



## PRO-series pH/ORP Transmitter (Model PRO-P3 measures pH or ORP)



### Multiple Measurements

The PRO-P3 transmitter can be selected to measure pH or ORP (oxidation reduction potential). Measured pH and temperature values can be displayed separately or together. The corresponding 4-20 mA analog output can also be shown.

### Versatile Hookup Capability

PRO-series transmitters can be wired in a two, three, or four-wire hookup arrangement to meet your application requirement.

### Compact Size and NEMA 4X Universal Mounting

The compact PRO-series transmitter can be panel, wall, pipe, or integral sensor mounted.

### Electromagnetic Conformance

All PRO-series transmitters exceed U.S. and meet European standards for EMI and RFI emissions and immunity.

### Multiple Language Capability

All screens can be selected for display in English or Spanish. Different languages such as French or German may also be substituted.

### “Menu-guided” Operation

The simple keypad and logical menu structure make this transmitter easy to use. Menu screens guide you through setup, operation, calibration, and test/maintenance functions.

### Passcode-protected Access

For security, use the passcode feature to restrict configuration and calibration settings to only authorized personnel.

### Isolated 4-20 mA Output

The isolated 4-20 mA analog output can represent the measured pH or temperature (or ORP). During calibration, the analog output is automatically held at the last measured value and, upon completion, returned to its active state.

### Versatile Sensor Capability

The PRO-P3 transmitter can be used with any GLI Differential Technique pH or ORP sensor, or any conventional combination pH or ORP electrode.

### Auto/Manual Temperature Compensation

Automatic temperature compensation is provided when using NTC 300 ohm thermistor, Pt 1000 RTD, or Pt 100 RTD temperature elements. For applications requiring fixed temperature compensation, the PRO-P3 can be manually set to a desired temperature.

### Simple Interactive Diagnostics

Built-in diagnostics continuously test transmitter and sensor operation.

### OEM Versions Available

PRO-series transmitters can be packaged or configured to accommodate OEM-specific needs.



Certified Compliant to  
European Community  
Standards



Be Right™

# Specifications

## Operational

**Display** .....Two-line by 16 character backlit LCD

**NOTE:** The measured pH (or ORP) and temperature can be displayed separately or together on one screen. Both analog output values are shown together on one screen.

Measurement	Selectable Ranges
pH	-2.0 to 14.0 pH or -2.00 to 14.00 pH
ORP	-2100 to 2100 mV
Temperature	-4.0 to 392.0° F or -20.0 to 200.0° C
Analog Outputs (1 and 2)	0.00-20.00 mA or 4.00-20.00 mA

**Ambient Conditions** .....Operation: -4 to 140° F (-20 to 60° C); 0 to 95% relative humidity, non-condensing  
Storage: -22 to 158° F (-30 to 70° C); 0 to 95% relative humidity, non-condensing

**Temperature Compensation** .....Automatic from 14.0 to 230.0° F (-10.0 to 110.0° C) with selection for NTC 300 ohm thermistor, Pt 1000 ohm RTD, or Pt 100 ohm RTD temperature element, or manually fixed at a user-entered temperature; additional selectable temperature correction factors (ammonia, morpholine, or user-defined pH/°C linear slope) available for pure water automatic compensation from 0.0-50.0° C

**Sensor-to-Analyzer Distance**  
GLI Differential Technique Sensor .....3000 ft. (914 m) maximum  
Conventional Comb. Electrode w/Preamp .....985 ft. (300 m) maximum  
Conventional Comb. Electrode w/o Preamp .....100 ft. (30 m) maximum with electrode cable capacitance of less than 30 pF/foot

**Power Requirements (Class 2 Power Supply)**  
Two-wire Hookup .....16-30 VDC  
Three-wire Hookup .....14-30 VDC\*  
Four-wire Hookup .....12-30 VDC\*  
\*16 VDC minimum with RS-485 serial communication

### Calibration Methods

2-point Buffer (pH only) .....Automatic calibration and buffer recognition using two buffers from a selected buffer set\*  
1-point Buffer (pH only) .....Automatic calibration and buffer recognition using one buffer from a selected buffer set\*

\*Buffer Sets: 4.00, 7.00, and 10.00 or DIN standard (1.09, 4.65, 6.79, 9.23, and 12.75)

**NOTE:** When using buffers that are not included in either of the analyzer buffers sets, calibrate using only the Sample method (1 or 2)

2-point Sample (pH only) .....Enter two known sample values (determined by laboratory analysis or comparison reading) or two known pH buffer values.

1-point Sample (pH and ORP) .....Enter one known sample value (determined by laboratory analysis or comparison reading), or one known pH buffer value (or, for ORP measurement, one known reference solution value)

**Analog Output** .....Isolated 4-20 mA output with 0.004 mA (12-bit) resolution

**NOTE:** Each output can represent the measured pH or temperature (or ORP). Parameter values can be entered to define the endpoints at which the 4 mA and 20 mA output values are desired (range expand). During calibration, the analog output is automatically held at the last measured value, and upon completion, returned to its active state.

