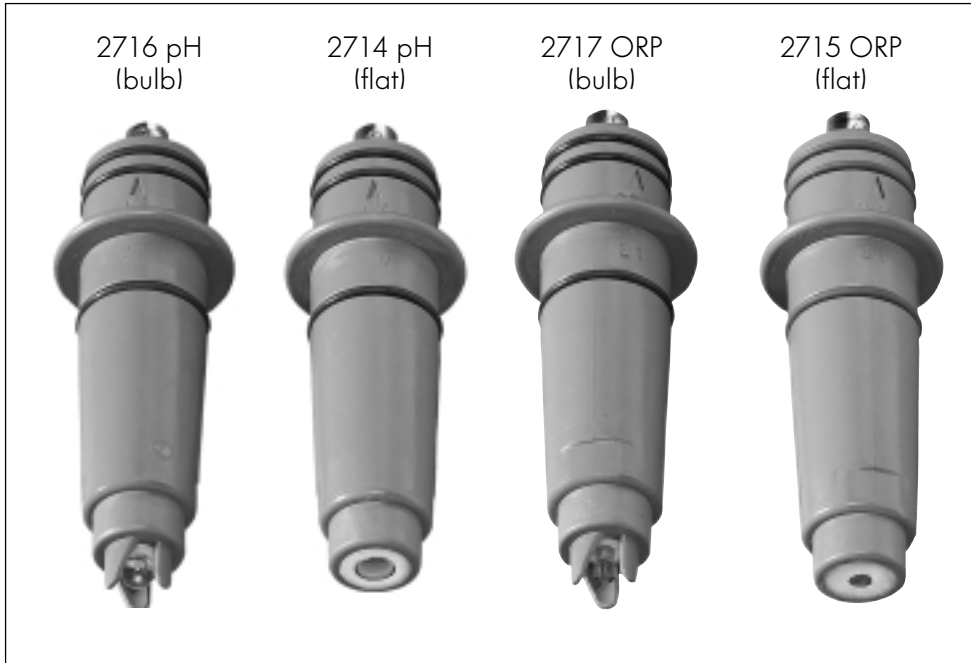


+GF+ SIGNET 2714, -15, -16, -17 pH and ORP Electrodes



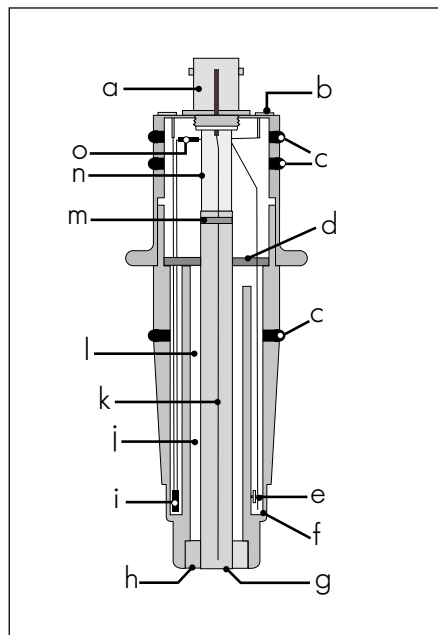
Description

Feature-packed +GF+ SIGNET pH & ORP Electrodes provide unsurpassed simplicity, reliability and accuracy for a wide variety of industrial applications. Rugged CPVC construction, large reference volume and intelligent positioning of internal elements combine to extend the service-life of these dependable and highly responsive sensors. Flat versions allow sediment and particles to sweep past the measurement surface, minimizing risks of abrasion, breakage

Technical Features

- a) Female BNC Connector
- b) I.D. Resistor (ORP sensor) or Thermistor contacts (pH sensor)
- c) Viton O-rings
- d) Silicone-bushing seal (entire volume above seal potted with epoxy)
- e) Double junction
- f) Ag/AgCl Reference element
- g) Platinum sensing surface (ORP sensor) or flat pH glass
- h) Porous UHMW polyethylene reference junction
- i) 3K Balco Thermistor (pH sensor)
- j) Solidified acrylamide reference electrolyte
- k) Ag/AgCl Measuring element
- l) Large reference volume
- m) Epoxy seal
- n) Shielding
- o) 10 K Ω I.D. resistor (ORP sensor)

and coating. The unique twist-lock design enables sensor connections in one easy motion. This includes the integral temperature sensor in pH electrodes, and the I.D. circuit in ORP electrodes. These contacts are used for automatic sensor recognition by +GF+ SIGNET pH/ORP Instrumentation, adding convenience and versatility to our systems.



