apeks

quantum X

Owner's Manual

Contents

FOR YOUR SAFETY

All warnings and cautions are identified with the triangle symbol. Whenever you see a warning or a caution, read it carefully, as it may protect you from serious injury or damage to the product. Read the manual in its entirety before attempting to use the QuantumX computer.

WARNING: Decompression sickness (aka, "the bends") is an inherent risk of SCUBA diving. Even if you properly follow all the instructions in this manual, and dive within the recreational limits of SCUBA diving, you still run the risk of getting decompression sickness, or some other inherent risk of SCUBA diving. Unless you are fully aware of these risks and are willing to personally accept and assume responsibility for those risks, do not use the QuantumX dive computer

The QuantumX, or any other dive computer, does not actually monitor changes that occur in your body as you dive. Rather, it is performing calculations using algorithms developed by leading decompression experts and backed by years of research and thousands of dives. However, these algorithms cannot account for factors like dehydration, fatigue, obesity, or poor physical conditioning. Therefore, always leave a comfortable safety margin in respect to no-decompression time and ascent speed. The computer is designed to ASSIST you in making a dive, not to CONTROL your dive.

WARNING: Using the QuantumX will not prevent decompression sickness, but using it sensibly reduces this risk. You must accept that there is no device or procedure that will totally prevent the possibility of a decompression accident.

INTRODUCTION

Congratulations on the purchase of your new QuantumX dive computer. As with all diving equipment, it is important to understand the features and functions of the QuantumX. Before using the computer, read this manual in its entirety. Contained within this manual are illustrations to aid you in understanding the computer.

Section 1 instructs you on how to navigate through the QuantumX's surface modes. Section 2 describes all the underwater displays and functions while diving with the QuantumX. Lastly, Section 3 covers care & maintenance.

This manual will clearly and concisely instruct you on the use of the QuantumX. However, if you have any questions on the material contained in this manual, please contact your nearest authorized dealer.

SECTION 1

Using the QuantumX on the Surface

The Push Buttons

The QuantumX has three buttons that allow you to access modes, change settings and switch displays. Throughout this manual, the buttons will be referred to as **MODE**, **A**, and **B**. The detailed function of each button is explained throughout this manual.

The Mode Button

All the surface functions are accessed by pressing the MODE button. The QuantumX has nine surface modes: TIME/DATE, COMPASS, DIVESET, PLAN, LOGBOOK, PROFILE, HISTORY, PC (PC download) and TIMESET (see opposite page).

Pressing the **MODE** button scrolls through the nine modes. As you scroll through the modes, the first screen of each mode is displayed. In this section, each mode will be explained in the order it appears.

1. Time/Date (Home)
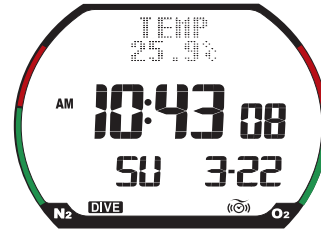
9. Set Time/Date

2. Compass

8. PC Download

3. Dive Set

**Sequence
of the nine
modes**
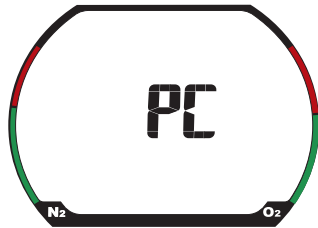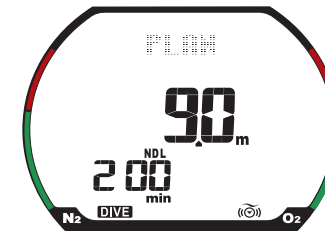
7. History

4. Plan Mode

6. Profile
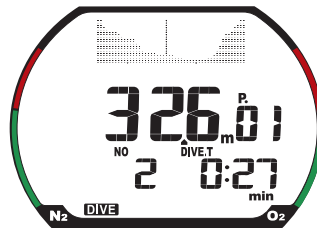
5. Logbook

Time Display Mode (pre-dive)

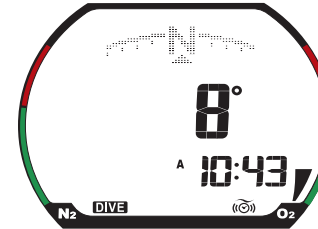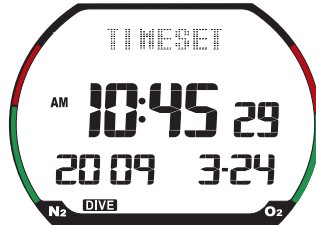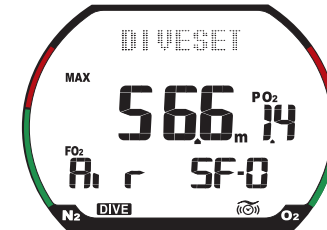The QuantumX's default mode is the Time Display Mode. The computer always returns to the time display after making a dive or exiting from one of the other modes, such as Plan Mode or Log Mode. If there is no button activity for several minutes while in another mode, the computer will automatically exit back to the time display.

a. **Time of day**: Displayed in HH:MM:SS. Displayed in 12-hour or 24-hour format. The 24-hour format does not use AM and PM. For example, 15:45 is the same as 3:45 PM. Selecting the 12- or 24-hour format is explained on pages 32-33.

b. **Day of the week**: Displayed as a two-letter abbreviation.

c. **Date:** Displayed in Month-Day format.

d. **Diving Mode Indicator:** Displays **DIVE** if the computer is set to Dive Mode, or **GAGE** if set to Gage Mode. For more information setting the diving mode, see page 18.
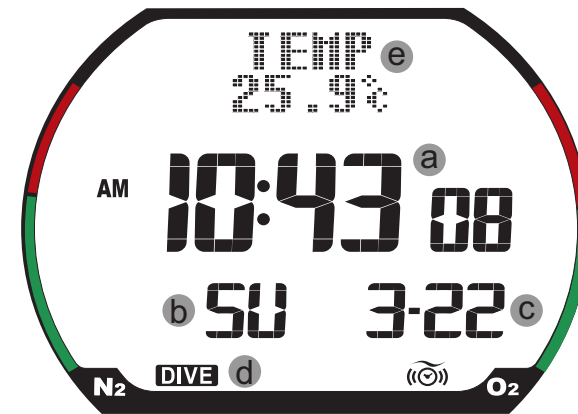
Time Display Mode with Temperature
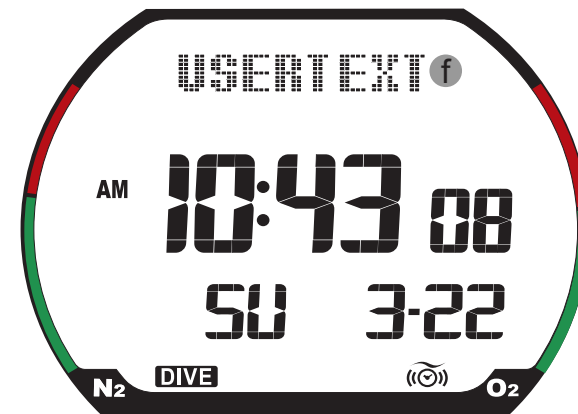
Time Display Mode with User Text

e. **Temperature**: Temperature is displayed in Celcius or Fahrenheit, depending if the computer is set to metric or imperial. To change units, see page 33.

f. **User-Defined Text**: Displays user-defined text, such as a name or phone number, that is uploaded from the PC using the interface kit and software (optional accessory).

⚠ **CAUTION: If the Nitrox indicator is flashing, it means that the QuantumX has defaulted to 99% FO$_2$. You must reset the FO$_2$ to match the contents in your cylinder.**

NS. **Altitude sector**: (Not Shown) If the QuantumX detects that it is at altitude, it will display one to three altitude sector icons. The QuantumX automatically adjusts for altitudes up to 19,680 ft. (6000 m). The following table lists the altitude sectors and their corresponding altitude range.

⚠ **WARNING: When diving at altitude, make sure the altitude sector matches the actual elevation of the dive site, otherwise, the QuantumX may display inaccurate information.**

Sector	(none)	⛰	⛰⛰	⛰⛰⛰	⛰⛰⛰ (flashing)
Altitude Range	Sea Level to 2624 ft (800 m)	2624 ft (800 m) to 5248 ft (1600 m)	5248 ft (1600 m) to 7872 ft (2400 m)	7872 ft (2400 m) to 19680 ft (6000 m)	Error. Icons flash above 19680 ft (6000 m)

☞ *Note: When arriving at a new altitude sector, segments on the nitrogen loading bar graph may appear, even if you have not made a dive.*

Backlight

To activate the backlight, press **A** or **B**. The backlight will stay on for 4 to 5 seconds.

Low Battery Indicator

When the battery power is too low for the computer to function properly, the QuantumX displays a battery icon. When the battery icon is blinking, you can place the computer into PC Transfer Mode to download your dive profiles to a PC, but it will not enter dive mode. When the battery icon stops blinking, you cannot dive with the computer and will not be able to transfer to a personal computer.
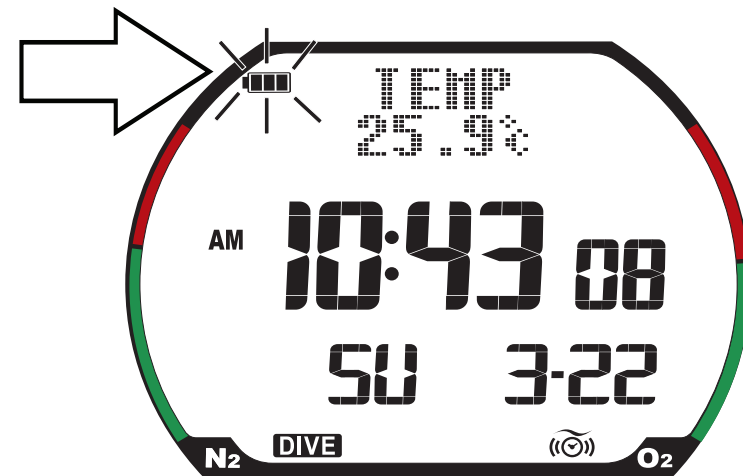
Low Battery Icon

Time Display Mode (post-dive)

After making a dive, the Time Display Mode shows additional information:

Time Display Mode (post dive)

a. **Nitrogen Bar Graph**. The Nitrogen bar graph is a series of nine segments that graphically represent your body's residual nitrogen. During the surface interval, the Nitrogen Bar Graph starts to recede, indicating that you are off-gassing nitrogen.

b. **Oxygen Bar Graph**. The Oxygen Bar Graph is a series of eight segments that graphically represent your CNS clock. It tracks your exposure to higher partial pressures of oxygen when diving with enriched air nitrox.