**Maximum Loop Load** .....Dependent on power supply voltage, transmitter hookup arrangement, and wire resistance:

### Maximum Permissible Loads

Transmitter Hookup Arrangement	Power Supply Voltage						
	12 VDC	14 VDC	16 VDC	20 VDC	24 VDC	28 VDC	30 VDC
Two-wire Hookup	—	—	100 ohms	300 ohms	500 ohms	700 ohms	800 ohms
Three-wire Hookup	—	500 ohms	600 ohms	800 ohms	1000 ohms	1200 ohms	1300 ohms
Four-wire Hookup	400 ohms	500 ohms	600 ohms	800 ohms	1000 ohms	1200 ohms	1300 ohms

**Memory Backup (non-volatile)** .....All user settings are retained indefinitely without battery backup

**EMI/RFI Conformance** .....Exceeds U.S. and meets European standards for conducted and radiated emissions and immunity; certified CE compliant for applications as specified by EN 50081-2 for emissions and EN 50082-2 for immunity

### Electrical Certifications

General Purpose (pending) .....UL, C-UL, FM, and GENELEC  
Division 2 (pending) .....UL, C-UL, and FM: Groups A, B, C, D, F, and G

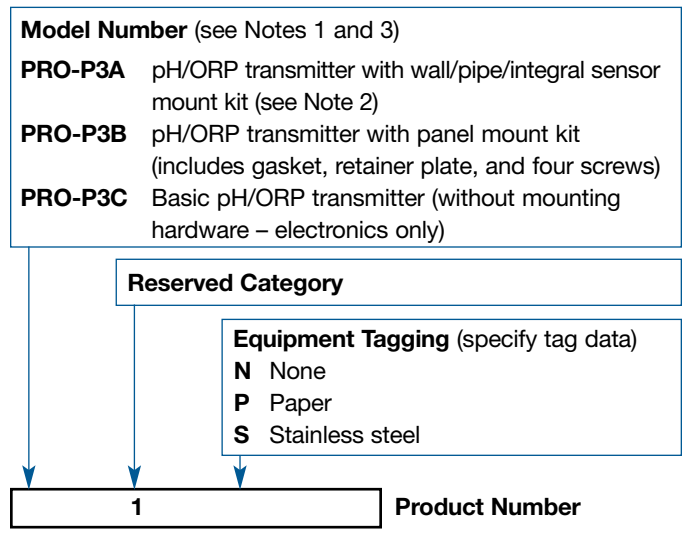
## Analyzer Performance (Electrical, Analog Outputs)

Accuracy\*\* .....± 0.1% of span  
Sensitivity\*\* .....± 0.05% of span  
Repeatability\*\* .....± 0.05% of span  
Temperature Drift\*\* .....Zero and Span: ± 0.02% of span per °C  
Response Time .....1-60 seconds to 90% of value upon step change (with output filter setting of zero)  
\*\* These performance specifications are typical at 25° C

## Mechanical

Enclosure .....Polycarbonate with NEMA 4X general purpose; choice of included mounting hardware  
Mounting Configurations .....Panel, wall, pipe, or integral sensor mounting  
Dimensions .....With Back Cover: 3.75 in. W x 3.75 in. H x 2.32 in. D (95 mm W x 95 mm H x 60 mm D)  
Without Back Cover for Panel Mount: 3.75 in. W x 3.75 in. H x 0.75 in. D (95 mm W x 95 mm H x 19 mm D)  
Net Weight .....10 oz. (280 g) approximately

# Ordering Information



Choose one from each category.

## Accessories (order separately)

### Retrofit Wall/Pipe/Integral Sensor Mount Kit (P/N 1000A3457-001)

This hardware kit enables an existing panel-mounted PRO-series transmitter to be wall, pipe, or integral sensor mounted.

### Retrofit Panel Mount Kit (P/N 1000A3455-001)

This hardware kit enables an existing wall, pipe, or integral sensor-mounted PRO-series transmitter to be panel mounted.

### Operating Manual (P/N PRO-P3)

A paper booklet operating manual for the PRO-P3 pH/ORP transmitter.

### pH and ORP Sensors

For various styles of GLI pH and ORP sensors, refer to these data sheets for complete details:

G109 – pH™ Differential Sensors

G110 – Encapsulated LCP, Ryton, and Epoxy Sensors

G112 – 3/4-inch Combination Sensors

G114 – Manual Positioners for Combination pH Electrode

## Ordering Notes:

1. The standard on-screen languages for PRO-series transmitter operation are English and Spanish. A different language (French, German, etc.) may be substituted for Spanish. Please specify the desired language.
2. This mounting kit includes all hardware needed to wall, pipe or integrally sensor mount the transmitter. When integrally mounting the transmitter onto a GLI sensor, please specify the sensor part number with a “PRO1” suffix to ensure a correct sensor cable length and coupling. When the coupling is not required (replacement sensor), please specify the sensor part number with a “PRO2” suffix.
3. Each transmitter is supplied with a CD-ROM containing operating manuals (in PDF-file format) for all of the PRO-series transmitters. Paper manuals are also available (see Accessories).

