



pH & ORP SENSORS



Designed with Tough Applications in Mind

Our sensors provide extended life in volatile applications where other sensors may not last.

Daphne, Alabama | (251) 418-4286

WWW.RHINOPCI.COM

Non-Porous Cross-Linked Polymer Reference System:

These are the only truly solid-state reference systems of their kind in existence. This is a non-permeable system in which only selective ionic communication with the secondary junction (and tertiary) is permitted. This creates a very stable reference potential, even during harsh process conditions, that provides the following advantages:

- Experiences far less aging and deterioration over long periods for low drift and maintenance.
- Solid-state construction allows for scraping clean with a straight-edge razor to extend sensor lifetime when fouled.
- It is not easily dried out when exposed to air for prolonged periods.
- Does not absorb fluids or gases into junction and is significantly more impervious to solvents.
- Stable operation even in the presence of harsh chemical attack at high temperature in the presence of abrasive slurries.

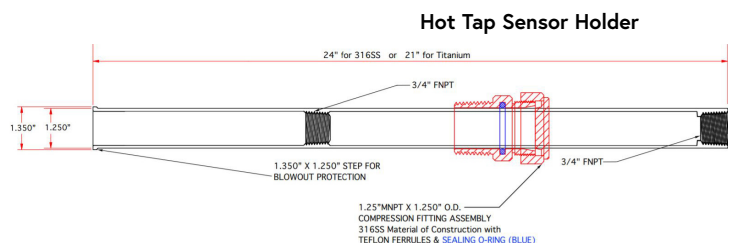
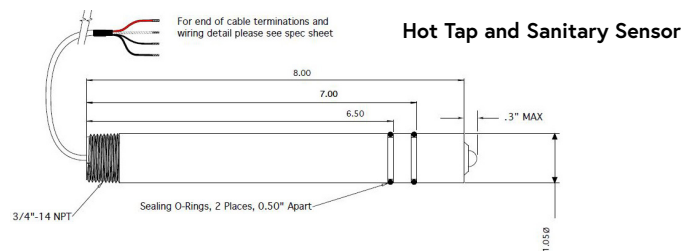
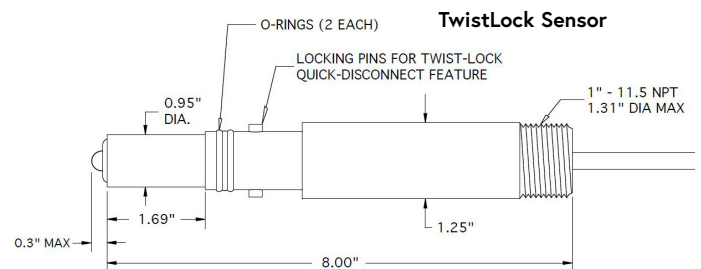
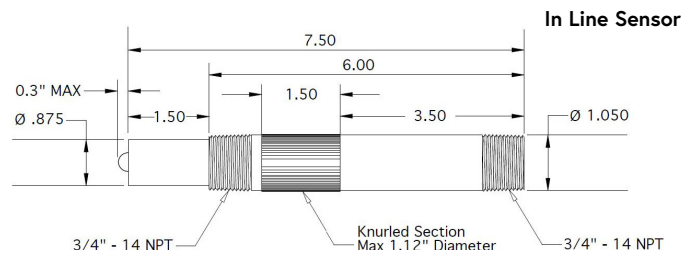
pH Glass features include:

- Unique low-profile thick-wall break-resistant parabolic pH glass element.
- Ideal for high viscosity solutions or high particulate abrasive slurries.
- Substantially minimize breakage with process upsets, mechanical abuse, or accidents.
- Low-profile platinum ball style ORP sensing element.
- Suitable for applications requiring resistant to high velocity flow, high pressure installations up to 200 psig, as well as aggressive dissolved gases and volatile organic solvents with suitable options invoked.
- Saturated sodium (brine) resistant pH glass elements.
- High-temperature & pressure-resistant pH glass elements.
- Supports down to -35° C to 150° C at pressures up to 200 psig.
- Wide range pH glass
- Low impedance pH glass
- Dual pH & ORP All-In-One

Integrated Modular Sensor Design

Specialized pH Glasses & Platinum ORP Redox Sensing Elements. These specialized pH elements are designed not only to survive such conditions but perform with great repeatability, accuracy, and sensitivity.

