

# 3700 Series Inductive Conductivity Sensors



## Applications

- Drinking Water
- Wastewater
- Clean Water
- Industrial Water
- Metal and Mining
- Chemical
- Food and Beverage
- Pulp & Paper
- Surface Water
- Steam Systems



## Wide Measuring Range

Hach's Inductive Conductivity Sensors measure from 200 up to 2,000,000 microSiemens/cm. A built-in PT1000 resistance temperature detector (RTD) compensates the measured conductivity for changes in process temperature.

## Low Maintenance Design

The inductive sensor design eliminates polarization and electrode coating problems that commonly affect conventional contacting electrode-type conductivity sensors.

## Versatile Mounting Styles

Sensors can be installed using a choice of four mounting styles - immersion, insertion, union, and sanitary.

## Withstands Harsh Environments

The inductive sensor is available in sanitary (CIP) flange style and convertible styles in PFA, polypropylene, PEEK, and PVDF material. Selected sensors can withstand high pressures and temperatures.

## Full-Featured "Plug and Play" with Digital SC Controllers

There are no complicated wiring or set up procedures with any Hach SC controller. Just plug in any combination of Hach digital sensors and it's ready to use - it's "plug and play."

One or multiple sensors - the SC controller family allows you to receive data from up to eight Hach digital sensors in any combination using a single controller.

Communications - multiple alarm/control schemes are available using the relays and PID control outputs. Available communications include analog 4-20 mA, digital Modbus (RS485 and RS232) or Profibus DP protocols. (Other digital protocols are available. Contact your Hach representative for details.)

## Technical Data\*

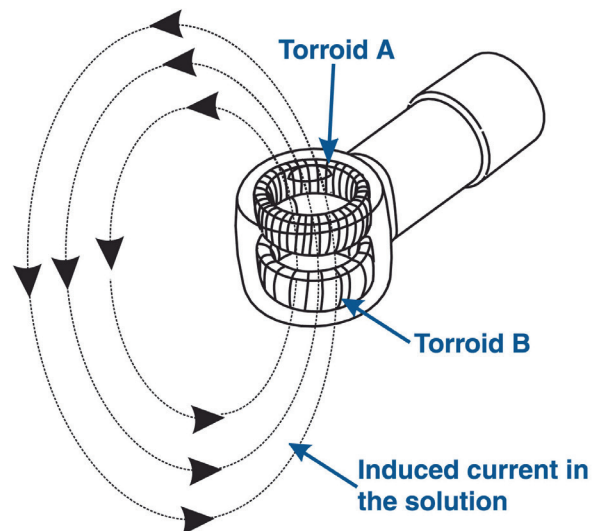
<b>Range</b>	200 - 2,000,000 microSiemens/cm
<b>Operating Temperature Range</b>	-10 - 200 °C (14 - 392 °F); limited by sensor body material and mounting hardware.
<b>Flow Rate</b>	3 m (10 ft.) per second, maximum
<b>Temperature Sensor</b>	PT1000 RTD
<b>Sensor Cable</b>	Polypropylene and PVDF Sensors: 5 conductor (plus two isolated shields) cable with XLPE (cross-linked polyethylene) jacket; rated to 150 °C (302 °F); 6 m (20 ft.) long  PEEK and PFA Sensors: 5 conductor (plus two isolated shields) cable with PFA-coated jacket; rated to 200 °C (392 °F); 6 m (20 ft.) long
<b>Wetted Materials</b>	Polypropylene, PVDF, PEEK or PFA
<b>Pressure/ Temperature Limits</b>	Polypropylene: 6.9 bar at 100 °C (100 psi at 212 °F) PVDF: 6.9 bar at 120 °C (100 psi at 248 °F) PEEK and PFA: 13.8 bar at 200 °C (200 psi at 392 °C)  Maximum pressure is dependent on mounting hardware.

\*Subject to change without notice.

