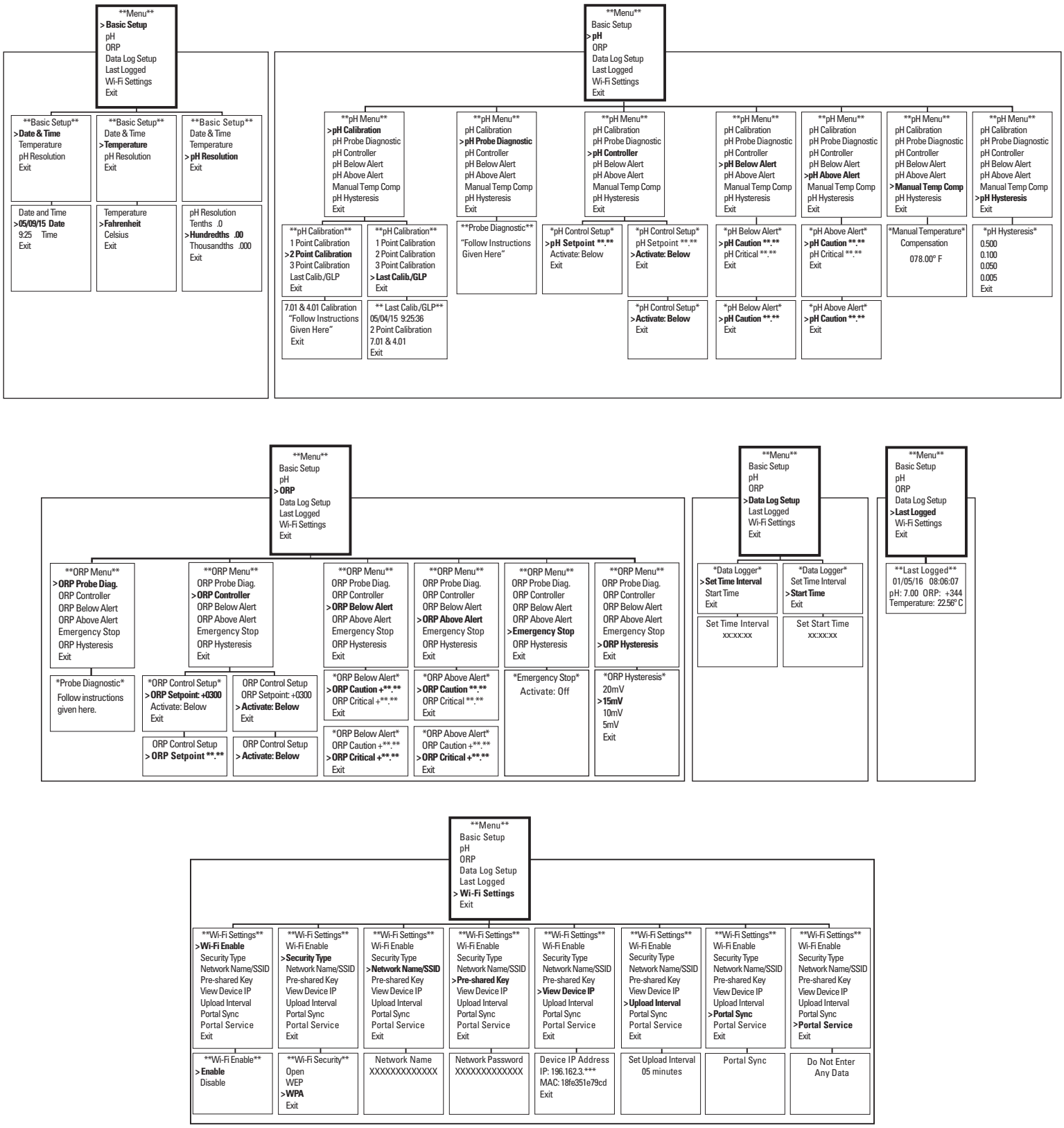
Milwaukee

DL125 BLACK BOX

DATA LOGGING CONTROLLER
pH/ORP/Temperature

Set Up / Operation Manual

DL125 MENU MAP



Please make sure you have all the components listed below. If not, call your dealer.

- DL125 Data Logging Controller
- Controller Power Box with pH and ORP outlets
- #MA911B/2 pH probe with 2m cable
- #MA921B/2 ORP probe with 2m cable
- #RJ11 temperature probe with 3m cable
- 9VDC power supply
- 4GB SD card
- RJ45 power cable
- International power supply kit

DL125 Quick-Start Hardware Setup

1) Plug both the pH and ORP probes into the BNC connectors on the controller. Connectors are the same; be sure not to switch. pH on the left; ORP on the right.