Features

- Durable CPVC Body
- Twist-lock design for easy installation and maintenance
- Flat versions resist fouling and reduce risks of breakage
- Large reference volume and solid polymer electrolyte for long service life
- pH electrodes include an integrated temperature sensor
- Reference element positioned for maximum protection from process contamination
- Symmetric arrangement of thermistor and reference elements optimizes temperature compensation in pH measurements
- Designed for use with +GF+ SIGNET 2720 Pre-amplifier
- Double O-ring seal protects the electrical interconnection between sensor and pre-amplifier
- DI option (pH) for pure water use (<100 μ S)
- HF option (pH) extends electrode life in applications containing trace amounts of HF (<2%)

Applications

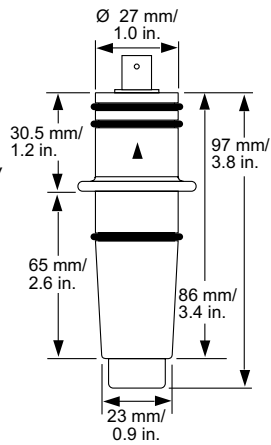
- Water & Wastewater Treatment
- Neutralization Systems
- Scrubber Control
- Effluent Monitoring
- Surface Finishing
- Heavy Metal Removal and Recovery
- Toxics Destruction
- Sanitization Systems
- Commercial Pools & Spas
- Aquatic Animal Life Support Systems
- Process Control

Options

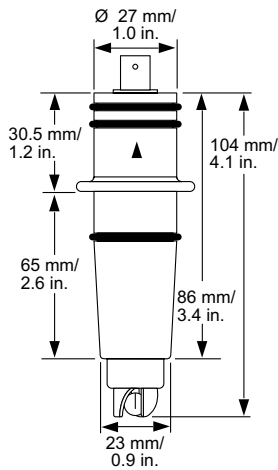
		pH/ORP Instruments/*Pre-amplifier				
		2720	8150	5100	9050	9040
pH	2714	●	●	●	●	●
	2716	●	●	●	●	●
ORP	2715	●	●	●	●	●
	2717	●	●	●	●	●

Dimensions

2714/2714-HF pH Sensor/
2715 Flat ORP Sensor



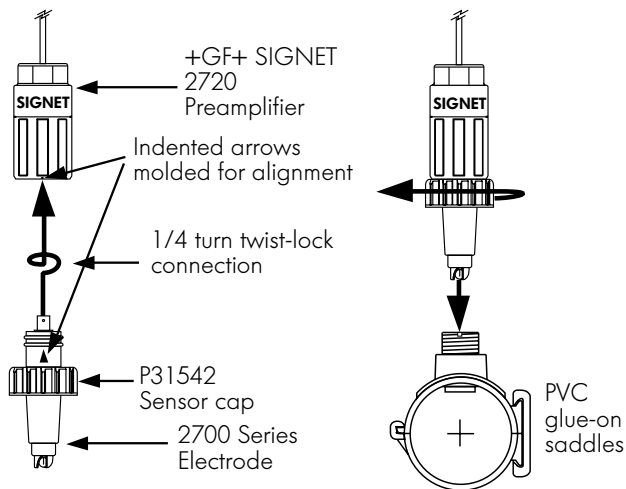
2716/2716-DI Bulb pH Sensor/
2717 Bulb ORP Sensor



Installation

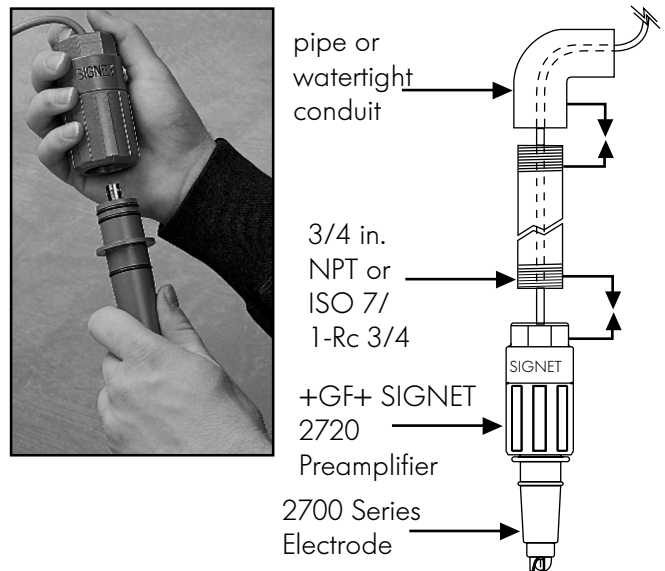
In-Line:

For in-line installation, combine a 2720 Preamplifier with a sensor cap, 2700 series electrode, and any +GF+ SIGNET fitting from 0.5 to 4 in.