c. **Desaturation Time:** Desaturation time is the amount of time it takes to release all the residual nitrogen left in your body from previous dives. Any dive made while there is still desaturation time remaining is considered a repetitive dive.

d. **Surface Interval Time:** Surface interval time is the amount of time since surfacing from a dive. It is displayed for 48 hours after the last dive.

e. **No Fly Icon:** The No Fly icon will stay on for a minimum of 12 hours after a dive. If desaturation time is greater than 12 hours, the No Fly icon will stay on until desaturation time reaches zero.
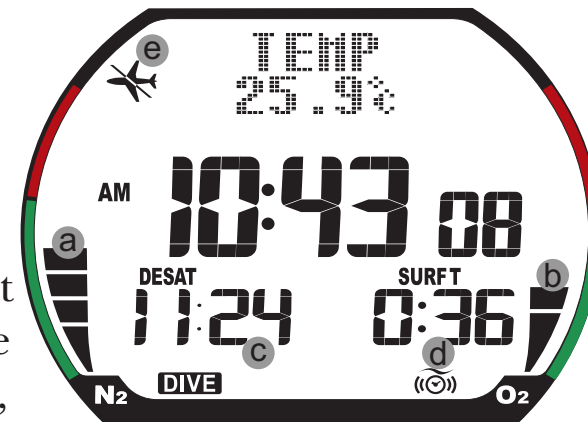
Wait-to-fly Guidelines

The Undersea and Hyperbaric Medical Society (UHMS) suggests that divers using standard air tanks and exhibiting no symptoms of decompression sickness wait 24 hours after the last dive to fly in an aircraft with a cabin pressure of 8000 feet (2438 m) or less. The two exceptions to this recommendation are:

1. Less than two hours of dive time in the last 48 hours, then wait 12 hours before flying.

2. Following a decompression stop dive, wait at least 24 hours or, if possible, 48 hours.

Both UHMS and Divers Alert Network (DAN) agree that there can never be a flying after diving rule that is guaranteed to prevent decompression sickness. Rather, there can be a guideline that represents the best estimate for a conservative surface interval for the vast majority of divers. There will always be an occasional diver whose physiological makeup or special diving circumstances will result in decompression sickness.

Compass Mode

The QuantumX features a digital compass that displays an animated compass in the dot matrix area at the top of the screen. When you enter the Compass Mode, the computer displays the following information:

a.   **Animated compass rose**. As you rotate, the animated compass rose displays the cardinal points (E,W,N,S) to show your general direction.

b.   **Direction arrow.** The arrow points to the direction you are traveling

c.   **Degrees.** In the center of the screen is the exact degree reading, displayed in one-degree increments.

d.   **Time of day.**
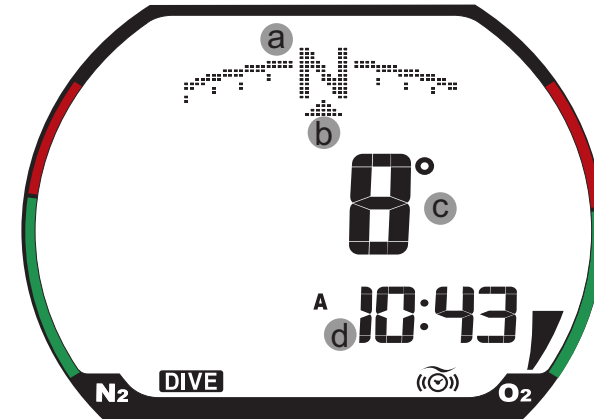
Compass Display

Taking a bearing

When you want to navigate in a certain direction, you can take a bearing by pressing and holding the **A** button. When you take a bearing, the computer shows the following:

e. **Bearing degrees.** The bearing degrees "locks-in" and does not change as the computer rotates.

Compass Display with Bearing Set

f. **Bearing symbol.** When you take a bearing, a downward pointing arrow appears above the direction arrow. This allows you to stay on course by keeping the direction arrow and bearing symbol aligned. As you turn off-course, the bearing symbol moves with the compass rose. To get back on course, turn towards the bearing symbol until it is aligned with the direction arrow.

Reciprocal Symbol

As you turn 180 degrees from your bearing, the reciprocal symbol appears. To return to your starting point, keep the direction arrow aligned with the reciprocal symbol.

Reciprocal Symbol

Clearing the bearing

To clear the bearing, press and hold the **A** button. When the bearing is cleared, the bearing degrees and bearing symbol will disappear. To take a new bearing, press and hold the **A** button.

☞ *Note: Unless the bearing is manually cleared, it remains locked-in and always appears when you enter the compass mode.*

Calibrating the compass

For the most accurate compass reading, calibrate the compass whenever traveling a significant distance to a new dive destination. If you dive in the same area, it is not necessary to calibrate the compass.

Follow these steps to calibrate the compass:
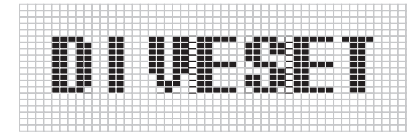
1. Put the QuantumX into compass mode.

2. Press and hold the B button until the message "ROTATE SLOWLY" and an empty circle appears at the top of the screen.

3. Keeping the computer level, slowly rotate until the circle fills completely and the message "ROTATE OK" appears.

4. Press and hold the B button to exit the calibration mode.

Compass Calibration

Dive Settings Mode

Dive Settings Mode allows you set all the parameters related to the operation of the computer during a dive. To enter the Dive Settings mode, press **MODE** until DIVESET is displayed at the top of the screen.

The buttons operate as follows:

1. Press **B** to change a setting. Press and hold **B** to rapidly scroll through the settings.

2. Press **A** to move to the next field.

3. Press **MODE** to save the settings and exit the mode.

The settings are listed below in the order that you can change them. The setting that is being changed will flash.

a. **Operational Mode**: If set to DIVE, the QuantumX will function as a complete dive computer and calculate no-decompression, decompression and oxygen related information. If set to GAGE, the QuantumX will become a basic depth gauge

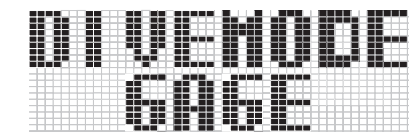and timer. If you make a dive in either DIVE or GAGE mode, you will not be able to change modes until desaturation time has reached zero. For more information on these modes, review Section 2, Diving with the QuantumX.

b. **Nitrox Mix and PO2**: (*Note: This screen does not appear when the computer is set to GAGE.*) For each the three nitrox mixes, you can set the PO_2 from 1.0 to 1.6, and the FO_2 from AIR (21%) to 99%. As you change the PO_2 and FO_2, the Maximum Operating Depth (MOD) automatically recalculates. After the first mix is set, the computer will display Mix 2. After Mix 2 is set, Mix 3 will be displayed. If you want to use the computer for air-only, all three mixes must be set to AIR. If any of the three nitrox mixes is set to 22% or higher, the Nitrox label will appear. Please read the *Important Nitrox Note* on page 23.

Mix No.   1 AIR   FO2 Setting

MAX

M.O.D.   56.6 m PO_2 14   PO2 Setting

Nitrox Symbol   Nitrox

N_2 DIVE O_2
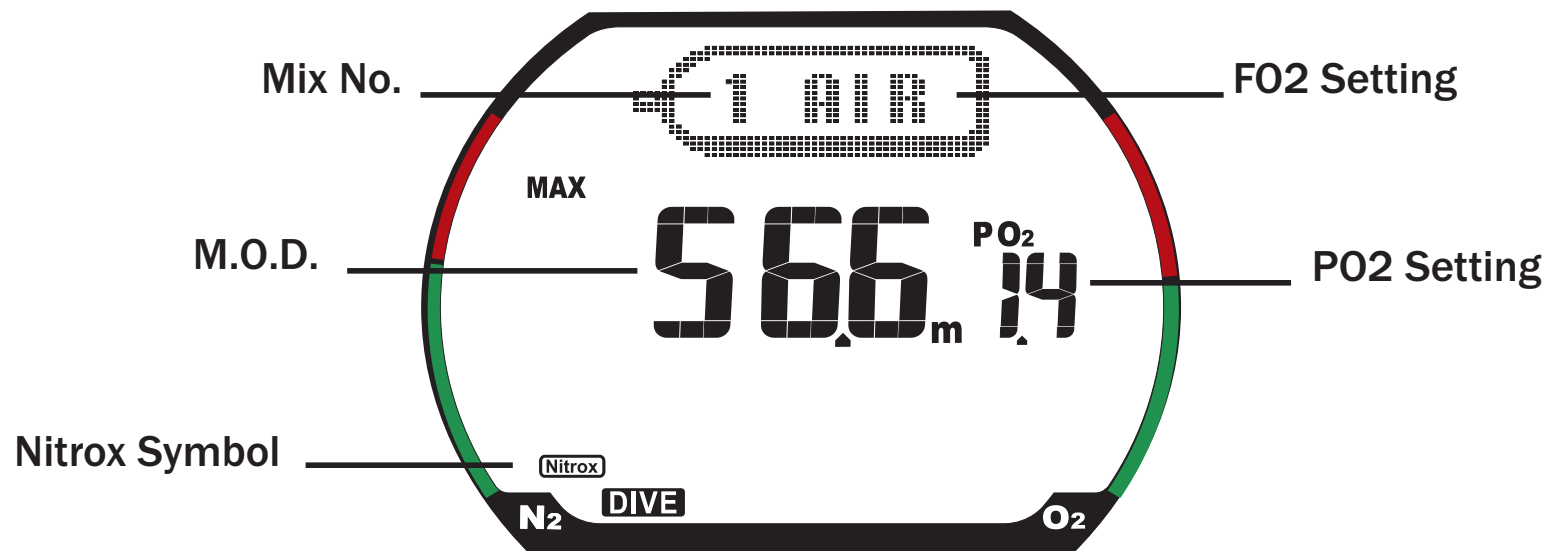
c.   Depth Alarm: You can set an alarm to sound during the dive if you exceed the set depth. The alarm can be set for 2m to 100m in 1m increments. You can also set the alarm to be ON or OFF. If set to ON, the ((•)) icon will be displayed.

