# +GF+ SIGNET 2720 Twist-Lock Pre-Amplifier

2720 Pre-Amplifier


Unique Twist Lock Design Shown with +GF+ SIGNET 271X pH or ORP Electrode

## Features

- **Twist-lock design allows quick connect/ disconnect of electrodes**
- **Local pre-amplification for submersible and in-line installations**
- **Unbreakable CPVC body**
- **Designed for use with +GF+ SIGNET 271X pH & ORP Electrodes**
- **Assures signal integrity up to 120 m. (400 ft.)**

## Application

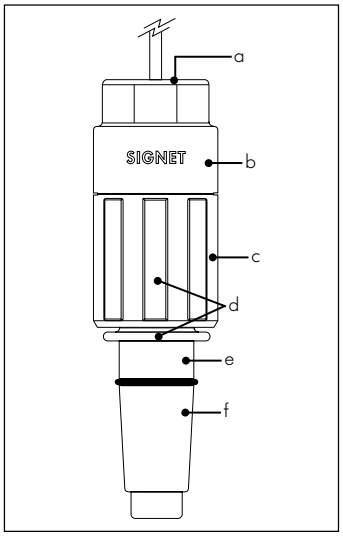
- **Water & Wastewater Treatment**
- **Neutralization Systems**
- **Scrubber Control**
- **Effluent Monitoring**
- **Surface Finishing**
- **Flocculent Coagulation**
- **Heavy Metal Removal and Recovery**
- **Toxics Destruction**
- **Sanitization Systems**
- **Commercial Pools & Spas**
- **Aquatic Animal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

## Description

Pre-amplification is required to protect the relatively weak output signal of pH & ORP electrodes from a wide variety of electromagnetic interference common in industrial environments. The +GF+ SIGNET 2720 Twist-Lock Pre-amplifier is installed locally, at the sensing point, to maximize this protection while allowing cable extensions up to 120 m (400 ft.). Our unique twist-lock design simplifies installation and maintenance by providing for the quick connection and disconnection of electrodes. And the CPVC body is virtually unbreakable for extended service-life in both submersible and in-line applications. If remote pre-amplification is necessary (e.g., tank temperature > 80° C), or if connecting to another manufacturer's electrode, use the +GF+ SIGNET 2721 Remote Pre-amplifier.

## Technical Features

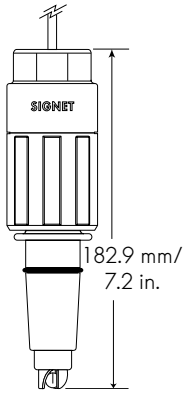
a) 3/4 in. female NPT or ISO port for support pipe or conduit connection.
b) Local pre-amplification for maximum protection from EMI.
c) Rugged CPVC body
d) Same pre-amplifier for pH or ORP systems. Add a threaded cap accessory for in-line installations.
e) "Twist-Lock" design allows mV and temperature/ID connections in one easy motion. Electrodes can be installed and removed in seconds. No tools or special handling required.
f) 271X pH or ORP electrode

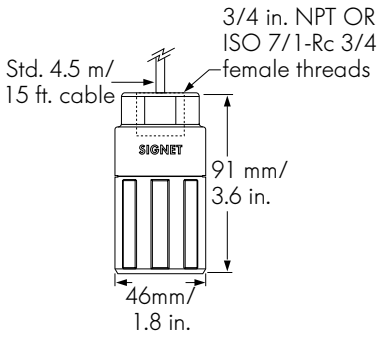



## Options

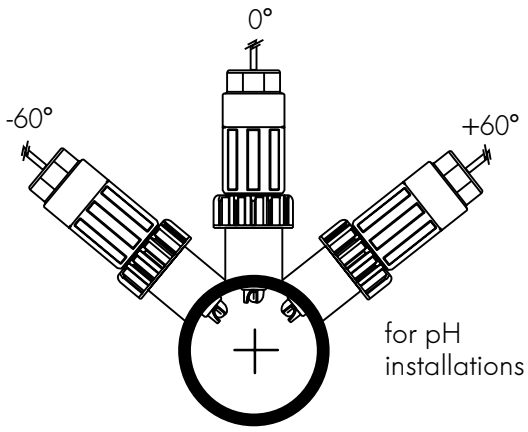
| Pre-amplifier | Electrode Options: 2714 | 2715 | 2716 | 2717 | other |
|---|---|---|---|---|---|
| 2720 | ● | ● | ● | ● | |
| 2721 | | | | | ● |