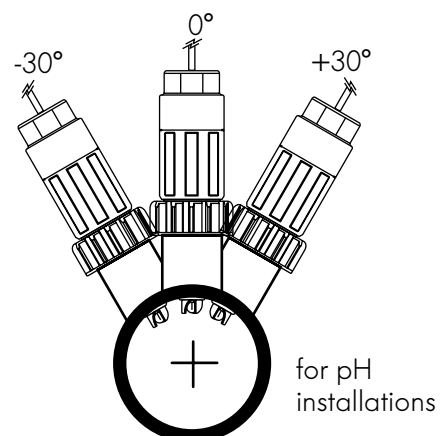
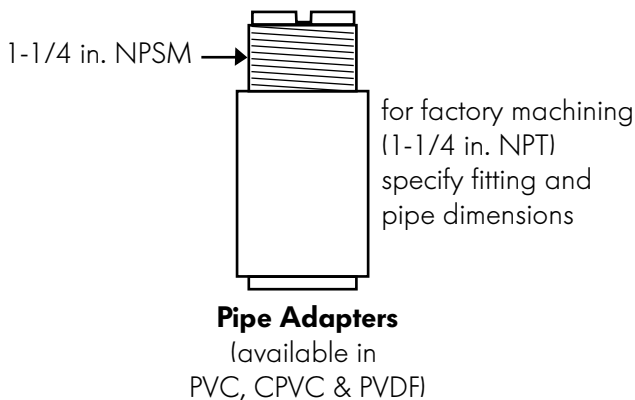
Submersible:

For submersible installation, combine a 2720 Preamplifier, a 2700 series electrode, and a (user-supplied) pipe or watertight conduit. Prevent moisture accumulation at the cable-end of the pre amplifier.



- Probes are shipped hydrated for immediate use. Store horizontally and keep all electrical contact surfaces clean and dry at all times.
- Use +GF+ SIGNET installation fittings for in-line installation in pipes from 0.5 to 4 in.

- Use pipe adapter for inline installation in pipes > 4 in. (1-1/4 in. NPT)



Technical Data

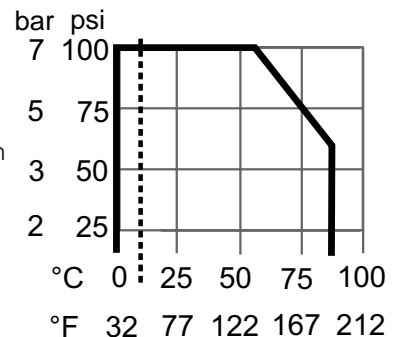
2714 and 2716 pH Electrodes

Operating Range:	0 to 14 pH
Temperature:	
2716:	0°C to 85°C (32° to 185°F)
2714:	10° to 85°C (50° to 185°F)
2714-HF:	0° to 85°C (32° to 185°F)
Storage Temperature:	> -12° C (11° F)
Pressure:	6.89 bar @ 0°C (100 psi @ 32° to 149°F) 4.00 bar @ 85°C (58 psi @ 150° to 185°F)
Pipe Size Range:	1/2 in. and up. Use +GF+SIGNET installation fittings from 0.5 to 4.0 in. (use pipe adapter in pipes over 4 in.) Vertical mounting ±30° required. Submersion with 3-2720 pre-amplifier requires 3/4 in. NPT or ISO 7-1/3/4 Male threaded extension.
Efficiency:	>97% @ 25°C (77° F)
pH Response Time:	< 5 secs. for 95% of signal change
Wetted Materials:	CPVC Body Glass FPM - Viton® O-rings Porous UHMW Polyethylene reference junctions
Reference:	Electrolyte: Solidified Acrylamide Gel 3.5M KCl (2714, 2714-HF, 2716) 0.1 M KCl (2716-DI) Element: Ag/AgCl
Primary Functions:	2714: Flat surface resists fouling 2716: Bulb surface for general use 2714-HF: Extended use in applications with trace hydrofluoric acid (<2%) 2716-DI: Extended use in pure waters (< 100 µS)
Temperature Sensor:	3K Balco (3092 @ = 25° C)
Response Time, τ:	140 secs. (2714), 196 secs. (2716)