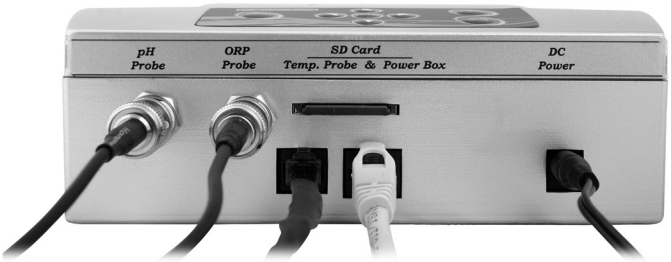
2) Insert the 4GB SD card (included), *printed side down*, making certain that it snaps into place.

3) Connect RJ11 temperature probe.

4) Connect one end of RJ45 power cable to the DL125 unit; the other end to the Controller power box. To avoid "accidental" dosing, you will **not** be plugging the Controller power box into a power supply until the settings for pH and ORP have been entered and saved.

5) Connect 9VDC power supply into unit first, then plug into 120VAC wall outlet.

Note: To enable Wi-Fi, you will need to know your Wi-Fi network Security Type, Name, and Password.



Milwaukee Instruments, designer and manufacturer of the DL125, recommends you read this manual from start-to-finish, without skipping sections. Many of the instructions in later sections are based on knowledge you will acquire in the earlier sections of this manual.

Getting to know the DL125

Once you have connected all the cords, inserted the SD card, and plugged the DL125 into a wall socket, please read this section, taking a few moments to learn about the screen and keypad.

Note there is no ON/OFF switch; the unit is ON as soon as it is plugged in. The only way to deactivate the unit is to unplug it. Recorded data on the SD card will remain intact when the unit is unplugged.

THE SCREEN When the unit is first powered up, you will see a WELCOME message. In a few seconds, the unit will automatically switch to the primary display screen. This screen gives the date, time, and real-time readings of pH, ORP, and Temperature. If activated, the word Wi-Fi will appear in the upper right corner. Unless you are changing settings, this is the screen that should always be displaying.

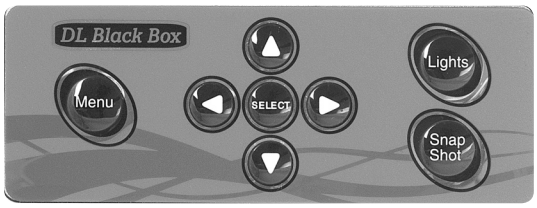
Primary Display Screen

If temperature probe is plugged in, ATC (Automatic Temperature Compensation) will appear in the lower right portion of screen. If not, MTC (Manual Temperature Compensation) will display.

On the menu screens, only four lines will be visible at a time. To see more options, scroll the list by using up/down arrows on the keypad. When the cursor (>) appears beside the appropriate function or setting, press **SELECT**.

THE KEYPAD Pressing the **Menu** button brings up a screen featuring the full menu. At the bottom of all menu screens, there will be an "Exit" option. The "Exit" option, when selected, takes you back to the previous screen you were viewing. For informational screens, there is no "Exit" option. Press **SELECT** to return to previous screen.

Pressing the **Menu** button takes you all the way back to the primary display screen, bypassing other screens you may have used. Pressing the **Menu** button also allows you to toggle between the primary display screen and the full menu screen.



The **left/right arrows (◂▸)** allow you to move the blinking cursor horizontally through a line of settings to the numbers you want to reset, while the **up/down arrows (⇕)** allow you to move through the function listings and numbers, and toggle between yes/no options. When new settings are entered, press **SELECT**, there will be a short pause and the screen will read SAVED! In just a moment, the screen will revert to the previous page.

The **Lights** button allows you to turn off the screen and status lights (lights to the left and right of screen, behind grills). The unit is still functional when lights are off. Pressing **Lights** again will reactivate all lights.

> **IMPORTANT:** When in the Lights OFF mode, the status lights (caution and critical) will not activate on the unit; however, since the unit is still operational, it will continue to log data and, if web portal is activated, send text or email alerts, or both. The only way to turn off data logging and the alerts system is to unplug the unit.

The **Snap Shot** button allows you to instantly log a real-time reading on both the SD card and the portal. A snap shot will not interfere with scheduled data logging. When you press the **Snap Shot** button on the keypad, "Snap Shot" will appear for a few seconds in the lower right corner of the screen, indicating the real-time data has been logged.

Getting Started with Basic Setup

This is a very important step, allowing you to enter the correct Date and Time, select Fahrenheit or Celsius Temperature readings, and calibrate for pH. Please note that ORP comes factory calibrated and needs no further calibration.

This unit comes with factory presets, but before using you must reset to meet your specific requirements. If you ever wish to revert to factory settings (a factory reset), simply unplug unit, then plug back in while holding the **Lights** button down for 3 seconds.

