DSX
Dive Computer Owner's Manual

PART NUMBER	DESCRIPTION
NS158000	DSX w/O2 Analyzer

Doc. 12-7969 Doc. 12-7969 r09 (9/22/22)

NOTICES

LIMITED TWO-YEAR WARRANTY

For warranty details and to register your product, refer to www.apeksdiving.com.

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DSX Dive Computer Owner's Manual, Doc. No. 12-7969

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TRADEMARK, TRADE NAME, AND SERVICE MARK NOTICE

PATENT NOTICE

U.S. patents have been issued to protect design features of our products. The list of patents issued and pending are available at dive-patent.com.

DECOMPRESSION MODEL

The program within the DSX simulates the absorption of inert gases into the body by using a mathematical model. This model is merely a way to apply a limited set of data to a large range of experiences. The DSX dive computer model is based upon the latest research and experiments in decompression theory. Still, using the DSX, just as using any other No Decompression Tables, is no guarantee of avoiding decompression sickness, i.e. “the bends”. Every diver’s physiology is different, and can even vary from day to day. No machine can predict how your body will react to a particular dive profile.

DANGERS, WARNINGS, CAUTIONS, AND NOTES

Pay attention to the following symbols when they appear throughout this document. They denote important information and tips.

DANGERS: are indicators of important information that if ignored **would** lead to severe injury or death.

WARNINGS: are indicators of important information that if ignored **could** lead to severe injury or death.

CAUTIONS: indicate information that will help you avoid faulty assembly, leading to an unsafe condition.

NOTES: indicate tips and advice that can inform of features, aid assembly, or prevent damage to the product.

RESPONSIBLE COMPUTER DIVING

- Always plan each dive.
- Always limit your dive to the level of your training and experience.
- Always make your deepest dive first.
- Always make the deepest part of every dive first.
- Check your computer often during the dive.
- Do a safety stop on every dive.
- Allow adequate surface interval between each dive.
- Allow adequate surface interval between each day of diving (12 Hours or until your computer clears).
- Read and understand this manual thoroughly before using the DSX.

⚠ WARNINGS:

- **This manual is to be used in conjunction with the Apeks Dive Computer Safety and Reference Manual, Doc. 12-7967. It contains general safety warnings and recommendations for use of this product.**
- **The DSX is intended for use by recreational divers who have successfully completed an internationally recognized course in scuba diving (for air use), diving with enriched nitrogen-oxygen (nitrox) breathing gas mixtures (for nitrox use), trimix (for trimix use).**
- **It must not be used by untrained persons who may not have knowledge of the potential risks and hazards of scuba diving and diving with enriched nitrogen-oxygen (nitrox) mixtures.**
- **You must obtain scuba certification in diving with enriched nitrogen-oxygen mixtures (nitrox) before using the DSX for nitrox diving.**
- **Your new DSX and O2 Analyzer cable are paired and precisely tuned at the factory, to compensate for resistance in the cable. ONLY use the cable that ships with your DSX. The cable serial number (labeled on the cable) must match the serial number that displays on your DSX (O2 Analyzer Sub Menu) screen. Contact your Apeks Dealer for assistance if the Oxygen Analyzer cable ever needs to be replaced.**
- **You must obtain trimix certification in diving with helium-oxygen-nitrogen mixtures (trimix) before using the DSX for trimix diving.**
- **You must obtain CCR certification in diving with rebreathers before using the DSX for CCR diving.**
- **Before using this product for military or commercial applications, contact Apeks for recommendations, limitations, and warnings for such use. www.apeksdiving.com.**
- **As with all underwater life support equipment, improper use or misuse of this product can cause serious injury or death.**
- **Never participate in sharing or swapping of a dive computer.**
- **Conduct your dives in such a manner so as to insure that you continuously check the computer's proper function.**
- **Read and understand this owner's manual completely before diving with the DSX.**
- **If you do not fully understand how to use this dive computer or if you have any questions, you should seek instruction in its use from your authorized Apeks dealer before you utilize this product.**
- **If your DSX stops working for any reason while operating, it is important that you have anticipated this possibility and are prepared for it. This is an important reason for not pushing the tables, oxygen exposure limits, or entering decompression without proper training. If you dive in situations where your trip would be ruined or your safety would be jeopardized by losing the use of your DSX, a backup instrument system is highly recommended.**
- **Each numeric and graphic display represents a unique piece of information. It is imperative that you understand the formats, ranges, and values of the information represented to avoid any possible misunderstanding that could result in error.**
- **Remember that technology is no substitute for common sense. The dive computer only provides the person using it with data, not the knowledge to use it. Remember also that the dive computer does not actually measure and test the composition of your body tissue and blood. Using an Apeks dive computer, just as using any other Decompression Tables, is no guarantee of avoiding decompression sickness. Every diver's physiology is different and can even vary from day to day. No machine can predict how your body will react to a particular dive profile.**
- **Diving at high altitude requires special knowledge of the variations imposed upon divers, their activities, and their equipment by the decrease in atmospheric pressures. Apeks recommends completion of a specialized altitude training course by a recognized training agency prior to diving in high altitude lakes or rivers.**
- **Repetitive dives in a series should only be conducted at the same altitude as that of the first dive of that series. Repetitive dives made at a different altitude will result in an error equal to the difference in barometric pressure, and possibly a false dive mode with erroneous data.**
- **If the DSX is activated at an elevation higher than 4,270 m (14,000 ft), it will immediately shutdown.**
- **Decompression diving or diving deeper than 39 m (130 ft) will greatly increase your risk of decompression sickness. This should only be attempted by those properly trained and certified in decompression diving. It is important to completely understand the features, functions, and specifically the limitations of the DSX. Based on this the diver must decide if the DSX is suitable for the dive activities and dive profiles being planned.**
- **Using an DSX is no guarantee of avoiding decompression sickness.**
- **The DSX enters Violation Mode (see "Complications" p. 54) when a situation exceeds its capacity to predict an ascent procedure. These dives represent gross excursions into decompression that are beyond the boundaries and spirit of the DSX's design. If you are following these dive profiles, Apeks advises that you should not use a DSX.**
- **If you exceed certain limits (see "Complications" p. 54), the DSX will not be able to help you get safely back to the surface. These situations exceed tested limits and can result in loss of some functions for 24 hours after the dive in which a violation occurred.**

