Mantech solutions is dedicated in sensing and monitoring of the liquids in various fields for past 2 years in India. Our main focus and experience keeps us in the field of pH, conductivity, TDS, dissolved oxygen, chlorine, chlorine dioxide, ozone, turbidity etc. sensors and transmitters. All the sensors are manufactured under strict and controlled environment under ISO standards and serialised for records. Given below is a brief of few sensors for you to select the right one for your application. However, if you do not find your sensor, please call the local dealer or our office for immediate help.

IAPL customers serve a broad range of industries:

- Pharmaceutical
- Biotech
- Food and Beverage
- Power
- Chemical Process
- Pulp and Paper
- Environmental
- Industrial and Municipal Water and Wastewater
- Institutions and Universities
- Laboratory

### Patented Technologies and Key Features…

The cornerstones to our performance technology include the patented porous Teflon reference system, the TOP68 quick disconnect cable and plug head system, the patented "Plunger" pH internal, and decades of glass working experience.
Innovative Sensors is the originator of the porous Teflon liquid junction. This technology provides a chemically inert, non-fouling, low impedance reference cell. The Plunger design permits any angle installation and the ability to withstand temperature cycling up to 150°C. The TOP68 system provides the reliability of fixed cable designs with the convenience of easy sensor replacement and the elimination of rewiring expense. This IP68 rated connector is waterproof, corrosion resistant and suitable for autoclaving.

# Sensors

### pH AND ORP

A complete offering of pH and ORP sensors is available to meet just about any application or price range. These applications include chemical processes, fermentation vessels, general industrial and high purity water applications. Standard and custom designs are available for on-line, laboratory or field use.

### TURBIDITY AND SUSPEND SOLIDS

A wide range of turbidity sensors are available employing various technologies and measurement methods. These methods include the Nephelometric 90° scattered according to ISO 7027. Factory calibrated plug and play operation means no formazine is required for start-up. The sapphire measuring window is self-cleaning in many applications, and a spray cleaner or cleaning wiper blade is available for media that deposits films or form crusts.

### DISSOLVED OXYGEN

Innovative Sensors' offers both galvanic and amperometric dissolved oxygen sensors. Primary applications include municipal sewage treatment, industrial plant effluent, fish farming and surface water monitoring. Steam sterilizable/autoclavable types are available for the fermentation and cell culture applications.

### CONDUCTIVITY AND RESISTIVITY

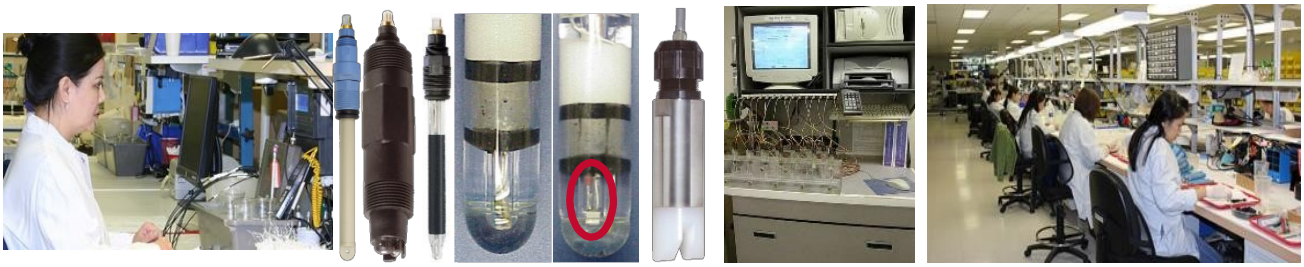
Both contacting and non-contacting sensors are available. The conductivity sensor offering covers applications ranging from ultrapure water, food, and pharmaceutical to percent concentrations of acids, bases and salts. A wide variety of cell constants, wetted materials and process connections are available.