Breadcrumbs, or the navigation path, shown at the beginning of each section of this manual, will take you from the Menu screen to the screen where you will be entering changes.

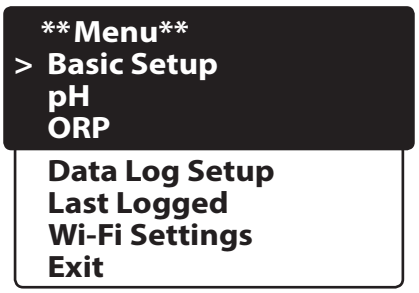
Setting Date and Time

Menu Button>Basic Setup>Date and Time

1) Press the **Menu** button on the keypad and the full menu will appear on screen.

2) The cursor appears beside the first option on each new screen, and since "Basic Setup" is the first option listed, you can press the **SELECT** button on the keypad.

Please note that the Full Menu lists seven options, but only three will be visible on the screen. To see other options, scroll with the down arrow to bring other options into view.



3) The **Basic Setup** screen will appear and the cursor will be beside the first option, which is "Date and Time." Press **SELECT**.

4) The "Date and Time" screen will now appear. Both the date and the time will be shown, but they might not be correct.

5) To change the date, make sure cursor is beside the Date line and press **SELECT**.

6) To set the "Date," use the left/right arrows on the keypad to move the blinking cursor through the line. Be sure to skip over slashes. Use the up/down arrows to find the correct numbers for the month, day, and year. Once you have set all numbers to match today's date, press the **SELECT** button and the SAVED! screen should appear for a few moments. It will then go back to the "Date and Time" screen.

7) Now you are ready to set the "Time." Scroll down to the next option, which is time. Press **SELECT**.

8) Again, work across the Hours: Minutes (00:00) using left/right arrows, picking the number you want to change, then using up/down arrows to select the appropriate number.

Note that this unit displays in military time (24-hour); there is no am/pm option, that is, 9AM is 09:00 and 2:05PM is 14:05. 10:30PM is 22:30.

9) Once complete, press **SELECT** to enter the new time. A screen will appear indicating that your change has been SAVED!

10) Scroll to "Exit" and press **SELECT** to return to **Basic Setup** screen, or press the **Menu** button to return to the primary display screen.

Important: *When utilizing portal, date on controller and portal dashboard must be the same, and times should be set as close as possible (within ten minutes).*

Setting Temperature – Fahrenheit or Celsius

Menu Button>Basic Setup>Temperature

Work your way to the "Temperature" screen and, using up/down arrows, select Fahrenheit or Celsius, then press **SELECT**. The SAVED! screen will appear then go back to the "Temperature" screen. Scroll to "Exit" and press **SELECT** to return to **Basic Setup** screen, or press the **Menu** button to return to the primary display screen.

Setting "pH Resolution" – Tenths, Hundredths, or Thousandths

Menu Button>Basic Setup>pH Resolution

On the "pH Resolution" screen, use up/down arrows to select tenths, hundredths, or thousandths, and press **SELECT.** The SAVED! screen will appear then go back to the "pH Resolution" screen. Scroll to "Exit" and press **SELECT** to return to **Basic Setup** screen, or press the **Menu** button to return to the primary display screen.

This completes the Basic Setup of your DL125.

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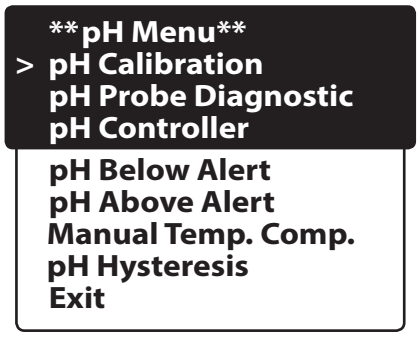
Setting Up for pH Readings

The **pH Menu**, as shown below:

- allows you to set for 1, 2, or 3 point calibration
- allows you to check the last calibration – date, time, number of points, and which points
- provides pH probe diagnostic
- allows you to establish a pH setpoint along with caution and critical alerts for "out of parameter" readings



Setting Calibration Points

Menu Button>pH>pH Calibration

Before selecting calibration point(s), you may want to review the

Last Calib./GLP** screen. Scroll down to the "Last Calib./GLP" option and press* ***SELECT. (Menu Button>pH>pH Calibration>Last Calib./GLP) *The **Last Calib./GLP** screen will then give you the date and time of the last calibration; indicate 1, 2, or 3 point calibration; and give you the calibration points, as shown below.*

```
** Last Calib./GLP **
O5/04/15   9:25
2 Point Calibration
7.01 & 4.01

Acid Slope:  000.0
Base Slope: 000.0
>Exit
```

In accordance with GLP (Good Laboratory Practices), you can scroll down on this screen to view Acid Slope and Base Slope once calibration is complete.