EUROPEAN UNION REGULATIONS:

- **EC type examination conducted by SGS Fimko Oy, Takomotie 8 Helsinki, 00380 Finland Notified Body No. 0598.**
- **HP gas pressure sensing components are in conformity with EN250:2014 - Respiratory equipment - open-circuit self-contained compressed air diving apparatus - requirements, testing and marking – clause 6.11.1 Pressure Indicator. EN 250:2014 is the standard describing certain minimum performance requirements for SCUBA regulators to be used with air only sold in EU. EN250:2014 testing is performed to a maximum depth of 50 M (165 FSW). A component of self-contained breathing apparatus as defined by EN250:2014 is: Pressure Indicator, for use with air only. Products marked EN250 are intended for air use only. Products marked O2 are intended for use with gases containing more than 22% oxygen and must not be used for air.**
- **DSX accessories (oxygen analyzer, chargers; etc.) are not EN250 or EN13949 (O2) certified unless otherwise marked or stated.**
- **Depth and time measurements are in conformity with EN13319:2000 - Diving Accessories - depth gauges and combined depth and time measuring devices**
- **The breathing air used must comply with EN 12021. EN 12021 is a standard that specifies the allowable contaminates and component gasses that make up breathing air. This is the equivalent of the USA Compressed Gas Association's Grade E air. Both standards allow very small amounts of contaminants that are not harmful to breathe, but can cause a problem if present in systems using gases with a high percentage of oxygen.**
- **Electronic instruments are in compliance with Directive 2004/108/EC Electromagnetic compatibility (EMC) EN 61000 part 6-1: Generic Standards - immunity for residential, commercial and light-industrial environments**
- **In accordance with EU regulation 2016/425 of 9 March 2016, may it be known that Apeks as manufacturer of this product issues a Declaration of Conformity, available here www.apeksdiving.com.**
- **The manufacturer's date code can be found on the underside of the DSX in the format 00/00 (month/year).**

⚠ CAUTION:

Transmitters and gas integrated dive computers marked EN 250 are certified for use with air only. Transmitters and gas integrated dive computers marked EN 13949 are certified for use with Nitrox only.

RISK ASSESSMENT:

The air integrated dive computer is intended to address the risk of breathing gas loss. This is accomplished by monitoring the level of remaining gas in the UBA (Underwater Breathing Apparatus) and providing the diver with a continuous readout of the remaining gas supply, visual indication of a low gas situation, and user set alarms.

page 20
Low Gas Visual Indication - To emphasize a low gas condition, the gas pressure reading will be displayed in red any time pressures are equal or less than 50 bar (726 psi).