2715/2717 ORP Electrodes

Operating Range:	ORP: -1,000 to +2,000 mV
Operating Temperature/Pressure:	
	6.89 bar @ 0°C (100 psi @ 32° to 149° F) 4.00 bar @ 85°C (58 psi @ 150° to 185°F)
Storage Temperature:	> -12° C (11° F)
Pipe Size Range:	1/2" and up. Use +GF+ SIGNET installation fittings from 1/2 to 4 in. (use pipe adapters in pipes over 4 in.) Submersion with 3-2720 pre-amplifier requires 3/4 in. NPT or ISO 7-1 /R 3/4 male threaded extensions
Efficiency:	> 97% @ 25°C (77 °F)
ORP Response Time:	< 5 secs. for 95% of signal change
Materials:	CPVC Body Glass FPM-Viton O-rings Porous UHMW Polyethylene reference junctions Platinum sensing surface
Reference:	Solidified Acrylamide Gel: 3.5M KCL saturated with AgCl Element: Ag/AgCl
Primary Functions:	2715: Flat surface resists fouling 2717: Bulb surface for general use

Graph applies to both
pH and ORP sensors



Ordering Information

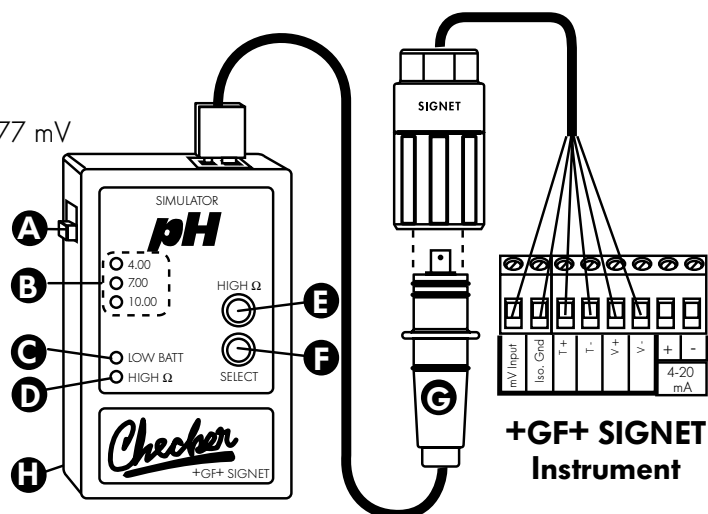
Mfr. Part No	Code	Description
3-2714	198 844 300	Flat pH electrode
3-2714-HF	198 844 305	Flat pH hydrofluoric acid resistant electrode (<2%)
3-2716	198 844 302	Bulb pH electrode
3-2716-DI	198 844 306	Bulb pH electrode for process liquids (< 100 μs)
3-2715	198 844 301	Flat ORP Electrode
3-2717	198 844 303	Bulb ORP Electrode
3-2720	198 864 602	Preamplifier, 3/4" NPT (required to complete the system)
3-2720-2	198 864 603	Preamplifier, ISO 7-1/R 3/4 (required to complete the system)

Accessories

Mfr. Part No	Code	Description
P31542	198 801 630	Sensor Cap for In-line Installations
3-2719	159 000 306	pH simulator/system tester
3-0700.390	198 864 403	pH Buffer Kit
P31515-OP200	159 000 630	PVC Pipe Adapter (available May, 2000)
P31515-OC200	159 000 631	CPVC Pipe Adapter (available May, 2000)
P31515-OV200	159 000 459	PVDF Pipe Adapter
1220-0021	198 801 186	O-ring, FPM
1224-0021	198 820 006	O-ring, EPR
1228-0021	198 820 007	O-ring, Kalrez

+GF+ SIGNET 3-2719 pH Simulator/System Tester

- A) Power switch
 - B) Output simulation indicators, pH 4, 7, 10 ±0.1%, ±177 mV
 - C) Low battery indicator
 - D) *High Ω test mode indicator
 - E) *High Ω selection button
 - F) Output simulation selection button
 - G) Sensor Adapter
 - H) 9V alkaline battery (included)
- * The High Ω test mode adds 100MΩ in series with the simulator output to verify preamplifier sensitivity and stability.



Engineering Specifications

- The sensor shall meet CE standards
- The sensor body shall be constructed of CPVC.
- The sensor shall have flat measuring glass or include guard
- The sensor shall have solidified acrylamide, solid polymer reference electrolyte.
- The sensor shall have a double HDPE reference junction.
- The pH sensor reference element shall be placed opposite the TC element for accurate temperature compensation.
- The sensor shall be constructed in order to allow for direct connection to preamplification without the need of coaxial cables and shall allow quick, simple electrical connection of mV and temperature signals utilizing a "twist-lock" connection.
- The sensor shall use a double O-ring seal to protect the electrical interconnection to the preamplifier.
- The sensor shall be equipped for either in-line or submersible installation using manufacturer supplied hardware.
- Optional: 3-2714-HF The sensor shall be supplied with a measuring glass construction, resistant to chemical attack from hydrofluoric acid/ fluoride ions.
- The sensor shall indicate month and year of manufacture.