- Application-specific pH & ORP sensing elements are optimized for each application.
- Solid-State Reference Junctions employ non-porous cross-linked conductive polymer optimized for each process.
- Resilient Plastic Housings
- Integrated electronics components, which include: Temperature Compensation, Solution Ground, Analog, and Smart Digital Sensor.
- Waterproofing options for fully submersible sensor assemblies.



pH & ORP Sensor Specifications

| Specifications | pH Sensor | ORP Sensor |
|--------------------------|---|--|
| Description | pH Sensor for Tough Applications / Aggressive Media Resistant | |
| Temperature Range | -31° F to 300° F | |
| Pressure | 6.9 to 1035 kPa absolute (1 to 200 psig) | |
| Body Type S | Submersible Hot Tap In-Line | |
| Junction Material | Kynar (Poly-Vinylidene-Fluoride) | |
| Cable Length | 20 foot Standard | |
| Temperature Compensation | Pt1000 | |
| Waterproofing | Standard Waterproofing | |
| Connection | Quick Connect Plug -NEMA 6P (-QCD) | |
| pH/ORP Range | 0 to 14 pH | +/- 2,000 mV Absolute |
| Measuring Element Type | Ultra Tough Break Resistant Glass | Platinum Ball in Low Profile Configuration |
| Element Dimensions | 8.0 mm (0.315") Diameter | 5.0 mm (0.197") Diameter |
| Initial Impedance | <1,500 M Ohms @ 25° C | N/A |
| Sodium Ion Error | <0.15 pH in saturated Na solutions at 14.00 pH | N/A |
| Acidic Errors | <0.05 pH in HCl solutions at 0.00 pH | N/A |
| Reference Type | Double Junction | |
| Reference Half Cell | Ag/AgCl, saturated KCl | |
| Primary Junction | Porous Ceramic, Saturated KCl in Cross-linked polymer, interfaced to secondary junction | |
| Secondary Junction | Solid-state non-porous cross-linked polymer embedded in Kynar support matrix holds excess KCl assuring saturation at all temps for stability & long sensor service life | |
| Special Features | Acid/Fluoride, Ammonia, Chlorine, and Sulphide Gas Resistant | |
| Analyzer / Interface | Handheld Field Communicator, Touchscreen PLC Controller | |
| Storage | Item should be kept at room temperature with closed protector cap, filled with storage solution in an upright position — Shelf life warranted for 12 months from date of purchase | |
| Warranty | 12 Month Conditional Warranty | |