The digital pressure indicator also has several user defined alarms. Alarms are addressed in the user manual.

pages 35-37 (items i, v; iv)
i. Audible & Vibration - feature allows the diver to set audible and vibration alarms to ON or OFF.
v. Tank Press - To emphasize a low gas condition, the Tank Pressure Alarm monitors the active gas. It allows you to set an alarm to trigger at a designated tank pressure. The default setting is 50 BAR (800 PSI).
iv. DTR (Dive Time remaining) - can be set for a specific reserve of dive time remaining, dive time is calculated based on gas time and no deco time.

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page 61 (items 1; 2).
1. TURN Press Alarms - set a pressure to alarm at turning point of a dive, pressure 70 - 200 bar (1000 - 3000 psi)
2. END Press - To emphasize a low gas condition, set an alarm for when you reach a designated end pressure. The default setting is 50 bar (800 psi).

In addition, recreational diving requires that the diver be fully trained in order to acquire filled gas cylinders or access many diving venues. Diver training focuses on the proper use of the pressure indicator and dive planning. This is to assure that the diver is able to correctly use the pressure indicator to complete the dive with a reserve supply of breathing gas.

UK
CA

- **UKCA type examination conducted by: SGS UK Ltd, Rossmore Business Park, Ellesmere Port, Cheshire CH65 3EN, Notified Body No. 0120.**
- **Depth and time measurements are in conformity with UKCA directives.**
- **Electronic instruments are in compliance with UKCA Electromagnetic compatibility requirements.**
- **In accordance with UK regulation 2016/425, may it be known that Apeks as manufacturer of this product issues a Declaration of Conformity, available here www.apeksdiving.com.**

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GETTING STARTED

BASICS

Welcome to your new DSX. The DSX is an easy to use dive computer utilizing a three button interface. Divers may choose between five modes of functionality consisting of CC (Closed Circuit), OC (Open Circuit), SM (Side Mount), Gauge, and SM (Side Mount) Gauge Mode. Though the DSX is easy to use, you will get the most out of your new DSX if you take some time to familiarize yourself with its displays and operation. Information has been organized into easy to follow sections to aid you in learning all you need to know. There is also a glossary at the end of this guide for any terms that may sound unfamiliar.

POWER

The DSX housing contains a rechargeable lithium battery similar to that of a cell phone. The level of battery charge is displayed on the primary screens. Charge the battery fully before first use.

Keep in mind that the DSX screen is the biggest draw of power. Using full brightness settings will reduce the interval between charges. This setting can be fully customized to your preferences in the DSX settings. Additionally, the DSX screen will sleep after 10 minutes of inactivity to conserve power. Pressing any button will wake the screen up again.

CHARGING THE BATTERY

Use either the included Apeks USB charging cable or wireless charging plate to charge the battery.

NOTE: It is recommended that you charge your DSX before any extended storage to avoid loss of battery performance or shortened battery life.

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ACTIVATION

To activate the DSX, press and release any button. The DSX will also turn on if its metal contacts become wet and you descend below 1.5 m (5 ft) for 5 seconds.

- Upon activation, the unit will display the Activation screen and perform a diagnostic check. The DSX checks the display and voltage at this time to ensure that everything is within tolerance.
- It will also check ambient barometric pressure, and calibrate present depth as 0 m (ft). When at 916 m (3001 ft), or higher, it will adjust for the higher altitude.
- After the Diagnostic check, the DSX will display the Dive Main screen.

NOTE: The DSX has no off button or command. If no buttons are pressed or dives made, the unit will enter Sleep Mode after 5 minutes. Within 2 hours of no buttons being pressed or dives made, the unit will shut itself off. However, the DSX will stay on for a 24 hour period after a dive, counting down FLY (time to fly) and DESAT (desaturation time) if a dive has been made.

ACTIVATION SCREEN

DISPLAY ICONS

SYMBOL	MEANING
M or FT	DEPTH (METERS OR FEET)
NO DECO	NO DECOMPRESSION TIME (DIVE TIME REMAINING)
PO2	PARTIAL PRESSURE OF OXYGEN
DIVE TIME	DIVE TIME
OC-1	OPEN CIRCUIT GAS #
CC-2	CLOSED CIRCUIT GAS #
TTS	TIME TO SURFACE
GTR	GAS TIME REMAINING
BAR or PSI	VALUE IS GAS PRESSURE IN BAR OR PSI
18/45	GAS CONTENT (OXYGEN / HELIUM)
	BATTERY CONDITION IS GOOD (SURFACE ONLY)
	LOW BATTERY WARNING
	LOW BATTERY ALARM
SURFACE TIME	SURFACE TIME
GF	GRADIENT FACTOR
O2 SAT	O2 SATURATION
MAX D	MAXIMUM DEPTH

BUTTONS

The DSX utilizes 3 control buttons called the Left, Middle, and Right buttons. They allow you to select mode options and access specific information. They are also used to enter settings and acknowledge the audible alarm.