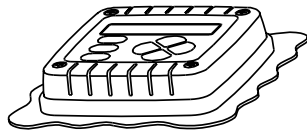
## Couplings to Retrofit Transmitter onto Sensor

Installed Sensor	Required Coupling	
	Part Number	Size
pHD™-series:		
Convertible (tee mount)	3P2120-125	1 x 1/2-inch
Convertible (union mount)	None required	-----
Sanitary	3P2120-125	1 x 1/2-inch
Insertion	Not available	-----
LCP-series:		
Convertible	3P2120-130	1-1/2 x 1/2-inch
Union mount	3P2120-130	1-1/2 x 1/2-inch
PC-series 3/4-inch Combination	3P2120-122	3/4 x 1/2-inch

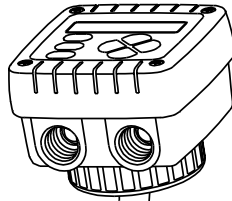
# Engineering Specifications

1. The microprocessor-based transmitter shall accept any GLI 5-wire Differential Technique pH or ORP sensor, or any conventional combination pH or ORP electrode.
2. The transmitter shall measure pH and process temperature or ORP.
3. The transmitter shall be operable in multiple languages.
4. The transmitter shall have a two-line by 16 character LCD. It shall display measured pH and temperature separately or together on a single screen. The corresponding 4-20 mA analog output value shall also be shown.
5. The transmitter shall have these calibration methods:
  - a) 2-point Buffer Method (pH only): Automatic calibration and buffer recognition using two buffers from a selected buffer set.
  - b) 1-point Buffer Method (pH only): Automatic calibration and buffer recognition using one buffer from a selected buffer set.
  - c) 2-point Sample Method (pH only): Enter two known sample values (determined by laboratory analysis or comparison reading) or two known pH buffer values.
  - d) 1-point Sample Method (pH and ORP): Enter one known sample value (determined by laboratory analysis or comparison reading) or one known pH buffer value (or, for ORP measurement, one known reference solution value).
6. The transmitter shall have a passcode to restrict configuration and calibration settings only to authorized personnel.
7. The transmitter shall have two temperature compensation methods:
  - a) Automatic: When the pH sensor has an NTC 300 ohm thermistor, Pt 1000 RTD or Pt 100 RTD temperature element, the pH measurement is automatically compensated for process temperature.
  - b) Manual: The transmitter can be set to compensate the pH measurement to a fixed, user-entered temperature.
8. The transmitter shall have user-test diagnostics for transmitter and sensor operation without requiring special test equipment.
9. The transmitter shall have an RS-485 data communication port.
10. The transmitter shall have an isolated 4-20 mA analog output that can be assigned to represent the measured pH or temperature (or ORP). Parameter values can be entered to define the endpoints at which the 4 mA and 20 mA analog output values are desired (range expand). During calibration, the analog output is automatically held at the last measured value and, upon completion, returned to its active state.
11. The transmitter shall be Hach Company GLI Model PRO-P3.

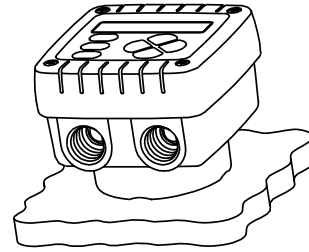
# Mounting Configurations



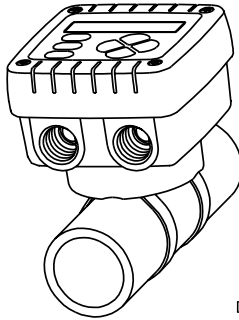
PANEL MOUNT



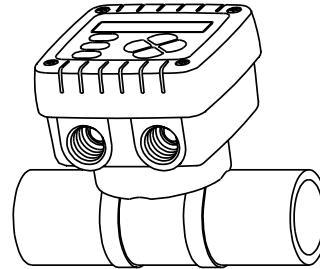
INTEGRAL SENSOR MOUNT  
(COUPLING AND SENSOR APPEAR  
DIFFERENTLY FOR EACH MEASUREMENT TYPE)



WALL MOUNT



VERTICAL PIPE MOUNT



HORIZONTAL PIPE MOUNT

## GLI pH<sup>™</sup> Differential pH and ORP Sensors

(for use with PRO-P3 Transmitter)  
For complete details and specifications,  
refer to Data Sheet G109.



**GLI**  
International  
A Hach Company Brand

Lit. No. G107 (Supercedes PRO-P3/1001) • G33 Printed in U.S.A. • ©Hach Company, 2003. All rights reserved.  
In the interest of improving and updating its equipment, Hach Company reserves the right to alter specifications  
to equipment at any time.



Be Right<sup>™</sup>