

Safety information

Please read this entire document before unpacking, setting up or operating this equipment. Pay attention to all danger and caution statements. Failure to do so could result in serious injury to the operator or damage to the equipment.

To ensure that the protection provided by this equipment is not impaired, do not use or install this equipment in any manner other than that specified in this document.

Important Note: *The manufacturer is not responsible for any damages due to misapplication or misuse of this product including, without limitation, direct, incidental and consequential damages, and disclaims such damages to the full extent permitted under applicable law. The user is solely responsible to identify critical application risks and install appropriate mechanisms to protect processes during a possible equipment malfunction.*

Use of hazard information

DANGER
Indicates a potentially or imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING
Indicates a potentially or imminently hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION
Indicates a potentially hazardous situation that may result in minor or moderate injury.

Important Note: *Information that requires special emphasis.*

Note: *Information that supplements points in the main text.*

Precautionary labels
Read all labels and tags attached to the instrument. Personal injury or damage to the instrument could occur if not observed. A symbol, if noted on the instrument, will be included with a danger or caution statement in the manual.

	This symbol, if noted on the instrument, references the instruction manual for operation and/or safety information.
	Electrical equipment marked with this symbol may not be disposed of in European public disposal systems after 12 August of 2005. In conformity with European local and national regulations (EU Directive 2002/96/EC), European electrical equipment users must now return old or end-of life equipment to the Producer for disposal at no charge to the user. Note: <i>For return for recycling, please contact the equipment producer or supplier for instructions on how to return end-of-life equipment, producer-supplied electrical accessories, and all auxiliary items for proper disposal.</i>

Introduction

This quick-start booklet contains condensed instructions to assist the user in starting and operating the instrument. These condensed instructions pertain to basic dissolved oxygen measurement operation (in ppm) and wiring the transmitter in a two-wire hookup. Refer to the

PRO-D3 manual for information about wiring in a three or four-wire hookup, or use a specific instrument feature.

Mount the transmitter

Refer to the PRO-D3 manual for instructions on mounting the transmitter.

Connect the sensor

DANGER

Explosion Hazard. Do not connect or disconnect electrical components or circuits to the equipment unless power has been removed or the area is known to be non-hazardous.

WARNING

Multiple hazards. Only qualified personnel must conduct the tasks described in this section of the document.

1. Install the membrane dissolved oxygen sensor. For more information about installing the membrane dissolved oxygen sensor, refer to the QSPRO-D3 manual.
2. When using the sensor mounting hardware, plug the sensor cable into the mating receptacle on the junction box. Route the six-conductor interconnect cable (part number 1W1100) from the junction box to the transmitter.
3. At the transmitter end of the interconnect cable, twist the two shield wires together. Then insulate them with plastic tubing or tape to prevent inadvertent shorting, and connect the combined shield to transmitter Terminal 3 on TB2.
4. Connect the other sensor interconnect cable wires to the transmitter terminals on TB2, matching colors as indicated in [Table 1](#).
5. At the junction box end of the interconnect cable, twist the two shield wires together. Connect the combined shield to the junction box terminal corresponding to the white wire with black stripe. Connect the other interconnect cable wires to terminals corresponding to their wire colors.

Table 1 Sensor connections

Wire color	Terminal
White	Terminal 1
Blue	Terminal 2
Inner and outer shield wires and black wire	Terminal 3
Yellow	Terminal 4
Green	Terminal 5
–	Terminal 6 (unused)
Red	Terminal 7

Configure the sensor temperature element

The transmitter is factory-set for automatic temperature compensation using the NTC 30 K ohm thermistor temperature element built into membrane dissolved oxygen sensors. If fixed Manual temperature compensation is required, change the temperature element type to Manual and enter a temperature. For details, refer to the PRO-D3 manual, section Select Temp Element Type.

Connect the DC power

In a two-wire hookup, at least 14 VDC is required for operation. A load device can be connected in the current loop as shown in [Figure 1 on page 3](#).

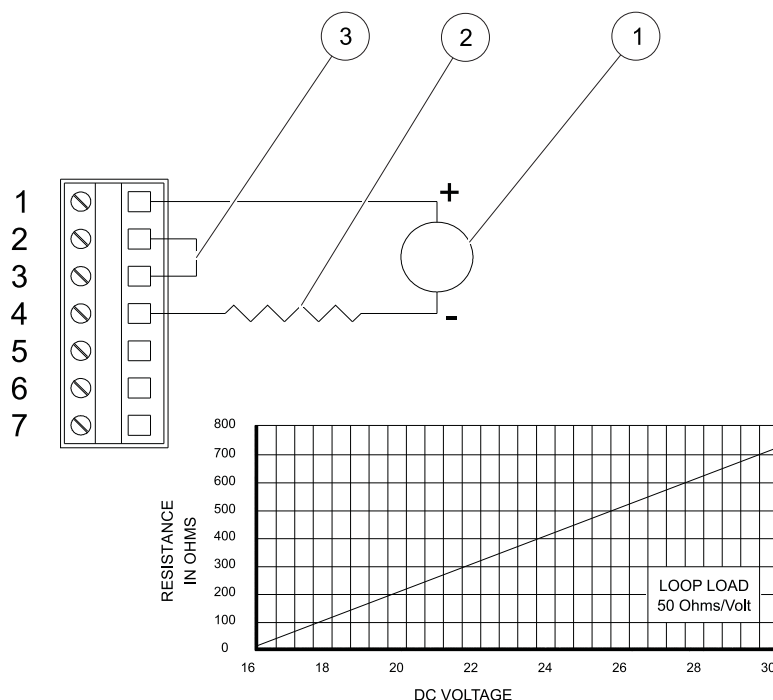


Figure 1 Load device connected in the current loop

1	Loop power 14–30 VDC class 2, 4–20 mA	3	Jumper required
2	Loop resistance (see nomograph)		

Depending on how the transmitter is mounted, route the DC power/analog output wiring into the transmitter as follows:

Wall/Pipe-mounted transmitter: Route the cable through the right side cable entry knockout hole in the back cover.

