



## 2-Wire Isolated pH/ORP Transmitter Systems

### PHTX-45



- ✓ PEEK Sensor Body Construction
- ✓ Dual-Glass Style Sensor
- ✓ Replaceable Sensor Saltbridge
- ✓ Electrode Breakage Diagnostic
- ✓ Universal Mounting Configurations
- ✓ Microprocessor Based System
- ✓ Large Dual Display Format
- ✓ Loop Powered, Fully Isolated

#### Sensor Features

Sensor housings are constructed of PEEK, a high performance thermoplastic that provides outstanding mechanical strength and chemical resistance. Multiple sealing materials are used to preserve sensor integrity over a wide range of applications.

A large volume, dual junction saltbridge is used to maximize the in-service time of the sensor. The annular junction provides a large surface area to minimize the chance of fouling. Large electrolyte volume and dual reference junction minimizes contamination of the reference solution. The replaceable saltbridge allows for easy sensor regeneration.

The reference element of this sensor is a second pH electrode immersed in a reference buffer solution. This glass reference system allows the sensor to be used in applications that poison conventional pH sensors.

An integral preamplifier is encapsulated in the body of the sensor. This creates a low impedance signal output which ensures stable readings in harsh environments, and maximize the distance between sensor and transmitter. Sensor diagnostics are used to alarm the user in the event of electrode breakage, loss of sensor seal integrity, or integral temperature sensor failure.

Sensor electrodes can be user-specified to ensure measurement reliability and maximum sensor lifetime. The type of glass used in the pH electrode can be selected for optimal performance. The metal electrode used for ORP measurements can be platinum or gold, depending on chemical makeup of the process solution.



PHTX-45, transmitter shown with PHE-45P electrode, both shown smaller than actual size.

To Order	
Model No.	Description
PHTX-45	pH transmitter
PHE-45P	pH electrode
ORTX-45	ORP transmitter
ORE-45P	ORP sensor, -1000 mV to 2000 mV
U24Y101	24 Vdc power supply
PHTX-45-SMH	Submersion mounting hardware, 1.8 m (6')
PHTX-45-RK	pH/ORP sensor regeneration kit: 1 saltbridgeplus 1, 125 mL bottle of reference cell solution, pH 7.00 (for Models PHE-45P and ORTX-45E sensors only)
PHA-4	pH 4.01 buffer solution, 475 ml bottle
PHA-7	pH 7.01 buffer solution, 475 ml bottle
PHA-10	pH 10.01 buffer solution, 475 ml bottle

Comes complete with operator's manual.

Ordering Example: PHTX-45, pH transmitter, PHE-45P, electrode and PHA-4, buffer solution.



## PHTX-45 in Line Application Solution

### Transmitter Features

The microprocessor-based transmitter is loop-powered and fully isolated for high service reliability. The transmitter includes devices to protect the system from power surge and brownout events.

The large, high contrast, super-twist display provides excellent readability over a wide operating temperature range, even in low light conditions. The main display line consists of large, segmented characters with measurement units. The secondary display line utilizes easily readable dot matrix characters for clear display of calibration and diagnostic messages. Two of four measured parameters may be displayed simultaneously.

Four-button programming provides intuitive navigation through the menu driven user interface. The 4 to 20 mA transmitter output can be configured to represent any portion of the measurement range. Output HOLD, ALARM and SIMULATION features provide the user with complete control of the system output under any condition.

Diagnostic messages provide a clear description of system condition, which eliminates confusing error codes that must be looked up in the operator's manual.

The flexible two-point and sample calibration options include auto-buffer recognition from thirteen built-in buffer tables. Manual override of the automatic buffer values allows the user to customize calibration values. To ensure high accuracy, all calibration methods include stability monitors that check temperature and main parameter stability before accepting data.

