by -19, which is the 2nd oldest result retained. Only the last 20 readings are stored in each menu. This meter is able to store 80 results in memory (20 in each menu).

READ: When pressed once, this button starts the timer for the parameter being tested. When pressed a second time the meter exits the timer and immediately prepares to colorimetrically measure the sample, and simultaneously stores the measurement in memory.

HCA2 Photometric Test Kit

Specifications

Kit Includes: HCA2 meter, Micro Strip Reagent Test Strips, Instruction Manual, and Carrying Case with Cell Cleaning Brush and Calibration Key

Measurement Method: Photometric

Light Source: Light Emitting Diode (LED) 525 nm

Transmission Range: 100 - 0.00 %T (+/- 0.1/0.01 %T)

Range Selection: See specifications below

Display: 3-digit LCD with indicators

Cell Chamber: 11 mm Path Length, PET plastic (non-removable), over 20,000 Readings

Sample Required: 4 ml (0.13 oz)

Operating Temperature Range: 0 - 50°C (32° - 122°F)

Power Supply: (4) AAA alkaline batteries (> 2000 tests)

Electromagnetic Compliance (EMC): Emitted / Immunity to Interference EN61326

Waterproof Rating: IP67

Weight: Instrument: 4.5 oz (128 g)

Dimensions: Instrument: 1.9” x 1.6” x 6.4” (4.8 x 4.1 x 16.3 cm)

Compliance: Chlorine, Chlorine Dioxide Tests to USEPA (DIN Standard 38 408 G4/G5, 150 7393/2)

Certified: NSF/ANSI Standard 50

Parameter	Number of Tests	Range	Chemistry
The Free Chlorine and Total Chlorine reagents are compliant for meeting USEPA (4500-Cl G)			
Free Chlorine	100	0 - 12 ppm	DPD-1
Total Chlorine	100	0 - 12 ppm	DPD-4
Chlorine Dioxide	100/100 (Glycine)	0 - 6 ppm	DPD-1
High Range Free Chlorine	50	1.0 - 200 ppm	
Ozone	100	0 - 2 ppm	DPD-4
Peracetic Acid	100	2 - 590 ppm	
Hydrogen Peroxide	50	0.5 - 130 ppm	

Part#	Description
1000040-1	Kit, Photometer Tester HCA-2, Free & Total Chlorine
1000040-2	Kit, Photometer Tester HCA-2, Free Chlorine
1000040-3	Kit, Photometer Tester HCA-2,Total Chlorine
1000040-4	Kit, Photometer Tester HCA-2, Chlorine Dioxide
1000040-5	Kit, Photometer Tester HCA-2, Free Chlorine High Range 0 - 200 ppm
1000040-6	Kit, Photometer Tester HCA-2, Ozone
1000040-7	Kit, Photometer Tester HCA-2, Peracetic Acid
1000040-8	Kit, Photometer Tester HCA-2, Hydrogen Peroxide
9260100	Test Reagent, Free Chlorine (100 test strips)
9260101	Test Reagent, Total Chlorine (100 test strips)
9260102	Test Reagent, Chlorine Dioxide (100 test strips)
9260103	Test Reagent, High Range Chlorine (50 test strips)
9260104	Test Reagent, Ozone (100 test strips)
9260105	Test Reagent, Peracetic Acid (100 test strips)
9260106	Test Reagent, Hydrogen Peroxide (50 test strips)
9260107	Cal Verification (10 vials)

Specifications subject to change without notice.

Represented by:

DS HCA2 C1120

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdanalytical.com

CERTIFIED ISO9001 QUALITY SYSTEM

H10C Handheld Conductivity Meter

ELECTRO-CHEMICAL DEVICES

H10C Handheld Conductivity, Salinity, TDS & Temp Meter

- Large LCD Display with Backlight
- Displays Conductivity, Salinity or TDS and Temp.
- 4 wire Conductivity Electrode with TC
- Calibration stored in nonvolatile memory
- Adjustable TDS and Temp. Coefficients

Description

The H10C Handheld Conductivity, Salinity, TDS and Temperature meter is a microprocessor based precision instrument. The meter has a large LCD that displays the Conductivity, Salinity or TDS and Temperature along with user promps and measurement mode indicators. The IP67 waterproof case has a shock resistant protective rubber boot and highly reliable keys that provide both tactile and audio feedback. The H10C is battery powered (four 1.5 volt AAA batteries).

A few key strokes will adjust all of the parameters for the probe including the TDS constant, Reference Temperature and Temperature Coefficient. The Mode Key toggles the display between the Conductivity, Salinity (ppt) and TDS (mg/L) screens. A single 4-wire electrode will measure Conductivity, Salinity and TDS. Additional features include automatically finds the best range for each measurement mode and has automatic temperature compensation.

Meter and Electrodes sold seperately.

Part #	Description
1100510	H10C Conductivty/Temperature meter
2008210	4 wire Cond/Temp electrode, K=0.5, 0-200mS/cm with 8 pin DIN connector
1000560-1	Conductivity Calibration Solutions Kit

Specifications

Electrode Type	4 wire Cond. / TC
Reference Temperature	59 to 77°F (15.0˚ to 25.0˚C) Default 77°F (25.0˚C)
Temperature Coefficient	0.0% to 4.0% (Default 1.91%)
TDS Constant	0.30 to 1.00 (Default 0.65)
Power	4 AAA batteries (6VDC)
Display	2 in x 1⅜ in, LCD
Ambient Temperature Range	32 to 77°F (0˚ to 50˚C)
Relative Humidity	Up to 90%
Case	IP67
Dimensions	3”x6.2”1.4” (75mmx157mmx35mm)
Weight(with Batteries)	8.1 oz (230 g)

Display	Range	Resolution	Accuracy
Conductivity	0.000 to 499.9 µS/cm 500 to 4999 µS/cm 5.00 to 49.99 mS/cm 50.0 to 200 mS/cm	0.1 µS/cm 1.0 µS/cm 0.01 mS/cm 0.1 mS/cm	±1% ±1% ±1% ±2.5%
Salinity	0.00 to 70.0 ppt	0.01 ppt	±0.2% FS
Temperature	0.0 to 100˚C	0.1˚C	±0.2˚C

H10 Handheld pH/ORP Meter

ELECTRO-CHEMICAL DEVICES

H10 Handheld pH/ORP & Temperature Meter

- Large LCD Display with Backlight
- Displays pH or mV and Temperature
- Resolution of 0.1 mV in ORP or Ion Mode
- Automatic or Manual Temp. Compensation
- Automatic Buffer Recognition
- Calibration stored in nonvolatile memory

Description

The H10 Handheld pH/ORP and Temperature meter is a microprocessor based precision instrument. The meter has a large LCD that displays the pH or millivolts and Temperature along with user promps and measurement mode indicators.

The H10 features Automatic Temperature Compensation and Automatic pH buffer recognition for both US and NIST primary standard buffers. Calibrations can be single, dual or three point calibrations. The AUTOLOCK function in both the pH and mV modes senses the end point of a calibration or measurement and locks the reading once the sensor has stabilized. Electrode offset and slope are monitored and the pH electrode efficiency is displayed.

The IP67 waterproof case has a shock resistant protective rubber boot and highly reliable keys that provide both tactile and audio feedback. The H10 is battery powered (four 1.5 volt AAA batteries).

Meter and Electrodes sold seperately.

Part #	Description
1100500	H10 pH/ORP/Temp meter
2008200	pH/Temp electrode
2008240	ORP electrode
2008019	pH Electrode (no Temp)
1000550-1	pH Buffer Kit, 4,01, 7.00, 10.00

Specifications

pH Buffer Recognition	(US) 7.00, 4.01, 10.01 (NIST) 6.86, 4.01, 9.18
pH Temp. Compensation	-10.0˚ to 120˚C
pH Buffer Temp. Range	0.0˚ to 60˚C
pH Offset Recognition	± 1.5 pH
pH Slope Recognition	± 30% of theoretical
Autolock sensing & Hold	Yes
Audio Feedback	All Keys
Calibration Back up	EEPROM
Input Impedance	> 10^{12} Ω
Temperature Sensor	Thermistor, 10KΩ @25˚C
Display	2 in x 1⅜ in, LCD
Case	IP67 waterproof
Ambient Temperature	0˚ to 50˚C
Relative Humidity	Up to 90%
Dimensions (W x D x H)	75mmx157mmx35mm
Weight (Batteries Included)	230 gm (0.51 lb.)

Display	Range	Resolution	Accuracy
pH	-2.00 to 16.00 pH	0.01 pH	± 0.02 pH
mV	-1999.9 to 1999.9mV	0.1 mV	± 0.1% FS
Temp.	0.0 to 100.0˚C	0.1˚C	± 0.5˚C

L20 Lab Conductivity Meter

ELECTRO-CHEMICAL DEVICES

L20 Laboratory Conductivity, TDS & Temperature Meter

- Large LCD Display with Backlight
- Displays Conductivity or TDS and Temperature
- 2 wire Conductivity Electrodes with TC
- Calibration stored in nonvolatile memory
- Accepts 3 Cell Constants for improved accuracy

Description

The L20 Laboratory Conductivity, TDS and Temperature meter is a microprocessor based precision instrument. The meter has a large LCD that displays the Conductivity or TDS (mg/L) and Temperature along with user promps and measurement mode indicators. The IP54 waterproof case uses highly reliable keys that provide both tactile and audio feedback. The L20 is AC line powered with a universal AC adapter, 9VDC output, or it can be battery powered (six 1.5 volt AAA batteries).

A few key strokes will adjust all of the parameters for the probe including the cell constant 0.1, 1.0, 10.0 or the specic K value of a conductivity cell. The Mode Key toggles the display between the Conductivity and TDS screens. Additional features include auto-ranging conductivity scales and automatic temperature compensation.

Meter and Electrodes sold seperately.

Part #	Description
1100520-2	L20 Conductivty meter with AC adapter
2008230	Conductivity probe, K=0.1, 0-200µS/cm
2008231	Conductivity probe, K=1.0, 0-200µS/cm
2008232	Conductivity probe, K=10, 0-200µS/cm
1000540	Conductivity probe Holder/Arm

Specifications

Reference Temperature	15.0˚ to 25.0˚C
Temperature Coefficient	0.0% to 4.0%
Cell Constant	0.10, 1.00, 10.0
TDS Constant	0.30 to 1.00
Power	6 AAA batteries (9VDC)
Display	3½ in x 2¼ in, LCD
Ambient Temperature Range	0˚ to 50˚C
Relative Humidity	Up to 90%
Case	IP54
Dimensions	150mm x 203mm x 72
Weight(with Batteries)	504 gm (1.1 lb)

Display	Range	Resolution	Accuracy
Conductivity K=0.10	0.00 to 19.99 µS/cm 2.0 to 199.9 µS/cm	0.01 µS/cm 0.1 µS/cm	±0.5% FS ±0.5% FS
Conductivity K=1.00	0.0 to 199.9 µS/cm 200 to 1999 µS/cm 2.00 to 19.99 mS/cm	0.1 µS/cm 1 µS/cm 0.01 mS/cm	±0.5% FS ±0.5% FS ±0.5% FS
Conductivity K=10.0	0 to 1999 µS/cm 2.00 to 19.99 mS/cm 20.0 to 199.9 mS/cm	1 µS/cm 0.01 mS/cm 0.1 mS/cm	±0.5% FS ±0.5% FS ±0.5% FS
Temperature	0.0 to 100˚C	0.1˚C	±0.2˚C

L20 Lab pH/ORP Meter

ELECTRO-CHEMICAL DEVICES

L20 Laboratory pH/ORP & Temperature Meter

- Large LCD Display with Backlight
- Displays pH or mV and Temperature
- Resolution of 0.1 mV in ORP or Ion Mode
- Automatic or Manual Temp. Compensation
- Automatic Buffer Recognition
- Calibration stored in nonvolatile memory

Description

The L20 Laboratory pH/ORP and Temperature meter is a microprocessor based precision instrument. The meter has a large LCD that displays the pH or millivolts and Temperature along with user promps and measurement mode indicators.

The L20 features Automatic Temperature Compensation and Automatic pH buffer recognition for both US and NIST primary standard buffers. Calibrations can be single, dual or three point calibrations. The AUTOLOCK function in both the pH and mV modes senses the end point of a calibration or measurement and locks the reading once the sensor has stabilized. Electrode offset and slope are monitored and the pH electrode efficiency is displayed.