Pressing different combinations of these buttons will navigate through different menus and options of the DSX.

ON SCREEN BUTTON PROMPTS

The DSX utilizes onscreen prompts. Below is a table describing the icons used.

SYMBOL	MEANING
 single circle	The single circle around an icon means press the button to execute the function
 double circle	The double circle around an icon means hold the button to execute the function
	• to step (scroll) up the screen • to increase setting value • to toggle or change setpoints
	exit or step back to the previous screen or setting
	• to step (scroll) down the screen • to decrease setting value • to toggle or change setpoints
	• to exit a menu directly to the Home (Main) screen
	to select, save an option or setting

Throughout this manual diagrams will be used to illustrate menu navigation. The symbols in the below table are used in the diagrams to indicate whether to press or hold a button.

SYMBOL	MEANING
	PRESS BUTTON LESS THAN 2 SECONDS
	HOLD BUTTON GREATER THAN 2 SECONDS

DIVE FEATURES

DTR (DIVE TIME REMAINING)

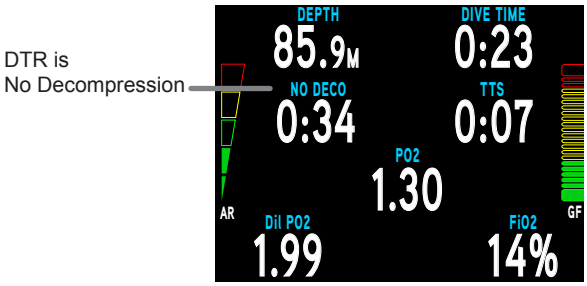
The DSX constantly monitors No Decompression status and O2 Accumulation, and will display whichever time is the least amount available as DTR on the No Decompression Dive Main screen. The time being displayed will be identified by the NO DECO (no decompression) or O2 TIME icons.

NO DECOMPRESSION

No Decompression is the maximum amount of time that you can stay at your present depth before entering decompression. It is calculated based on the amount of nitrogen absorbed by hypothetical tissue compartments. The rates each of these compartments absorb and release nitrogen is mathematically modeled and compared against a maximum allowable nitrogen level.

Whichever compartment is closest to this maximum level is the controlling compartment for that depth. Its resulting value NO DECO (no decompression) will be displayed. It will also be displayed graphically as the N2 or GF Bar Graph, see Bar Graphs later in this section.

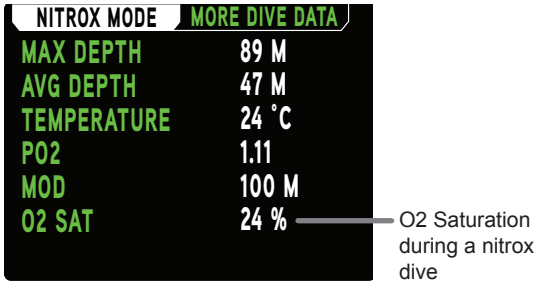
As you ascend, the N2 Bar Graph will recede as control shifts to slower compartments. This is a feature of the decompression model that is the basis for multilevel diving, one of the most important advantages that Apeks dive computers offer.



O2 TIME (OXYGEN TIME REMAINING)

When set for nitrox operation, O2 SAT (Oxygen Saturation) during a dive is displayed on the More Dive Data screen as a percentage of allowed saturation identified by the O2 SAT graphic. The limit for O2 SAT (100%) is set at 300 OTU (Oxygen Tolerance Units) per dive or 24 hour period. See the chart at the back of this manual for specific times and allowances. O2 SAT and O2 TIME values are inversely related; as the O2 SAT value increases the O2 TIME value decreases.

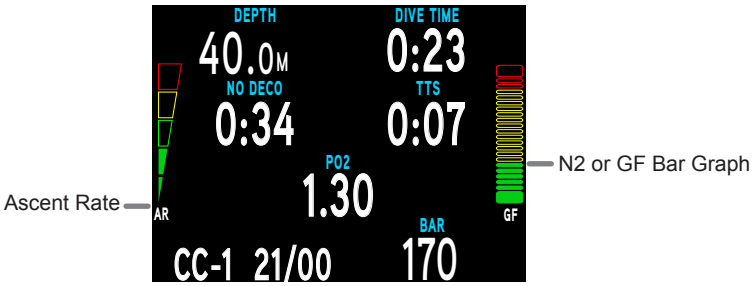
When the O2 TIME value becomes less than the No Decompression calculations for the dive, DTR (Dive Time Remaining) will be controlled by O2 SAT and the O2 TIME value will be displayed as the DTR on the Dive Main screen, identified by the O2 TIME icon.