### Specifications

#### PHE-45P and ORE-45P

##### Sensor Specifications

**Sensor Cable:** 3 m (10')

##### Measuring Range:

**PHE-45P:** 0 to 14.00 pH

**ORE-45P:** -1000 to 2000 mV

**Sensitivity:** 0.002 pH, 0.2 mV (ORP)

**Stability:** 0.02 pH or 2 mV per 24 hours, non-cumulative

##### Wetted Materials:

**PHE-45P:** PEEK, ceramic, titanium, glass, FKM, EDPM (316 stainless steel with 316SS body option)

**ORE-45P:** PEEK, ceramic, titanium, glass, FKM, EDPM, platinum or gold

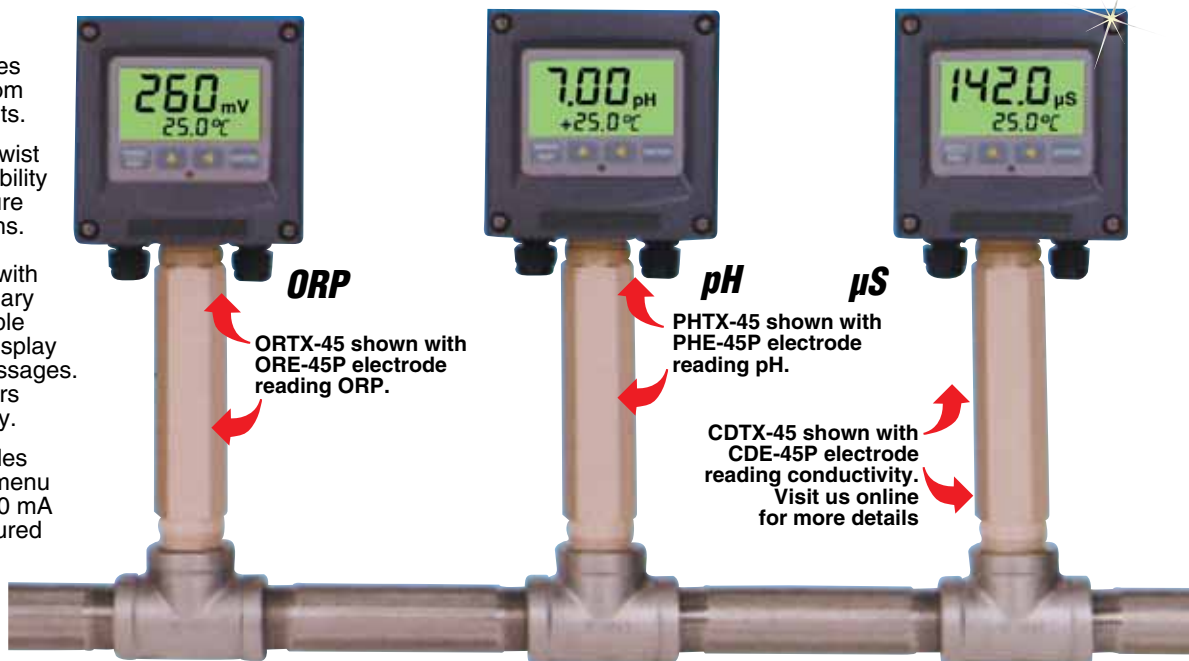
##### Temperature Compensation:

##### Pt1000 Sensor Cable:

6 Conductor plus 2 shields

##### Temperature Range:

-5 to 95°C (23 to 203°F)



**ORP**

ORTX-45 shown with ORE-45P electrode reading ORP.

**pH**

PHTX-45 shown with PHE-45P electrode reading pH.

**µS**

CDTX-45 shown with CDE-45P electrode reading conductivity. Visit us online for more details

**Pressure Range:** 0 to 100 psig

**Maximum Flow Rate:**

3 m (10') per second

**Sensor to Transmitter Distance:**

914 m (3000')

**Mounting Options:** 1 NPT convertible

**Weight/Shipping Weight:**

0.45 kg (1 lb)

#### PHTX-45 Transmitter

##### Specifications

**Enclosure:** NEMA 4X, IP65, polycarbonate, stainless steel hardware, weatherproof and corrosion resistant, 112 H x 112 W x 89 mm D (4.4 x 4.4 x 3.5")

**Mounting Options:** Wall, panel, pipe, Din rail, integral-sensor

**Conduit Openings:** 2-PG9 openings, 1 to 1 NPT center opening, cord grips and plug included

**Weight/Shipping Weight:**

0.45 kg (1 lb)

**Display:** Large, high-contrast, super-Twist (STN) LCD; 4-digit main display with 19.1 mm (0.75") seven-segment character, 12-digit secondary display, 7.6 mm (0.3") 5 x 7 dot matrix character

**Keypad:** 4-key membrane type with tactile feedback, polycarbonate with UV coating, integral EMI/static shield and conductivity coated window

**Ambient Temperature:**

**Service:** -20 to 60°C (-4 to 140°F)

**Storage:** -30 to 70°C (-22 to 158°F)

**Ambient Humidity:**

0 to 95%, non-condensing

**Location:** Designed for hazardous and non-hazardous areas

**EMI/RFI Influence:**

Designed to EN61326-1

**Voltage Range:**

16 to 35 Vdc (two-wire device)

**Output Isolation:**

600 V galvanic isolation

**Transmitter Cable Type:**

Belden twisted-pair, shielded

**Filter:** Adjustable 1 to 99 seconds

additional damping to 90% step input

**Temperature Input:** Selectable Pt1000 or Pt100, automatic compensation

#### PHE-45P Performance

##### Specifications

**Displayed Parameters:**

**Main Input:** 0 to 14.00 pH;

**Sensor Voltage:** ±500 mV;

**Loop Current:** 4 to 20 mA;

**Sensor Temperature:**

-10 to 110°C (14 to 230° F)

**Main Parameter Range:** 0 to 14.00 pH

**Input Impedance:** Greater than 1013 Ω

**Repeatability:** 0.1% of or better

**Sensitivity:** 0.05% of span

**Non-Linearity:** 0.1% of span

**Stability:** 0.1% of span

per 24 hours, non-cumulative

**Warm-Up Time:** 4 seconds to rated performance

**Supply Voltage Effects:** ±0.05% span

**Transmitter Response Time:**

4 seconds to 90% of step input at lowest setting

**Temperature Drift:**

Span or zero, 0.02% of span/°C

**Sensor to Transmitter Distance:**

914 m (3000') w/preamp,

9.1 m (30') w/o preamp