The IP54 waterproof case uses highly reliable keys that provide both tactile and audio feedback. The L20 is AC line powered with a universal AC adapter, 9VDC output, or it can be battery powered (six 1.5 volt AAA batteries).

Meter and Electrodes sold seperately.

Part #	Description
1100520-1	L20 pH/mV meter with AC adapter
2008220	pH/Temp electrode
2008240	ORP electrode
2000675	Temperature Electrode with 8 pin DIN
1000540	Electrode Holder/Arm

Specifications

Display	Range	Resolution	Accuracy
pH	0.00 to 14.00 pH	0.01 pH	± 0.01 pH
mV	-1999.9 to 1999.9mV	0.1 mV	± 0.05% FS
Temp.	0.0 to 100.0˚C	0.1˚C	± 0.2˚C

pH Buffer Recognition	(US) 7.00, 4.01, 10.01 (NIST) 6.86, 4.01, 9.18
pH Temp. Compensation	0.0˚ to 100˚C
pH Buffer Temp. Range	0.0˚ to 60˚C
pH Offset Recognition	± 1.5 pH
pH Slope Recognition	± 30% of theoretical
Autolock sensing & Hold	Yes
Audio Feedback	All Keys
Calibration Back up	EEPROM
Input Impedance	> 10^{12} Ω
Temperature Sensor 25˚C	Thermistor 10KΩ @
Display	3½ in x 2¼ in, LCD
Case	IP54 waterproof
Ambient Temperature	0˚ to 50˚C
Relative Humidity	Up to 90%
Dimensions (W x D x H)	150mmx203mmx72mm
Weight (Batteries Included)	504 gm (1.1 lb.)

Electro-Chemical Devices • 1500 N Kellogg Dr • Anaheim, CA, 92807 • 800-729-1333 • www.ecdi.com • sales@ecdi.com

WASTEWATER SAMPLERS – PORTABLE RANGE

Models: AQUA-COMPACT, AQUA-COOLBOX, AQUA-MULTIX

The ECD Analyzers Portable Wastewater Sampler range is made up of three models:

The very small AQUA-COMPACT, the passively cooled AQUA-COOLBOX, and the versatile multi bottle AQUA-MULTIX, providing complete sampling flexibility.

All can be powered by 110/220 VAC POWER, or an external 12VDC supply, or via an integral battery that can provide up to 350 samples on a full charge.

The air pump vacuum sampling system featured within every AQUA Module provides for a reliable, representative and repeatable sample without the weaknesses that can be associated with alternative sampling techniques. Programming set-up is very simple, with sample volumes from 50-500 mL (and above, using multiple shots/sample events) and sample intervals from 1 minute to almost 100 hours.

Sample extraction frequency can be time based or triggered by external sources such as flow meters, level sensors, pH meters, on-line analyzers, PLC's etc. Ambient working temperature range: 14°F (-10°C) to 122°F (50°C). Also, any of the Samplers can be supplied with a Sample Temperature Monitoring Facility. With this option, the minimum, maximum, average and present sample temperatures can by monitored on the display. Additionally all the Portable Samplers can be fitted with a Data Connection facility. This enables the download of logged sample temperature data from the Sampler Module to a PC (or similar) via the USB connection, and if needed, it is possible to extract samples from a pressurized effluent source, using the Pressurized Pipeline Interface.

Model: AQUA-COMPACT

Ideal when samplers are transported between sites or for temporary compliance purposes, the AQUA-COMPACT takes up minimal space and yet offers uncompromised sampling performance.

- Super–Compact and lightweight (only 16 lbs - 7.3 Kg)
- Suitable for indoor and outdoor use
- Ambient working temperature range: 14°F (-10°C) to 122°F (50°C)
- Supplied with integrated easy clean 5 liter low profile composite Sample Container
- AC Power and / or Battery powered
- Lockable Sampler Cover
- Front access to Sample Container without disturbing Sampler or Intake Hose

MODEL: AQUA-COOLBOX

Incorporated within the AQUA-COOLBOX is a high performance passive Sample Temperature Control System. This ensures that the collected samples are preserved at an optimal temperature 32°F (0°C) to 41°F (5°C) up to five days, while awaiting collection / inspection. This is particularly useful when sampling biologically active wastewater

The AQUA-COOLBOX is designed typically to operate at sites where the sampling requirement is infrequent or there is simply no power available.

Thick wall insulation combined with sealed ‘no mess’ Cooling Elements provides for impressive sample temperature control performance.

The passive temperature control system requires no power, ntherefore maximising on-board battery life. Sample temperatures can be measured and logged for subsequent download.

- Supplied complete with easy clean 5 liter HDPE composite Sample Container with lid and 2 Cooling Elements
- Suitable for indoor and outdoor use
- AC Power and / or Battery powered
- Separately lockable Sampler Cover and COOLBOX base
- 350+ samples achievable with a fully charged battery

MODEL: AQUA-MULTIX

The most versatile member of the Portable family. The AQUA-MULTIX can accommodate a choice of 4 Sample Collection Vessels. Changing Sample Collection Vessels is extremely quick and simple with the Aquacell Modules 'lift-off' design.
The open aluminum frame structure provides easy visual inspection of the collected samples. Users will quickly appreciate the benefit of being able to see each sample depositing correctly into its container without having to dismantle any part of the Sampler.

- Lightweight (only 18.8 lbs – 8.5 Kg)
- Suitable for indoor and outdoor use
- Available for use with various Sample Collection Vessels
- AC Power and / or Battery powered
- Lockable Sampler Cover
- Front access to Sample Container without disturbing Sampler or Intake Hose

AQUA-MULTIX SAMPLE COLLECTION VESSELS

Single Container 25L

Removable Bottler
12 x 0.75L Glass

Removable Bottler
12 x 1L PET

Removable Bottler
24 x 1 Liter HDPE

MODEL	AQUA-COMPACT	AQUA-COOLBOX	AQUA-MULTIX
GENERAL			
Sample Temperature Control	No	Passive	No
Sample frost protection	No	Passive	No
Suitable for outdoor use	Yes	Yes	Yes
DIMENSIONS / WEIGHTS			
Size in (mm) measured with standard base fitted	H 16.9 (430) W12.6 (320) D 14.8 (375)	H 32.9 (835) W 16.9 (430) D 16.9 (430)	H 30.7 (780) W 17.5 (445) D 17.5 (445)
Weight excluding container and options lbs (Kg)	16 (7.3)	38.5 (17.5)	18.8 (8.5)
POWER OPTIONS			
Integral battery 12VDC 7Ah	Opt	Opt	Opt
AC Power 110/220/230VAC 50Hz	Opt	Opt	Opt
Floated charged backup battery (12VDC 7 Ah)	Opt	Opt	Opt
Separate 12 VDC	Opt	Opt	Opt
POWER CONSUMPTION			
Current (A) @ 12 VDC	5	5	5
Power - Watts (VA) @110VAC	60	60	60
Power - Watts (VA) @220VAC	60	60	60
Power - Watts (VA) @230VAC	60	60	60
ENVIRONMENTAL			
IP Rating	55	55	55
Minimum ambient working temperature °F (°C)	14 (-10)	14 (-10)	14 (-10)
Maximum ambient working temperature °F (°C)	122 (50)	122 (50)	122 (50)
SAMPLE COLLECTION VESSELS			
5 L Container	Yes	Yes	No
25 L Container	No	No	Opt
12 x 1 L PET Bottler	No	No	Opt
12 x 0.75 L Glass Bottler	No	No	Opt
24 x 1 L HDPE Bottler	No	No	Opt
OPTIONAL EQUIPMENT			
Ancillary Signal Connection (for flowmeters, pHmeters, PLC's,...)	Opt	Opt	Opt
Bottler Connection	N/A	N/A	Opt
Data Download Connection	Opt	Opt	Opt
Sample Temperature Monitoring Connection	Opt	Opt	Opt
Transportation Truck	No	Opt	Opt
Thermal Jacket	No	Opt	Opt
Intake Hose Extension	Opt	Opt	Opt

WASTEWATER SAMPLERS – STATIONARY RANGE

Models: AQUA-S200, AQUA-S320, AQUA-S320H

The ECD Analyzers range of stationary, refrigerated wastewater samplers consists of three models, the AQUA-S200, the AQUA-S320 and the rugged outdoor AQUA-S320H. At the heart of each is the well proven AQUA Sampling Module, a robust and reliable unit proven in thousands of applications worldwide and trusted by users as diverse as food manufacturers, water companies and the Environment Agencies. The air pump vacuum sampling system featured within the AQUA Module provides for an extremely accurate, reliable, representative and repeatable sample. Programming set-up and daily operation have been designed to be as simple and intuitive as possible for the user.
Sample extraction can be time based or triggered by external sources such as flow meters, level sensors, pH meters, PLC's etc.
AQUA-S200, AQUA-S320 and AQUA-S320H Samplers can extract samples from both non-pressurized and pressurized (when specified with a Pressurized Pipeline Interface) effluent sources.

AQUA-S200

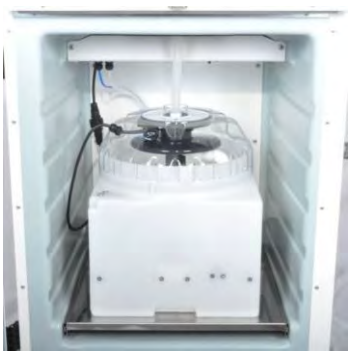
The S200 Sampler is the refrigerated solution for an indoor, secure location.

The Sampler Module is mounted separately above the lockable, high-performance, refrigeration compartment so it can be programmed and/or interrogated without disturbing the temperature controlled samples. The AQUA-S200 can be combined with any of the nonintegral range of Sample Collection Vessels. Additionally, this model can be combined with an optional, lockable, tamperproof Sampler Module Front Cover.

AQUA-S320	AQUA-S320H
There are two refrigerated models available in the AQUA-S300 Series, the AQUA-S320 for indoor applications only and the AQUA-S320H for outdoor. Both models are based around the same high performance AQUA-S300 cabinet. All electronic equipment is protected in the upper compartments, while collected samples are kept separately and securely in the lockable, temperature controlled, lower compartment. Both the AQUA-S320 and AQUA-S320H models can be used with the full range of Sample Collection Vessels, including Integral Bottlers, which are supplied with a Pull-out Tray for easy access to the sample collection bottles.	
	
	
	
Sampler Inspection Window	Pull-out Tray

Pressurized Pipeline Interface	Auxiliary Equipment IP66 Enclosure
	

MODEL	AQUA-S200	AQUA-S320	AQUA-S320H
GENERAL			
Sample Temperature Control	Yes	Yes	Yes
Sample frost protection	No	No	Yes
Suitable for outdoor use	No	No	Yes
DIMENSIONS / WEIGHTS			
Size in (mm) measured with standard base fitted	H 49.2 (1250) W 19.7 (500) D 23.6 (600)	H 57 (1450) W 33.5 (850) D30 (765)	H 57 (1450) W 33.5 (850) D 35.4 (900)
Weight excluding container and options lbs (Kg)	101 (46.0)	260 (118)	265 (120)
POWER OPTIONS			
Mains 110/220/230VAC 50/60Hz	Yes	Yes	Yes
Floated charged backup battery (12VDC 7 Ah)	Opt	Opt	Opt
POWER CONSUMPTION (VA)			
@110VAC (max. inrush current (A) in brackets)	380 (24)	665 (24)	910 (24)
@220VAC (max. inrush current (A) in brackets)	295 (9)	570 (9)	765 (9)
@230VAC (max. inrush current (A) in brackets)	315 (9)	615 (9)	830 (9)
ENVIRONMENTAL			
IP Rating	50	50	54
Minimum ambient working temperature °F (°C)	41 (5)	41 (5)	14 (-10)
Maximum ambient working temperature °F (°C)	104 (40)	104 (40)	104 (40)* *122 (50) on request
SAMPLE COLLECTION VESSELS			
2.5, 5, 10, 26 L HDPE Container	Opt	Opt	Opt
2 x 4.5 L Self-Emptying Polypropylene Bottler with/without optional cleaning	No	Opt	Opt
2 x 5 L HDPE Bottler (Removable & Integral)	No	Opt	Opt
4 x 2.27 L Glass Bottler (Removable & Integral)	Opt	Opt	Opt
4 x 5 L HDPE Bottler (Removable & Integral)	Opt	Opt	Opt
4 x 5 L Glass Bottler (Integral only)	No	Opt	Opt
4 x 6.4 L HDPE Bottler (Integral only)	Opt	No	No
4 x 10 L HDPE Bottler (Integral only)	No	Opt	Opt
12 x 1 L HDPE Bottler (Integral only)	No	Opt	Opt
8 x 2.8 L Bottler (Integral only)	Opt	Opt	Opt
4 x 15 L Bottler (Integral only)	Opt	Opt	Opt
12 x 1 L PET Bottler (Removable only)	Opt	Opt	Opt
12 x 0.75 L Glass Bottler (Removable only)	Opt	Opt	Opt
24 x 1 L HDPE Bottler (Removable only)	Opt	Opt	Opt