### CHLORINE AND CHLORINE DIOXIDE

The chlorine and chlorine dioxide sensors are amperometric sensors with a gold cathode and silver/silver chloride anode and a rugged PTFE membrane. As diffusion takes place molecules are reduced at the gold cathode and silver is oxidized to silver chloride at the anode. The resulting current is a direct measurement of chlorine or chlorine dioxide.

### OPTICAL

We manufacture inline optical sensors and analysers for the measurement and process control of liquid solids concentration, colour, bubble detection, cell growth monitoring and turbidity. Our biotech and food grade equipment are of a sanitary design, utilize high-grade traceable materials, and are suitable for CIP and SIP procedures. We also have industrial systems configured with explosion proof ratings for hazardous areas. The patented pneumatic window wiper prevents optical fouling of our sensors.



# Industrial Transmitters


Field mount or panel mount transmitters are available for all applications. A variety of alarm relays, process, control, and cleaning outputs are offered. Call our sales department to decide which model is right for you. If you only sell pH systems, add turbidity or dissolved oxygen, and be a complete supplier to your customer's needs. The modular design of this allows easy adaption of the transmitter to a variety of customer requirements. Starting with the basic version for "measurement and alarm generation", the transmitter can be equipped with additional software and hardware modules for special applications. These modules can also be retrofitted as required.

### Your benefits

- Field or panel-mounted housing
- Universal application
- Simple handling
  - – Logically arranged menu structure
  - – Large two-line display
  - – Ultrasimple calibration
- Safe operation
  - – Overvoltage (lightning) protection
  - – Direct access for manual contact control
  - – Calibration plausibility check
  - – User-defined alarm configuration

The basic unit can be extended with:

- Addtional 2 or 4 contacts for use as:
  - – Limit contacts (also for temperature)
  - – P(ID) controller
  - – Timer for simple rinse processes
  - – Complete cleaning with Chemo-clean
  - – Current input
- Plus package:
  - – User defined current output characteristics
  - – Automatic cleaning trigger on alarm or limit violation
  - – Sensor Check System for pH glass and reference
  - – Live check of sensor
  - – Special neutralisation controller
- HART® or PROFIBUS-PA/-DP
- 2nd current output for temperature

### Configurations:

Different alarms are required depending on application and operator. Therefore the transmitter permits independent configuration of the alarm contact and error current for each individual error. Unnecessary or undesirable alarms can be suppressed in this manner. Up to four contacts can be used as limit contacts (also for temperature) to implement a P(ID) controller or for cleaning functions. Direct manual operation of the contacts (bypassing the menu) provides quick access to limit, control or cleaning contacts, permitting speedy correction of deviations.

## Housings:

## Laboratory and Handhelds:

Laboratories require to measure the liquid's acidity and alkalinity, pH is one of the most common parameter measured in a wide variety of industries ranging from water and wastewater treatment, chemical production, agriculture research and production, environmental monitoring, chemical and life sciences research, biochemical and pharmaceutical research, electronics production to food processing and other industrial applications. Handheld instruments render excellent portability for quick measurement. We offer almost all type of liquid analytical instruments on bench and handheld.