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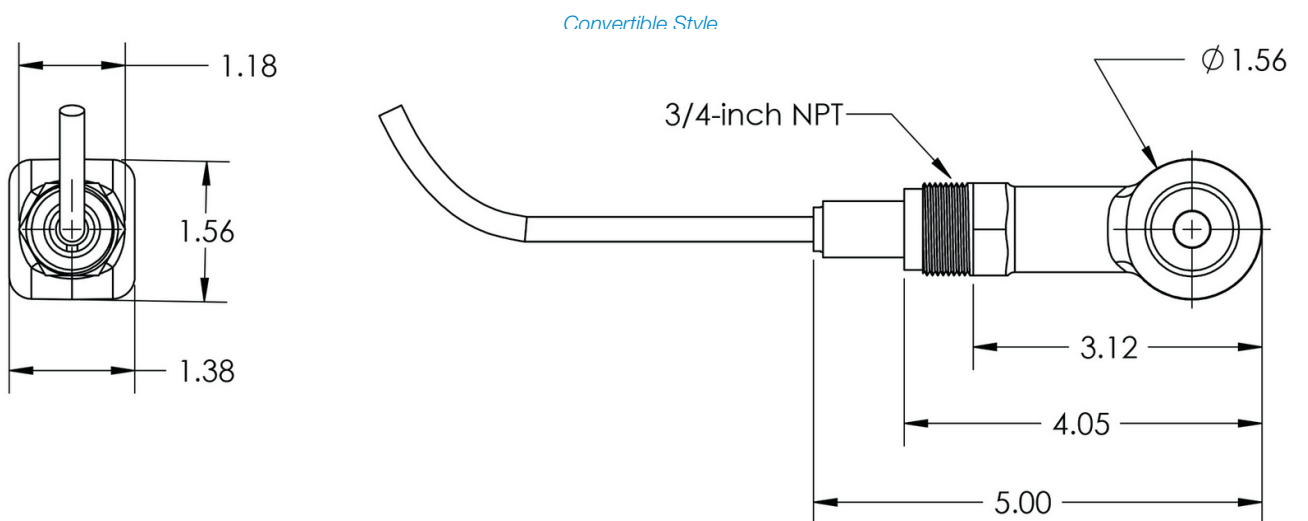
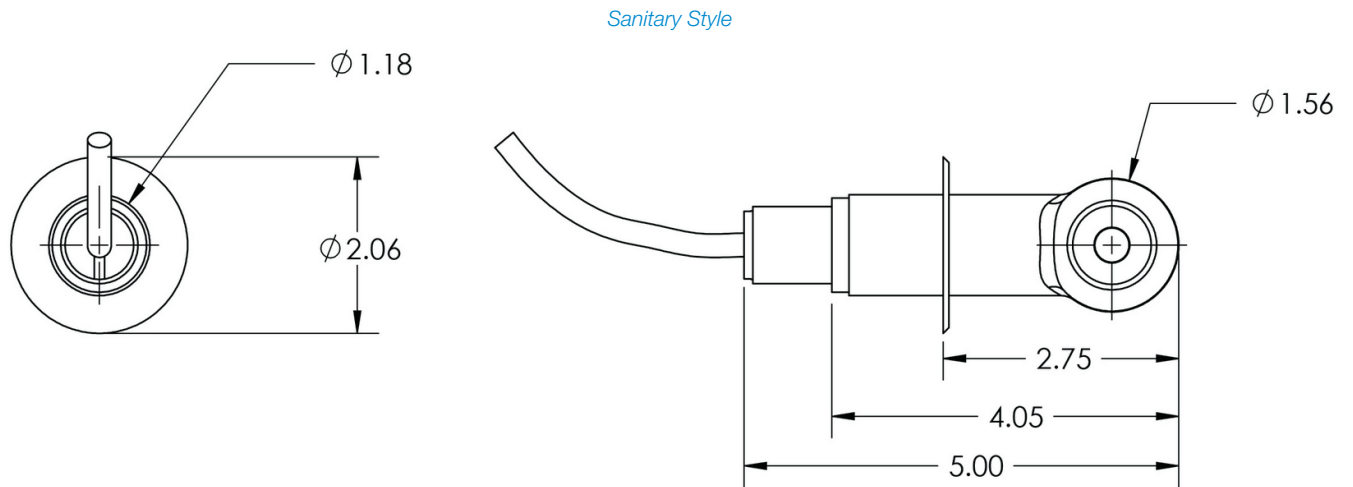
## Principle of Operation

Inductive conductivity sensors induce a low current in a closed loop of solution, then measure the magnitude of this current to determine the solution's conductivity. The conductivity analyzer drives Toroid A, inducing an alternating current in the solution. This current signal flows in a closed loop through the sensor bore and surrounding solution. Toroid B senses the magnitude of the induced current which is proportional to the conductance of the solution. The analyzer processes this signal and displays the corresponding reading.