Rhino PCI Sensor Part Numbering Reference Guide

| RH – [A1] – [A2] – [A3] – [A4] – [A5] – [A6] – [A7] – [A8] – [A9] – [A10] – [A11] – [A12] – [A13] | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------------------------|--|------|---|--------|---|------|---|----|--|---|------------------------------------|---|--------------------------------------|---|---|---|---|---|-----|---|----------------------------------|
| Example: | RH77-PH-D-4-2-2T-NS-DJ-0-00-NA-NA-NA | | | | | | | | | | | | | | | | | | | | | | |
| Rhino Hot Tap pH Sensor - Digital Signal - for Acids, Fluorides, and HF Solutions - 301 Ohm RTD Temperature - 2 each glass protective tines on tip - no solution ground - double junction standard process - standard cable length - no cable protection tube - without preamp analog - without specials - without additional hardware | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <th colspan="2">[A1] Probe Configuration</th> </tr> <tr> <td>RH71</td> <td>Inline Twist Lock</td> </tr> <tr> <td>RH76</td> <td>Submersible</td> </tr> <tr> <td>RH77</td> <td>Hot Tap or Sanitary</td> </tr> </table> | | [A1] Probe Configuration | | RH71 | Inline Twist Lock | RH76 | Submersible | RH77 | Hot Tap or Sanitary | | | | | | | | | | | | | | |
| [A1] Probe Configuration | | | | | | | | | | | | | | | | | | | | | | | |
| RH71 | Inline Twist Lock | | | | | | | | | | | | | | | | | | | | | | |
| RH76 | Submersible | | | | | | | | | | | | | | | | | | | | | | |
| RH77 | Hot Tap or Sanitary | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <th colspan="2">[A2] Measurement Type</th> </tr> <tr> <td>PH</td> <td>pH Sensor</td> </tr> <tr> <td>ORP</td> <td>ORP Sensor</td> </tr> </table> | | [A2] Measurement Type | | PH | pH Sensor | ORP | ORP Sensor | | | | | | | | | | | | | | | | |
| [A2] Measurement Type | | | | | | | | | | | | | | | | | | | | | | | |
| PH | pH Sensor | | | | | | | | | | | | | | | | | | | | | | |
| ORP | ORP Sensor | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <th colspan="2">[A3] Signal Type</th> </tr> <tr> <td>A</td> <td>Analog</td> </tr> <tr> <td>D</td> <td>Digital</td> </tr> </table> | | [A3] Signal Type | | A | Analog | D | Digital | | | | | | | | | | | | | | | | |
| [A3] Signal Type | | | | | | | | | | | | | | | | | | | | | | | |
| A | Analog | | | | | | | | | | | | | | | | | | | | | | |
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| <table border="1"> <tr> <th colspan="2">[A4] Intended Application of Sensor</th> </tr> <tr> <td>0</td> <td>General Purpose</td> </tr> <tr> <td>1</td> <td>High Temperature</td> </tr> <tr> <td>2</td> <td>Ultra-High Temperature</td> </tr> <tr> <td>3</td> <td>Abrasive Slurries and High Viscosity</td> </tr> <tr> <td>4</td> <td>Acids, Fluorides, and HF Solutions</td> </tr> <tr> <td>5</td> <td>Pulp and Paper Slurry Type Processes</td> </tr> <tr> <td>6</td> <td>Dissolved Sulfide (H₂S, HS, and S₂)</td> </tr> <tr> <td>7</td> <td>Aggressive Dissolved Ammonia & Chlorine Gas & Volatile Organic Solvents</td> </tr> <tr> <td>8</td> <td>ORP</td> </tr> <tr> <td>9</td> <td>Saturated Sodium (Brine) Samples</td> </tr> </table> | | [A4] Intended Application of Sensor | | 0 | General Purpose | 1 | High Temperature | 2 | Ultra-High Temperature | 3 | Abrasive Slurries and High Viscosity | 4 | Acids, Fluorides, and HF Solutions | 5 | Pulp and Paper Slurry Type Processes | 6 | Dissolved Sulfide (H ₂ S, HS, and S ₂) | 7 | Aggressive Dissolved Ammonia & Chlorine Gas & Volatile Organic Solvents | 8 | ORP | 9 | Saturated Sodium (Brine) Samples |
| [A4] Intended Application of Sensor | | | | | | | | | | | | | | | | | | | | | | | |
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| 2 | Ultra-High Temperature | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Abrasive Slurries and High Viscosity | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Acids, Fluorides, and HF Solutions | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Pulp and Paper Slurry Type Processes | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Dissolved Sulfide (H ₂ S, HS, and S ₂) | | | | | | | | | | | | | | | | | | | | | | |
| 7 | Aggressive Dissolved Ammonia & Chlorine Gas & Volatile Organic Solvents | | | | | | | | | | | | | | | | | | | | | | |
| 8 | ORP | | | | | | | | | | | | | | | | | | | | | | |
| 9 | Saturated Sodium (Brine) Samples | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <th colspan="2">[A5] Temperature Compensation</th> </tr> <tr> <td>AT</td> <td>ACCU-TEMP Temperature Sensor</td> </tr> <tr> <td>1</td> <td>3000 Ohm Balco RTD</td> </tr> <tr> <td>2</td> <td>301 Ohm RTD</td> </tr> <tr> <td>3</td> <td>1000 Ohm Platinum RTD</td> </tr> <tr> <td>4</td> <td>100 Ohm Platinum RTD</td> </tr> </table> | | [A5] Temperature Compensation | | AT | ACCU-TEMP Temperature Sensor | 1 | 3000 Ohm Balco RTD | 2 | 301 Ohm RTD | 3 | 1000 Ohm Platinum RTD | 4 | 100 Ohm Platinum RTD | | | | | | | | | | |
| [A5] Temperature Compensation | | | | | | | | | | | | | | | | | | | | | | | |