**Ion Selective Electrodes (ISE), for Lab and Industrial**

| Description | Concentration | Limits (ppm) | Temp Range °C | Main Interference's | pH Range | ISAB |
|---|---|---|---|---|---|---|
| Ammonium ($NH_4$+) | 0.5 - 5 x $10^{-5}$ | 9,000 - 0.9 | 0 - 50 | $K^+$, $Na^+$ | 0 - 8.5 | $CH_3$ COOH |
| Barium ($Ba^{2+}$) | $10^{-1}$ - $10^{-5}$ | 13,000 - 1.4 | 0 - 50 | $Sr^{++}$, $K^+$, $Na^+$ | 3 - 10 | $CuSO_4$ |
| Bromide (Br) | 1 - 5 x $10^{-6}$ | 81,000 - 0.4 | 5 - 50 | $I^-$, $CN^-$, $S^{--}$ | 1 -12 | 5M $KNO_3$ |
| Cadmium ($Cd^{2+}$) | $10^{-1}$ -1 x $10^{-6}$ | 11,200 - 0.1 | 5 - 50 | $Hg^{++}$, $Ag^+$, $Cu^{++}$ | 3 - 7 | 5M $KNO_3$ |
| Calcium ($Ca^{2+}$) | $10^{-1}$ - 5 x $10^{-7}$ | 4,010 -0.02 | 0 - 50 | $Ba^{++}$, $Al^{+++}$, $Sr^{++}$ | 3.5 - 11 | KCl |
| Chloride ($Cl^-$) | 1 - 3 x $10^{-6}$ | 35,000 - 1 | 5 - 50 | $I^-$, Br, $CN^-$, $S^{--}$ | 1 - 12 | 5M $KNO_3$ |
| Cupric ($C_u$2+) | $10^0$ - 1 x $10^{-7}$ | 64,000 - 0.006 | 5 - 50 | $Hg^{++}$, $Ag^+$, $S^{--}$ | 2 - 7 | 5M $KNO_3$ |
| Cyanide ($CN^-$) | $10^{-2}$ - 1 x $10^{-6}$ | 260 - 0.03 | 5 - 50 | $I^-$, $S^{--}$, $Br^+$ | 11 -13 | 10M NaOH |
| Fluoride (F) | $10^{-1}$ - 1 x $10^{-6}$ | 1,900 - 0.02 | 5 - 50 | $CH^-$ | 4 - 8 | TISAB |
| Iodide ($I^-$) | 1 - 5 x $10^{-7}$ | 127,000 - 0.06 | 5 - 50 | $CN^-$, $S^{--}$ | 2 - 12 | 5M $KNO_3$ |
| Lead (Pb2+) | $10^{-1}$ - 1 x $10^{-6}$ | 20,800 - 0.02 | 5 - 50 | $Hg^{++}$, $Ag^+$, $Cu^{++}$ | 3 - 7 | LiAC |
| Nitrate ($NO_3^-$) | 1 - 7 x $10^{-6}$ | 62,000 - 0.4 | 0 - 50 | $Cl^-$, $NO^-$ | 2 - 11 | 4M $(NH_4)_2S0_4$ |
| Perchlorate ($ClO_4^-$) | 1 - 2 x $10^{-6}$ | 99,500 - 0.2 | 0 - 50 | $I^-$, $SCN^-$, $NO_3^-$ | 0 - 11 | $CH_3COONa$ |
| Potassium ($K^+$) | 1 - $10^{-6}$ | 39,000 - 0.04 | 0 - 50 | $Cs^+$, $NH_4^+$ | 1 - 9 | TEAC |
| Silver ($Ag^+$) | $10^0$ - 1 x $10^{-7}$ | 107,900 - 0.01 | 5 - 50 | $S^{--}$, $Hg^{++}$ | 1 -9 | 5M $KNO_3$ |
| Sodium ($Na^+$) | 3 - $10^{-7}$ | 69,000 - 0.002 | 0 - 50 | $Ba^{++}$, $Li^+$, $K^+$ | 1 - 9 | SISAB |
| Sulphide ($S^2$-) | 1 - 1 x $10^{-7}$ | 32,00 - 0.003 | 5 - 50 | $Ag^+$, $Hg^{++}$ | 13 - 14 | 10M NaOH |
| Thiocyanate ($SCN^-$) | $10^{-1}$ - 2 x $10^{-6}$ | 5,800 - 1 | 5 - 50 | $I^-$, $Cl^-$, $S^{--}$, Br | 2 - 12 | 5M $KNO_3$ |
| Water Hardness | 2 x $10^{-1}$ - 5 x $10^{-5}$ | - | 0 - 50 | $Ba^{++}$, $Cd^{++}$, $Cu^{++}$ | 4.5 - 10 | LiAC |
| Ammonia ($NH_3$) | 1M - $10^{-6}$M | 0.02 | 0 - 50 | Hydrazine & Aliphatic Amines | 11 - 13 | 1M NaOH |

Endress+Hauser People for Process Automation

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JENCO Measuring Possibilities

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