## Dimensions

In inches (in.).



## Common Applications

Industry	Application	Recommended Sensor Style (and Material)
Metals Finishing and Mining	Plating bath monitoring Alkaline/caustic wash Rinse water Pickling processes Metals recovery Copper floatation Scrubbers	Convertible (Polypropylene) Convertible (Polypropylene) Convertible (Polypropylene) Convertible (PVDF) Convertible (PEEK) Convertible (PEEK) Convertible (Polypropylene)
Chemicals and Refining	Acid production Caustic production Phosphates Fertilizers Detergents Glycerin Moisture detection Scrubbers Wastewater Oil well drilling mud Leak detection Alkylation Spill detection	Convertible (PFA) Convertible (PFA) Convertible (PFA) Convertible (PFA) Convertible (PFA) Convertible (PVDF) Convertible (PVDF or PFA) Convertible (PVDF) Convertible (PVDF) Convertible (PEEK) Convertible (PEEK) Convertible (PFA) Convertible (PEEK)
Food and Beverage	Brine concentration Desalting Cheese production Caustic peeling Pickle making CIP applications Rinse water control Sugar carbonation	Convertible (Polypropylene) Convertible (Polypropylene) Sanitary (PFA) Convertible (PFA) Sanitary (Polypropylene) Sanitary (PFA) Convertible (Polypropylene) Convertible (PFA)
Pulp and Paper	White, black and green liquor Stock washing Wash and cooking liquor control Scrubbers Spill detection	Convertible (PEEK) Convertible (PEEK) Convertible (PEEK) Convertible (PEEK) Convertible (PEEK)
Textile Manufacturing	Rinse water Dye baths Bleaching Mercerizing Acid washing Carbonizing and scouring baths	Convertible (Polypropylene) Convertible (Polypropylene) Convertible (Polypropylene) Convertible (Polypropylene) Convertible (Polypropylene) Convertible (Polypropylene)
Natural Waters, Lakes, Streams, and Sea Water	Water pollution monitoring Salt intrusion Salinity	Convertible (Polypropylene) Convertible (Polypropylene) Convertible (Polypropylene)
Clean Water Treatment	Ion exchange regeneration Reverse osmosis concentrate monitoring Softener regeneration Acid/caustic concentration control	Convertible (Polypropylene) Convertible (Polypropylene) Convertible (Polypropylene) Convertible (PVDF)
Wastewater Treatment	Acid/caustic concentration control Spill detection	Convertible (PEEK) Convertible (PEEK)
Steam Generation	Boiler blowdown Flue gas scrubbers	Convertible (Polypropylene) Convertible (Polypropylene)

## Order Information

### 3700sc Digital Inductive Conductivity Sensors & Accessories

All digital inductive sensors come complete with standard sensor cable (6 m/20 ft.), digital gateway, and digital extension cable (1 m/3.3 ft.).

<b>D3705E2T</b>	Digital Inductive Conductivity Sensor, Sanitary Body Style, Polypropylene Body Material
<b>D3706E2T</b>	Digital Inductive Conductivity Sensor, Sanitary Body Style, PVDF Body Material
<b>D3708E2T</b>	Digital Inductive Conductivity Sensor, Sanitary Body Style, PFA Body Material
<b>D3725E2T</b>	Digital Inductive Conductivity Sensor, Convertible Body Style, Polypropylene Body Material
<b>D3726E2T</b>	Digital Inductive Conductivity Sensor, Convertible Body Style, PVDF Body Material
<b>D3727E2T</b>	Digital Inductive Conductivity Sensor, Convertible Body Style, PEEK Body Material
<b>D3728E2T</b>	Digital Inductive Conductivity Sensor, Convertible Body Style, PFA Body Material
<b>6120800</b>	Use the Digital Gateway to connect analog Hach 3700 inductive conductivity sensors to a Hach digital controller.
<b>6122400</b>	Digital Extension Cable, 1 m (3.3 ft.)
<b>5796000</b>	Digital Extension Cable, 7.7 m (25 ft.)
<b>5796100</b>	Digital Extension Cable, 15 m (50 ft.)
<b>5796200</b>	Digital Extension Cable, 31 m (100 ft.)
<b>5867000</b>	Digital Termination Box

### 3700 Analog Inductive Conductivity Sensors & Accessories

All analog sensors come complete with standard sensor cable (6 m/20 ft.).