1) On **pH Calibration** screen, select 1, 2, or 3 point calibration.

2) Depending on your selection, the **1 Pt Calibration**, **2 Pt Calibration**, or **3 Pt Calibration** screen will appear. Each of these screens lists the calibration points - various combinations of 4.01, 7.01, and 10.01. Place the cursor beside your desired point or combination of points and press **SELECT**.

As an example, if you select 2 Point Calibration, a new screen will appear listing 7.01 & 4.01 Calib and 7.01 & 10.01 Calib. If you **SELECT** 7.01 & 4.01 Calib, another screen will appear which will take you through the calibration process.

- You will be instructed to "Place probe in 7.01 calibration solution. Press Select."
- A "Please Wait..." message will appear on screen.
- Once the probe calibrates in the 7.01 solution, you will then be instructed to "Place probe in 4.01 calibration solution. Press Select."
- Once the probe has calibrated in the 4.01 solution, calibration is complete.

Using Acid/Base Slopes to Assess pH Probe Performance

In addition to displaying date, time, number of calibration points and specific points, the **Last Calib./GLP** screen provides readings for Acid Slope and Base Slope. Slopes are given as percentages and tell you how closely your freshly calibrated pH probe is reading as compared with an "ideal" probe.

A new probe can get very close to "ideal" probe readings, but with aging and coating becomes less accurate. The following graph shows the acceptable range and indicates what should be done if the reading falls outside this range. If your probe is good in one range (acid or base), but bad in the other, it should be replaced.

A 3-point calibration will always give you an acid and a base slope: however, when using 1- or 2-point calibration, depending on points chosen, you may get an acid OR a base slope reading. In this case, the other reading will show as a default 99.9.

pH Probe Diagnostic

Menu Button>pH>pH Probe Diagnostic

pH probes have a limited lifetime and must be replaced periodically to maintain accurate readings. If you suspect incorrect readings, work your way to the pH Probe Diagnostic screen. Press **SELECT.** Follow instructions on the screen and the unit will run a diagnostic test, then a message will appear on the screen, such as "Probe or solution is bad!" Replace your solution, run diagnostic again, and if you get the same message, replace the probe.

Setting up the pH Controller

The purpose of a pH controller is to constantly monitor the pH level of a solution and to activate a dosing device when the level strays from the setpoint you have entered. In most situations, pH levels tend to stray either up or down, too alkaline or too acidic, but not in both directions. The DL125 may be set to detect readings ABOVE or BELOW the setpoint. This requires two settings:

- the setpoint, and
- whether the controller activates the device when the reading goes either ABOVE the setpoint or BELOW the setpoint

Setting the pH Setpoint & Activation (Below or Above)

Menu Button>pH>pH Controller

1) Using the breadcrumbs above, work your way to the *pH Control Setup* screen.

2) The cursor should be at "pH Setpoint: **.**". If a pH setpoint has previously been set, it will appear on the screen. If this is the setpoint you want to keep, you can "Exit" the screen or press the **Menu** button to return to the primary display screen.

3) If, instead, you want to enter a new setpoint, press **SELECT**.

4) On the new screen, using the keypad arrows, select your desired pH setpoint and press **SELECT**.

5) The SAVED! screen will appear for a few moments and the *pH Control Setup* screen will reappear. Now scroll to the "Activate" line and press **SELECT**.

6) This screen allows you to set the activation for Below or Above. Make your selection using the up or down arrows on the keypad, press **SELECT** and the SAVED! screen will appear.

Setting the pH Alerts (Caution and Critical)

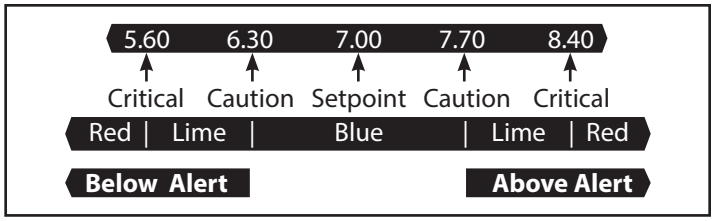
The DL125 is designed to efficiently monitor and maintain the pH value of a solution. If the pH level strays from the setpoint, the status lights located beside the screen will change color.

In addition, if you have enabled Wi-Fi and subscribe to the interface portal, the unit will send out your choice of emails or text messages, or both, to notify you of alerts. See "Setting up Wi-Fi" section for details on connecting to the interface portal.

In the next instructions, you will learn how to set pH values to activate Caution and Critical Alerts. A Caution is intended to alert you when the pH value has deviated too far from your setpoint. A Critical alert is to let you know that the pH value has deviated even further and you have a serious problem needing immediate attention.