			
Single Container (2.5, 5, 10, 26 L)	Integral Bottler: 4 x 5-liter Glass	Integral Bottler: 4 x 10-liter HDPE	Integral Bottler: 8 x 2.8-liter HDPE
			
Integral Bottler: 2 x 4.5 liter Self-Emptying Self-Cleaning	Integral Bottler: 12 x 1-liter HDPE	Integral Bottler: 12 x 1-liter Glass	Removable Bottler: 24 x 1-liter HDPE

OPTIONAL EQUIPMENTS			
Ancillary Signal Connection (for flowmeters, pHmeters, PLC's,...)	Opt	Opt	Opt
Beacon	No	Opt	Opt
Bottler Connection	Opt	Opt	Opt
Data Download Connection	Opt	Opt	Opt
Interior Lightning (S300)	No	Opt	Opt
Sample Temperature Monitoring Connection	Opt	Opt	Opt
Transportation Castors	No	Opt	Opt
Auxiliary Equipment Enclosure	No	Opt	Opt
Upper Protection Door	No	Opt	Yes
Pull Out Tray (standard with Integral Bottlers)	No	Opt	Opt
Sampler Inspection Window (for Upper Door)	No	Opt	Opt
Wastewater Drain	No	Opt	Opt

AC10 Air Blast Spray Cleaner

ELECTRO-CHEMICAL DEVICES

AC10 Automatic Sensor Cleaning

- Removes Biofilms and Other Soft Coatings
- Use with ECD Sensors and Analyzers
- NEMA 4X Self Contained System
- ECD Transmitter Controls Cleaning Cycles
- Wall Mount or optional 2” Handrail Mount

Description

The AC10 is a self contained, relay activated air compressor. The AC10 combined with a Sensor Spray Head and a T80 Transmitter/LQ800 Controller uses pressurized air to generate an area of high turbulence in the water surrounding the measurement end of the sensor. The turbulence is suitable for removing biofilms and other soft coatings.

The AC10 can be a Single Channel or Dual Channel System. It is designed to be used with ECD Snesors fitted with ECD cleaning attachments.

The AC10 uses redundant intake air filters and redundant fuses on both the relays and the compressor. A highly reliable high current contactor assures years of trouble free service. The 115 VAC 3.0 Amp or 220 VAC 1.3 Amp Air Compressor is housed in a rugged, corrosion resistant, compression molded, fiberglass reinforced, polyester enclosure with a stainless steel hinges to secure the cover to the base. The AC10 can be wall mounted or use the optional 2” handrail mounting system that uses stainless steel support rails with two 2” galvanized pipe clamps.

The ECD Transmitters or Controllers use its internal Timers and Relays to control the Period and Duration of the cleaning cycles. The Period between cleaning cycles and the Duration of the cleaning are easily adjusted in the SET-UP menu of the transmitter/controller. The 4-20 mA Outputs are placed in a “Hold Last Value” function during the cleaning cycle.

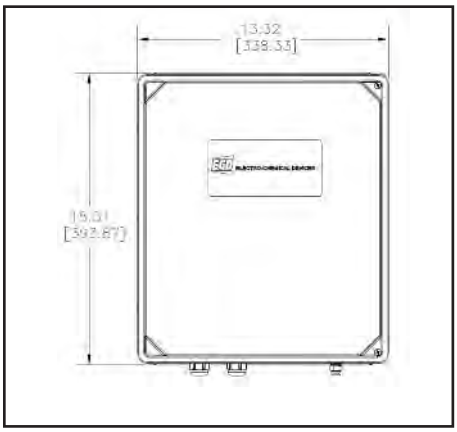
Most cleaning operations can be accomplished with a 30 second cleaning every 15 - 30 minutes. When using the AC10 to clean stubborn coatings or two sensors keep in mind the maximum duty cycle for the AC10 is 10 minutes per hour.

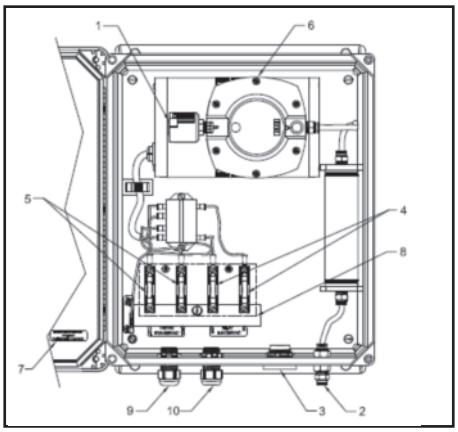
AC10 Air Blast Spray Cleaner

Specifications

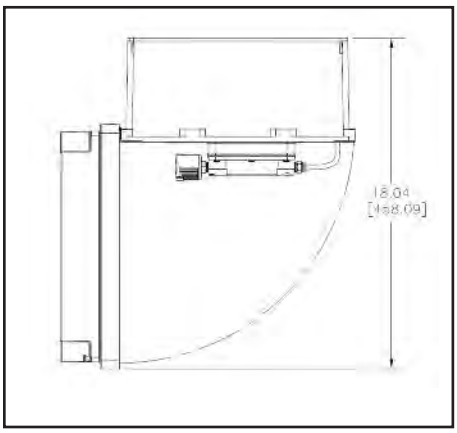
Description: Self Contained Relay Activated Air Compressor used for cleaning sensors configured with Air Blast Spray Cleaning Heads.
Enclosure: Fiberglass reinforced Polyester, NEMA 4X
Pressure: 40 psi, maximum(2.8 bar)
Flowrate: 1.24 CFM (35.1 LPM) 115 VAC
1.15 CFM (32.6 LPM) 220 VAC
Air Connection: ¼" Tube fitting

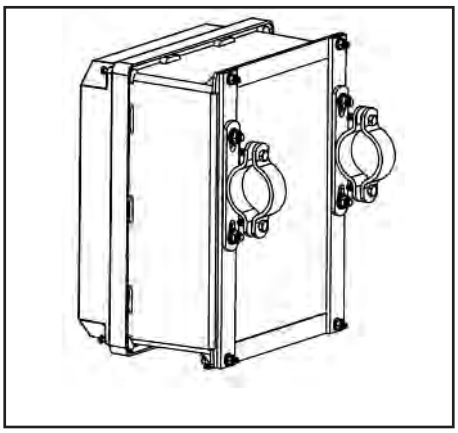
Duty Cycle: Less than 10 minutes per hour
Power: 115 VAC 60hz 5.5 A
220 VAC 50 hz 2.1 A
Fuses: Compressor 115VAC: (2) T.10A 250V, L & N
220VAC: (2) T.10A 250V, L & N
Controller Relay:(2) T. 0.5A 250V
Dimensions: 15.5"x 13.3"x 8.2"(39.4 x 33.7 x 20.7 cm)
Weight: AC10 wall mount: 20 lbs (9.1 kg)
AC10 Handrail Mount: 25 lbs (11.3 kg)

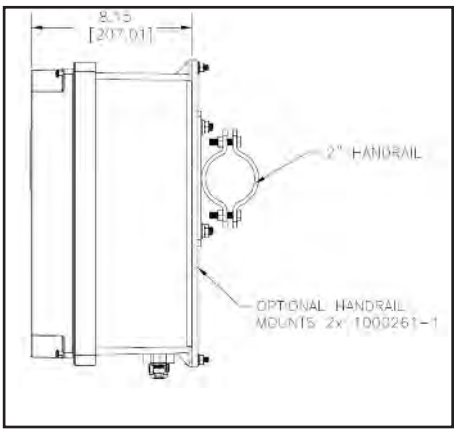




1. Air Filter, Interior
2. ¼"Quick Connect Tube Fitting
3. Air Filter, Exterior
4. Relay Fuses, T. 0.5A 250V
5. Compressor Fuses, T. 10A 250V
6. Air Compressor
7. Product Label, Part#, Serial#
8. Folding Protective Cover
9. Cable Gland, AC Power
10. Cable Gland, Control Signal







Part#	Description
1280100-1 (-5 Dual Ch)	AC10 Air Blast Cleaner, 115 VAC, Wall Mount
1280100-2 (-6 Dual Ch)	AC10 Air Blast Cleaner, 220 VAC, Wall Mount
1280100-3 (-7 Dual Ch)	AC10 Air Blast Cleaner, 115 VAC, Handrail Mount
1280100-4 (-8 Dual Ch)	AC10 Air Blast Cleaner, 220 VAC, Handrail Mount

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 N Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
Email: sales@ecdi.com
Web: www.ecdi.com

