# Model 22 Process pH Sensor

## Features

- Patented Plunger[1] pH Electrode
- Concave or Flat Sensor Design
- Choice of High Temperature or High pH Measurement
- Patented Porous[2] Teflon® Liquid Junctions
- Double Junction Reference Cell
- **New** Cast-In-Place Solid Reference Electrolyte
- Optional Integral Unity Gain Preamplifier
- **New** TOP68 Quick Disconnect Cable
- **New** Capillary TC Design
- **New** Non-Metallic Solution Ground



## Applications

- Water and Wastewater Treatment
- Coagulation and Flocculation
- Process Monitoring and Control
- Pulp Stock Applications
- Ore Separation

## Description

The Model 22 process pH sensor features the Plunger pH electrode design which permits 360° sensor mounting. The porous Teflon® liquid junction resists fouling and chemical attack. Double junction reference cells increase the service life in applications containing sulfides ($H_2S$) and metals such as lead, mercury and silver. The new cast-in-place solid reference electrolyte helps maintain a constant reference cell potential by resisting dilution over time with pressure and temperature changes. The new capillary temperature sensor design places the Pt100 or Pt1000 TC behind the pH sensitive membrane for accurate temperature compensation and measurement. The TOP68 quick disconnect cable system provides ease of use and the reliability of fixed cable. The IP68 environmental rating protects the high impedance pH electrode signal from moisture resulting from condensate build up in submersion pipes.

## Specifications

| Model 22 | Specifications |
|---|---|
| Body Material | Ryton® |
| O-Rings | Viton® |
| Measuring Range | 0 to 14 pH |
| Temperature Range | 0 to 80°C (32 to 176°F) Standard Version<br>0 to 110°C (32 to 230°F) High Temp Version |
| Pressure Range | 0 to 6.9 bar (0 to 100 psig) Standard Version<br>0 to 10.3 bar (0 to 150 psig) High Temp Version |
| Drift | < 2.0 mV/week |
| Response Time @ 25°C | 95% of reading in 10 seconds |
| Asymmetry Potential | 7.0 pH ± 0.2 pH |
| Theoretical Slope | ± 59.16 mV / pH unit @ 25°C (77°F) |
| Sodium Error | < 0.05 pH in 0.1 Molar Na+ Ion @ 12.8 pH |
| pH Glass Bulb Impedance @ 25°C | 150 Megohms |

[1] United States Patent No. 4,333,812
[2] United States Patent No. 4,128,468
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® Ryton is a registered trademark of Philips 66 Co.

INNOVATIVE SENSORS INC.
REGISTERED TO ISO 9001
CERTIFICATE NO. 00-1011

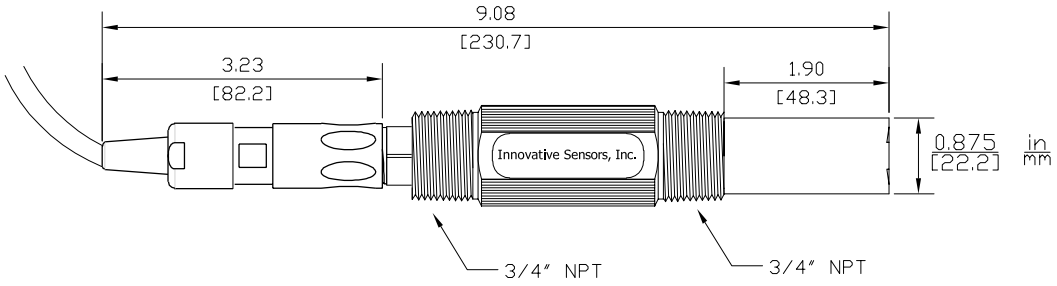
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## Ordering Information

**Model 22 pH sensor** features a concave probe design with an insertion length of 48.3mm (1.9”). Concave sensor designs tend to be self-cleaning and are recommended for flow applications containing suspended solids. Select a flat sensor design for viscous or fibrous solutions such as pulp stock applications. The Model 18 is the same as Model 22 except it is designed with 1.0” MNPT process connections.

| **Model 22** | **Description** |
|---|---|
| M – 22 | Process pH Sensor with Concave Sensor Design<br>Double Junction Reference Cell, KCl/AgCl and $KNO_3$<br>No Temperature Compensation<br>¾” MNPT Process Connections<br>48.3 mm (1.9”) Insertion Length<br>4.5m (15 ft.) Cable with BNC |
| M – 18 | 1.0” MNPT Process Connections |
| **Options** | **Description** |
| T68 | TOP68 Quick Disconnect |
| Amp | Integral Unity Gain Preamplifier |
| ORP | Platinum ORP electrode |
| HT | For continuous high temperature use, >80°C (176°F) |
| HpH | For continuous high pH use, > 11.0 pH |
| PT100 | Temperature Compensation, 100 Ohm RTD |
| PT1000 | Temperature Compensation, 1000 Ohm RTD |
| 3KTC | Temperature Compensation, 3000 Ohm Thermister |
| FLAT | Flat Electrode Sensor Design |
| SG | Solution Ground (Available with Flat Only) |
| **M-22-T68-PT100-FLAT** | **Example Order Number** |






Flow Installation

- 1” NPT Pipe Tee (By Others)
- ¾” Reducing Bushing (By Others)
- Use Tefon® Tape on Sensor to permit removal for routine maintenace
- Install shut off valves upstream and downstream of sensor
- Optimum flow rate is 3 to 5 GPM
- Sensor must remain in solution at all times

Note: Variations in design of plastic plumbing parts from different manufactures can be expected. Check tolerances prior to installation.

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