It is your responsibility to set the pH alert parameters for your specific requirements. This is a balancing act and may require some experimentation on your part. You do not want the pH value to drift too far from your setpoint without an alert, but you also don't want the DL125 to be sending you alerts too frequently.

For most applications, Milwaukee Instruments recommends a minimum .7 difference between the setpoint and a Caution alert; and a minimum 1.4 difference between the setpoint and a Critical alert. *See the diagram below.*



If the value for pH is within the Caution parameters you have set, the status light on the LEFT side of the screen will remain blue.

If the blue changes to lime, this signals that the value has reached the Caution level. If the reading continues to drift further from the setpoint and reaches the Critical level, the lime light will turn red, indicating a critical condition.

Setting pH Below Alerts (Caution & Critical)

Menu Button>pH>pH Below Alert

1) Work your way to the *pH Below Alert* screen. You will see two options: "pH Caution" and "pH Critical." If the settings shown beside each are the desired settings, you may "Exit" the screen.

2) If you want to change the Caution setting, place the cursor beside "pH Caution" and press **SELECT**.

3) On this screen, use the keypad arrows to create the new setting, and press **SELECT**. The SAVED! screen will appear and you will be taken back to the *pH Below Alert* screen.

4) Move the cursor to the "pH Critical" option; press **SELECT**, then enter the new setting.

5) Press **SELECT** and you have completed the setup for the pH Below Alerts. Scroll down and select "Exit" to go back to **pH Menu** screen or press **Menu** button to go back to primary display screen.

Setting pH Above Alerts (Caution & Critical)

Menu Button>pH>pH Above Alert

1) Work your way to the *pH Above Alert* screen. You will see two options: "pH Caution" and "pH Critical." If the settings shown beside each are the desired settings, you may "Exit" the screen.

2) If you want to change the Caution setting, place the cursor beside "pH Caution" and press **SELECT**.

3) On this screen, use the keypad arrows to create the new setting, and press **SELECT**. The SAVED! screen will appear and you will be taken back to the *pH Above Alert* screen.

4) Move the cursor to the "pH Critical" option; press **SELECT**, then enter the new setting.

5) Press **SELECT** and you have completed the setup for the pH Above Alerts. Scroll down and select "Exit" to go back to **pH Menu** screen or press **Menu** button to go back to primary display screen.

Setting Manual Temperature Compensation

Menu Button>pH>Manual Temp. Comp.

Work your way to the *Manual Temperature Compensation* screen. Using left/right arrows to scroll blinking cursor through temperature and up/down arrows to change numbers, enter the temperature of your solution, being sure to note if it is set for Fahrenheit or Celsius scale. When complete, press **SELECT** and the SAVED! screen will appear.

When manual temperature compensation has been set, MRC will appear in the lower right corner of the primary display screen.

Setting pH Hysteresis

Menu Button>pH>pH Hysteresis

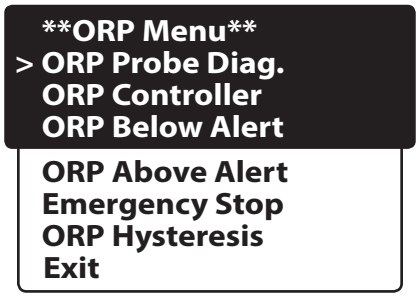
To prevent excessive on/off cycling of dosing devices, the "pH Hysteresis" feature allows you to customize the lag (delay) in device activation. Without hysteresis, your controller will attempt to correct even the slightest variation in pH value and will be cycling on and off almost continuously.

On the **pH Hysteresis** screen, you may select from four pH options: 0.500, 0.100, 0.050, and 0.005. Place the cursor beside your selection, press **SELECT** and the SAVED! screen will appear. The default setting for this unit is pH 0.050.

As an example, if your setpoint is 6.5 (Set for ABOVE) and you set hysteresis at 0.050, then the controller will activate your dosing device when the pH value reaches 6.550 and will continue dosing until the pH value returns to 6.450.

Setting up for ORP Readings

The DL125 allows you to establish an ORP setpoint along with caution and critical alerts for "out of parameter" readings. ORP has been factory calibrated and no user calibration is required.



ORP Probe Diagnostic

Menu Button>ORP>ORP Probe Diagnostic

ORP probes have a limited lifetime and must be replaced periodically to maintain accurate readings. If you suspect incorrect readings, work your way to the ORP Probe Diagnostic screen. You will be instructed to: "Place probe in 240 or 470mV Calib. Sol'n. Press SELECT."

The unit will run a diagnostic test, then a message will appear on the screen, such as "Probe or solution is bad!" Replace your solution, run diagnostic again, and if you get the same message, replace the probe.