<b>3705E2T</b>	Analog Inductive Conductivity Sensor, Sanitary Body Style, Polypropylene Body Material
<b>3706E2T</b>	Analog Inductive Conductivity Sensor, Sanitary Body Style, PVDF Body Material
<b>3708E2T</b>	Analog Inductive Conductivity Sensor, Sanitary Body Style, PFA Body Material
<b>3725E2T</b>	Analog Inductive Conductivity Sensor, Convertible Body Style, Polypropylene Body Material
<b>3726E2T</b>	Analog Inductive Conductivity Sensor, Convertible Body Style, PVDF Body Material
<b>3727E2T</b>	Analog Inductive Conductivity Sensor, Convertible Body Style, PEEK Body Material
<b>3728E2T</b>	Analog Inductive Conductivity Sensor, Convertible Body Style, PFA Body Material
<b>1W1100</b>	Analog Interconnect Cable, order per foot
<b>60A2053</b>	Junction Box, Surface-mount, aluminum (includes mounting hardware)
<b>60A9944</b>	Junction Box, Pipe-mount, PVC (for 1/2-inch diameter pipe, includes mounting hardware)
<b>60G2052</b>	Junction Box, Pipe-mount, PVC (for 1-inch diameter pipe, includes mounting hardware)
<b>76A4010-001</b>	Junction Box, NEMA 4X (no mounting hardware included)

#### Choice of body styles:

Sanitary (CIP) - 2-inch flange, special cap, and EPDM compound gasket. Conforms to provisions of 3-A Sanitary Standards.

Convertible - 2-inch NPT, designed for tee, other flow through, insertion, and pipe mountings for immersion.

## Order Information

### Conductivity Reference Solutions

**25M3A2000-X** 100 / 200 / 400 / 500 / 600 / 1000  $\mu\text{S/cm}$ , 1 L each

**25M3A2050-X** 1000 / 1500 / 2000  $\mu\text{S/cm}$ , 1 L each

**25M3A2100-X** 2000 / 2500 / 3000 / 5000 / 10,000 / 50,000 / 100K / 150K  $\mu\text{S/cm}$ , 1 L each

**25M3A2200-X** 200K / 300K  $\mu\text{S/cm}$ , 1 L each

**25M3A2300-X** 300K / 350K / 450K / 500K  $\mu\text{S/cm}$ , 1 L each

*The conductivity reference solutions are available in different concentrations, see listed values per main number.*

*To get the fully appropriate order number please replace the "X" with the according  $\mu\text{S/cm}$  concentration value from the list.*

### Mounting Hardware

**MH018S8SZ** Sanitary Mount, 316 SS  
Includes 316 SS sanitary 2-inch tee, heavy-duty clamp, special cap, and EPDM compound gasket.

**MH518N3NZ** Union Mount, 316 SS  
Union Mount, CPVC

**MH568N3NZ** Union Mount, PVDF  
Includes adapter and a 2-inch pipe tee. Union adapters are used with convertible style sensors that are to be union or flange mounted into a standard 2-inch NPT pipe tee or insertion mounted into a 2-inch ball valve assembly.

**MH432G** Immersion Mount, CPVC Pipe  
Includes  $\frac{1}{2}$ -inch diameter x 4-foot pipe,  $\frac{1}{2}$ - x  $\frac{3}{4}$ -inch NPT coupling, and plastic pipe-mount junction box with terminal strip.

**MH138M9NZ** Insertion Mount, CPVC

**MH118M9NZ** Insertion Mount, 316 SS  
Includes 2-inch NPT insertion assembly with ball valve.



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