| AT | ACCU-TEMP Temperature Sensor | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 3000 Ohm Balco RTD | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 301 Ohm RTD | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 1000 Ohm Platinum RTD | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 100 Ohm Platinum RTD | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <th colspan="2">[A6] Protection Tines on Tip</th> </tr> <tr> <td>NT</td> <td>No Glass Protective Tines</td> </tr> <tr> <td>2T</td> <td>2 Each Glass Protective Tines</td> </tr> <tr> <td>4T</td> <td>4 Each Glass Protective Tines</td> </tr> </table> | | [A6] Protection Tines on Tip | | NT | No Glass Protective Tines | 2T | 2 Each Glass Protective Tines | 4T | 4 Each Glass Protective Tines | | | | | | | | | | | | | | |
| [A6] Protection Tines on Tip | | | | | | | | | | | | | | | | | | | | | | | |
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| [A7] Grounding Solutions | | | | | | | | | | | | | | | | | | | | | | | |
| NS | No Solution Grounding | | | | | | | | | | | | | | | | | | | | | | |
| SG | 316 Stainless Steel Solution Addition | | | | | | | | | | | | | | | | | | | | | | |
| PG | Platinum Solution Addition | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <th colspan="2">[A8] Process Junction</th> </tr> <tr> <td>DJ</td> <td>Double Junction Standard</td> </tr> <tr> <td>TJ</td> <td>Triple Junction Standard</td> </tr> </table> | | [A8] Process Junction | | DJ | Double Junction Standard | TJ | Triple Junction Standard | | | | | | | | | | | | | | | | |
| [A8] Process Junction | | | | | | | | | | | | | | | | | | | | | | | |
| DJ | Double Junction Standard | | | | | | | | | | | | | | | | | | | | | | |
| TJ | Triple Junction Standard | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <th colspan="2">[A9] Cable Length</th> </tr> <tr> <td>0</td> <td>Standard Length: 10' Analog 20' Digital</td> </tr> <tr> <td>10</td> <td>+10 Length</td> </tr> <tr> <td>20</td> <td>+20 Length</td> </tr> <tr> <td>30</td> <td>+30 Length</td> </tr> </table> | | [A9] Cable Length | | 0 | Standard Length: 10' Analog 20' Digital | 10 | +10 Length | 20 | +20 Length | 30 | +30 Length | | | | | | | | | | | | |
| [A9] Cable Length | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | Standard Length: 10' Analog 20' Digital | | | | | | | | | | | | | | | | | | | | | | |
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| <table border="1"> <tr> <th colspan="2">[A10] Cable Protection</th> </tr> <tr> <td>00</td> <td>No Protective Tube</td> </tr> <tr> <td>VT</td> <td>Vinyl Tubing</td> </tr> <tr> <td>BC</td> <td>Shielded and Braided Reinforced Blue Cable</td> </tr> </table> | | [A10] Cable Protection | | 00 | No Protective Tube | VT | Vinyl Tubing | BC | Shielded and Braided Reinforced Blue Cable | | | | | | | | | | | | | | |
| [A10] Cable Protection | | | | | | | | | | | | | | | | | | | | | | | |
| 00 | No Protective Tube | | | | | | | | | | | | | | | | | | | | | | |
| VT | Vinyl Tubing | | | | | | | | | | | | | | | | | | | | | | |
| BC | Shielded and Braided Reinforced Blue Cable | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <th colspan="2">[A11] Analog with Preamp</th> </tr> <tr> <td>NA</td> <td>Not Applicable</td> </tr> <tr> <td>PREAMP</td> <td>Analog Sensor with Preamp. Max Submersible Temperature</td> </tr> </table> | | [A11] Analog with Preamp | | NA | Not Applicable | PREAMP | Analog Sensor with Preamp. Max Submersible Temperature | | | | | | | | | | | | | | | | |
| [A11] Analog with Preamp | | | | | | | | | | | | | | | | | | | | | | | |
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| PREAMP | Analog Sensor with Preamp. Max Submersible Temperature | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <th colspan="2">[A12] Specials</th> </tr> <tr> <td>NA</td> <td>Not Applicable</td> </tr> <tr> <td>DR</td> <td>Extreme Dehydration Resistance. A modified reference system that is capable of being left dry for long periods of time and subject to intermittent periods of wetness. (Digital Probe Only)</td> </tr> </table> | | [A12] Specials | | NA | Not Applicable | DR | Extreme Dehydration Resistance. A modified reference system that is capable of being left dry for long periods of time and subject to intermittent periods of wetness. (Digital Probe Only) | | | | | | | | | | | | | | | | |
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| <table border="1"> <tr> <th colspan="2">[A13] Hardware</th> </tr> <tr> <td>NA</td> <td>No Hardware Required</td> </tr> <tr> <td>SS</td> <td>SS Hot Tap with 316 SS 1-1/4" Compression Fitting (RH77 Only)</td> </tr> <tr> <td>TI</td> <td>Titanium Hot Tap with 316 SS 1-1/4" Compression Fitting (RH77 Only)</td> </tr> <tr> <td>TR</td> <td>316 SS Sanitary TRI-CLOVER 1.5", 2.0", & 2.5" Sensor Holders</td> </tr> </table> | | [A13] Hardware | | NA | No Hardware Required | SS | SS Hot Tap with 316 SS 1-1/4" Compression Fitting (RH77 Only) | TI | Titanium Hot Tap with 316 SS 1-1/4" Compression Fitting (RH77 Only) | TR | 316 SS Sanitary TRI-CLOVER 1.5", 2.0", & 2.5" Sensor Holders | | | | | | | | | | | | |
| [A13] Hardware | | | | | | | | | | | | | | | | | | | | | | | |
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