BAR GRAPHS

The DSX features three specific bar graphs.

1. The one on the left represents ascent rate. It is referred to as AR Bar Graph.
2. The one on the right represents No Decompression or Decompression status. It is referred to as the N2 Bar Graph.
3. The DSX allows the diver to select an alternate No Decompression or Decompression status bar graph in place of the N2 Bar Graph. It is referred to as the Gradient Factor Bar Graph.

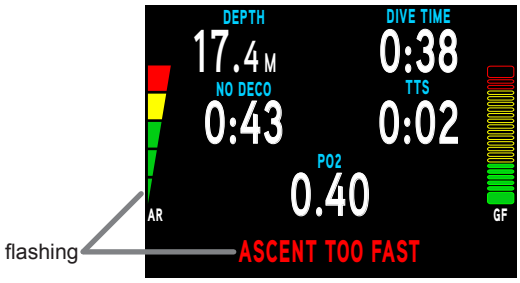


ASC BAR GRAPH

The ASC Bar Graph provides a visual representation of ascent speed (i.e., an ascent speedometer). When the ascent is faster than the recommended 30 fpm (9 mpm), all segments flash until the ascent is slowed.

# OF SEGMENTS	ASCENT RATE, MPM (FPM)
0	0 – 1.8 (0 - 6)
1	>1.8 - 3.7 (6 - 12)
2	>3.7 - 5.5 (>12 - 18)
3	>5.5 - 7.4 (>18 - 24)
4	>7.4 - 9.2 (>24 - 30)
5	> 9.2 (> 30)

ASC ALARM TRIGGERED



N2 BAR GRAPH

The N2 Bar Graph represents your relative No Decompression or Decompression status. As your depth and elapsed dive time increase, the bar graph will grow in length, shift from green to amber, and ultimately to red (indicating a Decompression condition). As you ascend the bar graph recedes, indicating that additional No Decompression time is available. The DSX monitors multiple theoretical nitrogen and helium (if diving trimix) compartments simultaneously. The N2 Bar Graph displays the the tissue compartment that is in control of your dive at any given time.

GF (GRADIENT FACTOR) BAR GRAPH

The GF Bar Graph is an alternative setting to N2 Bar Graph. The GF Bar Graph represents the controlling Gradient Factor and Deco Status accordingly.

The first bottom segment is bigger and it represents a tissue pressure of less than or equal to ambient pressure. It is always green. Each segment of the middle section represent 5% of the gradient factor. Those segments are colored according to the GF High and GF Low settings. The amber segments represent values between GF Low and GF High set points. While the red segments meaning missed decompression represent values greater than the current GF High setting.

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ALGORITHM

The DSX utilizes the Bühlmann ZHL-16C algorithm model to calculate nitrogen tissue loading. To create even greater margins of safety with respect to decompression, a Conservative Factor (via gradient factor settings) as well as Safety Stops can be included for No Decompression dives.

GF (GRADIENT FACTOR)

Gradient factors are a method for setting decompression table conservatism. The ZHL-16C model predicts maximum inert gas saturation values that should not result in Decompression Sickness symptoms if the diver were to ascend further during the dive.

Gradient factors take this further by limiting the diver to ascend only with a fraction (factor) of the algorithm's maximum allowed gas saturation values.

CONSERVATISM

The DSX offers both Sport and Tec conservative settings.

The Sport option gives the user the choice of 3 settings: Low (90 - 90), Medium (35 - 80), and High (30 - 70). Increasing the Conservatism setting (Low > Med > High) decreases, the dive time remaining, NO DECO (No Decompression)/O2 TIME, which are based on the algorithm and used for N2/O2 calculations and displays relating to Plan Mode will have their values reduced.

The Tec setting adds a technical gradient factor option. This option allows the technical diver to manually select an appropriate GF High and GF Low setting for the planned dive.

SAFETY STOP

Upon ascent to within 1.5 m (5 ft) deeper than the Safety Stop depth set for 1 second on a No Decompression dive in which depth exceeded 9 m (30 ft) for 1 second, a beep will sound and a Safety Stop at the depth set will appear on the Dive Main display with a countdown beginning at the Safety Stop time set and counting down to 0:00.

- If the Safety Stop was set for OFF, the display will not appear.

