

## PRO-series pH/ORP Transmitter

(Model PRO-P3 measures pH or ORP)



Certified Compliant to  
European Community Standards

### ■ 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.

# Specifications

## Operational:

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

**NOTE:** The measured pH (or ORP) and temperature can be separately displayed or shown together on one screen. The corresponding 4-20 mA analog output value can also be shown.

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 .....	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 Combination

Electrode with Preamp ..... 985 ft. (300 m) maximum

#### Conventional Combination

Electrode without Preamp ..... 100 ft. (30 m) maximum with electrode cable capacitance of less than 30 pF/foot

Power Requirements ..... Two-wire Hookup: 16-30 VDC; Three-wire Hookup: 14-30 VDC\*; Four-wire Hookup: 12-30 VDC\*  
(Class 2 Power Supply) \*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 buffer set, 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:** 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 (non-volatile)..... All user settings are retained indefinitely in memory 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 CENELEC

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; 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



<b>MODEL NUMBER</b> (see Notes 1 and 3)	
<b>PRO-P3A</b>	pH/ORP transmitter with wall/pipe/integral sensor mount kit (see Note 2)
<b>PRO-P3B</b>	pH/ORP transmitter with panel mount kit (includes gasket, retainer plate, and four screws)
<b>PRO-P3C</b>	Basic pH/ORP transmitter (without mounting hardware -- electronics only)
<b>RESERVED CATEGORY</b>	
<b>EQUIPMENT TAGGING</b> (specify tag data)	
<b>N</b>	None
<b>P</b>	Paper
<b>S</b>	Stainless steel

<b>1</b>	<b>Product Number</b>
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Choose item from each category.

## 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 integral 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 at right).

## Accessories (order separately):

### • Retrofit Wall/Pipe/Integral Sensor Mount Kit 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 1000A3455-001

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

### • Couplings to Retrofit Transmitter onto Sensor

Installed Sensor	Required Coupling	
	Part Number	Size
pH™-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

### • Operating Manual No. PRO-P3

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

## pH and ORP Sensors

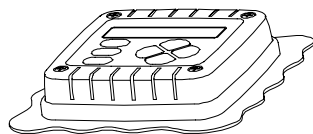
For various styles of GLI pH and ORP sensors, refer to these data sheets for complete details: PD, LRE, 6000P0, FTA, HPW, PC or PR6300M.

# Engineering Specification

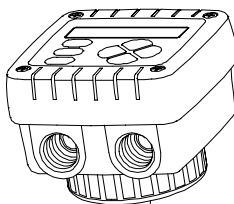
1. The microprocessor-based transmitter shall accept any GLI 5-wire Differential Technique pH or ORP sensor, or any conventional combination pH or ORP electrode.
2. The transmitter shall measure pH and process temperature or ORP.
3. The transmitter shall be operable in multiple languages.
4. The transmitter 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.
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 GLI International, Inc. Model PRO-P3.

# Mounting Configurations

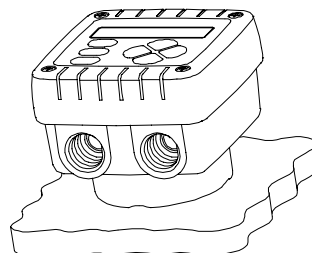
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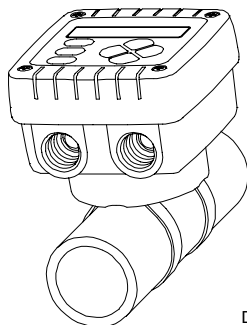
PANEL MOUNT



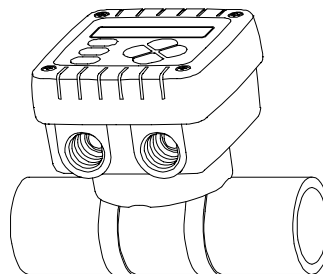
INTEGRAL SENSOR MOUNT  
(COUPLING AND SENSOR APPEAR  
DIFFERENTLY FOR EACH MEASUREMENT TYPE)



WALL MOUNT



VERTICAL PIPE MOUNT



HORIZONTAL PIPE MOUNT

## GLI pHD™ Differential pH and ORP Sensors

(for use with PRO-P3 Transmitter)



For complete details and specifications, refer to Data Sheet PD.