DEPTH
ALARM

ON   4.00

Nitrox
DIVE   N₂   O₂
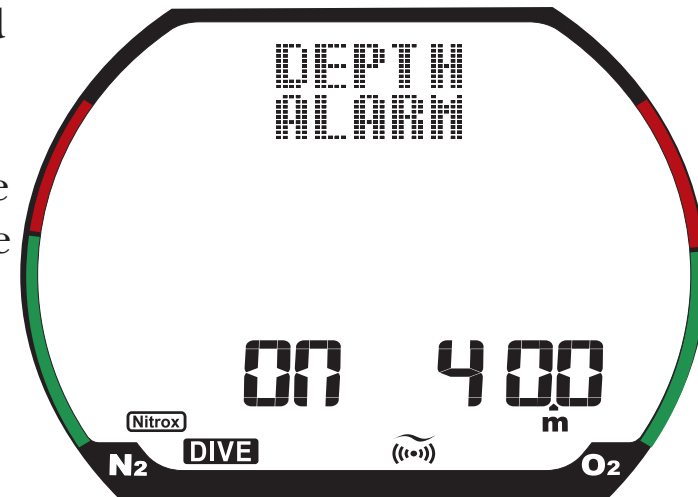
d.   Dive Time Alarm: If your bottom time exceeds this setting, you will get an audible warning. You can also set the alarm to be ON or OFF. If set to ON, the ((◉)) icon will be displayed.

DIVETIME
ALARM

DIVE.T
OFF   1:00   min

DIVE   N₂   O₂
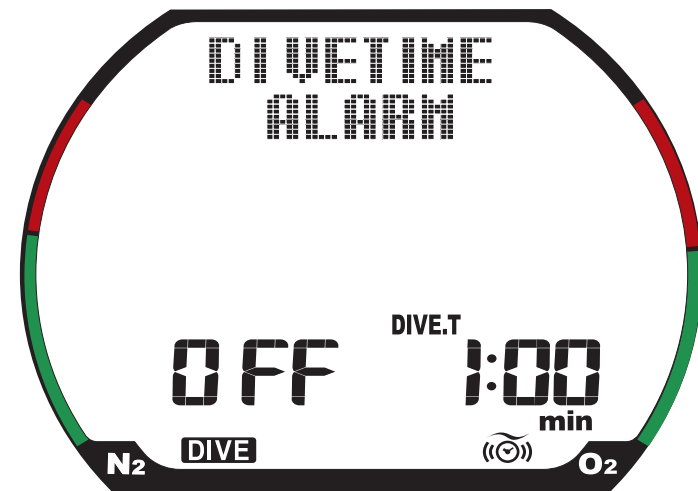
d. **Deep Stops:** This turns the Deepstop feature on or off. Deepstops help reduce the formation of microbubbles. Deep Stops only appear if the dive is deeper than 21m (69 ft).

DEEPSTOP ON
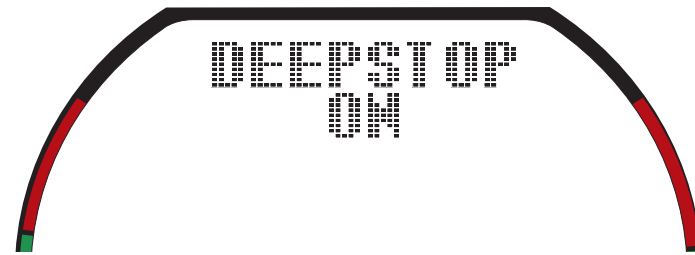
g. **Water type**: Actual depth can differ based on the salinity of the water. If you are diving in a fresh water lake or river, set the QuantumX to Fresh; if diving in seawater, set it to Sea.

WATER IS SEA

f. **Profile recording interval**: The QuantumX can record depth measurements every 10 or 30 seconds. If set to 10, memory capacity is reduced.

PROFILE TIME

Pt-30

N₂   DIVE   O₂
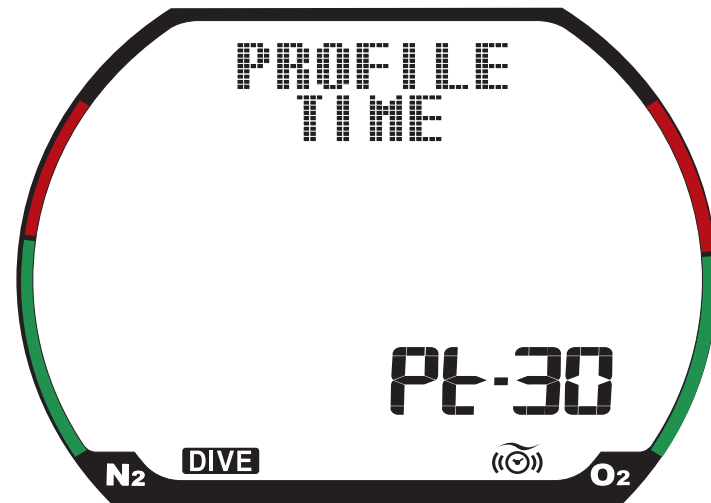
g. **Safety Factor (SF)**: The safety factor may be set to 0, 1 or 2. When set to 0, the computer will perform calculations based on the current altitude setting. If set to 1, the calculations are made as though the computer was at one altitude sector higher. This adds in an extra level of conservatism.

USER
SAFETY

SF-0

N₂   DIVE   O₂

IMPORTANT NITROX NOTE:

-   *If a mix is set to 22% or higher, the QuantumX will default the FO_2 for that mix to 99% after a 10 minute surface interval and display the mix as two dashes (- - %); if a mix is set to Air, it will stay set to Air indefinitely. When a mix is set to the default, the following warning will appear when you enter the water:*
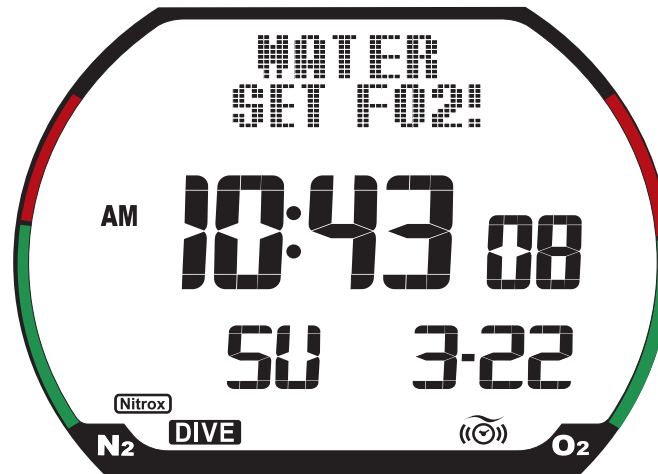
Default FO2 Warning

Plan Mode

Plan Mode allows you to review the no-decompression time limits at various depths for the next dive. To enter Plan Mode, press the **MODE** button until PLAN is displayed in the dot matrix display.

☞ *Note: If the QuantumX is set to GAGE mode, PLAN mode is disabled.*
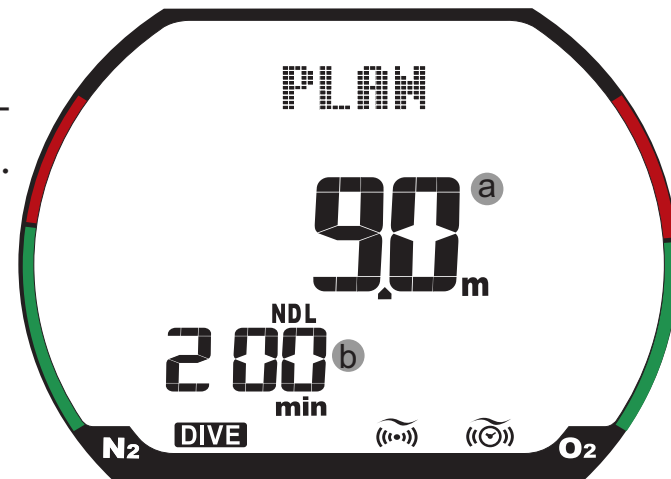
In Plan Mode, the buttons operate as follows:

1.   Press **B** to go to the next deeper depth-time combination.

2.   Press **A** to go to the next shallower depth-time combination.

3.   Press **MODE** to exit the mode.

In Plan Mode, the computer displays the following information:

a.   **Plan Depth**. The computer will display the plan depths in 3m/10 ft increments starting at 9m/30 ft and ending at 48m/160 ft.

b.   **No-decompression limit (NDL)**. This is the maximum amount of time you can stay at the given depth before requiring mandatory decompression stops. If you set Mix 1 to 22% or higher and you exceed your Maximum Operating Depth (MOD), three dashes (- - -) will be displayed.

Logbook Mode

The QuantumX logs any dive that is at least 1.2m/4 ft., and has a dive time of at least three minutes. Its memory capacity is 60 hours or 60 logged dives if the sampling rate is set to 30 seconds. If the sampling rate is set to 10 seconds, the logbook capacity is reduced to 20 hours or 20 logged dives.

When the memory is full, the newest dives will overwrite the oldest dives. The memory stays intact indefinitely, even after a battery change. It is strongly recommended, however, that you download all your dives and/or enter them into your logbook before changing the battery.

The QuantumX logs more information than can be displayed on a single screen; therefore, the logbook displays three "pages" of information for each dive.

To enter the Logbook mode, press **MODE** until Logbook Icon is displayed. Page 1 of the most recent dive is displayed.

In Logbook Mode, the buttons operate as follows:

1. Pressing **A** scrolls through the logbook pages from the most recent dive to oldest dive. e.g., 60-1 ➜ 60-2 ➜ 60-3 ➜ 59-1 ➜ 59-2 ➜ 59-3 ➜. . .

2. Pressing **B** scrolls through the logbook pages from the oldest dive to newest dive. e.g., 1-3 ➜ 1-2 ➜ 1-1 ➜ 2-3 ➜ 2-2 ➜ 2-1 ➜ . . .

3. Pressing **Mode** will exit Logbook Mode and go to Profile Mode.

Logbook - Page 1

a. **Logbook Icon**. Denotes that the computer is in Logbook Mode.

b. **Log Number:** This is the sequential number of the dive relative to all the other dives in memory. The higher the number, the newer the dive, i.e., dive 1 is the oldest dive in memory.

Logbook - Page 1

c. **Start time:** Denoted by the downward pointing arrow ↓, this is the time of day that the dive started.

d. **Date:** The date the dive started, shown in mm-dd format.

e. **Dive number:** The number of the dive made that day.

f. **Residual nitrogen:** The residual nitrogen at the end of the dive. This is not displayed if it was a Gage Mode dive.

g. **Oxygen level:** The oxygen level at the end of the dive.

h. **Dive profile:** A graphic representation of the dive profile for the entire dive.

i. **Altitude Sector:** The altitude sector when the dive started.
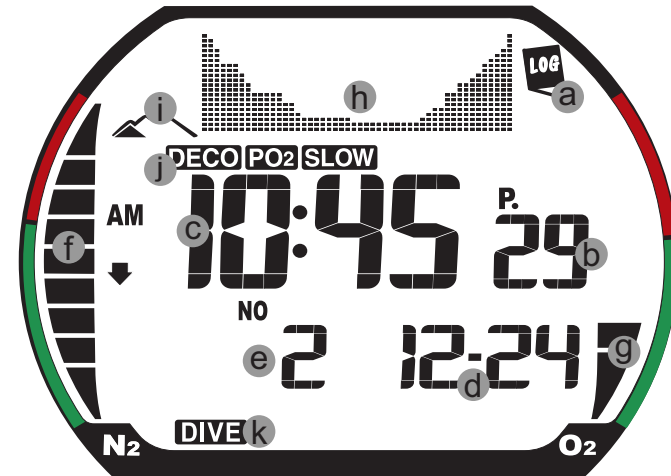
j.   Recorded violations:

- **Decompression:** If a decompression dive was made, the DECO label will be displayed; if the decompression stop was violated, the DECO label will flash.