- In the event that you descend 3 m (10 ft) deeper than the Stop Depth for 10 seconds during the countdown, or the countdown reaches 0:00, the No Decompression Main screen will replace the Safety Stop Main screen. The Safety Stop Main screen will reappear upon ascent to within 1.5 m (5 ft) deeper than the Safety Stop depth set for 1 second.

- In the event that you enter Decompression during the dive, complete the Decompression obligation, then descend again below 9 m (30 ft); the Safety Stop Main will appear again upon ascent to within 1.5 m (5 ft) deeper than the Safety Stop depth set for 1 second.

- If you ascend to 0.9 m (3 ft) of the surface for 1 second, the Safety Stop will be canceled for the remainder of that dive.

- There is no penalty if you surface prior to completing the Safety Stop or choose to ignore it.

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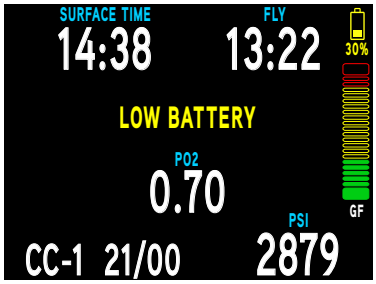
LOW BATTERY WHILE ON THE SURFACE

Warning Level

- When the capacity drops to 15% of full charge, the battery icon is to be displayed in yellow and flash during audible then remain yellow (solid).
- The message “Low Battery” appears in yellow flashing at the 2nd row during the audible alarm, then removed.

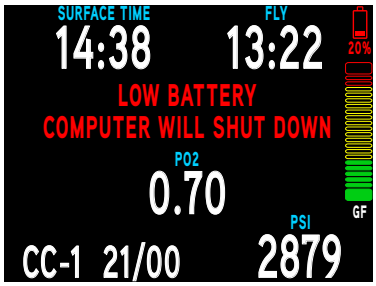
⚠ **WARNING: Recharge the battery before diving if your DSX indicates the Battery Low Warning or Alarm.**



Alarm Level

- When the capacity drops to 2% of full charge the battery icon is to change to red and flash during the audible alarm.
- The graphics "LOW BATTERY COMPUTER WILL SHUT DOWN" shall flash.
- After the audible alarm stops the DSX will shut off after 5 seconds. All functions are to be disabled and the unit is not to reactivate until the battery is charged.

⚠ **WARNING: Recharge the battery before diving if your DSX indicates the Battery Low Warning or Alarm.**

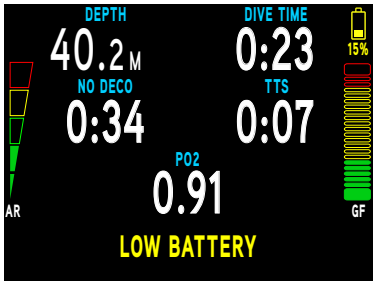


LOW BATTERY DURING A DIVE

Warning Level

- When the capacity drops to 15% of full charge, the battery icon is to be displayed in yellow and flash.
- The message “Low Battery” appears in yellow flashing at the 2nd row during the audible alarm, then removed.

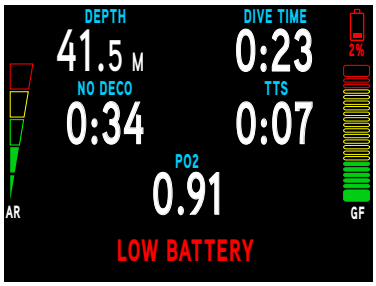
⚠ **WARNING: Recharge the battery before making additional dives if your DSX indicates the Battery Low Warning during a dive.**



Alarm Level

- When the capacity drops to 2% of full charge the battery icon is to change to red and flash during the audible alarm.
- The LOW BATTERY message shall be removed after the audible alarm and operation is to continue normally until on the surface.
- The DSX will shut off shortly after surfacing. All functions will then be disabled and the unit is not to reactivate until the battery is charged.

⚠ **WARNING: The DSX will shut down when the battery is completely exhausted. Recharge the battery before making additional dives. End your dive as soon as is safe if your DSX indicates the Battery Low Alarm during a dive.**

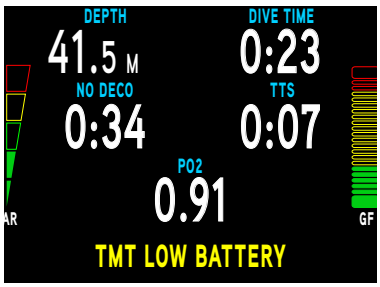


LOW TMT (TRANSMITTER) BATTERY

Warning Level

- Activates when the transmitter voltage drops below 2.75 volts.
- The graphic "TMT LOW BATTERY" is displayed in yellow until acknowledged or audible is silenced.
- The transmitter operation continues.

