



Liquid Analytical Instrumentation for Process Control



ELECTRO-CHEMICAL DEVICES



Industrial Applications



With Electro-Chemical Devices (ECD), you not only have access to a broad product line with 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 provided as an overview to various industrial applications that utilize ECD's products for a solution. This is a partial list with additional applications - too many to list. Contact ECD and our worldwide representatives to solve your measurement requirements.

the liquid
analytical
instrument
experts
since 1977

Chemical Processing



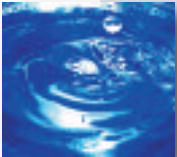
Application	Measurements	Recommended Products
Neutralizations	pH	Typically aggressive - use T28, PHS10/17 & 2005169
Concentration Control	ORP Cond	Highly conductive - use T28 and KYNAR Torodial P/N CS10/17xx
Waste Water Treatment	pH ORP DO pION	Potential coating problems - use T23, PH10/17 and 2005145
Gas Scrubbers	pH ORP Cond	Caustic and corrosive - use T28, PHS17 and 2005130 pH and 2005067 for ORP.

Petro-Chemical Processing



Application	Measurements	Recommended Products
Sour water/gas	pH	Sulfides poison electrodes - use T28 PHS10/17 and 2005130
Overhead crude	pH	Oil coating and sulfides - use T28 and PHS10/17 and 2005130
Waste Water Treatment	pH ORP DO pION	Coating and scaling - use T28 and PHS10/17 and 2005145, ORP for sulfide removal
Cooling Towers	pH ORP Cond	Biofilm coating - use spray cleaner, T28, S10 and 2005145 pH, 2005067 ORP and Toroidal

Water and Waste Water



Application	Measurements	Recommended Products
Waste Water	pH ORP Cond DO pION	Biofilm coating - use spray cleaner, T23, S10 and 2005145 pH 2005067 ORP and Toroidal
Potable	pH ORP Cond	Long life and accurate are the demands - T23, PHS10/17 with 2005145 and Toroidal sensor

Pulp and Paper



Application	Measurements	Recommended Products
Liquor Recovery	pH Cond	Caustic and corrosive use T28, Titanium PHS17, 2005130 and 1" Toroidal
Head Box(Paper)	pH	The T23 with a PHS10 and 2005145 for variable insertion length and easy cleaning
Pulp Stock	pH Cond	Aggressive and Coating use T28 and PHS17 with 2005160 and Toroidal for conductivity

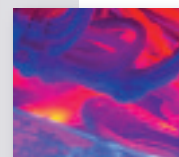
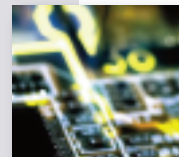
Food and Beverage

Application	Measurements	Recommended Products
Concentration Control	Cond	Highly conductive use a T23 and a KYNAR toroidal sensor.
Waste Water Treatment	pH DO	Oily and Coating use a T23 with an S10/17 sensor and 20005145 electrode.
CIP Control	pH Cond Res	Two measurements on the C22, Toroidal on the wash and resistivity on the rinse cycle.



Electronics and Semi Conductor

Application	Measurements	Recommended Products
Concentration Control	Cond	Highly conductive use a T23 and a KYNAR toroidal sensor
Rinsing	pH Cond	The solutions are getting more dilute use T23 and RS10/17, also possible pH neutralizations
Waste Treatment	pH ORP DO pION	Possible Fluoride Ion measurement, also coating issues use a T23, PHS10/17 and 2005145
De-ionized Water	pH Res	Resistivity is the control parameter, use T23 and RS10/17, pH is a check, use PHS10/17
Resin Regeneration	Cond Res	Two measurements on the C22, Toroidal on the wash and resistivity on the rinse cycle.