Setting ORP Setpoint and Activation (Below or Above)

Menu Button>ORP>ORP Controller

1) Work your way to the *ORP Control Setup* screen. If the ORP setpoint shown on this screen is correct, "Exit" the menu.

2) If you want to change the ORP setpoint, make sure the cursor is beside "ORP Setpoint" and press **SELECT**.

3) On this screen, use the keypad arrows to create the new ORP setpoint, expressed in mV (millivolts). While most ORP values are positive, you can set a negative value by moving the cursor to the "-" sign. Both the up and down arrows on the keypad will allow you to toggle between positive(+) and negative (-).

ORP values on the DL125 are calculated with an Ag/AgCl w/3.5 M KCl reference electrode.

4) Once you have entered the correct setpoint, press **SELECT** and the SAVED! screen will appear.

5) This will bring you back to the *ORP Control Setup* screen. Scroll to the "Activate" line and press **SELECT**. If the Above or Below setting is correct, you may exit the screen.

6) If not, simply use the up/down arrows on the keypad to toggle between Above and Below, then press **SELECT**. There is no blinking cursor on this screen.

Understanding ORP Alerts (Caution and Critical)

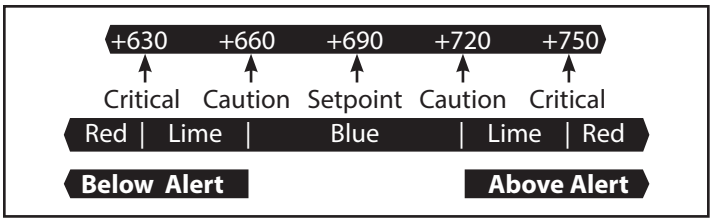
The DL125 is designed to efficiently monitor ORP and maintain the setpoint you have entered; however, problems may occur over which this unit has no control.

When this happens, lights on the unit will signal Caution and Critical alerts and, if you have enabled Wi-Fi and subscribe to the interface portal, the unit will send out your choice of emails or text messages, or both, to notify you. See "Setting up Wi-Fi" section for details on connecting to the interface portal.

A Caution is intended to alert you when the unit registers an ORP value that has deviated too far from your setpoint. A Critical alert is to let you know that the ORP value has deviated even further and you have a serious problem needing immediate attention.

It is your responsibility to set the ORP alert parameters for your specific requirements. This is a balancing act and may require some experimentation on your part. You do not want an ORP value to drift too far from your setpoint without an alert, but you also don't want the DL125 to be sending you alerts too frequently.

For most applications, Milwaukee Instruments recommends a 30mV difference between the setpoint and the Caution alert value; and a 70mV difference between the setpoint and the Critical alert value. See the diagram below.



If the value for ORP is within the Caution parameters you have set, the status light on the RIGHT side of the screen will remain blue. If the blue changes to lime, this signals that the ORP value has reached the Caution level. If the value continues to drift further from the setpoint and reaches the Critical level, the lime lights will turn red, indicating a critical condition.

Setting ORP Below Alerts (Caution & Critical)

Menu Button>ORP>ORP Below Alert

1) Work your way to the *ORP Below Alert* screen. You will see two options: "ORP Caution" and "ORP Critical." If the settings shown beside each are the desired settings, you may "Exit" the screen.

2) If you want to change the Caution setting, place the cursor beside "ORP Caution" and press **SELECT**.

3) On the *ORP Below Alert* screen, use the keypad arrows to create the new setting, and press **SELECT**. The SAVED! screen will appear and then you will go back to the * ORP Below Alert* screen.

4) Now move the cursor to the "ORP Critical" option; press **SELECT**, then enter the new setting.

5) Press **SELECT** and you have completed setup for the ORP Below Alerts. "Exit" to return to the **ORP Menu** or press the **Menu** button to go back to the primary display screen.

Setting ORP Above Alerts (Caution & Critical)

Menu Button>ORP>ORP Above Alert

1) Work your way to the *ORP Above Alert* screen. You will see two options: "ORP Caution" and "ORP Critical." If the settings shown beside each are the desired settings, you may "Exit" the screen.

2) If you want to change the Caution setting, place the cursor beside "ORP Caution" and press **SELECT**.

3) On the *ORP Above Alert* screen, use the keypad arrows to create the new setting, and press **SELECT**. The SAVED! screen will appear and then you will go back to the * ORP Above Alert* screen.

4) Now move the cursor to the "ORP Critical" option; press **SELECT**, then enter the new setting.

5) Press **SELECT** and you have completed setup for the ORP Above Alerts. "Exit" to return to the **ORP Menu** or press the **Menu** button to go back to the primary display screen.