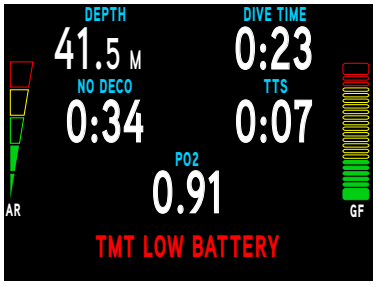
⚠ **WARNING: Change the transmitter battery before starting a new dive or making subsequent dives if your DSX indicates the Transmitter Battery Low Warning.**



Alarm Level

- Activates when the transmitter voltage drops below 2.5 volts.
- The graphic "TMT LOW BATT" is displayed in red until acknowledged or audible is silenced.
- Transmitter operation continues until the battery drops to a nominal voltage. At that time a Lost Link Warning will display on the screen.

⚠ **WARNING: Change the transmitter battery before starting a new dive or making subsequent dives if your DSX indicates the Transmitter Battery Low Alarm.**



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AUDIBLE ALARM

The audible alarm will emit 1 beep per second for 10 seconds when alarms strike. During that time, the audible alarm can be acknowledged and silenced by pressing the Right button.

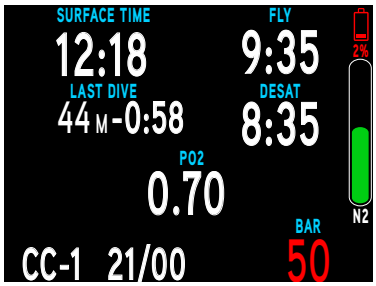
The audible alarms will not be active if the audible alarm is set to OFF.

The following situations shall activate the CC/OC/SM/GAUGE SM/GAUGE Alarm (1 beep per sec for 10 sec):
- Conditional Violation.
- Delayed Violations 1, 2.
- Ascent Rate too fast, 5 segments.
- OC and SM PO2 decreases to OC Min PO2.
- OC and SM PO2 increases to OC Max PO2.
- OC and SM PO2 increases to OC Deco PO2 in Deco.
- Depth Alarm.
- CC//OC/SM N2 Alarm.
- CC//OC/SM GF Alarm.
- CC/OC/SM O2 Sat. at 80% and 100%.
- Entry into Deco.
- Long Deco.
- Missed Deco.
- Dive Time Alarm.
- TTS Alarm
- CC/OC/SM DTR Alarm.
- OC/SM END Alarm.
- OC WOB Alarm.
- OC/SM/GAUGE SM/GAUGE GTR decreases to 5 minutes and again at 0 minutes.
- CC Tank Pressure (TP) Alarm.
- OC/SM/GAUGE SM/GAUGE Turn Pressure Alarm.
- OC/SM/GAUGE SM/GAUGE End Pressure Alarm.
- Loss of Link for greater than 15 seconds during Dive Modes.
- Tank Switch Warning.

The following situations shall activate the 3 short beep Alarm:
- Ascent Rate (warning), 4 segments.
- CC Auto Switch to Low SP Warning.
- CC Auto Switch to High SP Warning.