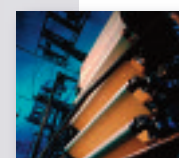
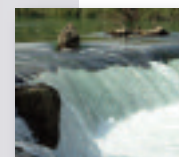
Power Generation

Application	Measurements	Recommended Products
Boiler Water/ de-mineralizers	pH Cond Res	Each boiler will have 4-6 conductivity, resistivity and pH measurements, T23 with RS10 or PHS10
Resin Regeneration	Cond Res	Two measurements with the C22, Toroidal on the wash and resistivity on the rinse cycle.
Cooling Towers	pH ORP pION	Biofilm coating is the problem use a spray cleaner with the T23 and PHS10, 2005145
Gas Scrubbers	pH ORP Cond	Coating with lime needing regular cleaning use T23 with PHS17 and 2005160



Biotech & Pharmaceutical

Application	Measurements	Recommended Products
Product recovery	pH Cond	Solvents and high Salt concentrations use T28 PHS10/17 with 2005169 and Toroidal sensor
Waste Treatment	pH ORP DO	Oil coating and sulfides - use T28 and PHS10/17 and 2005130
High Purity Water	pH Cond Res	Resistivity is the control parameter, use T23 and RS10/17, pH is a check, use PHS10/17
Resin regeneration	Cond Res	Two measurements on the C22, Toroidal on the wash and Resistivity on the rinse cycle.



SENTINEL pre-pHault Diagnostics

Both, the T23 and C22 instruments are available with the SENTINEL pre-pHault diagnostic option. This feature when coupled with a SENTINEL sensor provides a visual indication of the life expectancy of the measuring electrode. A second electrode is built inside the reference electrode and it is continuously compared to primary electrode. As the reference electrode becomes depleted or poisoned these two signals diverge. This divergence is displayed as a growing bar on the right side of the display. When the offset reaches a critical level the bar begins to flash indicating that service is required.



Sentinel T23

Model T23 Transmitter

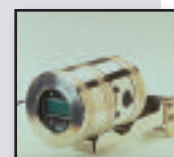
The Model T23 transmitter provides simplicity in a powerful package. This 24 VDC loop powered, 4-20 mA transmitter is available in pH, ORP, pION, Dissolved Oxygen, Conductivity or Resistivity configurations. The Conductivity transmitter accepts either contacting or toroidal sensors and displays % concentration or μS , mS or siemens, the Resistivity transmitter ranges from 0 to 20 meg-ohms. Multi- Channel capability allows two sensor inputs, excluding Cond/Resistivity, with up to three 4-20 mA outputs. Other options include a 110/220 VAC power supply, dual 5 amp SPDT relays and PID control.



Model T23

Model T28 Transmitter

The Model T28 microprocessor based two wire transmitter is FM and CSA approved for Class I, II, and III Division I Groups A through G environments allowing installation in intrinsically safe and explosion proof applications. All parameter selections including calibrations are performed with a magnetic screwdriver to magnetic influenced keys through the front display window. The contrast adjustable LCD display module can be rotated for easy viewing in a variety of installation orientations. The Model T28 is available as a pH, ORP, pION, Dissolved Oxygen, Conductivity or Resistivity transmitter.



Model T28

Model C22 Controller

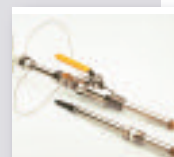
The System 22 controller features a Multi-Bus architecture that allows up to 4 inputs and six outputs to be monitored from this 1/2 DIN NEMA 4X controller. Up to eight field configurable SPDT relays are available to match the process requirements. The Model C22's microprocessor easily handles tasks like PID control, % concentration tables, dual channel comparisons and process compensations, i.e. pH adjusted Fluoride ion measurement. The backlit LCD displays the parameter with engineering units, % output and Temperature for each variable each of which can be graphically displayed.



System C22

Model S10 & S17 Sensors

The Universal Model S17 ball valve retractable sensor and the Model S10 insertion/immersion sensor are modular field rebuildable sensors with a 3/4" O.D. outer housing, a signal conditioner and a measuring electrode. Available materials include 316 SS, titanium, Hastalloy C22, KYNAR, polypropylene, CPVC or Teflon. The signal conditioners minimize noise and permit signal transmission of up to three miles. The Models S10/17 provide application specific solutions for pH, ORP, pION, Dissolved Oxygen, Conductivity and Resistivity measurements. Torodial Conductivity sensors are 1" O.D.



Models S10 & S17

Specifications subject to change without notice.

Represented by:

Electro-Chemical Devices

23665 Via Del Rio
Yorba Linda, California, USA 92887-2715
Phone: +1-714-692-1333
+1-800-729-1333
Fax: +1-714-692-1222
email: sales@ecdi.com
web: www.ecdi.com

