

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 pH measurement operation with a Differential pH sensor and wiring the transmitter in a two-wire hookup. Refer to the PRO-P3 manual for more information about measuring ORP, using a conventional

combination electrode, wiring in a three or four-wire hookup, or use a specific instrument feature.

Mount the transmitter

Refer to PRO-P3 manual for instructions on mounting the transmitter.

Connect the sensor/Configure the sensor type and temperature element

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. Connect the Differential Technique pH sensor, matching wire colors to terminals as indicated in [Table 1](#).

Note: For Differential sensors with only one shield wire, always connect it to Terminal 3 on TB2. For systems not requiring CE compliance and lacking an earth ground, connect the outer shield to Terminal 3 on TB2.

2. The transmitter is factory-set for use with a Differential Technique pH sensor. To use another type of pH sensor or an ORP sensor, change the sensor type. For more information about changing the sensor type, refer to the PRO-P3 manual, section Select Sensor Type.
3. The transmitter is factory-set for automatic temperature compensation using the 300 ohm (NTC300) temperature element built into all Differential sensors (except 6006P4-2000 pure water pH sensor system which uses a Pt 1000 RTD). To use a sensor with a different temperature element, or if fixed Manual temperature compensation is required, change the temperature element type. For more information about changing the temperature element type, refer to the PRO-P3 manual, section Select Temp Element Type.

Table 1 Sensor connections

Wire color	TB2 Terminal connections
White	Terminal 1
No connection (not used)	Terminal 2
Inner shield and black	Terminal 3
Yellow	Terminal 4
Green	Terminal 5
No connection (not used)	Terminal 6
Red	Terminal 7
Outer shield (see Note)	Earth ground

Connect the DC power

In a two-wire hookup, 14 to 30 VDC is required for operation. A load device can be connected in the current loop as shown in [Figure 1 on page 3](#).

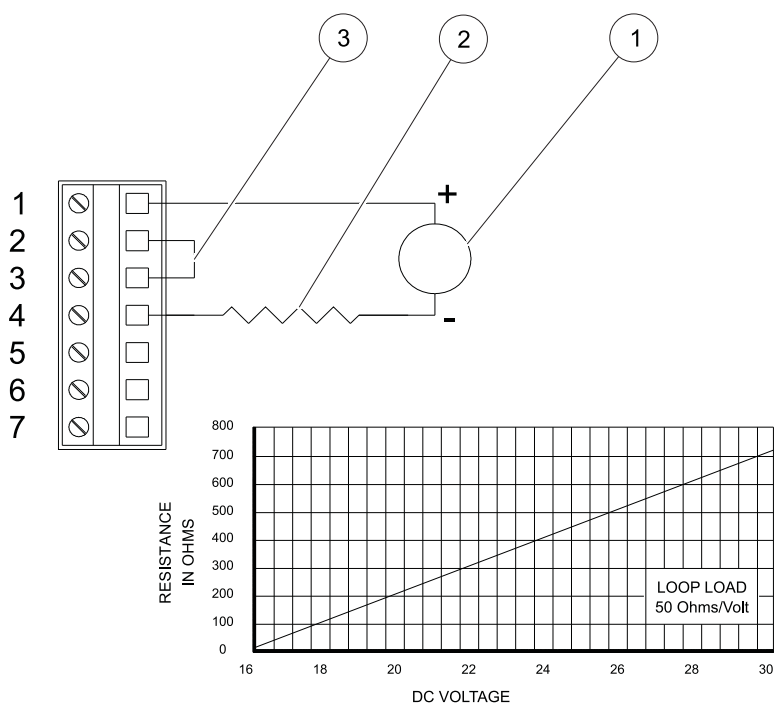


Figure 1 Load device connected in the current loop

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 cable through right side cable entry knockout hole in the back cover.
- **Panel-mounted transmitter:** Route cable behind panel to the exposed TB1 terminal strip.
- **Integral sensor-mounted transmitter:** Route cable through right side cable entry knockout hole in the back cover. (Do not open left side cable entry knockout hole in cover.)