IMPORTANT: When all pH and ORP settings have been entered and saved, plug the controller power box into a 120VAC wall socket or power supply. pH devices must be plugged into the top socket; ORP devices must be plugged into the bottom socket. The red indicator lights beside the pH and ORP sockets, labeled "Activated," let you know when the sockets are providing power to the devices.

ORP Emergency Stop

The factory setting for the ORP Emergency Stop is OFF. When turned ON, the DL125 will disable the ORP device if pH values go outside safe levels. Use up/down arrows to toggle on and off.

Setting ORP Hysteresis

Menu Button>ORP>ORP Hysteresis

To prevent excessive on/off cycling of dosing devices, the "ORP Hysteresis" feature allows you to customize the lag (delay) in device activation. Without hysteresis, your controller will attempt to correct even the slightest variation in ORP value and will be cycling on and off almost continuously.

On the **ORP Hysteresis** screen, you may select from four ORP options: 5mV, 10mV, 15mV, and 20mV. Place the cursor beside your selection, press SELECT and the SAVED! screen will appear. The default setting for this unit is 15mV.

As an example, if your setpoint is +690mV (Set for ABOVE) and you set ORP hysteresis at 20mV, then the controller will activate your dosing device when the ORP value reaches 710mV and will continue until the solution returns to 670mV.

Setting up the Data Logger (Time Interval & Start Time)

Please note that if you remove the SD card when the unit is ON, the unit will remain operational. However, before re-inserting the SD card, disconnect the unit from its power source. Once you have the SD card snapped back in place, restore power to the unit. If you re-insert the SD card while the unit is operational, you must still momentarily disconnect from power, then reconnect, allowing the unit to properly communicate with the SD Card.

Also note that the internal SD card is fixed at two-minute logging intervals. The following instructions refer to the portal only.

	Date ↓	Time ↓	pH ↓	ORP ↓	Temperature ↓
	A	B	C	D	E
1	5/18/16	9:08:30	7.44	254	70.47F
2	5/18/16	9:08:34	7.438	254	70.47F
3	5/18/16	9:29:55	7.406	255	69.57F
4	5/19/16	0:00:01	7.361	249	69.91F
5	5/19/16	1:00:01	7.36	248	69.80F
6	5/19/16	2:00:01	7.36	248	69.46F

Example of Logged Data on SD Card

Menu Button>Data Log Setup>Data Logger

1) Work your way to the **Data Logger** screen. The cursor will appear beside "Set Time Interval." Press **SELECT**.

2) On the "Set time interval" screen, using the keypad arrows, enter the amount of time between logs, in Hours: Minutes:Seconds (00:00:00). Logging is restricted to a 5-minute minimum upload interval (except for Snap Shots); however, Milwaukee Instruments recommends a wider interval, typically 00:10:00 to 00:15:00. For most applications, this 10- to 15-minute interval is frequent enough to gather meaningful data without collecting too much data, which can often make evaluation cumbersome.

3) Press **SELECT** to save this interval. Screen will read SAVED! and go back to the **Data Logger** screen with the cursor beside "Start Time."

4) Press **SELECT** to advance to the Start Time screen. Using the keypad arrows, enter the start time and press **SELECT** to save.

5) Press the **Menu** button to return to the primary display screen.

Note: To capture a real-time reading, press the Snap Shot button. A snap shot will not interfere with scheduled data logging. When you press the **Snap Shot** button on the keypad, "Snap Shot" will appear for a few seconds in the lower right corner of the screen, indicating the real-time data has been logged.

Checking Last Logged Screen

Place cursor beside "Last Logged" and press **SELECT**. The **Last Logged** screen will appear. Press **Menu** button to return to primary display screen.

```
** Last Logged **
01/05/16     08:06:07
pH: 7.105  ORP: +344
Temperature:  77.56° F
```

Setting up Wi-Fi

In addition to displaying real-time data, the Wi-Fi and portal provide email and text alerts, store redundant data, and offer remote control of unit.

Use of Wi-Fi and portal is optional; it is not required. Not utilizing the portal will not affect operation of the unit.

Your DL Controller is set up to transmit in the 2.4GHz frequency range only. If you are using a wireless router with two or more channels, please be sure to enter the "Network Name / SSID" that will access the 2.4GHz frequency channel only. The unit will **not** communicate at 5.0GHz.

Before beginning Wi-Fi setup, make sure you have the following:

- Wi-Fi Network Security Type (Open, WEP, or WPA)
- Wi-Fi Name, and
- Wi-Fi Password

```
** Wi-Fi Settings **
> Wi-Fi Enable
  Security Type
  Network Name/SSID
  Pre-shared Key
  View Device IP
  Upload Interval
  Portal Sync
  Portal Service
  Exit
```

IMPORTANT: Although "Wi-Fi Enable" is the first option listed, you should enter all Wi-Fi information with the unit in Wi-Fi Disabled mode. Enable Wi-Fi as the last step, otherwise the unit may begin uploading information before you finish entering it.

