8. Warranty

Oakton Instruments warrants this product to be free from significant deviations in material and workmanship for a period of three year from the date of purchase (excludes electrode). If repair is necessary and has not been the result of abuse or misuse within the warranty period, please return by freight pre-paid and amendment will be made without charge. The Customer Service Department will determine if the product problem is due to deviations or customer abuse. Out of warranty products will be repaired on a charge basis.

9. Return of Goods

Authorization must be obtained from our Customer Service Department before returning items for any reason. When applying for authorization, please include data regarding the reason the items are to be returned. For your protection, items must be carefully packed to prevent damage in shipment and insured against possible damage or loss. We will not be responsible for damage resulting from careless or insufficient packing. A restocking charge will be made on all unauthorized returns. NOTE: We reserve the right to make improvements in design, construction, and appearance of products without notice.

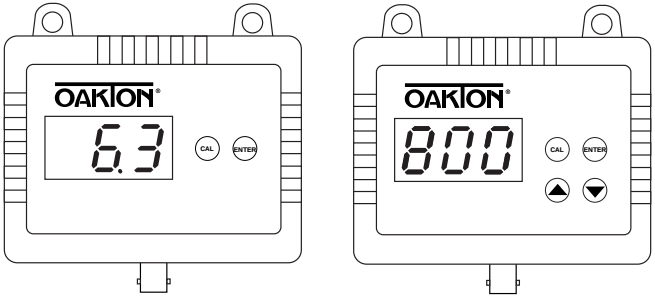
00702-85

OAKTON®

OPERATING INSTRUCTIONS

OAKTON WD-35623-00, -01, -05,
WD-35649-00, -05
WD-35660-00, -01, -05, -06

pH, ORP, and TDS Continuous Monitors



pH Continuous Monitor

ORP Continuous Monitor

TDS Continuous Monitor not shown

Printed in the U.S.A. 8/99

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1. Introduction

Thank you for purchasing an OAKTON Continuous Monitor. This monitor is a member of the line of quality monitors available from OAKTON Instruments.

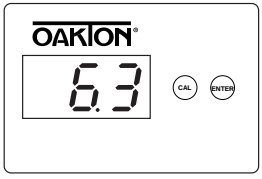
The Continuous Monitor Series feature microprocessor technology, which gives it many reliable, user-friendly features. These monitors were designed for long-term low-maintenance use, just plug in the AC adapter, calibrate and the unit is ready for continuous monitoring. No batteries required.

2. Overview

2.1 Front Panel

The front panel consists of a 3-digit LED display, 2 keys for pH Monitor, 4 keys for ORP Monitor and 3 keys for TDS Monitor.

Keys for pH Monitor

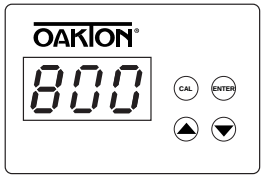


pH Monitor

CAL The **CAL** key switches monitor into calibration mode from measurement mode. In calibration mode **CAL** switches monitor back to measurement mode. See pages 6-7 for details.

ENTER Press the **ENTER** key to confirm the calibration while in calibration mode.

Keys for ORP Monitor



ORP Monitor

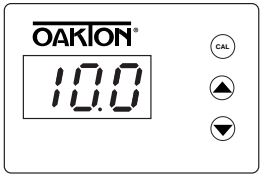
CAL The **CAL** key switches monitor into calibration mode from measurement mode. In calibration mode **CAL** switches monitor back to measurement mode. See pages 8-9 for details.

ENTER Press the **ENTER** key to confirm the calibration while in calibration mode.

▲ The ▲ **Up/increment** key scrolls value up in calibration mode.

▼ The ▼ **Down/Decrement** key scrolls value down in calibration mode.

Keys for TDS Monitor



TDS Monitor

CAL The **CAL** key switches monitor into calibration mode from measurement mode. Pressing **CAL** while in calibration mode confirms calibration value. Monitor returns to measurement mode. See page 10-11 for details.

ENTER Press the **ENTER** key to confirm the calibration while in calibration mode.

▲ The ▲ **Up/increment** key scrolls value up in calibration mode.

▼ The ▼ **Down/Decrement** key scrolls value down in calibration mode.

2.2 Connecting the Probe

The OAKTON pH or ORP monitor uses any standard pH or ORP electrode with a BNC connector. The probe for the TDS monitor is hard wired into the unit, no connection is necessary.

NOTE: Keep connector dry and clean. Do not touch connector with soiled hands.

