2-Wire Isolated Dissolved Oxygen Transmitter System

DOTX-45 transmitter shown smaller than actual size.

- Reliable 3-Electrode Amperometric Sensor
- Replaceable Sensor Cartridge
- Sensor Membrane Puncture/Tear Diagnostic
- Microprocessor-Based System
- Large, Dual-Display Format
- Loop Powered, Fully Isolated

Sensor Features
The DOE-45PA dissolved oxygen sensor is a highly dependable membrane-covered galvanic sensor. The polymer membrane has hydrophobic properties to help resist fouling from biological growth and maximize diffusion of oxygen into the sensor. The DOE-45PA also has automatic temperature compensation to correct for membrane permeability errors.

Transmitter Features
The microprocessor-based transmitter is loop powered and fully isolated for high reliability. The transmitter includes devices that protect the system from power surges and brownout events. The large, high-contrast, super-twist display is readable 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 displays calibration and diagnostic messages in readable dot-matrix characters. Two of four measured parameters can be displayed simultaneously. Programming is intuitive, with a 4-button, menu-driven 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 give the user complete control of the system output under any condition. Diagnostic messages clearly describe system conditions, which eliminates confusing error codes. The flexible calibration method includes stability monitors that check temperature and main parameter stability before accepting data.

Specifications (DOE-45PA Sensor)
- Measuring Range: 0 to 40 ppm
- Sensor Cable: 9.1 m (30')
- Measurement Response Time: 90% in less than 3 minutes
- Measurement Principle: Membrane covered galvanic
- Electrode Material:
  - Cathode: Platinum
  - Anode: Lead
- Electrolyte: Potassium chloride based
- Pressure Range: 0 to 150 psig @ 25°C (77°F)
- Temperature Compensation: Pt100
- Temperature Range: -5 to 55°C (23 to 131°F)
- Minimum Flow Rate: 6 mm (0.02') per second
- Membrane Thickness: 50 microns

Membrane Material: FEP (fluorinated ethylene propylene)
Wetted Materials: 316 SS, FKM, Noryl
Sensor Cable: 5-conductor
Sensor-to-Transmitter Distance: 305 m (1000')
Mounting: Submersion 1 NPT
Shipping Weight: 0.45 kg (1 lb)

Specifications (DOTX-45 Transmitter)
- Performance Specifications
  - Displayed Parameters: Main input, 0 to 40.0 ppm
  - % Saturation: 0 to 200%
  - Loop Current: 4 to 20 mA
  - Sensor Temperature: 0 to 50°C (32 to 122°F)
  - Power: 16 to 35 Vdc
  - Main Parameter Range: 0 to 40 ppm
  - Repeatability: 0.1% of span 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% of span

Transmitter Response Time: 4 seconds to 90% of step input at lowest setting
Temperature Drift: Span or zero, 0.02% of span/°C

Temperature Compensation: 0 to 50°C (32 to 122°F), Pt1000 element; sensor is internally compensated for membrane permeability changes with temperature

Sensor-to-Transmitter Distance: 305 m (1000’)

Enclosure: NEMA 4X (IP66), 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, 1-1 NPT center opening, cordgrips and plug included

Weight/Shipping Weight: 0.45 kg (1 lb)

Display: Large, high-contrast, super-twist LCD; 4-digit main display with sign, 19.1 mm (0.75”), 7-segment characters; 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 conductively coated window

Operating Temperature: -20 to 60°C (-4 to 140°F)
Storage Temperature: -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 EN 61326-1

Voltage Range: 16 to 35 Vdc (2-wire device)

Output Isolation: 600V 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

To Order

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<th>Model No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>DOTX-45</td>
<td>Dissolved oxygen transmitter</td>
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<tr>
<td>DOTX-45-115VAC-R2</td>
<td>Dissolved oxygen transmitter with relays</td>
</tr>
<tr>
<td>DOE-45PA**</td>
<td>Dissolved oxygen sensor</td>
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<tr>
<td>PSU-93</td>
<td>Unregulated power supply</td>
</tr>
<tr>
<td>PHTX-45-SMH</td>
<td>Submerison mounting hardware, 1.8 m (6’)</td>
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Accessories

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<th>Model No.</th>
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<td>DOE-45PA-DOE**</td>
<td>DO electrolyte, 4 oz bottle</td>
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<tr>
<td>DOE-45PA-EC</td>
<td>Electrolyte chamber</td>
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<tr>
<td>DOE-45PA-MH</td>
<td>316 SS membrane holder</td>
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<tr>
<td>DOE-45PA-RLE</td>
<td>Replacement lead electrode</td>
</tr>
<tr>
<td>DOE-45PA-RM**</td>
<td>Membranes, 5 mil 10-pack</td>
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<tr>
<td>DOE-45PA-SE</td>
<td>Submersible sensing-element body</td>
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<tr>
<td>DOE-45PA-SH</td>
<td>Submersible sensing-element holder assembly</td>
</tr>
<tr>
<td>DOE-45PA-SM</td>
<td>Submersible sensing module</td>
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** When purchasing the DOE-45PA for the first time it is necessary to also purchase the DOE-45PA-DOE electrolyte solution and DOE-45PA-RM membranes.