- **Fast ascent:** If the ascent rate was violated, the SLOW label will flash.

- **PO$_2$ violation**: If you exceed the maximum operating depth for either mix, the PO2 label will flash.

k.   Diving Mode Indicator: If the computer was used in dive mode, the DIVE indicator will be displayed; if used in gauge mode, the GAGE indicator will be displayed

Logbook - Page 2

a.   Page Number: The denotes whether page 2 or 3 is being displayed.

b.   Dive time: This is the total time spent below 1.2m/4 ft.

c.   End time: Denoted by the upward pointing arrow, the time of day that the dive ended.

d.   FO2: The FO2 that was used during the dive.
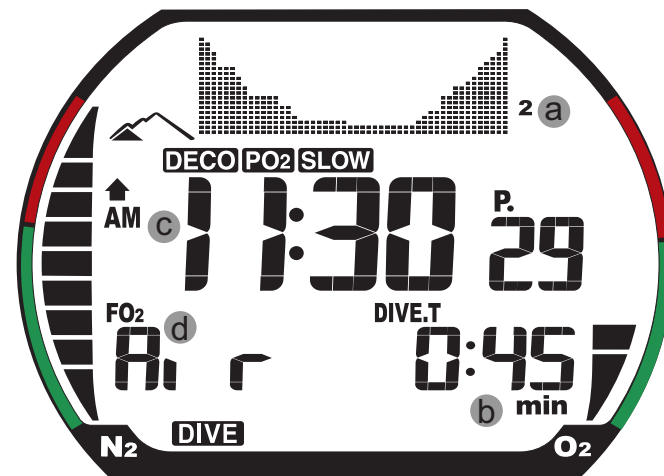
Logbook - Page 2

Logbook - Page 3

a. **Maximum depth:** The deepest depth reached during the dive.

b. **Temperature:** This is the temperature recorded at the maximum depth.
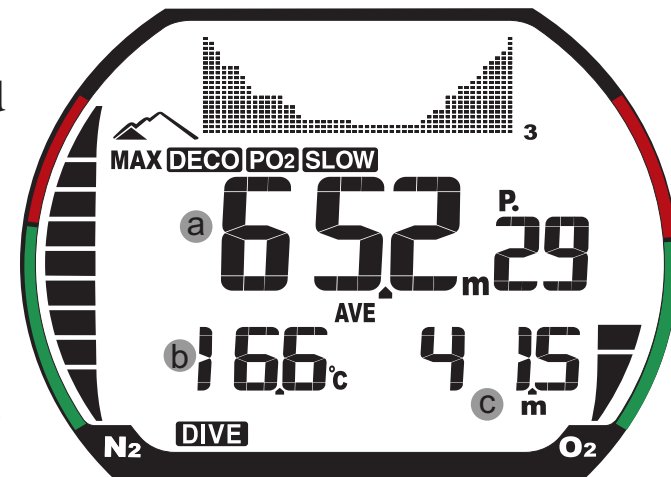
c. **Average depth:** The weighted average depth of the dive based on amount of time spent at various depths.

Logbook - Page 3

Profile Mode

In addition to the basic logbook data, the QuantumX also records the dive depth every 10 or 30 seconds (*see Dive Mode Settings on pages 18-21*). The Profile Mode plays back the profile in one-minute increments. This profile information is also downloadable to a PC.

To enter the Profile Mode, press **MODE** until you see the dive profile in dot matrix display.

Note: Unlike the Logbook Mode, the Profile Mode does not display the nitrogen or oxygen bar graphs, nor does it show the logbook icon.

In Profile Mode, the buttons operate as follows:

1.   Pressing **A** goes to the next dive profile.

2.   Pressing **B** goes to the previous dive profile

In Profile Mode, the QuantumX displays the following information:

Profile Mode

a.   **Dive profile:** A graphic representation of the dive profile for the entire dive. A flashing vertical line moves across the profile denoting the position of the datapoint being displayed.

b.   **Profile number:** This is the sequential number of the dive in memory.

c.   **Dive time:** This is the minute displayed during the dive. Though the profile is recorded in 10- or 30-second intervals, the profile is only displayed in one-minute intervals.

d.   **Depth:** The depth where the sampling occurred.

e.   **Dive number:** The number of the dive made that day.

f.   **Diving Mode Indicator:** If the computer was used in dive mode, the **DIVE** indicator will be displayed; if used in gauge mode, the **GAGE** indicator will be displayed
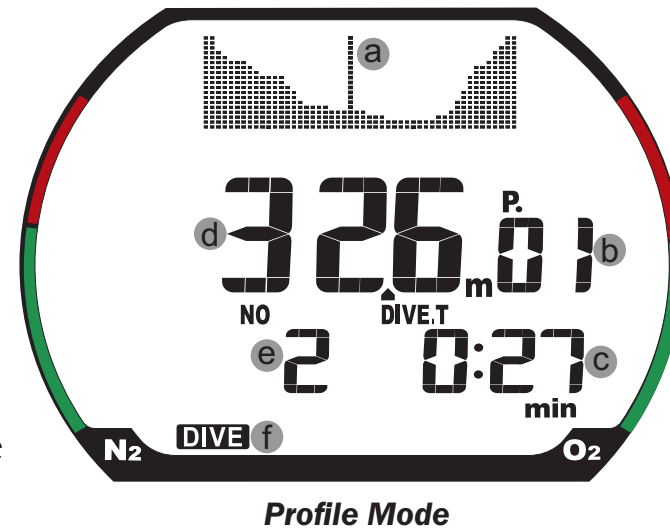
History Mode

History Mode displays a summary of all your diving activity. To enter History Mode, press the **MODE** button until HISTORY is displayed in the dot matrix display. If the computer is set to Dive Mode, it will show the Dive Mode History; if set to Gage Mode, it will show the Gage Mode History.

In History Mode, the QuantumX displays the following information:

a. **Total Dive Time:** Total dive time is the number of hours and minutes spent underwater, up to 999:59 (hrs:min). After 999:59, it will roll over to 0:00

b. **Total dives:** This is the total number of dives ever made, up to 9999. After 9999, it will roll over to 0.

c. **Maximum Depth:** This is the deepest dive ever made.

d. **Dive mode indicator:** Shows whether it's Dive Mode summary or Gage Mode summary.

HIstory Mode - Dive Mode Summary
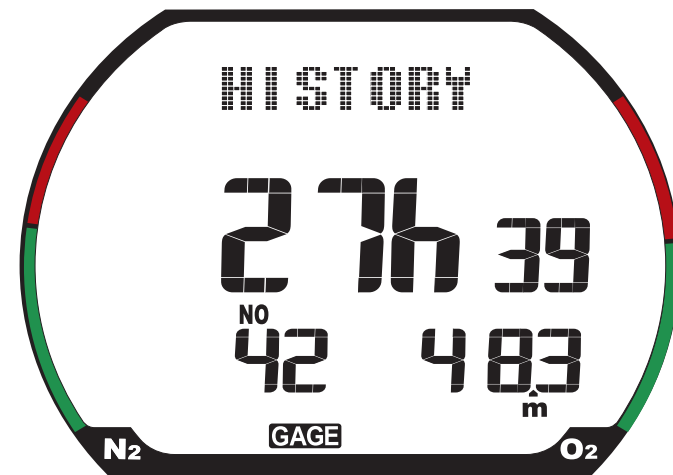
HIstory Mode - Gage Mode Summary

PC Transfer Mode

You can download the logbook and profile data to a personal computer using the optional PC interface kit.

To enter the PC Transfer Mode, press **MODE** until PC is displayed in the center of the screen.

In PC Transfer Mode, the buttons operate as follows:

PC Transfer Mode

1. Pressing **A** has no function.

2. Pressing **B** has no function

3. Pressing **Mode** will exit PC Transfer Mode and go to Set Time Mode.

> ⚠ **WARNING: The QuantumX cannot enter Dive Mode while in PC Transfer Mode. You must exit this mode before attempting to dive. Otherwise, the computer will not perform any nitrogen or oxygen calculations, which may lead to serious injury or death.**
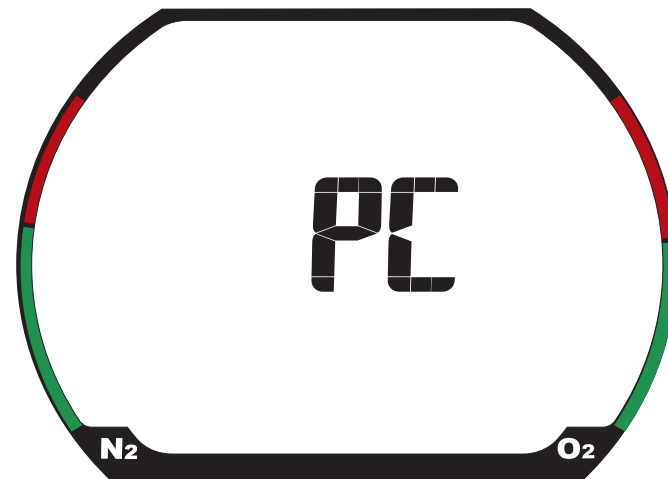
Time Settings Mode

The QuantumX records the time and date of each dive into memory; therefore, it is important to make sure that the time and date are set correctly. Remember to set the time after changing the battery or traveling to a different time zone.
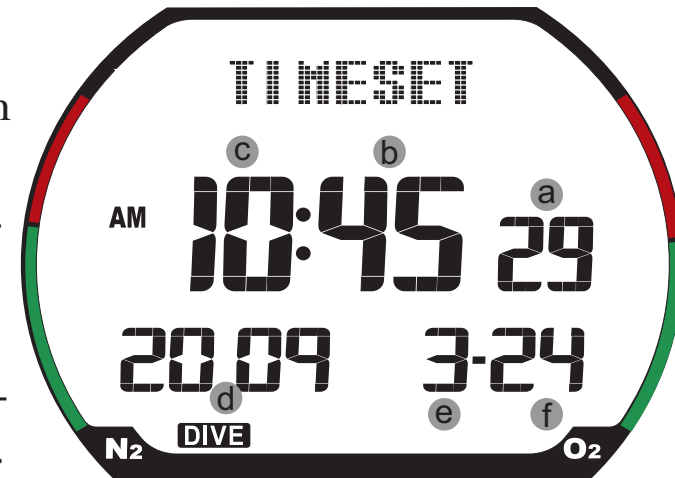
To enter the Time Settings Mode, press **MODE** until TIMESET is displayed in the dot-matrix display.