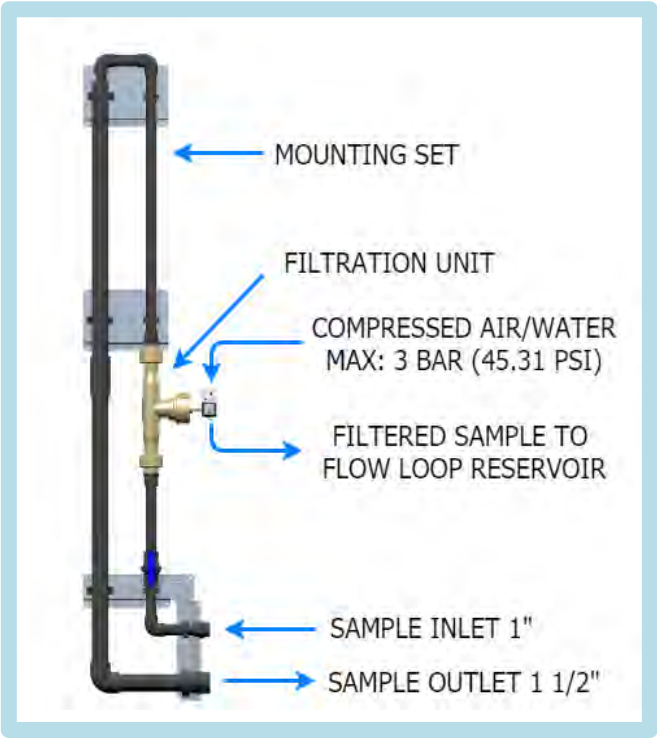
CERTIFIED ISO9001 QUALITY SYSTEM

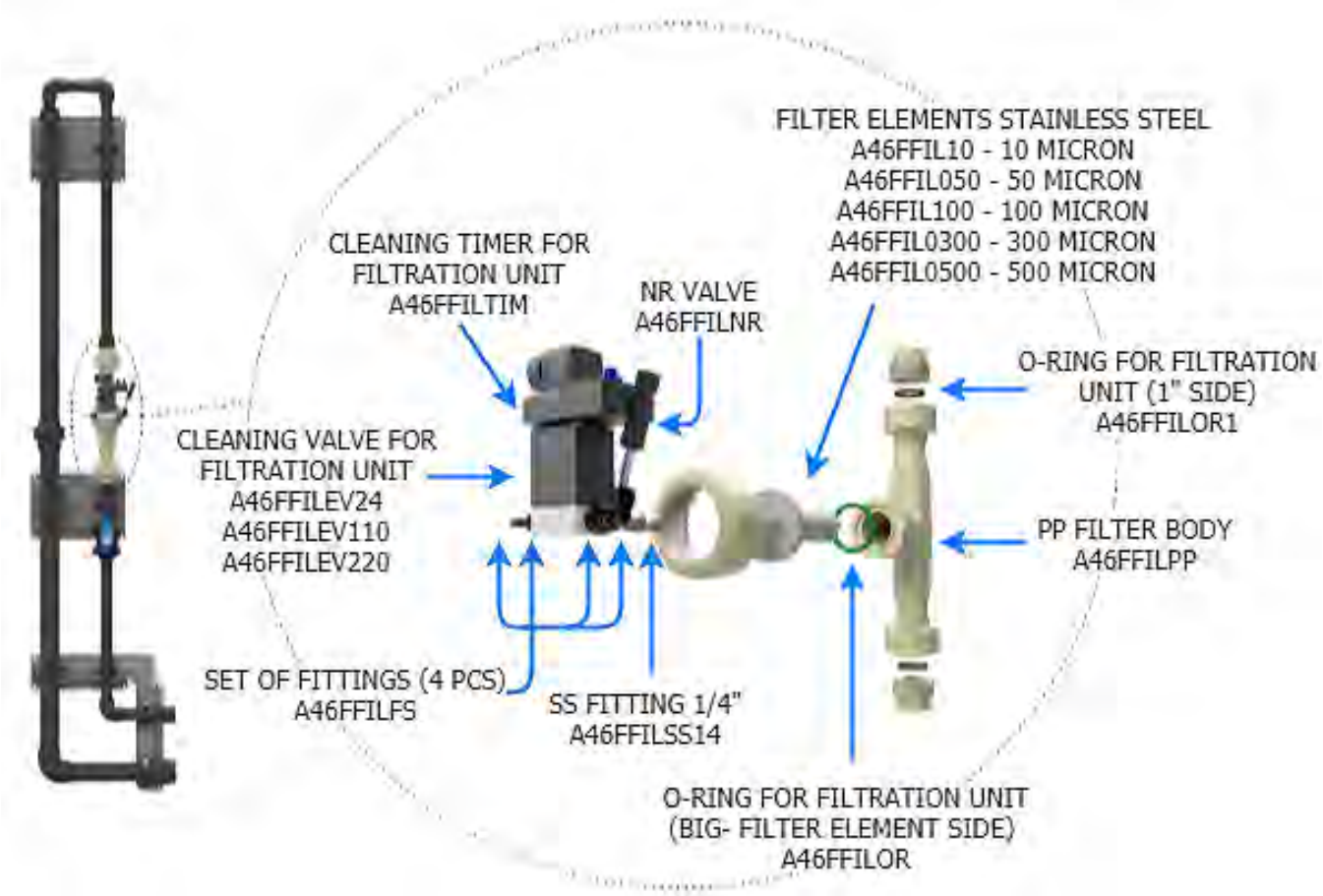
FILTRATION UNIT

DESCRIPTION:

The Filtration Unit Kit is a self-cleaning filtration system for ON-LINE analyzers. The entire kit is comprised of (1) Filtration Unit and an assembly for the (1) Mounting Set.

A stainless steel sieve that is available in different mesh sizes allows for very stable filtration. The self-cleaning feature is achieved periodically with compressed air or water that travels backwards through the Filtration Unit. Customers will see benefits for this unit because of its automatic and chemical-free cleaning process. An electronic timer can be configured for the cleaning of the unit.





ECD ANALYZERS, LLC 1500 N Kellogg Dr Anaheim, CA 92807 USA - Phone: +1-714-695-0051 Fax: +1-714-695-0057
Email: support@ECDanalyzers.com www.ECDanalyzers.com

TECHNICAL SPECIFICATIONS:

Power Supply:	Customer must specify 110 VAC, 220 VAC or 24 VDC
Filter Body Material:	PP (Polypropylene)
Filter Element:	Inox AISI 316
Protection Grade:	IP 65
Solenoid Valve (wet part):	Inox AISI 16 – Buna
Power Supply Consumption:	8 VA
Filter Mesh:	10, 50, 100, 300, 500 micron
Clean Interval Period:	1 – 45 min. (selectable)
Blowback Period:	1 – 30 sec. (selectable)
Installation Dimensions:	220 mm x 380.6 mm x 1864 mm (8.7 in x 15.0 in x 73.4 in)
Weight (Filtration Unit Only):	1 kg (2.2 lbs)
Sample Inlet Connection:	25.4 mm (1.0 in)
Sample Outlet Connection:	38.1 mm (1.5 in)
Filter Outlet Connections – Compressed Air/Water:	6.0 mm (0.24 in) O.D. Tubing
Filter Outlet Connection – Sample Outlet:	6.0 mm (0.24 in) O.D. Tubing
Filter Main Connections:	25.4 mm (1.0 in)
Sample & Ambient Temperature:	Less than 5 – 55 ° C (41 - 131 ° F)
Min/Max Sample Line Pressure	0.3 Bar (4.35 psi) / 2.5 Bar (36.26 psi)
Minimum Sample Line Flowrate:	0.1 mc/h (100 L/h)
Sample Outlet Flowrate:	0.1 – 2 L/min depending on sample line pressure
Compressed Air or Water Pressure:	At least 20% above sample line pressure up to 3 bar (43.51 psi)

PART NUMBERS for the FILTRATION UNIT:

Customer must specify 110 or 220 VAC	**110 VAC**	**220 VAC**
Filtration Unit – 500 micron	A46SF50010	A46SF50020
Filtration Unit – 300 micron	A46SF30010	A46SF30020
Filtration Unit – 100 micron	A46SF10010	A46SF10020
Filtration Unit – 50 micron	A46SF50100	A46SF20200
Filtration Unit – 20 micron	A46SF20100	A46SF20200

PART NUMBER for the MOUNTING SET:

Mounting Set for Filtration Unit	A46SFMKIT0

MODEL CMS – INTAKE FILTRATION SYSTEM

Integrated Filtration System for Industrial and Municipal Wastewater Applications - For use with the ECD online Analyzers

DESCRIPTION

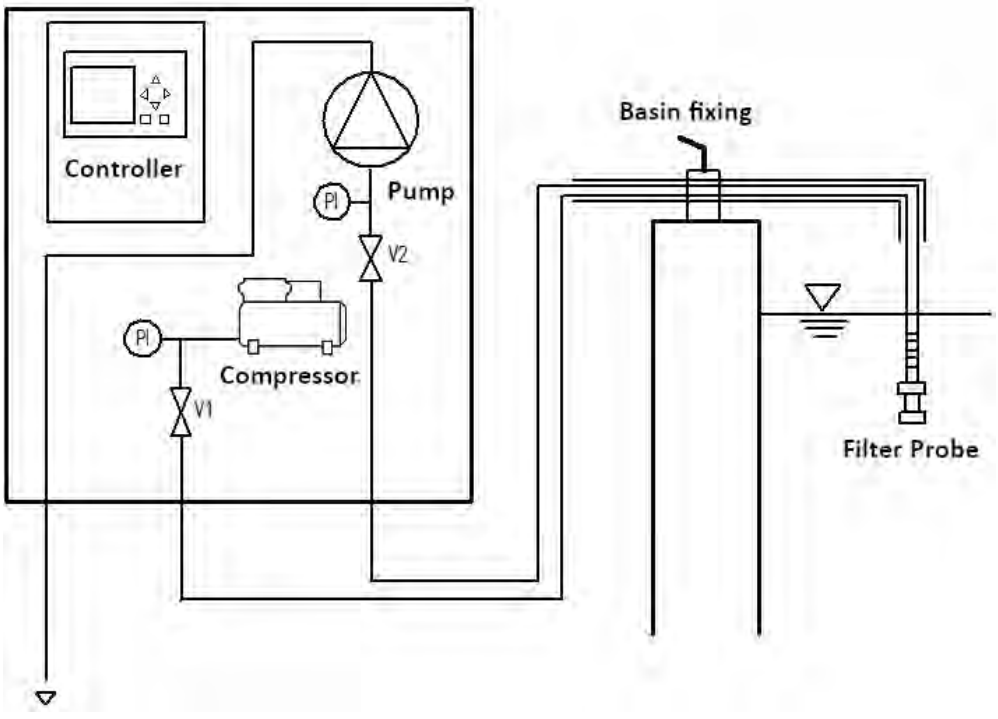
The CMS is a fully integrated filtration system for the family of ECD online analyzers. This system is designed for the filtering of industrial or municipal wastewater, and due to the periodic backflush, the filter has good performance for water that is contains a high level of suspended solids, like found in biological oxidation tanks.

The system is compact and easy to install directly on the sampling point of streams or basins. The sampled liquid is pumped directly to the overflow vessel of the analyzer guaranteeing a fast analysis sequence with minimal delay.

The filter probe can be removed easily for the periodic manual cleaning, which is done only sporadically due to the backflush with compressed air.

Both the cabinet and the sampling pipe can be heated for winter, outdoor operation.

SCHEMATIC



TECHNICAL SPECIFICATIONS

Power Supply	Customer must specify 110 VAC, 230 VAC
Cabinet Material	PVC
Filter Element	Stainless Steel
Power Consumption	350 W (heating excluded)
Filter Mesh	5 - 200 µm
Filter Area	10 cm^2
Cleaning Interval Period	10 minutes
Dimensions (H x W x D)	600 mm x 600 mm x 200 mm (15.7 in x 23.6 in x 7.9 in)
Weight	22.9 kg (50.5 lbs)
Filter line - Pump Connection	PE O.D. 4 mm (protective hose 25 mm O.D.)
Cabinet - Analyzer Connection	PE O.D. 4 mm (1.5 m)
Sample & Ambient Temperature	5 – 55 °C (41 - 131 °F)
Backflush Cleaning Pressure	max 6 bar
Sample Outlet Flowrate	200 – 500 ml/min

ORDERING INFORMATIONS

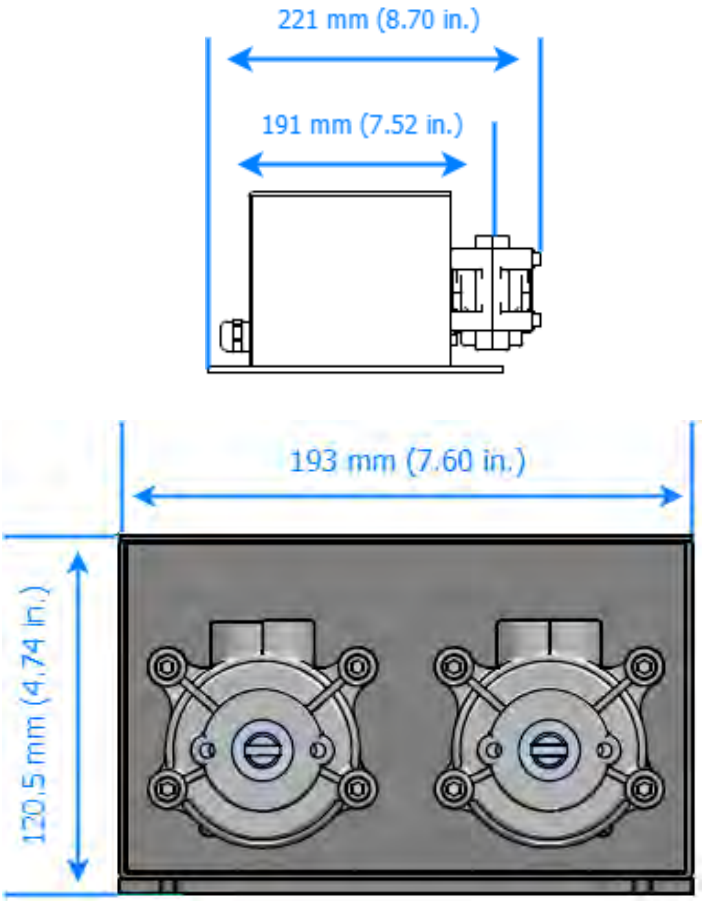
- A46VF1000 INTAKE FILTER CONTROL UNIT, UNHEATED, 230V
- A46VF2010 SUCTION LINE, 10 m, UNHEATED
- A46VF3010 PRESSURE LINE, 10 m, UNHEATED
- A46VF1005 FILTER / POROSMET 5 µm
- A46VFCLE FILTER CLEANING - LABORATORY KIT

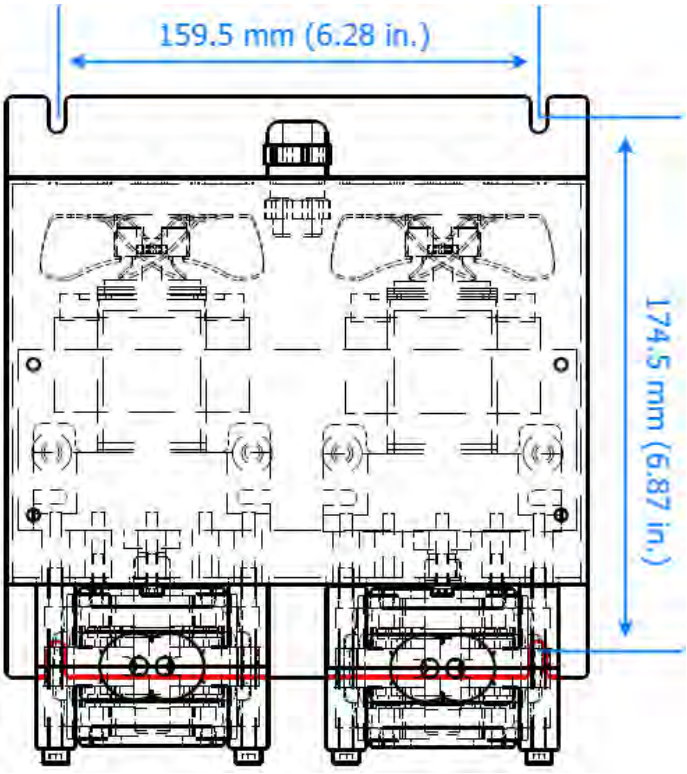
ECD ANALYZERS, LLC 1500 N Kellogg Dr Anaheim, CA 92807 USA - Phone: +1-714-695-0051 Fax: +1-714-695-0057
Email: support@ECDanalyzers.com www.ECDanalyzers.com

EXTERNAL DILUTOR ED2 (TWO MOTORS, TWO SINGLE PUMP HEADS)

DESCRIPTION:

The External Dilutors are an optional accessory for on-line analyzer such as the CA6, UV6 and TOC Analyzers. They are used when concentrations of the analyte are out of range for analysis and needs to be diluted. This External Dilutor is configured with two gear motors and two single pump heads diluting 5, 10, 20 or 40x the original concentration. A fixing plate is supplied with the External Dilutor for wall mounting.