Menu Button>Wi-Fi Settings>Wi-Fi Enable

1) Work your way to the **Wi-Fi Enable** screen.

2) On the **Wi-Fi Enable** screen, place cursor beside "Enable" and press **SELECT**.

3) Use the same procedure to Disable Wi-Fi.

Menu Button>Wi-Fi Settings>Security Type

1) Work your way to the **Wi-Fi Security** screen and press **SELECT**.

2) On the **Wi-Fi Security** screen, you will have the following options: Open, WEP, and WPA. WPA is the most common. Place the cursor beside the appropriate security type and press **SELECT**.

Menu Button>Wi-Fi Settings>Network Name/SSID

(Remember to use 2.4 GHz only)

1) Work your way to the "Network Name/SSID" screen and press **SELECT**.

2) When the "Network Name/SSID" screen opens, fill in your Wi-Fi name using the keypad arrows, and press **SELECT**.

Menu Button>Wi-Fi Settings>Pre-shared Key (Password)

1) Work your way to the **Pre-shared Key** screen and press **SELECT**.

2) When the screen opens, the heading will read "Network Password."

3) Fill in your Wi-Fi password using the keypad arrows, and press **SELECT**.

Menu Button>Wi-Fi Settings>View Device IP

When Wi-Fi is set up and you have logged in, you will be able to view the Device IP and MAC Addresses.

Menu Button>Wi-Fi Settings>Upload Interval

This screen will show upload interval, that is, how often the DL125 sends new information to the portal. Five minutes is the minimum upload interval.

Menu Button>Wi-Fi Settings>Portal Sync

Menu Button>Wi-Fi Settings>Portal Service

IMPORTANT: Do not open the Portal Service screen unless you are instructed to do so by Milwaukee Instruments. If you accidentally open this screen, press MENU to back out. **Do NOT enter any data!** Doing so will permanently disconnect you from the portal.

DL125 BLACK BOX SPECIFICATIONS

Range pH	0.01 pH to 14.00 pH
Range ORP	0 to 1000 mV
pH Resolution - User Select	Tenths (0.1 pH); Hundredths (0.01 pH); Thousandths (0.001) pH
ORP Resolution - Fixed	1 mV
Accuracy @ 77°F	pH 0.02 pH and 5 mV
pH & ORP Setpoint Range	Full pH Scale: 0.00 to 14.00 Full ORP Scale: -1000 mV to +1000 mV
Activation Parameter	User Select above or below activation setpoint
Visual Alerts	LED backlight blue = normal; lime = caution; red = critical
Probe Protection	On Master Board GLP chipset (Ground Loop Preventer)
Circuit Board Protection	On Master Board RJ45 Backfeed Prevention Chipset
Operational Environment	15°F to 180°F (-10°C to 85°C)
Temperature Accuracy	0.5°F
Power Supply	International Plug Set - No converter needed
pH Electrode / ORP Electrode	MA911B/2 / MA921B/2
RJ45 Cable	7 foot RJ45 provided -- Optional up to 50 feet
Controller Power Box	1 socket for pH dosing or CO_2 solenoid control; 1 socket for ORP dosing or Ozone
Main Board	Atmel SAM3X8E ARM Cortex-M3 CPU
Operating Voltage	3.3 volts
Clock Speed	84 MHz clock
S Ram	96 KBytes of SRAM (two banks: 64KB and 32KB)
Flash Memory	512 KB
Data Retention	100 years at 25° C
Station and Access Point, Wi-Fi	802.11 b/g/n Roles with Integrated Radio, Baseband, and MAC
TCP/IP	Embedded TCP/IP stack
Circuit Board Protection	RJ45 Back Feed Protection with Short Circuit Protection
GLP (Ground Loop Prevention)	Dual Ground Loop Prevention Circuit and Chipset
Input Power Supply	7V to 12VDC Recommended --- International Plug Set - No Converter needed
Input Min. & Max.	6V to 20VDC
Logic Load Shifter	Provides Higher LCD Screen Resolution and Fast Response Time

Manufactured/Assembled in the USA

CONTROLLER POWER BOX

Controller Power Max Capacity @ 110VAC or 220VAC, 10 amps / 1000 watts
Relay Response Time is 20ms
Free-wheeling Diode Protection
Universal Plug -- No Converter Necessary
Red LED Light Indicates Socket is Active and Power is On
One Socket Powers pH Device; the Other Powers ORP Device
Communication to Master Controller Through RJ45 up to Maximum Distance of 50 Feet