The buttons operate as follows:

1. Press **B** to change a setting. Press and hold **B** to rapidly scroll through the settings.

2. Press **A** to move to the next field.

3. Press **MODE** to save the settings and exit the mode.

The settings are listed below in the order that you can change them. The setting being changed flashes.

a. **Seconds**: Pressing the **B** button will reset the seconds to 00. If the seconds setting is 30 or higher when the button is pressed, it will also increment the minutes setting by one.

32

b.   Minutes.

c.   Hours.

d.   Year.

e.   Month.

f.   Day.

After the time and date are set, the TIME FORMAT screen will appear. press **B** to toggle between the **12-hour and 24-hour format.** When set to the 24-hour format, the AM or PM label will disappear.

Change Units of Measure

The QuantumX allows you to change the units of measure from Imperial (feet, °F) to Metric (meters, °C), or vice versa.

1.   Press **MODE** until DIVESET appears in the dot-matrix display (see Dive Settings Mode).

2.   Press and hold both **A & B** for 5 to 6 seconds. An audible alarm will sound and the depth display will switch to the new metric or imperial setting.

3.   Press and hold **MODE** to exit directly back to the Time display.

Section 2

Diving with the QuantumX

⚠️ **WARNING: Never use the QuantumX unless it has been with you since the first dive. Using a "clean" computer (no residual nitrogen) after you have already made a dive(s) may result in the computer allowing you more no-decompression time than you really have. In addition, never share or swap computers. Any of these practices may result in decompression sickness.**

Pre-Dive Checklist

Before making a dive, it is important that you make sure you go through the following checklist:

1. Make sure the time and date is set correctly. Remember, the QuantumX records the time and date of each dive into memory.

2. Check the Altitude sector and make sure it matches the altitude of the dive site.

3. Go into Dive Settings Mode and make sure all the parameters are set correctly, including the water type, safety factor, profile recording interval, and FO_2 settings.

4. Go to Plan Mode and review your no-decompression time limits.

Automatic Activation

At the top of the QuantumX are two water contacts. When the water contacts are submerged, the computer automatically enters Dive Mode. The automatic activation features works when the QuantumX is in any of its surface modes except for PC Transfer Mode.
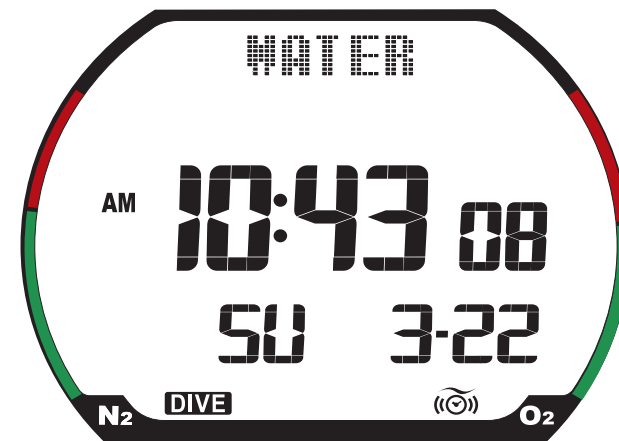

Water Contacts

⚠️ **WARNING: The QuantumX cannot enter Dive Mode while in PC Transfer Mode. You must exit PC Transfer Mode before attempting to dive. Otherwise, the computer will not perform any nitrogen or oxygen calculations, which may lead to serious injury or death.**
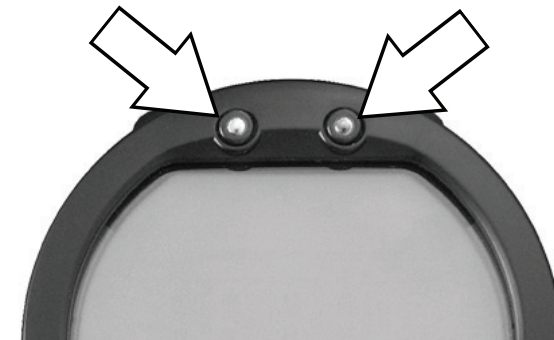
Testing the water contacts

You can test this feature by wetting your finger and touching the water contacts. The word "WATER" should appear in the dot matrix display. If "WATER" does not appear, it is possible that the contact needs to be cleaned. You can clean the contact with warm, soapy water and a soft-bristle brush.

Water Contacts Active

35

No-decompression Dive Mode

The QuantumX has a primary dive display and two alternate displays that you can access with a press of a button.
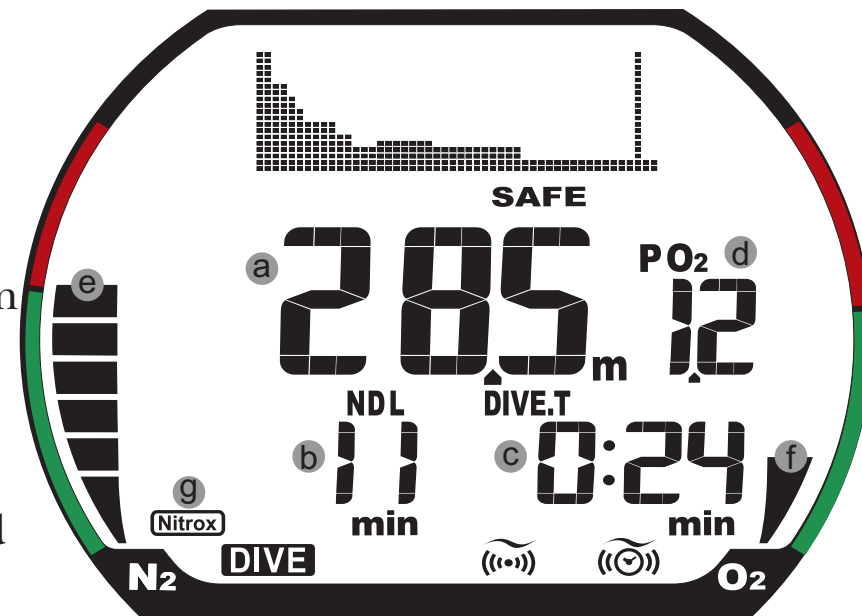
The buttons work as follows:

1. Press and hold **A** to show the alternate displays. When the button is released, the computer switches back to the primary display.

2. Press and hold **MODE** for 2 to 3 seconds to switch nitrox mixes.

3. Press and hold **B** to add a bookmark to the profile memory.

4. Press **B** to enter the Compass Mode.

4. To activate the backlight, press any button. Pressing **MODE** will activate the backlight but not switch any displays.

Primary Display

a. **Current Depth:** How deep you are at any moment during the dive.

b. **No-decompression limit (NDL):** The amount of time you can stay at the current depth before requiring mandatory decompression stops.

c. **Dive Time:** How long you have been below 1.2 meters (4 feet).

d. **PO_2:** The calculated PO_2 based on depth and FO_2.

e. **Nitrogen Bar Graph:** Graphically shows your body absorbing and eliminating Nitrogen. The bar graph has nine segments. When the last segment appears, you have gone beyond the no-decompression limit and now require mandatory decompression stops.

f. **Oxygen Bar Graph:** Graphically shows your exposure to an elevated partial pressure of Oxygen (PO_2). The bar graph has eight segments. When the eighth segment appears, you have reached 100% of the CNS clock.

No-Deco Dive Mode - Primary Display

g. **Nitrox symbol:** Only displayed if the FO_2 is set to 22% or higher for any of the three mixes. Does not appear if all the mixes are set to Air.
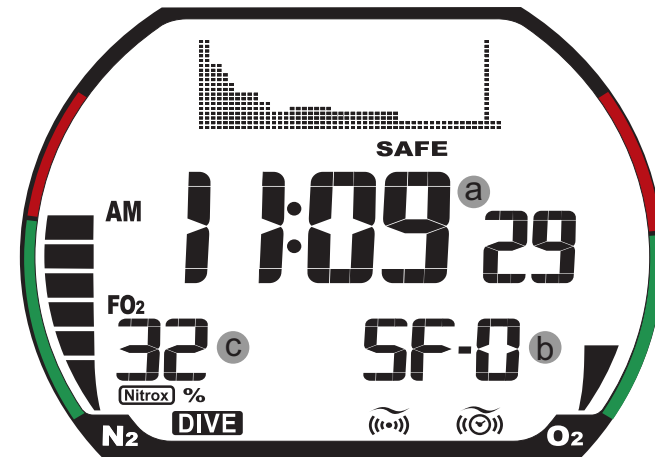
Alternate Display 1

Pressing and holding the **A** button shows the first alternate display:

a. **Time of Day:** The current time of day

b. **Safety Factor setting:** The current Safety Factor that was selecting in the Dive Settings Mode.

c. **FO₂:** The FO_2 of the mix currently in use.

Dive Mode - Alternate Display 1

Alternate Display 2

While continuing to keep the **A** button pressed, the second alternate display appears after two seconds:

a. **Maximum depth:** The deepest depth reached during the dive.

b. **Temperature:** The actual water temperature at that time. Since the temperature sensor is inside the computer, it may take a few minutes before you get an accurate reading.

Dive Mode - Alternate Display 2

38
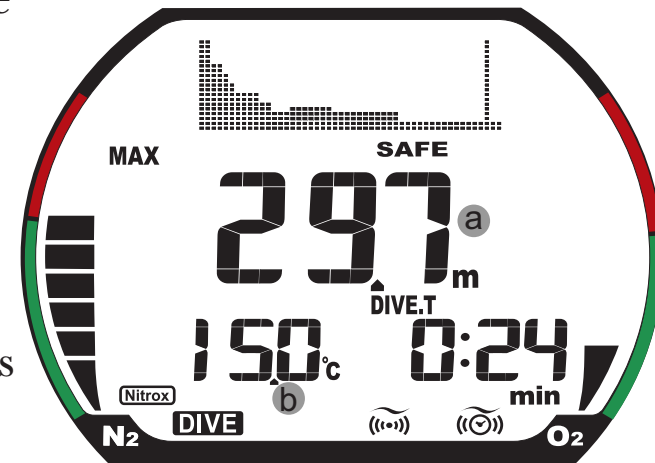
Safety Stop

Whenever you make a dive deeper than 10m/33ft., then ascend above 6m/20 ft., the QuantumX will display a three minute safety stop countdown. Ignoring the safety stop will not penalize you, however, it is highly recommended that you perform the complete three minute safety stop before surfacing from the dive.