ECD ANALYZERS, LLC 1500 N Kellogg Dr Anaheim, CA 92807 USA - Phone: +1-714-695-0051 Fax: +1-714-695-0057
Email: support@ECDanalyzers.com www.ECDanalyzers.com

TECHNICAL SPECIFICATIONS:

Power Supply:	Customer must specify 110 or 230 VAC
Weight:	4.5 kg (9.9 lbs.)
Dilution Ratio:	5, 10, 20, 40x Dilution *(Please contact ECDA for more Dilution Ratio Options)*

PART NUMBERS for EXTERNAL DILUTOR ED2 (TWO MOTORS, TWO SINGLE PUMP HEADS):

A46ED215X00	External Dilutor (Two Motors, Two, Single Pump Heads) – 5X Dilution – 110 VAC Dilution Pump Motor 20 RPM // Sample Pump Motor RPM Dilution Pump Head 16 (0.8 cc/min) // Sample Pump Head 16 (0.8 cc/min)
A46ED2110X0	External Dilutor (Two Motors, Two, Single Pump Heads) – 10X Dilution – 110 VAC Dilution Pump Motor 20 RPM // Sample Pump Motor 2 RPM Dilution Pump Head 16 (0.8 cc/min) // Sample Pump Head 16 (0.8 cc/min)
A46ED2120X0	External Dilutor (Two Motors, Two, Single Pump Heads) – 20X Dilution – 110 VAC Dilution Pump Motor 20 RPM // Sample Pump Motor 2 RPM Dilution Pump Head 15 (1.7 cc/min) // Sample Pump Head 16 (0.8 cc/min)
A46ED2140X0	External Dilutor (Two Motors, Two, Single Pump Heads) – 40X Dilution – 110 VAC Dilution Pump Motor 20 RPM // Sample Pump Motor 2 RPM Dilution Pump Head 24 (2.8 cc/min) // Sample Pump Head 16 (0.8 cc/min)
A46ED225X00	External Dilutor (Two Motors, Two, Single Pump Heads) – 5X Dilution – 230 VAC Dilution Pump Motor 20 RPM // Sample Pump Motor RPM Dilution Pump Head 16 (0.8 cc/min) // Sample Pump Head 16 (0.8 cc/min)
A46ED2210X0	External Dilutor (Two Motors, Two, Single Pump Heads) – 10X Dilution – 230 VAC Dilution Pump Motor 20 RPM // Sample Pump Motor 2 RPM Dilution Pump Head 16 (0.8 cc/min) // Sample Pump Head 16 (0.8 cc/min)
A46ED2220X0	External Dilutor (Two Motors, Two, Single Pump Heads) – 20X Dilution – 230 VAC Dilution Pump Motor 20 RPM // Sample Pump Motor 2 RPM Dilution Pump Head 15 (1.7 cc/min) // Sample Pump Head 16 (0.8 cc/min)
A46ED2240X0	External Dilutor (Two Motors, Two, Single Pump Heads) – 40X Dilution – 230 VAC Dilution Pump Motor 20 RPM // Sample Pump Motor 2 RPM Dilution Pump Head 24 (2.8 cc/min) // Sample Pump Head 16 (0.8 cc/min)
A46MF00000	Mounting frame for multiple gear motors and polycarbonate fast loop reservoirs
A46MF00001	Mounting frame for multiple gear motors and plate for SS fast loop reservoirs

PART NUMBERS for SPARE PARTS:

A462103221	Pump Motor 20 RPM 230 VAC
A462103111	Pump Motor 20 RPM 110 VAC
A462135221	Pump Motor 2 RPM 220 VAC
A462135111	Pump Motor 2 RPM 110 VAC
A462101221	Pump Motor 5 RPM 230 VAC
A462101111	Pump Motor 6 RPM 110 VAC
A461100001	Pump Head 7024
A461102001	Pump Head 7015
A461103001	Pump Head 7016
A46ED2BC00	Protective case for external dilutor model ED2
A46ED4EB00	Electronic board for multiple dilutors (3 or 4 motors)
A46ED4V000	Ventilator for external dilutor assembled into mounting frame
A46ED2Y0K	Annual set of norprene tubing for peristaltic pumps – for 3 replacements *Serial number of the dilutor to be specified when ordering*

4-20 mA USB Datalogger

ELECTRO-CHEMICAL DEVICES

Features

- 4-20mA current loop measurement range
- Logging rates between 1s and 12hr
- Stores 32,510 readings
- Connection via two screw terminals
- USB interface for set-up and data download
- User-programmable alarm thresholds
- Status indication via red and green LEDs
- Supplied with replaceable internal lithium battery and Windows control software

Model 1000300-1
4 - 20 mA Datalogger

Description

This stand alone data logger measures and stores up to 32,000 current loop readings over a 4-20mA measurement range. The user can easily set up the logging rate and start time, and download the stored data by plugging the data logger into a PC's USB port and running the purpose designed software under Windows Software. The data can then be graphed, printed and exported to other applications. The data logger is supplied complete with a long-life lithium battery. Correct functioning of the unit is indicated by a flashing red and green LED. The data logger features a pair of screw terminals and is supplied complete with a set of measurement leads terminating clips.

USB (CONTROL SOFTWARE)

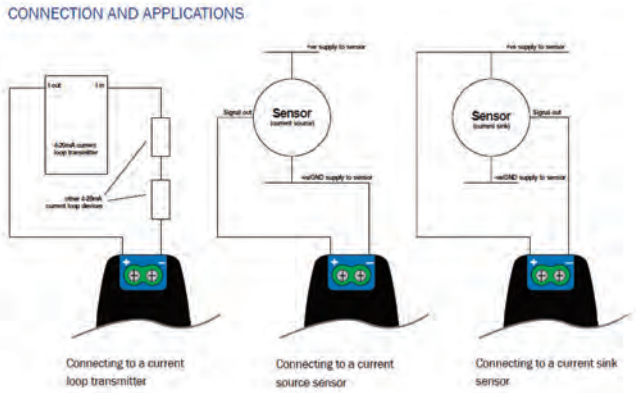
The USB control software is supplied free of charge with each data logger. Easy to install and use, the control software runs under Windows Software. The software is used to set-up the data logger as well as download, graph and export data to Excel. The software allows the following parameters to be configured:

- Logger name
- Logging rate (1s, 10s, 1m, 5m, 30m, 1hr, 6hr, 12hr)
- High and low alarms
- Start date and start time

LED FLASHING MODES

USB-Datalogger features a red and a green LED.
By default hold is disabled. In this mode the red LED will no longer continue to flash after the logged reading has
returned to normal from an alarm condition.
Hold can be turned on via the control software. In this mode the red LED that indicates an alarm condition will continue to flash,
even after the logged reading has returned to normal. This feature ensures that the user is notified that an alarm level has been
exceeded, without the need to download the data from the logger.

4-20 mA USB Datalogger



LED Flashing Modes			
✹	Green single flash (10 seconds) The data logger is currently logging. No alarm.	✹✹	Red double flash (10 seconds) The data logger is currently logging. High alarm.
✹	Green single flash (20 seconds) The data logger is currently logging. No alarm. However, the battery is low and should be replaced before logging important data.	✹	Red single flash (20 seconds) The data logger is currently logging. Low alarm. However, the battery is low and should be replaced before logging important data.
✹	Green single flash (30 seconds) The data logger is not currently logging, but is primed to start at a later date and time (delayed start).	✹✹	Red double flash (20 seconds) The data logger is currently logging. High alarm. However, the battery is low and should be replaced before logging important data.
✹✹	Green double flash (20 seconds) The data logger is full and has stopped logging. No alarm.	✹✹	Red/Green single flash (20 seconds) The data logger is full and has stopped logging. Alarm (high, low or both).
✹	Red single flash (10 seconds) The data logger is currently logging. Low alarm.	✹	No LEDs flash The data logger is stopped, the battery is empty or there is no battery fitted.

Specification	Minimum	Typical	Maximum	Units
0-40 mA d.c. measurement range	4		20	mA d.c.
Internal Resolution		0.05		mA d.c.
Accuracy (overall error)		± 1		% ±1count
Logging Rate	1 sec		12 hours	
Operating Temperature range	-35 (-31)		+80 (+176)	°C (°F)
1/2AA 3.6V Lithium Battery Life		1		year

Part No.	Parts and Accessories Description
1000300-1	4-20 mA USB Datalogger with Easy Log software

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Drive
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ECDanalytical.com

CERTIFIED ISO9001 QUALITY SYSTEM

APPLICATION INFORMATION
Section 8.0.0

Liquid Analytical Instrumentation *for* Wastewater Treatment Plants

Accurate *and* Reliable Process Measurement

- pH
- ORP
- Conductivity
- Ammonium (NH4-N)
- Nitrate(NO3-N)
- Dissolved Oxygen
- Total Suspended Solids
- Turbidity
- Free Chlorine
- Total Chlorine
- Total Phosphorus/Phosphate

ECD ELECTRO-CHEMICAL DEVICES

ECD Solutions To Wastewater Treatment Plant Measurements

Preliminary Treatment

Measurements:

- pH
- Conductivity

Large solids are removed from the wastewater using grinders and screens. Sand and other heavy materials are settled out in the Grit Chamber.

Primary Treatment

Measurements:

- pH
- Ammonium
- TSS

The heavy organic materials settle out as primary sludge which is sent to the Digester. Fats, oils and greases are skimmed from the top and treated for disposal.

Secondary Treatment

Measurements:

- pH
- ORP
- Ammonium
- Nitrate
- Dissolved Oxygen
- TSS
- Phosphate

Activated Sludge is a biological process that removes organic materials and nutrients from the wastewater in the Aeration Basin.

Secondary Clarifier

Measurements:

- pH
- TSS
- Turbidity
- Nitrate
- Dissolved Oxygen
- Phosphate

The Activated Sludge is settled out and returned to the Aeration basin as needed (RAS) or sent to the digester (WAS).

RAS

WAS

Chlorine Disinfection

Measurements:

- Free Chlorine
- Total Chlorine

Chlorine is added to the clarified water. The Free Chlorine Residual must be high enough to kill any pathogens in the available contact time and then the water is dechlorinated.

Outfall Effluent

Measurements:

- pH
- Conductivity
- Turbidity
- Dechlorination
- Dissolved Oxygen
- Phosphate

The outfall effluent into lakes or streams is regulated by the EPA to maintain the environmental water quality.

Anaerobic Digesters

Measurements:

- pH
- ORP

Anaerobic digestion consumes 60-65% of the available solids in the sludge and frees up most of the water bound to the sludge. The water is returned to the aeration basin and the remaining solids are dried and disposed of.

