

T23 DISSOLVED OXYGEN (DO) CALIBRATION CARD



Main Menu

DO 10.0 ppm
50.0% 25°C

Place the transmitter into the manual mode prior to calibration to lock the current output, by:

*Simultaneously pressing
The horizontal calibrate keys*

Electrode Standardization

1 DO .0
Cal .0 mV

Rinse the sensor in DI water and dry. Place the sensor into a zero oxygen atmosphere (see DO zero solution), then:

*Simultaneously pressing
The horizontal calibrate keys*

Electrode Span

2 DO .0
Cal -400.0 mV/FS

(Observe under 2)

Dry the sensor and allow it to hang in air membrane side down for a minimum of 10 minutes, then:

*Simultaneously pressing
The horizontal calibrate keys*

Electrode Span

2 DO 8.4
Cal -380 mV/FS

Record the mV/FS value for future reference. Return to the main menu by:

*Pressing up 4 times
The up Menu Selection Key*

Main Menu

DO 10.0 ppm
M50.0% 25°C

Observe the “M” appear signifying that the transmitter is in the manual mode, then:

*Press down:
The down Menu Selection Key*

Electrode Standardization

1 DO .0
.2 mV

Wait for the mV value to stabilize. Exit and save the calibration, by:

*Pressing down
The down Menu Selection Key*

Electrode Span

2 DO .0
-999.9*mV/FS

Input 8.4 ppm, via the calibrate keys. Left & right keys move the cursor accordingly. Up and down keys add or subtract values.

*Press needed key
Use calibrate keys to input value*

Main Menu

DO 8.4 ppm
M50.0% 25°C

Install the sensor back into the process. Remove transmitter from manual mode by:

*Pressing
left calibrate key*

Electrode Diagnostic

Input 275.0 mVa
0 mV .0 mV

Electrode diagnostics no calibration from this screen, then:

*Press down
The down Menu Selection Key*

Electrode Standardization

1 DO .0
Cal .2 mV

Record the mV value for future reference, then:

*Press down 2 times
The down Menu Selection Key*

Electrode Span

2 DO 8.4
-363.3 mV/FS

Wait for the mV/FS value to stabilize. Exit and save the calibration, by:

*Pressing down
The down Menu Selection Key*

Main Menu

DO 8.4 ppm
10.7% 25°C

% value has now returned to a “real time” current output.

STEP #1

Prior to starting calibration the sensor must be connected to the transmitter with the cartridge installed and allowed to hang membrane side down for a minimum of 30 minutes. For best results leave the sensor hanging in this manner for 12 hours. This allows the sensor to consume the excess oxygen stored up behind the membrane.

Standard Factory Re-set 1

Electrode Standardization

1 DO .0
Cal -153.0 mV

Incorrect values stored in the standardization calibration menu. Set to factory defaults by:

*Simultaneously pressing
The horizontal calibrate keys*

Electrode Standardization

1 DO .0 mV
Cal .0 mV

The standardization menu is set to factory default values

Standard Factory Re-set 2

Electrode Span

2 DO 4.8
Cal -813.5*mV/FS

Incorrect values stored in the span calibration menu.

Set to factory defaults by:

*Simultaneously pressing
The horizontal calibrate keys*

Electrode Span

2 DO .0
Cal -400.0 mV/FS

The span menu is set to factory default values

Dissolved Oxygen (DO) Zero Calibration

Two zero calibration methods are possible with the Dissolved Oxygen sensor: By simulation of a zero oxygen environment or by using a true zero oxygen environment (ECD recommends that if possible use the true zero oxygen environment).

True Zero:

An easy way to achieve a zero oxygen environment is through the use of an oxygen scavenger, such as sodium sulfite.

1. Mix 1 or 2 grams of sodium sulfite into a beaker with 100 ml of water.
2. Allow for approximately 10 minutes for the reading to reach zero.

Note: Make sure that the electrode is off of the bottom of the beaker and that the membrane of the electrode does not come in contact with the sodium sulfite.

Simulated zero:

1. Remove the electrode from the sensor.
2. Wait for the Dissolved Oxygen reading on the instrument to stabilize. This allows for a zero calibration for the electronics (sensor and transmitter) it does not compensate for any offset in the electrode. If the zero is done in this manner once the cartridge is installed back into the sensor you must allow the excess oxygen in the electrode to be consumed. This is accomplished by performing step #1.

Sensor Diagnostics

Electrode Diagnostic

Input	-156.4 mV
0 mV	.0 mV

Electrode Diagnostic screen:

The value on the top line is the real time non-temperature compensated millivolt value coming from the sensor. If the value on the top line is less than -102mV the asterisk will flash in the second cal screen signifying that the electrode needs to be replaced. The value on the second line is the Dissolved Oxygen value at which the electrode output is zero millivolts.

Electrode Zero

1 DO	.0
Cal	.0 mV

Electrode Zero screen:

This is the first of a two point calibration. The top line displays the calibration point, at which the last calibration was performed. The bottom line displays the millivolt value the electrode generated at the calibration point. Two zero calibrations are possible see DO ZERO CALIBRATION.

Electrode Span

2 DO	.0
Cal	-400 mV/FS

Span Screen:

This is the second point of a two point calibration. The top line displays the calibration point, at which the last calibration was performed. The bottom line displays the electrode slope, or efficiency, in millivolts at full-scale. The asterisk will appear in this screen if the mV value is greater than -242 or greater than -490. If the value is less than -242 the electrode should be replaced. If the value is greater than -490 let the sensor to hang membrane side down for a minimum of 15 minutes.

Output calibration

4 mA	.0
20 mA	20.0

Output Calibration Menu:

Current output ranges are adjusted in this menu. The top line defines the 4 mA point while the bottom lines defines the 20 mA point. Between these points, the output current is linear with respect to the sensor input.

Temperature Calibration

Trim °C	.0
Unit	24.3°C

Temperature calibration Menu:

This menu has two calibration functions. It is used to adjust or trim the temperature compensation for variations in the sensing element. This menu can also provide a manual temperature input for the process. The top line displays the temperature offset value. The bottom line displays the adjusted temperature value.

Second, the menu is used to change the units of display to either Celsius or Fahrenheit. The change is performed as a toggle function and changes the display units on all screens or menus where temperature is displayed to the desired unit of measurement.

DO Locus

DO Locus	-17.0°C
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DO Locus Menu:

The DO Locus defines the point at which a family of Dissolved Oxygen concentration curves intersect for a specific sensor or electrode. Empirical data for ECD sensors defines the locus to be approximately -17°C.