Safety Stop Display

a.   **Safety stop time:** Safety stop time is shown in min:sec. It starts at 3:00 and counts down to 0:00. If you descend below 6m/20ft., the countdown is paused until you ascend to 6m/20ft. If you descend below 10m/33ft., the safety stop will reset to 3:00 when you return to 6m/20 ft.

b.   **Safety stop alert:** Displayed above the current depth to alert you that you should perform a safety stop.

39
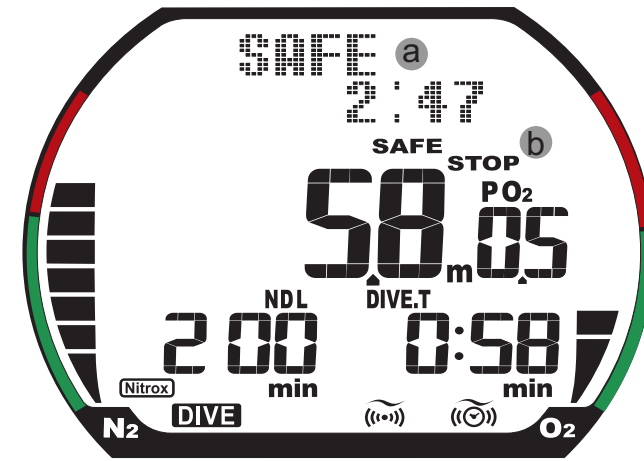
Switching Nitrox Mixes

☞ *Note: Instructions for setting Mix 1, Mix 2 and Mix 3 are found on page 19.*

To switch to a different nitrox mix, press **MODE** for 2-3 seconds, then press **A** to scroll through the mixes. When the **A** button is initially pressed, the QuantumX will show the new no-decompression limit (NDL) and PO_2 based on the mix being selected. For example, if the QuantumX is set to Mix 1 and you press the **A** button, it will show the NDL and PO_2 based on Mix 2.

If the PO_2 is below 1.6, the QuantumX will allow the switch to the new mix; however, if the PO_2 is 1.6 or higher, the QuantumX will not allow the switch.

If the mix is set to default (- - %), the QuantumX will not allow the switch to the new mix.

Switch to New Mix

40
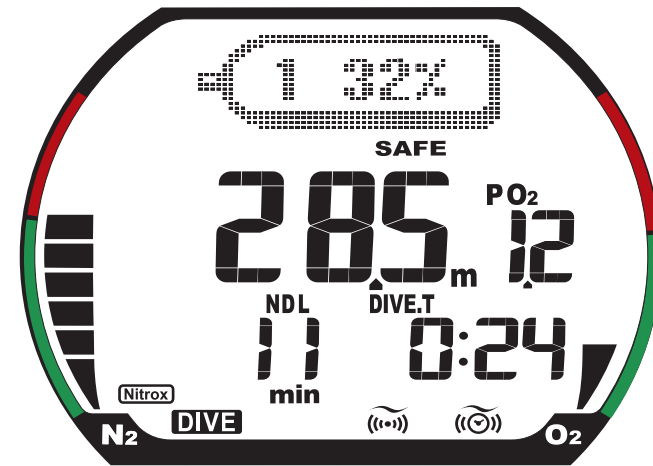
Decompression Dive Mode

If you exceed the no-decompression time limit, you will be required to make mandatory decompression stops. The computer will automatically switch from normal Dive Mode to Decompression Dive Mode. In Decompression Dive Mode, the QuantumX displays the following information:

Decompression Dive Mode

a. **Decompression warning:** When the computer enters Decompression Dive Mode, The computer will flash the words DECO STOP in the dot matrix display for 15 seconds.

b. **DECO label:** Displayed above the current depth to alert you that you are in Decompression Mode.

c. **Stop depth:** This is the shallowest depth to which you can ascend. DO NOT ascend above this depth until the computer displays the next shallower decompression stop, or the computer returns to No-Decompression Dive Mode.

d. **Stop time:** This is the amount of time you need to spend at the decompression stop.

e. **Total ascent time:** This is the total amount of time required at all the decompression stops, plus the time it takes to ascend to all the stops.
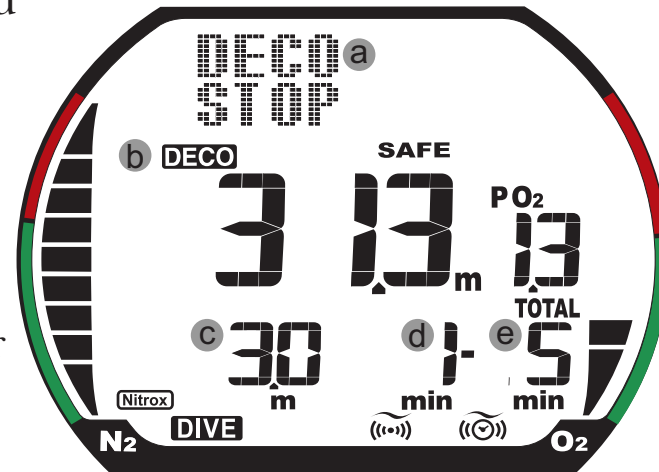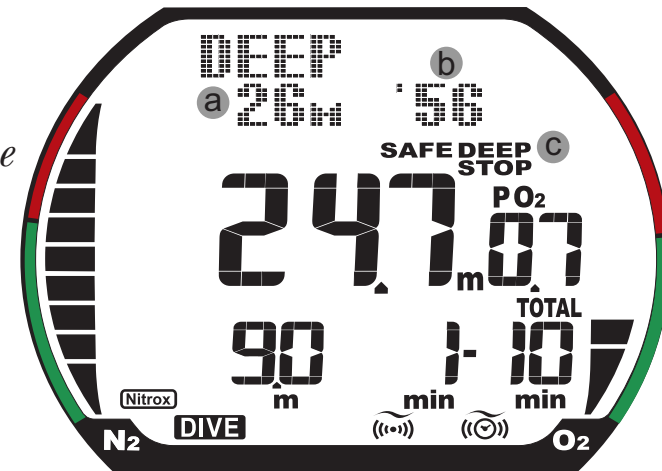
Deep Stops

Deep Stops appear only in Decompression Dive Mode and if the Deep Stop feature is set to ON (*see Dive Settings Mode on pages 18-22*) and if the dive is deeper than 21 meters (69 feet).

a.   **Deep stop depth:** This is the depth at which the deep stop is performed.

b.   **Deep stop timer:** Deep stop time is shown in seconds. It starts at :59 and counts down to :00.

c.   **Deep stop label:** Denotes that the computer will be using deep stops.

Deep Stop Display

Summary of Warnings and Alarms

FO$_2$ Warning

If you enter the water when the computer has defaulted to a 99% FO$_2$, the computer will sound an audible alarm. Immediately surface and set the FO$_2$ to the proper Oxygen percentage. See page 23.

Fast Ascent Warning

The QuantumX uses a variable ascent rate. The fastest allowable rate of ascent is dependent upon the depth. The table below shows the three depth ranges and the fastest ascent allowed in each range:

Fast Ascent Warning
(grey segments flash)

Depth Range	Ascent Rate Limit
0-5.9 m (0-20 ft)	8 m (26 ft)/min
6 -17.9 m (21-59 ft)	12 m (39 ft)/min
18 m (60 ft) or deeper	16 m (52 ft)/min

If you exceed the fastest allowable ascent rate, the QuantumX flashes the SLOW symbol, sounds an audible alarm, and flashes the current depth. The warning will remain in effect until you slow your ascent or go shallower than 1.5 m (5 ft).

43

PO$_2$ Warnings

When the actual PO$_2$ matches the PO$_2$ setting, the computer will sound a 3-second alarm twice, show "PO2 CAUT" in the dot matrix display, and flash the PO$_2$ indicator, PO$_2$, and DIVE.T label.

If the PO$_2$ reaches or exceeds 1.6, the computer sounds a continuous audible alarm, "PO2 ALARM" appears in the dot matrix display and the OLI graph flashes. The alarm will continue to flash until you ascend to a safer, shallower depth.

☞ *NOTE: If the PO$_2$ warning activates at 20 feet, you forgot to reset the FO$_2$ and the computer is using the 99% default.*
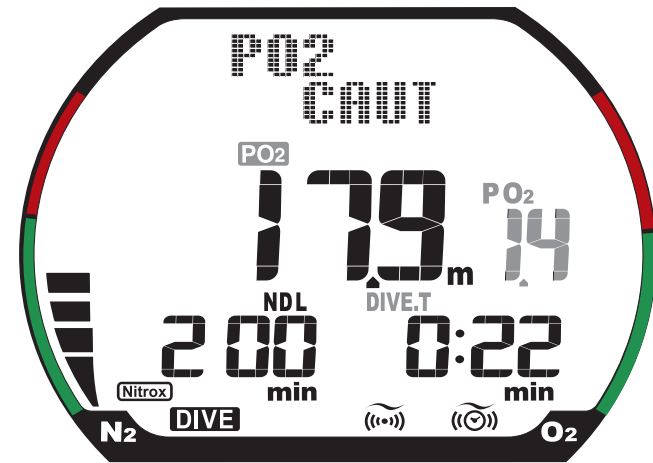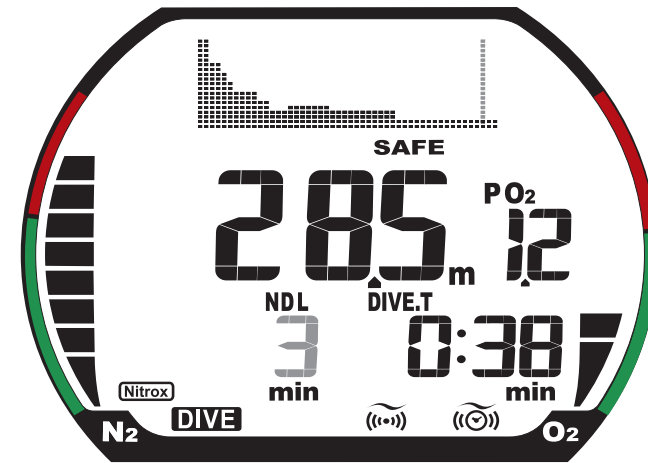
PO2 Caution
(grey segments flash)
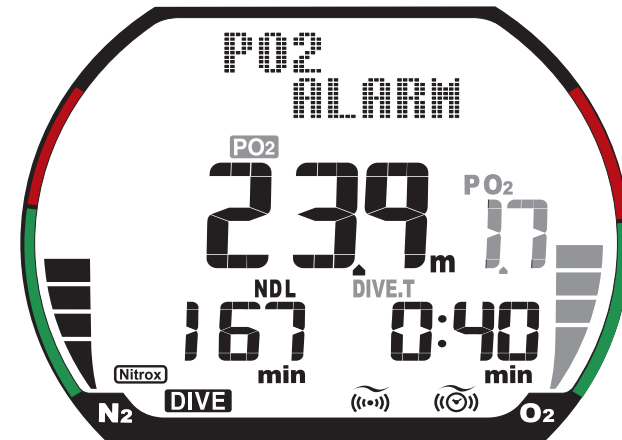
PO2 Alarm
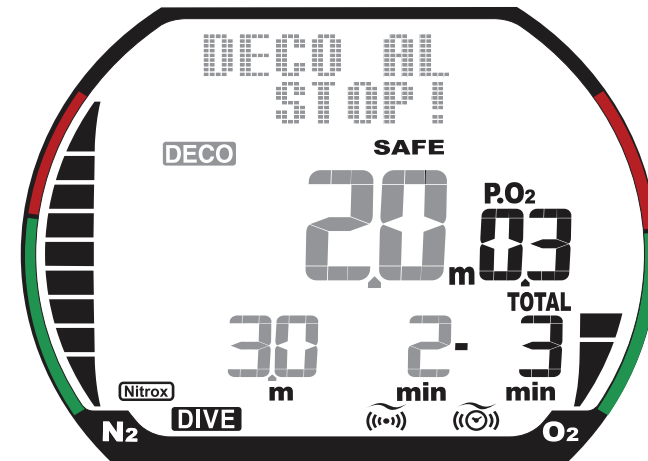*(grey segments flash)*