Panel-mounted transmitter: Route the cable behind the panel to the exposed TB1 terminal strip.

Note: Use high quality, shielded instrumentation cable.

For more information about wiring the transmitter in a three or four-wire hookup arrangement or monitor mode hookup, refer to the PRO-C3 manual.

Calibrate the transmitter

The transmitter must be calibrated so that measured values will correspond to actual process values.

The manufacturer recommends on using the Air Cal method with one of the calibration bags provided with the membrane D.O. sensor because this:

- Ensures high calibration accuracy by providing a stable atmosphere at the sensor membrane.
- Is more convenient than using a portable meter to determine the known D.O. value (even more so when an optional washer head assembly is attached to sensor for self-cleaning).
- Provides high repeatability because the sensor is in a controlled environment inside the bag.

Important Note: During initial startup and before calibration, always condition the membrane D.O. sensor by operating it in water for at least 12 hours to polarize the electrodes. Failure to properly condition the sensor will result in significant measurement error.

The Air Cal method for calibration method is described below. For more information about the other available methods, refer to the PRO-D3 manual. The transmitter automatically calibrates itself using the atmospheric pressure/altitude value entered by the user and the measured temperature in the calibration bag. For more information about theoretical D.O. calibration values based on measured temperature, refer to the PRO-D3 manual. The actual calibration value may be slightly different due to the effect of the entered atmospheric pressure/altitude.

1. Before calibration, enter the known atmospheric pressure or altitude of the geographic area:
 - a. Press **MENU** to display the Main Menu screen. If the Main Menu screen is not displayed, press the **UP** or the **DOWN** arrow key to display it.
 - b. Press **ENTER** to display the Configure Set Output screen.
 - c. Press the **DOWN** arrow to display the Configure Sensor.
 - d. Press **ENTER** to display the Sensor Display Format screen.
 - e. Press the **DOWN** arrow to display the Configure Pressure Units screen.
 - f. Press **ENTER** to display the Pressure Units? (mmHg) screen. Press the **UP** and the **DOWN** arrow keys to select the desired units pressure in mm of mercury or altitude in meters or feet, and press **ENTER**.
 - g. After the Pressure Units? (mmHg) screen appears, press the **DOWN** arrow to display SENSOR SET PRESSURE or SENSOR SET ALTITUDE and press **ENTER** to display the Set Pressure? (xxx.x mmHg) or the Set Altitude ? (xxxx FT) screens respectively. Adjust the displayed value to the known pressure or altitude. Press the **RIGHT** and the **LEFT** arrow keys select digit, and the **UP** and **DOWN** arrow keys to adjust its value and press **ENTER**.

Note: For values above the sea level altitude, press the **UP** arrow to select "+" in front of value. For below sea level altitude, press the **DOWN** arrow to select "-" in front of value.

If the "Confirm Failure" screen appears at any time during calibration, press **ENTER**. Press the **UP** or **DOWN** arrow key to select between "Cal: Exit" or "Cal: Repeat" and do one of the following:

- Select "Cal: Exit" and press **ENTER**. After the Confirm Active screen appears, press **ENTER** to return the analog output to its active state (Measure screen appears).
 - Select Cal: Repeat select, press **ENTER** to repeat calibration.
2. Press **MENU** to display the Main Menu screen screen. Press the **UP** arrow to display Main Menu Calibrate screen.
 3. Press **ENTER** to display the Calibrate Sensor screen.
 4. Press **ENTER** again to display Sensor Sample Cal screen.
 5. Press the **DOWN** arrow once to display the Sensor Air Cal screen.
 6. Remove the sensor from the conditioning water, place the calibration bag (provided) over the wet membrane end of the sensor and secure the bag to the sensor body.

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7. Press **ENTER** to display the "xx.xx ppm Sample Ready?" screen. With the sensor held in air, press **ENTER** to start the automatic calibration ("Air Cal Please Wait" screen appears for a few minutes).

***Note:** During calibration, the analog output is automatically "held" at the last measured value.*

8. After the "Air Cal: Confirm Cal Ok?" screen appears, press **ENTER** to end the calibration.
9. After the "Confirm Active?" output status screen appears showing the active measurement reading, remove the calibration bag from the sensor, and place the sensor into the process. When the reading corresponds to the actual typical process value, press **ENTER** to return the analog output to its active state (Measure screen appears).

The transmitter is now ready to accurately measure D.O.

***Note:** For more information about changing display units on the Measure screen (for example, from ppm to mg/l or % saturation), refer to the PRO-D3 manual section, Select Display Format.*

Complete transmitter configuration

To further configure the transmitter to meet the application requirements, use the appropriate Configure screens to make selections and key in values. For more information about complete configuration, refer to the PRO-D3 manual.

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