## Dimensions




## Sensor Mounting

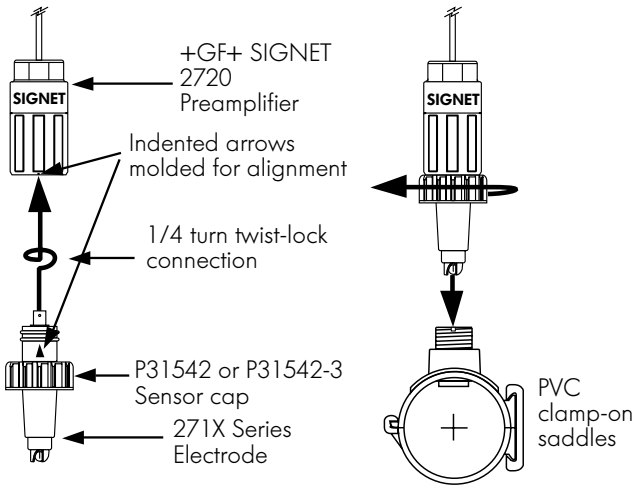



- It is recommended that you do not install standard electrodes within 30° of horizontal.
- Special electrodes for horizontal or inverted installation are available - contact factory.

## Installation

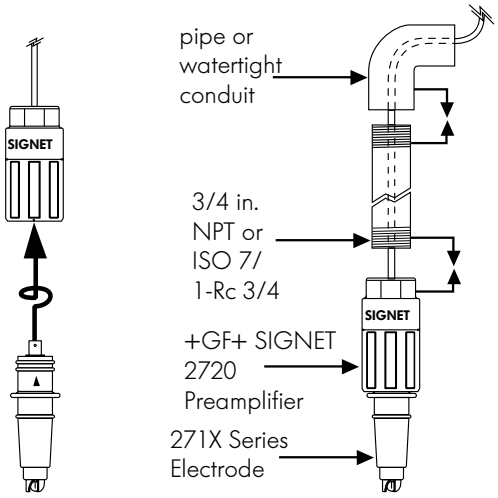
### In-Line:

For in-line installation, combine a 2720 Preamplifier with a sensor cap, 271X series electrode, and any +GF+ SIGNET fitting from 0.5 to 4 in.




### Submersible:

For submersible installation, combine a 2720 Preamplifier, a 271X series electrode, and a (user-supplied) pipe or watertight conduit. To prevent moisture accumulation at the cable-end of the pre amplifier, fill the lower 3 to 4 in. of conduit or extension pipe with a flexible sealant, such as silicone.




### Fitting Types for In-Line Installations

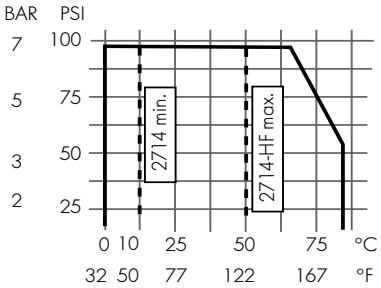
Refer to Fittings section of +GF+ SIGNET catalog for a complete listing of part numbers.

| Type | Description |
|---|---|
| Plastic tees | • Available in 1/2 in. to 4 in. sizes<br>• PVC, CPVC w/solvent cement socket<br>• PVDF and PP w/union end fittings |
| PVC saddles | • Available in 2 in. to 4 in. sizes<br>• Requires 1-7/16 in. hole in pipe |
| Iron strap-on saddles | • Available in 2 in. to 4 in. sizes<br>• Requires 1-7/16 in. hole in pipe |

| Type | Description |
|---|---|
| Carbon steel weldolets | • Available in 2 in. to 4 in. sizes<br>• Requires 1-7/16 in. hole in pipe<br>• Install by certified welder only |
| Carbon steel threaded tees | • Available in 1/2 in. to 2 in. sizes<br>• Female NPT ends |
| Universal pipe adapters | • Use for installation in pipes > 4 in. (1-1/4 in. NPT)<br>• PVC, CPVC, or PVDF versions<br>• Specify socket or 1-1/4 inch NPT male threads |

## Wiring


## Technical Data




| | |
|---|---|
| Input Range: | ±2,500 mV |
| Temperature: | 0° to 80° C (32 to 176°F) |
| Maximum pressure/temperature ratings: | |
| | 7 bar (100 psi) max @ ≤65 °C (149°F) |
| | 4 bar (58 psi) max @ ≤80 °C (176°F) |
| Power Requirements: | ±4.5 to ±8 VDC, dual supply (provided by all) +GF+ SIGNET pH/ORP instruments) |
| Maximum Current: | <1 mA, dual supply |
| Temp. Contact Res.: | <0.1Ω |
| End Connection: | Twist-Lock mount to +GF+ SIGNET 271X Electrodes |
| In-line Usage: | Place P31542 or P31542-3 sensor cap between electrode and preamp |
| Submersible Usage: | Direct connection to electrode. (Submersion of 2720 requires 3/4 in. NPT or ISO 7-1/R 3/4 Male thread and watertight cable conduit or sealed pipe) |
| Input Impedance: | $>10^{11}\Omega$ |
| Gain: | Unity |
| Material: | CPVC |
| Cable Type: | 6 conductor, foil shield, w/drain wire, 24AWG |
| Cable Length: | 4.5 m./15 ft. standard (120 m./400 ft. maximum) |
| Shipping Weight: | 0.5 kg/1.2 lbs. |