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-P3 manual.

Configure the buffer type/calibrate the transmitter

The transmitter must be calibrated so that measured values will correspond to actual process values. Before calibrating for the first time, select the buffer set intended to use. Then, calibrate using the recommended "2 Point Buffer" method which provides the most accurate pH measurements.

1. The transmitter is factory-set for the common 4.00, 7.00 and 10.00 pH buffer set. To use DIN 19267 standard value buffers, change the buffer set. For more information about changing the buffer set, refer to the PRO-P3 manual, section "Select Buffer Set for pH Calibration".

***Note:** When using buffers that are not included in either of these buffer sets, use the "2 Point Sample" calibration method. For more information about 2 Point Sample calibration method, refer to the instructions PRO-P3 manual.*

2. Immerse the sensor in the first buffer (preferably pH 7).

***Note:** Allow the sensor and buffer temperatures to equalize. Depending on their temperature differences, this may take 30 minutes or more.*

An in-progress Calibration can always be cancelled by pressing **ESC**. After the "Abort: Yes?" screen appears, do one of the following:

- Press **ENTER** to cancel. After the "Confirm Active?" screen appears, press **ENTER** again to return the analog output to its active state (Measure screen appears).
- Press the **UP** or **DOWN** arrow key to display the "Abort: No?" screen, and press **ENTER**.

If the "2 Point Buffer: 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 "2 POINT BUFFER? (CAL: EXIT)" and press **ENTER**. After the "2 Point Buffer: Confirm Active?" screen appears, press **ENTER** to return the analog output to its active state (Measure screen appears).
- Select "2 POINT BUFFER? (CAL: REPEAT)" and press **ENTER** to repeat calibration of this point.

3. 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.
4. Press **ENTER** to display the Calibrate Sensor screen.
5. Press **ENTER** to display the Sensor 2 Point Buffer screen.
6. Press **ENTER** again to display the "2 Point Buffer: In 1st Solution" screen. Place the sensor in the first buffer, press **ENTER**.

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

7. While the "2 Point Buffer: Please Wait" screen is displayed, the transmitter waits for the pH and temperature signals to stabilize, measures the buffer value, and automatically calibrates this point. Thereafter, a screen like this appears for 5 seconds to confirm calibration of this point.

***Note:** Any time the "Please Wait" screen appears during calibration you can manually complete calibration of the point by pressing **ENTER**. This is not recommended because the pH and temperature signals may not be fully stabilized, resulting in a less accurate calibration.*

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8. After the "2 Point Buffer: In 2nd Solution" screen appears, remove the sensor from the first buffer, rinse it with clean water, and immerse it in the second buffer (typically pH 4). Then press **ENTER**.
 9. While the "2 Point Buffer: Please Wait" screen is displayed, the transmitter waits for the pH and temperature signals to stabilize, measures the buffer value, and automatically calibrates this point. Thereafter, a screen like this appears for 5 seconds to confirm calibration of this point.
 10. A "pH Slope XX.X mV/pH" screen appears, indicating a slope value to measure sensor performance. The slope should be between 54 and 62 mV/pH for optimal sensor performance. Typically, as the sensor ages and/or becomes dirty, its slope decreases. When the slope is less than 54 mV/pH, clean the sensor to improve its performance. If using a differential sensor and the slope remains low, replace the salt bridge and standard cell solution (see sensor operating manual for details). If using a conventional combination electrode, consider replacing it.
 11. Press **ENTER** to end the calibration ("2 Point Buffer: Confirm Cal Ok?" screen appears).
 12. Install the sensor into the process.
 13. Press **ENTER** to display the active measurement reading on the "2 Point Buffer: Confirm Active?" output status screen. When the reading corresponds to the actual typical process value, press **ENTER** again to return the analog output to its active state (Measure screen appears).

The transmitter is now ready to measure pH.

Complete the transmitter configuration

To further configure the transmitter to the application requirements, use the appropriate Configure screens to make selections and "key in" values. For more information about completing the configuration, refer to the PRO-P3 manual.

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