(1) (2) (3) **T80 Universal Transmitter pH, Conductivity, ORP**

(9) **T80 Universal Transmitter TR86 Total Suspended Solids**

(6) (7) **HYDRA Ammonium and Nitrate Analyzers**

SMS22 Sulfide Analyzer

(4) **TRITON® TR8 Turbidity or Suspended Solids Analyzer**

(5) **TRITON DO82 Optical Dissolved Oxygen Sensors**

(10) (11) **FC80 and TC80 Free or Total Chlorine Analyzers** ***(No Reagents)***

(8) **CA6 Colorimetric Analyzer Phosphate and Total Phosphorus**

ECD Is The Smart Choice For Your Plant

PRIMARY | SECONDARY | TERTIARY

ECD is the smart choice in liquid analytical instrumentation for municipal wastewater treatment plant applications. Our measurement solutions combine highly intelligent transmitters with rugged low maintenance sensors to deliver precision accuracy, low maintenance and long life for a low total lifecycle cost.

ECD Analyzer/Sensor Solutions

Wastewater Parameter	T80 Universal Transmitter	C22 Multi Channel Controller	S80 pH Sensor	S80 ORP Sensor	S80 Conductivity Sensor	DO82 Dissolved Oxygen Sensor	TR8 Suspended Solids Analyzer	HYDRA NH4-N Ammonium Analyzer	HYDRA NO3-N Nitrate Analyer	CA6 Colorimetric Analyzer	TR6 Turbidity Analyzer	FC80 Free Chlorine Analyzer	TC80 Total Chlorine Analyzer	AC10 Spray Cleaner System
1 pH	●		●											●
2 ORP	●			●										●
3 Conductivity	●				●									●
4 Total Suspended Solids							●							●
5 Dissolved Oxygen	●					●								●
6 Ammonium (NH4-N)		●						●						●
7 Nitrate (NO3-N)		●							●					●
8 Total Phosphorus/Phosphate										●				
9 Turbidity											●			●
10 Free Chlorine(residual)												●		
11 Total Chlorine													●	

Liquid Analytical Instrumentation *for the* Power Generation Industries

Accurate and Reliable Process Measurement

- pH
- ORP
- Conductivity
- Resistivity
- Free Chlorine
- Total Chlorine
- Dissolved Oxygen
- Phosphate
- Ammonia
- Sodium
- Silica

ELECTRO-CHEMICAL DEVICES

Raw water is chlorinated, to prevent microbial growth in Pretreatment and then dechlorinated. The water may be pretreated by reverse osmosis, lime softening or sodium softening to remove excessive hardness. It is finally demineralized using Ion exchange resins, typically in Cationic, Anionic and Mixed Bed exchangers.

Measurements: ● Free Chlorine ● Total chlorine ● pH ● Conductivity ● Resistivity ● Silica ● Sodium ● Dual conductivity, % rejection

Steam is condensed to water and collects in the hotwell. Leaks in the Condenser tubes can introduce impurities, gasses and corrosive salts from the cooling water. Leaks must be detected quickly to avoid damage to the boiler. Impurities are removed by the condensate polishers and the purified water is blended with the Make Up water to become Feedwater.

Measurements: ● Dissolved Oxygen, ppb level ● Cation conductivity ● Conductivity ● High Purity pH ● Sodium ● Silica

Hot Water **Cold Water**

The cooling tower uses evaporative cooling to provide the Condenser and other heat exchangers with cooling water. The pH of the water is monitored to minimize scaling and corrosion. The blowdown is controlled by conductivity.

Measurements:
● pH ● Conductivity
● Free and/or Total Chlorine

ECD

Industrial Analytical Measurement Designed for Power Plants

- **S80 High Purity Water pH Sensor -** designed for long life and quick easy electrode replacement.

no need to replace the complete sensor
-- just the HPW electrode

- **FC80/TC80 "Reagentless" Chlorine Analyzers -** simple installation and low maintenance

no costly reagents needed
-- lowers overall running cost

- **NA6 Sodium Analyzer -**
Low level ppb and wide measuring range

lower operating cost
-- Low reagent consumption
-- no moving parts

T80 Universal pH, ORP ION, Conductivity, Resistivity transmitter

CSX2 Conductivity Resistivity Sensor

CE800 Cation Conductivity Sensor

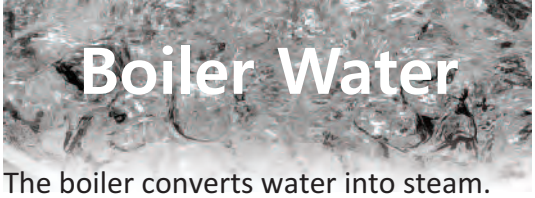
S80 High Purity pH Sensors

S80 Conductivity Sensors

The Feedwater is preheated, deaerated and sent to the Economizer and Boiler. The water quality requirements of the boiler must be met at this stage to assure the boiler efficiency and steam quality. Impurities in the feedwater may cause corrosion in the boiler piping and will increase the rate of blowdown.

Measurements:

- Dissolved Oxygen, ppb level
- Cation conductivity
- Conductivity • High Purity pH



The boiler converts water into steam. Steam is separated from water in a drum boiler, and any contaminants are concentrated in the water as the steam is generated. These impurities are removed by Blowdown. High concentrations of dissolved solids can form deposits on the heater tubes lowering the effiency or corroding the super heater tubes. Steam quality also suffers allowing solids carryover that will deposit on the turbines.

Measurements:

- High Purity pH • Silica • Conductivity
- Cation conductivity • Sodium
- Dissolved Oxygen, ppb level

Steam

Blowdown

Water from cooling tower blowdown, resin bed regeneration and any other water that cannot be reused must be treated to the environmental standards before being released from the plant

Measurements:

- pH • Conductivity • Total Chlorine
- Dissolved Oxygen • Turbidity

Flue gas desulfurization removes sulfur dioxide, SO_2, an acid rain gas from the flue gas. A suspension of limestone is sprayed into the flue gas, the SO_2 reacts with the limestone and air to precipitate gypsum which is separated and sold.

Measurements:

- pH

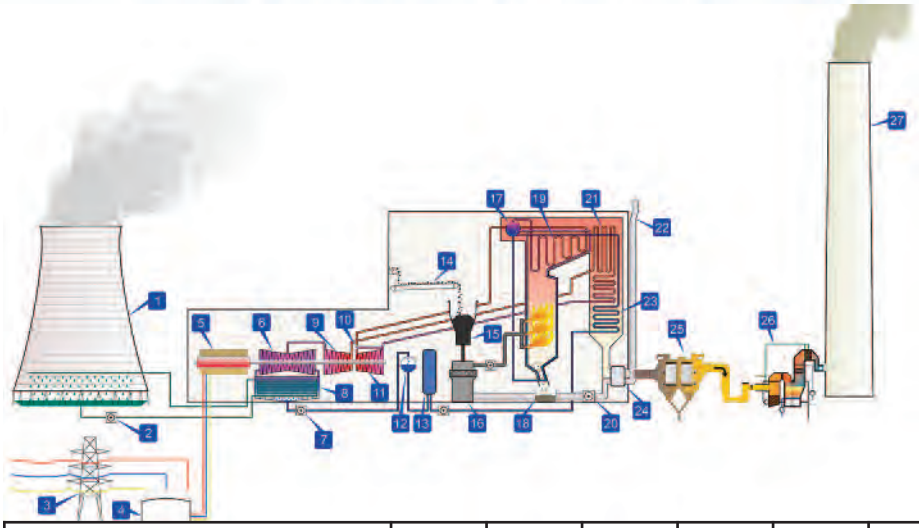
FC80 or TC80
Chlorine Analyzers

TRITON TR86
Turbidity

TRITON DO92 ppb
Dissolved Oxygen

CA6 Colorimetric
Silica Analyzer

NA6 Sodium
Analyzer



1. Cooling tower
2. Cooling water pump
3. Pylon (termination tower)
4. Unit transformer
5. Generator
6. Low pressure turbine
7. Boiler feed pump
8. Condenser
9. Intermediate pressure turbine
10. Steam governor
11. High pressure turbine
12. Deaerator
13. Feed heater
14. Coal conveyor
15. Coal hopper
16. Pulverized fuel mill
17. Boiler drum
18. Ash hopper
19. Superheater
20. Forced draught fan
21. Reheater
22. Air intake
23. Economizer
24. Air preheater
25. Electrostatic Precipitator
26. Flue Gas Desulfurization
27. Chimney stack

ECD Product Solutions	Model T80 Transmitter Single Channel	Model T80 Transmitter Two Channel	Model S80 pH Sensors	Model S80 Conductivity sensors	Model FC80 Free Chlorine Analyzer	Model TC80 Total Chlorine Analyzer	Model CA6 Colorimetric Analyzer	NA6 Sodium Analyzer	Model DO90 /DO92 ppb DO Analyzer	Model DO82 ppm DO Analyzer	Model TR86 Turbidity Analyzer
Makeup water pH	■		■								
Makeup Water Conductivity	■			■							
Makeup Water Free Chlorine					■						
Makeup Water Total Chlorine						■					
Makeup Water Conductivity % rejection		■		■							
Makeup Water Silica							■				
Makeup Water Sodium								■			
Condensate Dissolved Oxygen, ppb									■		
Condensate pH	■		■								
Condensate Conductivity	■			■							
Condensate Cation Conductivity		■		■							
Condensate Silica							■				
Condensate Sodium								■			
Feedwater Dissolved Oxygen, ppb									■		
Feedwater Conductivity	■			■							
Feedwater pH	■		■								
Feedwater Cation Conductivity		■		■							
Boiler Water Dissolved Oxygen, ppb									■		
Boiler Water pH	■		■								
Boiler Water Conductivity	■			■							
Boiler Water Cation Conductivity	■	■		■							
Boiler Water Silica							■				
Boiler Water Sodium								■			
Cooling Water pH	■		■								
Cooling Water Conductivity	■			■							
Cooling Water Free Chlorine					■						
FGD Scrubber pH	■		■								
Effluent pH	■		■								
Effluent Conductivity	■			■							
Effluent Total Chlorine						■					
Effluent Dissolved Oxygen	■									■	
Effluent Turbidity	■										■

ELECTRO-CHEMICAL DEVICES

1500 North Kellogg Dr, Anaheim, CA 92807

Phone: +1 (714) 695-0051 | Fax: +1 (714) 695-0057

www.ECDanalytical.com

Liquid Analytical Instrumentation *for the* Drinking Water Industries

Accurate and Reliable Process Measurement

- pH
- ORP
- Conductivity
- Chlorine Dioxide
- Free Chlorine
- Total Chlorine
- Dissolved Oxygen
- Turbidity
- Suspended Solids
- Ammonia
- Hardness

ECD ELECTRO-CHEMICAL DEVICES

The water may come from ground water or surface waters. Well water is low in organic materials but may have iron, manganese, excessive hardness and sulfides present. Surface waters are passed through a screen to remove leaves and fish but other materials are still present algea, organic matter, silt and ammonia from agricultural runoff.

Measurements:
- Turbidity
- Dissolved Oxygen
- pH
- Conductivity
- ORP
- Hardness
- Ammonium

T80 Universal pH, ORP ION, Conductivity, Resistivity transmitter

S80 ORP Sensors

S80 Conductivity Sensors

S80 pH Sensors

Free or Total Chlorine Analyzers

CA6 Colorimetric Hardness Analyzer

TRITON DO82 ppm Dissolved Oxygen

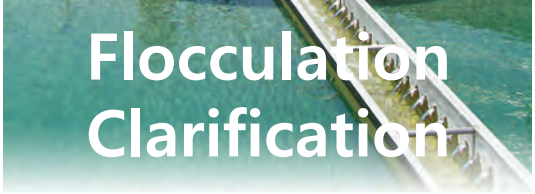
TRITON TR86 Turbidity

Raw water is oxidized with chlorine, chlorine dioxide or ozone to remove the metals and sulfides, kill disease causing organisms and algea. Aeration may be used to remove odors from sulfides and volatile organic compounds. The water may be pretreated using lime/sodium softening to remove excessive hardness. The pH is adjusted slightly acidic to optimize flocculation.

Measurements:
- Free Chlorine
- Chlorine Dioxide
- pH
- Turbidity
- Conductivity
- Dissolved Oxygen
- Hardness

Water distribution systems consist of pipes, storage tanks, pumps and other physical features that deliver water from water treatment plant to the customer's connection. The pH is monitored to limit corrosion, total chlorine is measured to assure a residual disinfectant is present and the Turbidity and Dissolved Oxygen are monitored as general indicators of overall water quality.