No-decompression Limit (NDL) Warning

When the no-decompression limit reaches three (3) minutes, the computer will flash the vertical bar on the profile display, and the NDL time.

NDL Warning
(grey segments flash)

Decompression Stop Violation Warning

If you ascend shallower than the required decompression stop, the QuantumX will alert you by flashing a "DECO AL STOP!" warning in the dot matrix display, DECO label, current depth, deco stop depth, and deco stop time. This warning will remain in effect until you descend to, or slightly deeper than, the decompression stop depth. If you ignore the decompression stop and surface, the computer will lock out for 48 hours, five minutes after surfacing.


Deco Stop Violation Warning
(grey segments flash)

45

Oxygen Limit Warnings

When the next to last segment appears on the OLI bar graph, the QuantumX flashes "OLI CAUT" in the dot matrix display and the bar graph.

When the last segment on the OLI bar graph appears, the audible alarm sounds, and "OLI ALARM" flashes in the dot matrix display. The entire bar graph will flash until you ascend to a shallower depth and the bar graph reduces to seven segments.
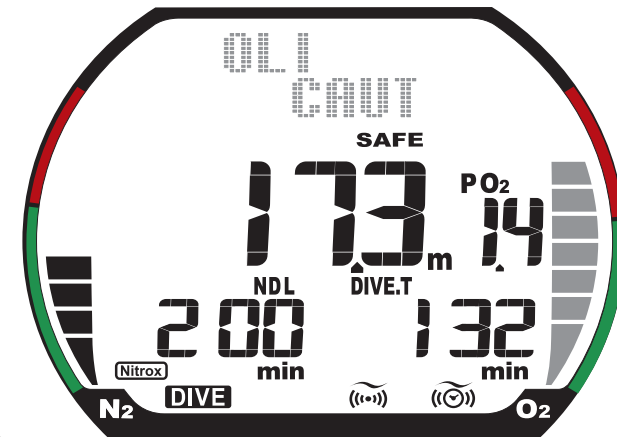
Oxygen Limit (OLI) Caution
(grey segments flash)
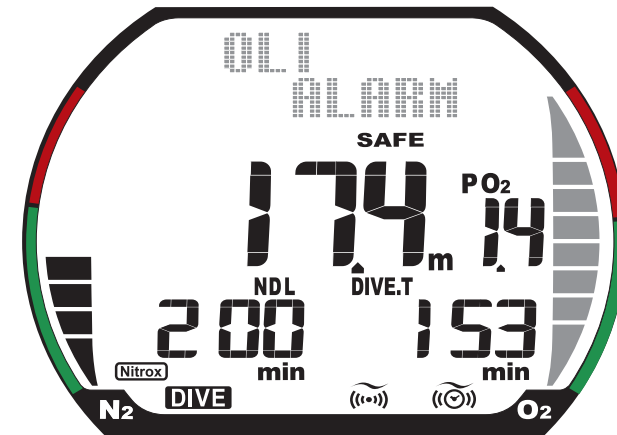
Oxygen Limit (OLI) Alarm
(grey segments flash)

Out-of-Range Warning

The out-of-range warning only occurs when you take the QuantumX to extreme depths and/or time limits. To activate the out-of-range warning, you must exceed one of the following limits:
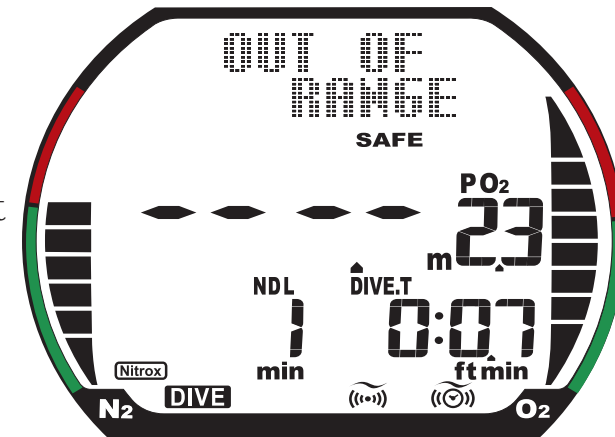

Out of Range Warning

1.   Maximum depth limit of 99.9m/328 ft.

2.   Dive time limit of 999 minutes.

3.   Deepest decompression stop of 27m/90 ft.

4.   Decompression stop time of 99 minutes.

5.   Total ascent time of 99 minutes.

In the extremely unlikely event that you exceed one of the limits listed above, the computer will sound an alarm, replace the depth display with dashes, and flash the entire display. The computer cannot be used for 48 hours after an out-of-range warning.
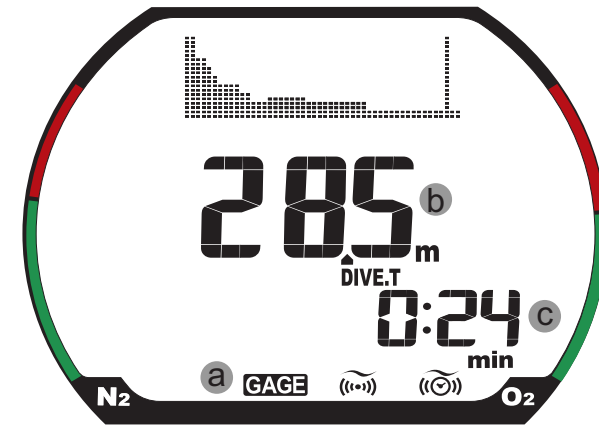
Gage Mode

If the QuantumX is set to Gage Mode (*see Dive Settings Mode on page 18*), the computer operates as a basic depth gauge and dive timer. It does not calculate no-decompression, decompression, or oxygen information. If you make a dive while in Gage Mode, you must wait 48 hours until you can use Dive Mode.

Gauge Mode, has a primary display and two alternate displays. Pressing and holding the **A button** shows the alternate displays. When the button is released, the computer switches back to the primary display.

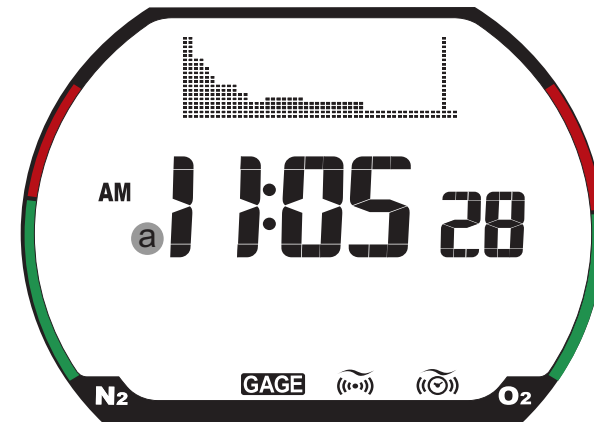*Gage Mode - Primary Display*

Primary display

a. **GAGE Mode indicator:** Alerts you that the QuantumX is in Gage Mode.

b. **Current Depth:** How deep you are at any moment during the dive

c. **Dive Time:** The amount of time below 1.5m/5 ft.

Alternate Display 1

Pressing and holding the **A** button shows the first alternate display:

a.	**Time of Day:** The current time of day

Gage Mode - Alternate Display 1

Alternate Display 2

While continuing to keep the **A** button pressed, the second alternate display appears after two seconds:

a.	**Maximum depth:** The deepest depth reached during the dive.

b.	**Temperature:** The actual water temperature at that time. Since the temperature sensor is inside the computer, it may take a few minutes before you get an accurate reading.

Gage Mode - Alternate Display 2

49
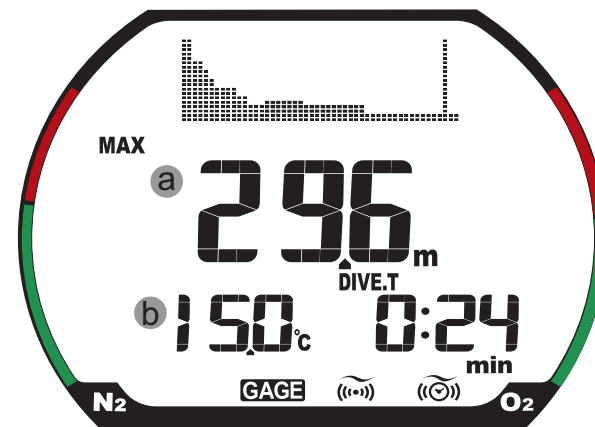
System Reset Button

On the backside of the QuantumX is the System Reset Button. Pressing this button erases all residual nitrogen/oxygen information, and it resets the time and date to its default setting. This feature is primarily used by dive shop rental departments. You are strongly cautioned never to use this feature.