**Standards and approvals**

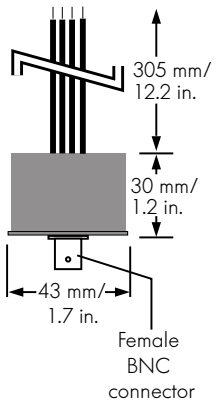
- Manufactured under ISO 9001 and ISO 14001
- CE

**+GF+ SIGNET 2721 Remote pH/ORP Preamplifier**

| | |
|---|---|
| Housing material: | Low density polyethylene |
| Electronics assembly: | Epoxy encapsulated |
| Input Impedance: | $>10^{11}\Omega$ |
| Operating temp.: | -15 to 65°C (-5 to 150°F) |
| Gain: | Unity |
| Input power: | ±4.5 to ±8 VDC dual supply (provided by +GF+ SIGNET pH/ ORP instruments) |
| Current consumption: | <1 mA, dual supply |

2721 Remote pH/ORP Pre-amplifier

To Signet instrument:
- •black: power input (V-)
- •red: power input (V+)
- •brown: amplified sensor signal output (mV)
- •green: isolated ground



## Ordering Information

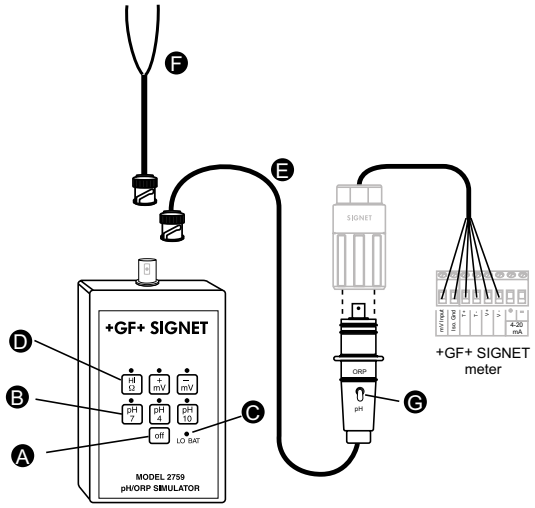
| Mfr. Part No | Code | Description |
|---|---|---|
| 3-2720 | 198 864 602 | Pre-amplifier 3/4 in. Female NPT |
| 3-2720-2 | 198 864 603 | Pre-amplifier ISO 7/1-R 3/4 |
| 3-2721 | 198 864 610 | Remote pH/ORP Pre-amplifier |

## Accessories

| Mfr. Part No | Code | Description |
|---|---|---|
| P31542 | 198 801 630 | Red sensor cap |
| P31542-3 | 159 000 464 | Blue sensor cap |
| 1220-0021 | 198 801 186 | Sensor Viton® O-ring, FPM (2 req'd.) |
| 1224-0021 | 198 820 006 | Sensor O-ring, EPDM (2 req'd.) |
| 1228-0021 | 198 820 007 | Sensor O-ring, FPM Kalrez (2 req'd.) |
| 5523-0624 | 159 000 636 | Cable, 24 AWG, 6-conductor (specify length in feet) |
| 3-2759 | 159 000 762 | pH/ORP System Tester (includes bypass adapter) |

**2759 pH/ORP System Tester Specifications**

A) Power OFF Button
B) Output simulation buttons and indicators. Simulate pH and ORP output at five fixed values: pH 4, pH 7, pH 10, -700 mV and +700 mV. Pressing one of these buttons turns the 2759 on.
C) Low battery indicator
D) High Ω switch: Adds 1000 MΩ resistance in series with output. Simulates high impedance of pH electrodes. Used to verify proper preamplifier operation.
E) 3-2759.393: Adapter cable for use with 2720
F) 3-2759.390: Bypass adapter cable (included with 2759)
G) Mode selector switch: Trigger automatic sensor recognition software in +GF+ SIGNET pH/ORP instrumentation.




## Engineering Specifications

- The preamplifier shall be CE listed.
- The preamplifier shall allow for direct "twist-lock" connection to pH and ORP electrodes.
- The preamplifier shall draw less than 1 mA, dual supply.
- The preamplifier shall be constructed of CPVC.
- The preamplifier shall have a 3/4 in. NPT or ISO 7/1R 3/4 in. female thread for standpipe or conduit connection.
- The preamplifier shall allow cable extension to 121 m/400 ft. from the sensing point.
- The preamplifier shall be +GF+ SIGNET 2720 Pre-Amplifier.