Measurements:
- Total Chlorine
- Turbidity
- Dissolved Oxygen
- pH



Alum, aluminum sulfate and/or ferric sulfates or ferric chlorides are rapidly mixed in the turbid water to destabilize the particles and cause them to clump together and form a floc. The water is then slowly mixed to grow the floc until the particles are large enough to settle in a clarifier. The clear water is drawn off and sent to filtration.The settled sludge is sent to disposal.

Measurements:
- pH
- Turbidity

The most commonly used filter type is a dual-media filter comprised of sand and anthracite. The majority of particles removed are trapped in the upper layers of the filter. The filters are backwashed to redude the head loss, back pressure, by removing most but not all of the trapped particles from the sand.The filter is most effective with a small amount of particles trapped in the media.

Measurements:
- Turbidity, Clean water
- Turbidity, Backwash

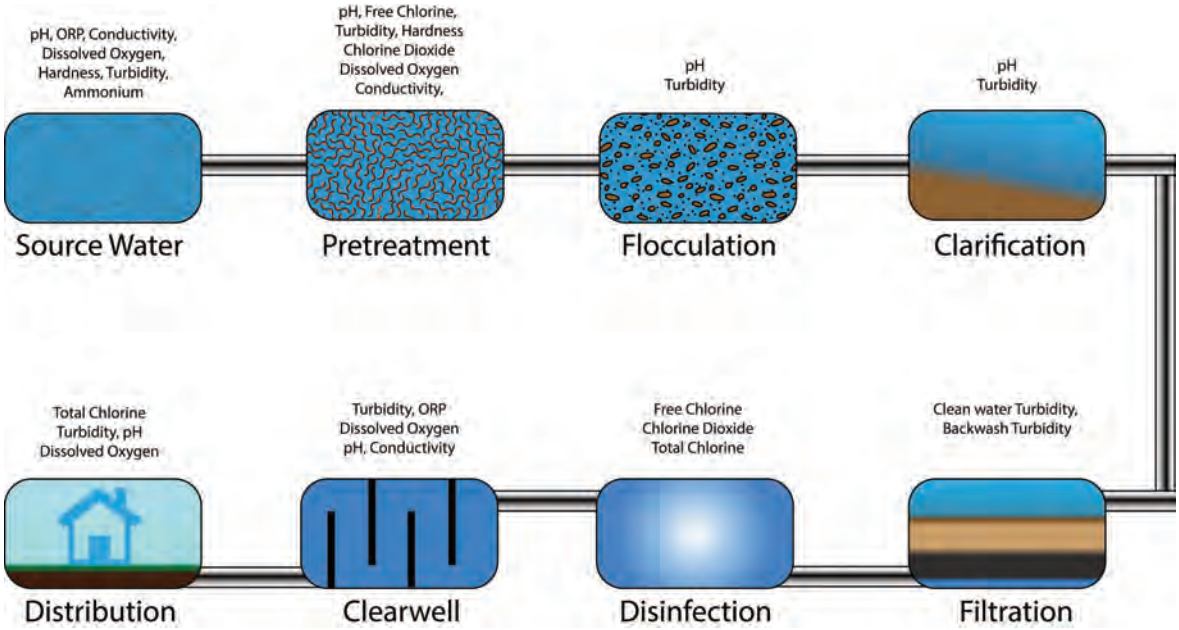
A clearwell is a large storage tank that holds treated drinking water for a several hours before it is distributed. The clearwell collects filtered water once the pH and chlorine levels have been adjusted to optimum levels. The clearwell also provides adequate contact time for disinfection before the water leaves the plant.

Measurements:
- Turbidity
- Dissolved Oxygen
- pH
- Conductivity
- ORP

To protect drinking water from disease causing organisms water suppliers add a disinfectant, such as chlorine and/or chloramine, to drinking water. Public water systems using surface water or ground water under the direct influence of surface water are required to maintain a detectible disinfectant residual in the distribution system. Chloramine provides this residual, while not as strong an oxidizer as chlorine it has increased stability.

Measurements:
- Free Chlorine
- Chlorine Dioxide
- Total Chlorine

Drinking Water Plant Measurements



ECD Product Solutions	Model T80 Transmitter	Model S80 pH Sensors	Model S80 ORP Sensors	Model S80 Conductivity Sensors	Model FC80 Free Chlorine Analyzer	Model TC80 Total Chlorine Analyzer	Model CD80 Chlorine Dioxide Analyzer	Model CA6 Colorimetric Analyzer	Model DO82 ppm DO Sensors	Model TR86 Turbidity Sensors
Source water pH	■	■								
Source Water Conductivity	■			■						
Source Water ORP	■		■							
Source Water Dissolved Oxygen	■								■	
Source Water Turbidity	■									■
Source Water Hardness								■		
Source Water Ammonia								■		
Pretreatment pH	■	■								
Pretreatment Conductivity	■			■						
Pretreatment Free Chlorine					■					
Pretreatment Chlorine Dioxide							■			
Pretreatment Turbidity	■									■
Pretreatment Dissolved Oxygen	■								■	
Floc and Clarification pH	■	■								
Floc and Clarification Turbidity	■									■
Filtration Clean water Turbidity	■									■
Filtration Backwash Turbidity	■									■
Disinfection Free Chlorine					■					
Disinfection Total Chlorine						■				
Disinfection Chlorine Dioxide							■			
Clearwell pH	■	■								
Clearwell ORP	■		■							
Clearwell Turbidity	■									■
Clearwell Dissolved Oxygen	■								■	
Clearwell Conductivity	■			■						
Distribution pH	■	■								
Distribution Total Chlorine						■				
Distribution Dissolved Oxygen	■								■	
Distribution Turbidity	■									■

ELECTRO-CHEMICAL DEVICES
1500 North Kellogg Dr.
Anaheim, CA 92807
+1 (714) 695-0051
www.ecdi.com

Liquid Analytical Instrumentation for Process Control

ELECTRO-CHEMICAL DEVICES

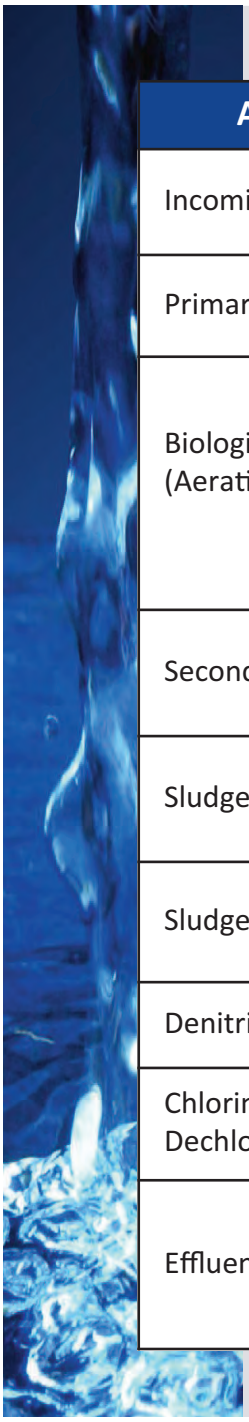
pH
ORP
Turbidity
Specific Ion
Conductivity
Water Analyzers
Dissolved Oxygen

INDUSTRIAL APPLICATIONS

Petro-Chemical Processing
Biotech & Pharmaceutical
Waste Water Treatment
Chemical Processing
Power Generation
Food & Beverage
Semi-Conductor
Industrial Water
Drinking Water

Electro-Chemical Devices (ECD), not only provides you access to a broad product line of application specific instruments and sensors .... you are also supported by a company with years of successful installations and application experience. This industry knowledge has been incorporated into each instrument and sensor design we manufacture. The following guide is a partial list and provides as an overview to various industrial applications that utilize ECD's products for a solution. Contact ECD and our worldwide sales representatives to solve your measurement requirements.

the liquid analytical instrument experts since 1977



Waste Water Treatment

Application	Measurements	Recommended Products
Incoming Sample	**pH, ORP AC10 Spray Cleaner**	Biofilm coating - use the AC10 spray cleaner, T80, S80 sensor with 2005145 pH electrode
Primary Clarifier	**Turbidity, Ammonium**	Turbidity - Triton®TR80/TR82 - High Range Ammonium Measurement - HYDRA NH4-N
Biological Treatment (Aeration Basin)	**Dissolved Oxygen, pH, Ammonium, Nitrate, Suspended Solids AC10 Spray Cleaner**	Dissolved Oxygen - Triton®DO82 with AC10 pH Measurement - T80 with S80 pH Sensor with 2005145 pH electrode Ammonium - Model HYDRA NH4-N Analyzer with AC10, Nitrate - Model HYDRA NO3-N Analyzer Suspended Solids - Triton®TR80, High Range
Secondary Clarifier	**Suspended Solids, Nitrate, Phosphate**	Activated Sludge Return-TR80-High Range Effluent from overflow or centrifuge TR80 Nitrate-HYDRA NO3-N, CA-6 Phosphate
Sludge Thickening	**Suspended Solids**	Sludge to Digester - Triton®TR80 - High Range Effluent from overflow - Triton®TR80
Sludge Digester	**Suspended Solids, pH, ORP**	Feed from Sludge Thickening - Triton®TR80, High range pH & ORP Sensors Model S80
Denitrification	**Nitrate**	Nitrate - Model HYDRA NO3-N Analyzer with AC10
Chlorination and Dechlorination	**Free Chlorine, Total Chlorine**	FC80 Free Chlorine Analyzer TC80 Total Chlorine Analyzer
Effluent	**pH, ORP, Conductivity, Dissolved Oxygen, Turbidity, Colorimetric**	pH & ORP Sensors Model S80 with T80 or Toroidal Conductivity S80 Sensors with T80 or Dissolved Oxygen-Triton®DO82, CA-6 Total Nitrogen, CA-6 Total Phosphorus Turbidity, suspended solids, Triton®TR80

S80 Sensors

Multiple individual measurement parameters in the same mechanical configuration - **pH, ORP, Specific Ion, Dissolved Oxygen, Conductivity & Resistivity**. Features Include: application specific, replacable electrode cartridges, Various process fittings with adjustable insertion lengths, Industrial housing materials for compatibility with process fluid.

Petro-Chemical Processing

Application	Measurements	Recommended Products
Sour water/gas	**pH**	Sulfides poison electrodes - use T80 with S80 or X80 with S88 and 2005130 electrodes
Overhead crude	**pH**	Oil coating and sulfides - use T80 with S80 or X80 with S88 and 2005130 electrodes
Waste Water Treatment	**pH, ORP, Turbidity Dissolved Oxygen, pION**	Coating and scaling - use T80 with S80 or X80 with S88 and 2005145, ORP for sulfide removal Turbidity - TR80 - High Range / Low Range Dissolved Oxygen - Triton®DO82 or S80 Sensor
Cooling Towers	**pH, ORP, Conductivity Cooling Tower Control Free Chlorine**	Biofilm coating - use AC10 spray cleaner, T80 or X80, S80 or S88 and 2005145 pH, 2005067 ORP and Toroidal Model 2122 Cooling Tower Controller, FC80 or FCX80 for oxidant control

Food and Beverage

Application	Measurements	Recommended Products
Concentration Control	**Conductivity**	For Highly Conductive Solutions use a T80 and a KYNAR toroidal sensor.
Waste Water Treatment	**pH, Ammonium Dissolved Oxygen**	Oily and Coating use a T80 with an S80 sensor and 2005145 electrode. Triton®DO82 dissolved oxygen, HYDRA NH4-N
CIP Control	**pH, Conductivity, Resistivity**	Two conductivity measurements on the T80, Toroidal for the wash cycle and resistivity for the rinse cycle.
Food Processing Sanitation, Vegetable or Fruit Rinse Wash Water	**Chlorine Dioxide Free Chlorine**	Use Model CD80 Chlorine Dioxide Analyzer The CD80 design avoids dirty rinse water from easily fouling or clogging the analyzer or if chlorine is used the FC80 will replace the CD80

Turbidity and Suspended Solids

The Triton®TR80 uses the nephelometric method for determining the turbidity of the sample. This method directs a light beam into the sample where it is scattered by suspended particles. The light is measured at an angle of 90°. The sensor uses a long lived near infrared LED source, has self monitoring diagnostics, and Factory Calibration stored in its memory that assures trouble free service.