⚠️ **WARNING: All memory of nitrogen and oxygen loading is erased when you press the Reset Button. If you press the Reset Button between dives, you must wait 24 hours before diving again. Otherwise, you may increase the risk of decompression sickness.**
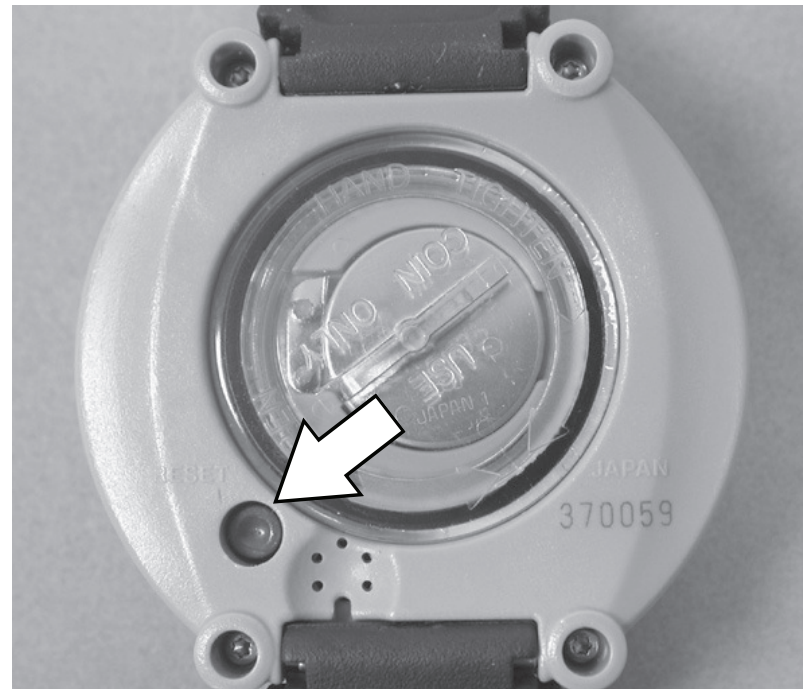
System Reset Button

CARE & MAINTENANCE

The QuantumX is a tough and durable instrument, but it still needs to be protected from excessive shock, extreme heat, chemical attack, and tampering.

⚠️ **CAUTION: Do not store the QuantumX near chemicals, such as gasoline. Do not use silicone sprays or any other type of propellants near the QuantumX. Do not clean the computer with alcohol or any other solvents. Exposing the QuantumX to chemicals and solvents may damage the lens and case.**

Care before the dive

The QuantumX can withstand the normal bumps associated with SCUBA diving, however, it cannot withstand the impact of heavy objects, such as a weight belt or SCUBA cylinder. Do not leave it exposed where someone could accidentally step on it or drop something on it.

Care during the dive

The most common damage inflicted on a computer while diving is scratches in the lens. If the QuantumX is worn on the wrist, you must be careful when reaching into rocky holes and crevices to avoid scratching the computer. If you have the QuantumX in a gauge console, secure the gauge close to you body so the gauge doesn't get dragged over coral and rocks. It is highly recommended that you purchase a third-party gauge retainer and secure the console to your buoyancy compensator.

Care after the dive

Soak the QuantumX in a warm, fresh water bath to dissolve salt crystals. Rinse thoroughly with fresh water and towel dry before final storage. Store the computer in a cool, dry and protected place. Do not store the computer in a wet or humid environment. Doing so may cause the unit to go into dive mode and prematurely drain the battery.

Changing the Battery

IMPORTANT NOTE: The QuantumX will not lose its logbook memory when the battery is replaced; however, it is recommended that you record all your logbook information and upload the data to your PC (if you have the optional PC interface kit) before changing the battery.

Whenever you see the low battery symbol, you should immediately change the battery. It is also recommended that you change the battery before any extended, multi-day dive trip.

CAUTION: Damage from improper battery replacement is not covered under warranty. It is advisable to have your authorized dealer perform the battery replacement. At the same time, the dealer can perform an inspection to make sure the computer functions properly.

⚠ **WARNING: All memory of nitrogen and oxygen loading is erased when the battery is removed. If you change the batteries between dives, you must wait 24 hours before diving again. Otherwise, you may increase the risk of decompression sickness.**

Battery Removal and Replacement

☞ *Note: Replace the battery in a dry, clean environment, taking extreme care to prevent moisture and dust from entering into the battery compartment.*
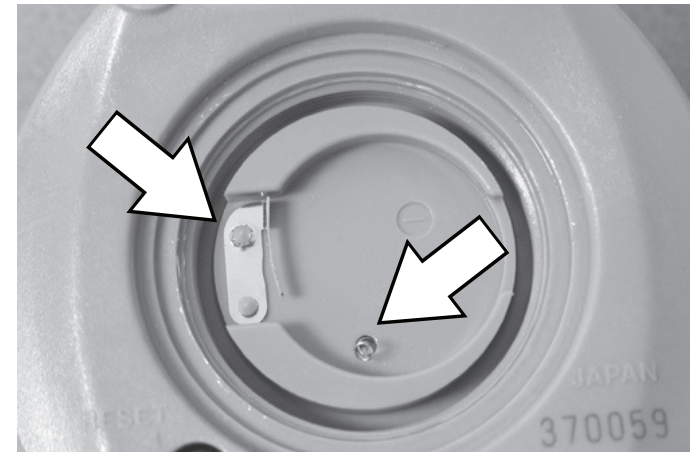

1. Using a coin (never use a screwdriver), turn the battery hatch counter clockwise and remove it from the case.

2. Using your fingers, remove the O-ring from the battery hatch and discard. Do not use any tools to remove the O-ring.
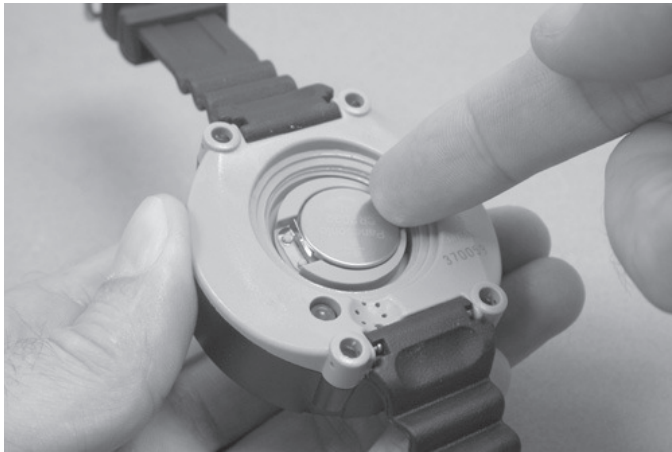
3. With your finger, lift up on the edge of the battery opposite the gold contact and remove the battery.

4. Inspect the gold contact and small spring contact for signs of bending, breakage or corrosion. If you find any signs of damage, return the unit to your authorized dealer and do not attempt to use it.
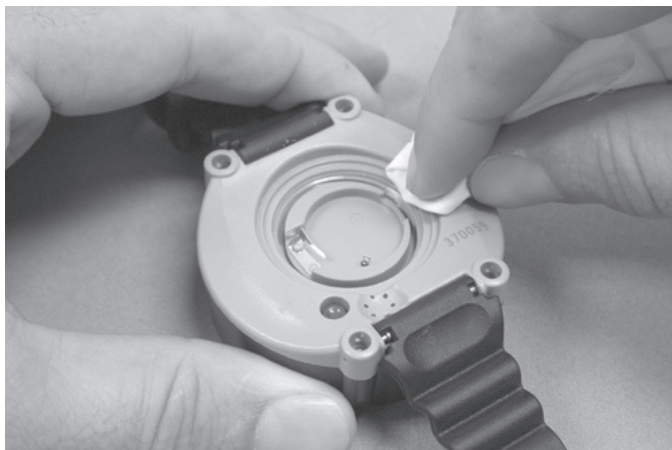
5. Using a clean, dry, lint-free cloth, wipe the sealing area of the battery compartment. Inspect to make sure it is completely clean and dry.

☞ *Note: It is recommended that you do not handle the new battery with bare fingers, as skin oils may impair the electrical contact. Handle the battery with a lint-free cloth or wear gloves.*

6.   The QuantumX uses a CR2032 3v lithium coin cell battery. The new battery is installed with positive (+) side facing upward. Insert the battery at a slight angle so the edge pushes against the gold contact, then press the battery into place.

7.   Lightly lubricate a new O-ring using a scuba-grade silicone grease, such as Dow Corning 111. This grease is available at most dive shops. Do not overlubricate. Install the new O-ring onto the battery hatch. Carefully thread the battery hatch into the case in a clockwise direction until snug. Using a coin, tighten the battery hatch until it can no longer be turned.

8.   After the battery is changed, the time and date will be incorrect. Reset the time and date by following the procedures on page 32. Go through all the surface modes to make sure they are working properly. Reset the Dive Settings if necessary. Wet your finger and touch both contacts to make sure the unit displays "WATER" in the dot matrix display.
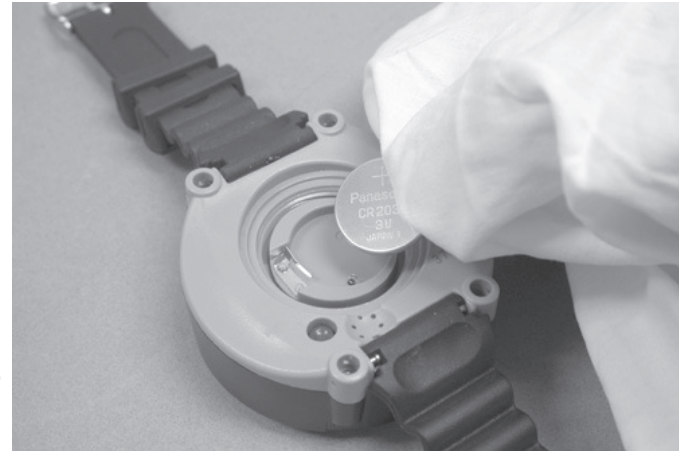
TECHNICAL SPECIFICATIONS

Accuracy

Time	Average monthly variance ±30 seconds
Depth	±3%+0.5m (±3%+2 ft.)
Temperature	±2.0°C (±4°F)

Measurement Range

Depth	0 to 99.9 msw (0 to 328 fsw)
Dive Time	Dive Mode: 0-599 minutes; Gage Mode: 0-1199 minutes
Altitude	0 to 6000 m (0 to 19680 ft); measured every 10 minutes
Temperature	-5 to 40°C (23 to 104°F); measured once per minute

Nitrox Settings

FO2	21 to 99% in 1% increments for all mixes
PO2 Limits	1.0 to 1.6 for all mixes

Operational Limits

Waterproof limit	99.9 msw (328 fsw)
Operational Temperature	-5 to 40°C (23 to 104°F)

Battery

Battery Type	CR2032 (3v lithium coin cell)
Battery Life	3 years based on 50 one-hour dives per year and 10 seconds of audible alarms per dive.

Physical Dimensions

Diameter	62mm (2.44 inches)
Thickness	25mm (.98 inches)
Weight	115 g (4.1 oz)

Algorithm

Type	Modified Swiss model by Randy Bohrer
Number of Tissue Compartments	12

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