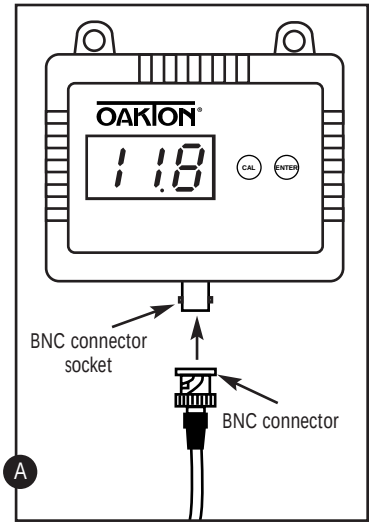
To connect the pH or ORP probe:

1. Slide the BNC connector of the probe over the BNC connector socket on the monitor. Make sure the slots of the connector are in line with the posts of the socket. Rotate and push the connector clockwise until it locks

See figure A

2. To remove probe, push and rotate the connector counter clockwise. While holding onto the metal part of the connector, pull probe away from the meter.

CAUTION: Do not pull on the probe cord or the probe wires might disconnect.



3. Calibration

3.1 pH Calibration (WD-35623-00, -01, -05 and -06 only)

Important Information on pH Monitor Calibration

This monitor has 3 pH calibration points: 4, 7 and 10 with automatic buffer recognition. For best accuracy calibrate to all 3 pH points at room temperature, starting with pH 7. We recommend that you perform at least a 2-point calibration. You can also perform a 1-point calibration, but make sure that the buffer value is close to the sample value you are measuring.

Calibration should be performed regularly to ensure accuracy. Frequency of calibration will vary and should be checked regularly until the required schedule has been determined.

Be sure to remove the protective electrode storage bottle or rubber cap of the probe before calibration or measurement. If the electrode has been stored dry, wet the probe in tap water for 10 minutes before calibrating or taking readings to saturate the pH electrode surface and minimize drift.

Do not reuse buffer solutions after calibration. Contaminants in the solution can affect the calibration, and eventually the accuracy of the measurements.

Use buffers that are close to the temperature of the solution you will be monitoring. We recommend you calibrate at pH 7 first followed by pH 4 or pH 10 depending on the range of operation.

NOTE: All new calibration data will over-ride existing calibration data.

pH Calibration

1. **Plug in the monitor** to turn on. The monitor will be in pH measurement mode.

See figure A

2. **Rinse the probe thoroughly with de-ionized water or a rinse solution.** Do not wipe the probe; this causes a build-up of electrostatic charge on the glass surface.
3. **Dip the probe into the calibration buffer.** The end of the probe must be completely immersed into the sample. Stir the probe gently to create a homogeneous sample.
4. **Press the CAL** key to enter the calibration mode. **"CA"** will flash on the display for a second and then a value close to pH 7.0 will flash.

See figures B and C

5. **Let the electrode soak** in the buffer until reading is stable, stirring occasionally (time will vary depending on temperature and electrode condition). When the display has flashed the same pH value for 15 seconds or more, press the **ENTER** key. **"CO"** will flash on the display. The reading should now display pH 7.0.

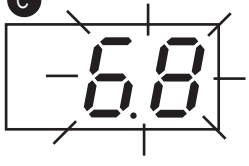
See figures D and E

6. **Repeat steps 2 through 5** for the remainder of the buffer values (pH 4.0 and 10.0)

A

B

C



D

E

3.2 ORP Calibration (WD-35649-00 and -05 only)

Important Information on ORP Monitor Calibration

Typically ORP measurements are taken on a relative basis and calibration is not required. This monitor has ±100 mV offset adjustment, adjustable in 5 mV increments. Choose a calibration standard that is close to your working condition.

Calibration should be performed regularly to ensure accuracy. Frequency of calibration will vary and should be checked regularly until the required schedule has been determined.

Be sure to remove the protective electrode storage bottle or rubber cap of the probe before calibration or measurement. If the electrode has been stored dry, wet the probe in tap water for 10 minutes before calibrating or taking readings to saturate the ORP electrode surface and minimize drift.

Do not reuse calibration solutions after calibration. Dispose of any used calibration solution. Contaminants in the solution can affect the calibration, and eventually the accuracy of the measurements.

IMPORTANT: ORP offset adjustment is limited to ±100 mV from the original reading. Adjustable in 5 mV increments.

NOTE: All new calibration data will over-ride existing calibration data.

ORP Calibration

1. **Plug in the monitor** to turn on. The monitor will be in ORP measurement mode.

See figure A

2. **Rinse the probe thoroughly with de-ionized water or a rinse solution.** Do not wipe the probe; this causes a build-up of electrostatic charge on the glass surface.
3. **Dip the probe into the calibration standard.** The end of the probe must be completely immersed into the sample. Let probe soak 2 to 5 minutes or until readings stabilizes.
4. **Press the CAL** key to enter the calibration mode. **"CA"** will flash on the display for a second and then a value close to the calibration standard will flash.

See figures B and C

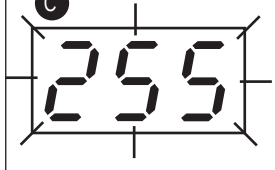
5. **Press the ▲ or ▼ keys** to adjust the display to match the calibration standard value. Press the **ENTER** key. **"CO"** will flash on the display. The reading should now display the same value as the calibration standard.