Electronics and Semi Conductor

Application	Measurements	Recommended Products
Concentration Control	**Conductivity**	For Highly Conductive Solutions use a T80 and a S80 toroidal sensor
Rinsing	**pH, Resistivity**	The solutions are getting more dilute use T80 and S80resistivity, also possible pH neutralizations
Waste Treatment	**pH, ORP Dissolved Oxygen pION**	Possible Copper Ion, Fluoride Ion measurements, coating issues use a T80, S80 pH, ORP, pIon and dissolved oxygen sensors
De-ionized Water	**pH, Resistivity CA6 Colorimetric**	Resistivity is the control parameter, use T80 and S80resistivity, pH is a check, use S80 PH 2005145, CA6 for Silica break through on resin bed
Resin Regeneration	**Conductivity Resistivity**	Two measurements on the T80, Toroidal on the wash and resistivity on the rinse cycle.

Metals and Mining

Application	Measurements	Recommended Products
Chrome Reduction	**pH, ORP**	Easy application, but aggressive. Use T80 with S80 PH sensor with 2005130 electrode.
Cyanide Destruction	**pH, ORP**	Potential poisoning of the electrode. Use T80 with S80 PH sensor with 2005130 electrode.
Waste Water Treatment for Steel Manufacturing	**pH CA6 Colorimetric Analyzer**	Oily coatings use a T80 with an S80 sensor and 2005169 electrode. CA6 for monitoring metals content of effluent.
Floatation Separations	**pH**	Mineral coating, use AC10 spray cleaner and T80 with S80 sensor with 2005169 electrode
Chemical Concentration	**Conductivity pION**	Highly conductive, use T80and a S80 KYNAR Torodial sensor
Rinse applications	**pH, Conductivity**	Wide pH swings, use T80 transmitter S80 PH and 2005145 electrode

Transmitters and Controllers

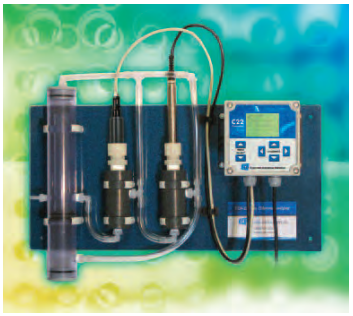
ECD manufactures a family of transmitters and controllers for multiple measurement parameters. The T80 Universal Transmitter is a general purpose instrument. The Model X80 is a FM/ATEX/IECEx transmitter for use in hazardous locations. Each having programmable instrument and numerous control functions.

Pulp and Paper

Application	Measurements	Recommended Products
Liquor Recovery	**pH, Conductivity**	Caustic and corrosive use T80, Titanium s80, 2005130 and 3/4" Toroidal
Head Box (Paper)	**pH**	The T80 with a S80 PH and 2005145 for variable insertion length and easy cleaning
Filtrate	**Turbidity**	Monitor cloudy filtrate and white water with high dry content - Triton®TR80
Pulp Stock	**pH, Conductivity**	Aggressive and Coating use T80 and S80 with 2005160 and Toroidal for conductivity

Chemical Processing

Application	Measurements	Recommended Products
Neutralizations	**pH**	Typically aggressive - use T80, S80 & 2005169 electrode
Concentration Control	**ORP, Conductivity**	Highly conductive - use T80 and S80 KYNAR Toroidal
Waste Water Treatment	**pH, ORP, Turbidity Dissolved Oxygen Free & Total Chlorine pION**	Potential coating problems - use T80 and S80 PH and 2005145 electrode Turbidity - Triton®TR80 - High Range / Low Range Dissolved Oxygen - Triton®DO82 or S80 Sensor FC80 Free Chlorine Analyzer TC80 Total Chlorine Analyzer
Gas Scrubbers	**pH, ORP, Conductivity**	Caustic and corrosive - use T80, S80 and 2005130 pH and 2005067 for ORP.
Cooling Towers	**pH, ORP, Conductivity Cooling Tower Control**	Biofilm coating - use AC-10 spray cleaner on pH and ORP, T80 with 2 S80s and 2005145 pH, 2005067 ORP electrodes. T80 with S80 Toroidal. Model 2122 Cooling Tower Controller



Sanitizer and Water Analyzers

ECD manufactures several panel mounted analyzers that allow installation and commissioning to be completed in just a few simple steps. The disinfectant/sanitizer line of analyzers includes: the Model FC80 Free Chlorine Analyzer, TC80 Total Chlorine Analyzer, CD80 Chlorine Dioxide Analyzer and DC80 Seawater Chlorination/Dechlorination Analyzer.

Biotech & Pharmaceutical

Application	Measurements	Recommended Products
Product recovery	**pH** **Conductivity**	Solvents and high salt concentrations use T80 S80 with 2005169 and Toroidal sensor
Waste Treatment	**pH, ORP** **Dissolved Oxygen**	Oil coating and sulfides - use T80 and S80 and 2005130
High Purity Water	**pH, Resistivity** **CA6 Colorimetric**	Resistivity is the control parameter, use T80 and S80 resistivity, pH is a check, use T80 ans S80 PH, CA6 for SiO_2 break through in resin beds
Resin regeneration	**Conductivity** **Resistivity**	Two measurements on the T80, Toroidal on the wash and Resistivity on the rinse cycle.
Fermentation and Cell Culture	**pH, ORP** **Dissolved Oxygen**	SE Series Sterilizable/Autoclavable electrodes pH, ORP and DO and SF Series electrode fittings

Drinking Water

Application	Measurements	Recommended Products
Intake Water	**Chlorine Dioxide**	Use the CD80 Chlorine Dioxide Analyzer for color and odor control
Filtration	**pH** **Turbidity**	pH adjustment use T80 with S80 sensor and 2005145 electrode. Turbidity for filter backwash, use the Triton®TR80, Measure turbidity after filtration with Triton®TR80
Contact Tank	**pH** **Free & Total Chlorine** **Fluoride Ion**	For final pH adjust use T80 with S80 sensor and 2005145 electrode Monitor Chlorination, FC80, Monitor Chloramine, TC80 Analyzer Measure Fluoride Ion with T80 and S80 pION
Seawater Desalination	**Chlorination** **Dechlorination**	The DC80 is designed to monitor the Total Residual Oxidant and the pH of seawater and determine the equivalent chlorine concentration, to protect the RO membranes

Dissolved Oxygen Measurement

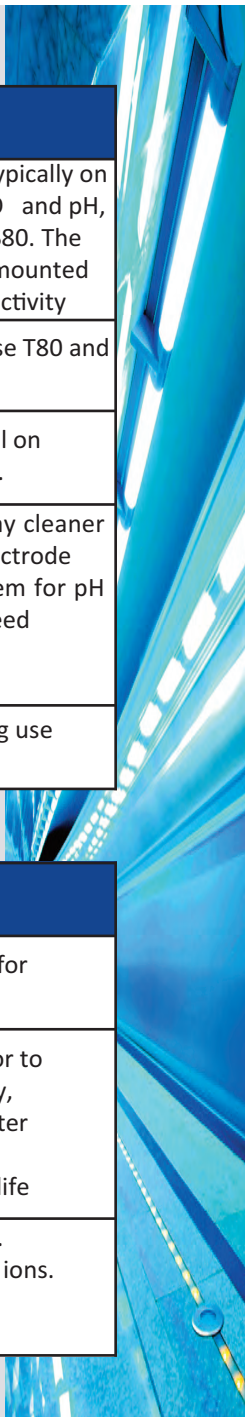
The ECD Triton®DO80 optical dissolved oxygen sensor combines the high technology of Fluorescence Quenching with a rugged, easy to install design, ideal for aeration applications. The Triton®DO9 amperometric DO sensor with auto polarization voltage optimization and 316 SS flow cell is ideal for the low level ppb measurements typical in boiler water.

Power Generation

Application	Measurements	Recommended Products
Boiler Water	**pH, Conductivity, Resistivity, pION, ppb DO, Boiler Blowdown System**	Each boiler will have 4-6 measurements typically on a water panel, conductivity, resistivity, DO and pH, Use 2 channel C-22 with S10 or T80 with S80. The Model 61 Boiler Blowdown System; rack mounted sludge trap and sample cooler with conductivity
De-mineralizers	**pH, Conductivity, Resistivity**	Noisy and expect shorter electrode life, use T80 and S80 PH sensor with 2005145 electrode
Resin Regeneration	**Conductivity Resistivity**	Two measurements with the C22, Toroidal on the wash and resistivity on the rinse cycle.
Cooling Towers	**pH, ORP, pION, Cooling Tower Control System, Free & Total Chlorine**	Biofilm coating is the problem use a spray cleaner with the C22 and PHS10 with 2005145 electrode Model 2122 Cooling Tower Control System for pH and conductivity to control acid or base feed Model FCA-22 Free Chlorine Analyzer Model TCA-22 Total Chlorine Analyzer
Gas Scrubbers	**pH, ORP Conductivity**	Coating with lime needing regular cleaning use T80 with S80 PH and 2005160 electrode

Aquaculture - Environmental

Application	Measurements	Recommended Products
Fish Farming	**Dissolved Oxygen**	The Triton®DO80 to maintain the oxygen for optimal growing conditions.
Aquatic Parks and Aquariums	**pH, ORP, pION Free Chlorine**	The T80 or C22 with S10/17/80 ORP sensor to control ozonation to improve water clarity, The FCA-22 Free Chlorine Analyzer for water sanitation at Aquatic Parks Monitor low level chlorine to protect sea life
Environmental Monitoring	**pH, ORP, pION Nitrate, Ammonium**	Monitor Streams, rivers, ponds, lakes, etc. Use T80 and S80 pION to monitor specific ions. The Hydra Analyzer to monitor Nitrate or Ammonium ions from agricultural runoff.



Industrial Applications

Model CA-6

The Model CA-6 Analyzers are a family of on-line sequential sampling colorimetric analyzers. These easy to use analyzers can perform most colorimetric analysis that use less than 4 reagents. 1-4 Analzer channels

The HYDRA Nutrient Analyzers are designed for monitoring nitrification and denitrification processes in a waste water treatment plant. The HYDRA-NH4 measures ammonium and the HYDRA-NO3, nitrate ion.

Model T80

The Model T80 Universal transmitter provides simplicity in a powerful package. This 24 VDC loop powered, 4-20 mA transmitter can measure pH, ORP, pION, Dissolved Oxygen, Conductivity or Resistivity.

Easy to use, plumb and play designs for measuring Chlorine. The FC80 for Free Chlorine, the TC80 for Total Chlorine and the CD80 for Chlorine Dioxide. Amperometric designs that require no reagents.

Model X80

The Model X80 microprocessor based two wire transmitter FM approved for Class I, II, and III Division I Groups A through G environments and ATEX and IECEx hazardous location applications.

The Triton®TR80 is a nephelometric turbidity analyzer designed for use in water and wastewater. There are two versions, a Low Range for FNU values < 500 and a High Range for turbidities up to the % solids range.

C22 Controller

The C22 controller features a Multi-Bus architecture that allows up to (4) inputs and (4) 4-20 mA outputs and (8) field configurable SPDT relays, PID, PWM, timers and logic gates all in a 1/2 DIN NEMA 4X controller.

The Model 61 Automatic Boiler Blowdown Control System from ECD provides a reliable solution for the continuous control of the surface blowdown rate for commercial and industrial boilers.

Triton®DO82/DO9

TheTRITON® DO82 optical dissolved oxygen sensor combines high technology in a rugged reliable design for aerated water, while the TRITON®DO9 ppb dissolved oxygen sensor excels in boiler water.

The Model 2122 Cooling Tower Control System (CTCS) from ECD is an integrated system designed to control the acid feed, blow down and inhibitor/biocide feed to a Cooling Tower.

S80 Sensors

The ECD sensors are ¾"O.D. with signal conditioner, temperature and replaceable sensing electrodes.Ball Valve Retractable and insertion, submersion designs are available in 316 SS, Titanium and Hastelloy C.

The rugged SE Series pH electrodes and SF Series fittings are in-situ steam sterilizable or autoclavable. The pH electrodes are a sealed gel filled design and the 316 SS fittings meet the EHEDG criteria.

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices
1500 North Kellogg Dr.
Anaheim, California, USA 92807
Phone: +1-714-695-0051
+1-800-729-1333
Fax: +1-714-695-0057
email: sales@ecdi.com
web: www.ecdi.com

CERTIFIED ISO9001 QUALITY SYSTEM