See figures D and E

A

B

C



D

E

3.2 Conductivity Calibration

(WD-35660-00, -01, -05, and -06 only)

Important Information on TDS Monitor Calibration

This monitor has ±30% adjustment. Adjustable in 0.1 mS increments. Choose a calibration standard is close to your working condition.

Calibration should be performed regularly to ensure accuracy. Frequency of calibration will vary and should be checked regularly until the required schedule has been determined.

Do not reuse calibration solutions after calibration. Dispose of any used calibration solution. Contaminants in the solution can affect the calibration, and eventually the accuracy of the measurements.

NOTE: All new calibration data will over-ride existing calibration data. Minimum calibration value is 2.5 mS

Conductivity Calibration

1. **Plug in the monitor** to turn on. The monitor will be in conductivity measurement mode.

See figure A

2. **Rinse the probe thoroughly with de-ionized water or a rinse solution,** then rinse with a small amount of calibration solution.
3. **Dip the probe into the calibration solution.** Immerse the probe tip at least ½ inch into the solution. Stir the probe gently to create a homogeneous sample.
4. **Press the CAL** key to enter the calibration mode. **"CA"** will flash on the display for a second and then a value close to the calibration standard will flash.

See figures B and C

5. **Press the ▲ or ▼ keys** to adjust the display to match the calibration standard value. Press the **CAL** key. **"CO"** will flash on the display. The reading should now display the same value as the calibration standard.

See figures D and E

A

B

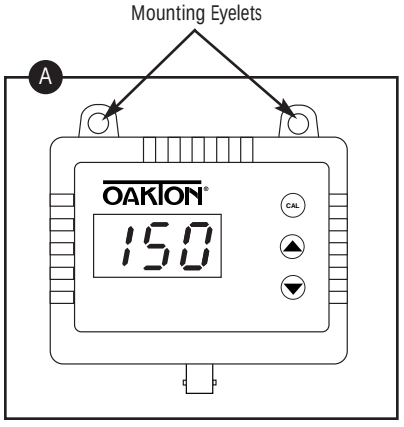
C

D

E

4. Monitoring

Once the monitor is calibrated it is ready for monitoring. The monitor has two eyelets holes. Mount the monitor where it can easily be viewed.
See figure A



5. Error Messages

 Over Range	 Under Range	 Error 1
pH		
when pH value is more than 14.0 pH	when pH value is less than 0.0 pH	displays when there is an error in calibration
ORP		
when ORP value is more than 995 mV.	when ORP value is less than 0 mV	—
TDS		
when TDS value is more than 10.0 mS	when pH value is less than 0 mS	displays when there is an error in calibration

6. Specifications

	pH	ORP	TDS
Model	35623-00, -01, -05 & -06	35649-00, -05	35623-00, -01, -05 & -06
Range	0.0 to 14.0 pH	0 to 995 mV	0-10.0 mS
Resolution	0.1 pH	5 mV	0.1 mS
Accuracy	±0.1 pH	±5 mV	±1%
Calibration	up to 3 points pH 4.0, 7.0 & 10.0	Offset ±100 mV	±30%

General Specifications for all Models

Display: LED, 3 digits

Inputs:

pH and ORP: BNC
TDS: permanently wired

Power: 110 VAC

Environmental Requirements:

Operating: 0 to 50°C
Storage: –10 to 60°C
Humidity Limits: 10 to 95% RH (non condensing)

Dimensions:

Monitor: 3.1" L x 3.4" W x 1.25" H
pH Probe: 5.75" L x 12 mm dia with 3.5-ft cable
ORP Probe: 5.75" L x 12 mm dia with 3.5-ft cable
TDS Probe: 5.75" L x 12 mm dia with 3.5-ft cable

Shipping Weight: 1.0 lb (0.45 kg)

7. Accessories

Replacement electrodes

WD-35805-01 Replacement pH electrode, double junction
WD-35801-54 Replacement ORP electrode, double junction

Calibration solutions

WD-00654-00 pH 4.01 calibration solution, 1 pint.
WD-00654-04 pH 7.01 calibration solution, 1 pint.
WD-00654-08 pH 10.01 calibration solution, 1 pint.

WD-00653-20 2764 µS calibration solution, 1 pint
WD-00653-89 8974 µS calibration solution, 1 pint

OAKTON "Singles" calibration solution pouches

WD-35653-00 Deionized rinse water solution pouches, 20/box.
WD-35653-01 pH 4.01 calibration solution pouches, 20/box.
WD-35653-02 pH 7.00 Calibration solution pouches, 20/box.
WD-35653-03 pH 10.00 Calibration solution pouches, 20/box.
WD-35653-04 pH Assortment pack, 5 ea. deionized water, pH 4.01, pH 7.00, and pH 10.00 solution pouches.

WD-35653-12 2764 µS calibration solution pouches, 20/box.