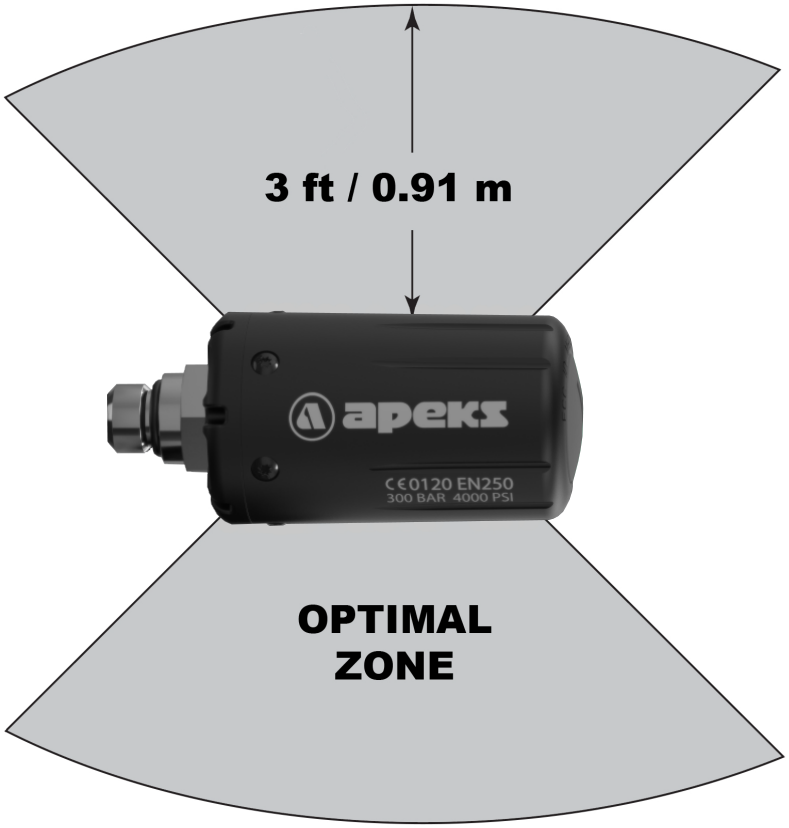
LOW GAS VISUAL INDICATION

To emphasize a low gas condition, the gas pressure reading will be displayed in red any time pressures are equal or less than 50 bar (726 psi).



PROXIMITY OF THE TMTS (TRANSMITTERS) AND DSX

The DSX can be used with the Apeks Transmitter (P/N NS119115). The TMTs emit low frequency signals that radiate out in semicircular patterns parallel to the length dimension of the TMT. A coiled antenna inside the DSX wrist unit receives the signals when it is positioned within a zone parallel to or at a 45 degree angle to the TMT as illustrated.



The DSX cannot effectively receive a signal when it is held out to the sides (as displayed above) of the TMT or held at distances greater than 0.91 m (3 ft) in front of the TMT. Best reception is achieved when the DSX is within less than 0.91 m (3 ft) of the TMT.

When installed into the high pressure ports of the regulator first stages, the TMTs must be positioned so that they face horizontally outward from the tank valves.

NOTE: Installing the transmitter vertically (parallel to the tank) could place the DSX wrist unit in a blind spot, increasing the incidence of lost transmission.

NOTE: Using multiple transmitters could increase the incidence of transmitter signals stepping on each other (the DSX wrist unit not receiving all active transmitter signals). Best practice is not to activate (pressurize regulators/transmitters) simultaneously. If you suspect the signals are stepping on each other, purge the transmitter not being received by the DSX and allow the transmitter to power off and retry.

NOTE: Consider labelling your transmitters to avoid any confusion, in terms of DSX assigned transmitter ID, when using multiple transmitters for a dive.

Link Interruption Underwater

During a dive, you may at times move the DSX out of the signal pattern of the TMT, resulting in a temporary loss of the link signal. The link will be restored within 4 seconds after the DSX is moved back into its correct position.

An interruption may also occur while the DSX is within 3 feet (1 meter) of a running DPV, or shortly after a strobe flashes. The link will be restored within 4 seconds after the DSX is moved out of that area.

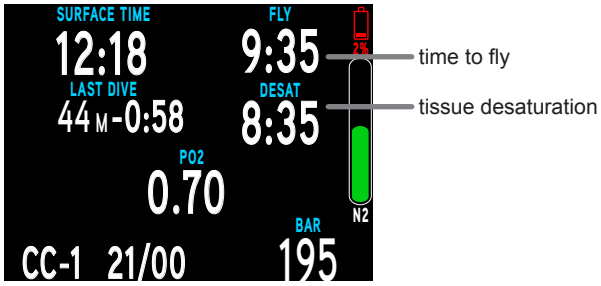
The audible alarm will sound, the message LOST TMT will replace gas pressure during the audible alarm.

If the link is not restored within 1 minute, dashes will replace gas pressure until the link is restored.

FLY/DESAT

The FLY and DESAT values (on the Surface Main Screens) display the Time to Fly and the DESAT (desaturation) countdowns. The Time to Fly countdown shall begin counting from 23:50 to 0:00 (hr:min), 10 minutes after surfacing from a dive. The DESAT (desaturation) counter shall provide calculated time for Tissue Desatuation at sea level. It shall begin counting down 10 minutes after surfacing from dives counting down from a maximum of 23 to 10 (hr only), then 9:59 to 0:00 (hr:min). When the SAT countdown reaches 0:00 (hr:min), which will generally occur prior to the FLY countdown reaching 0:00 (hr:min), the SAT time is to remain on the screen as 0:00 until the FLY counter shuts the DSX off, 24 hours after the last dive.

NOTE: Desaturation times won't display in Gauge or Sidemount Gauge Modes.



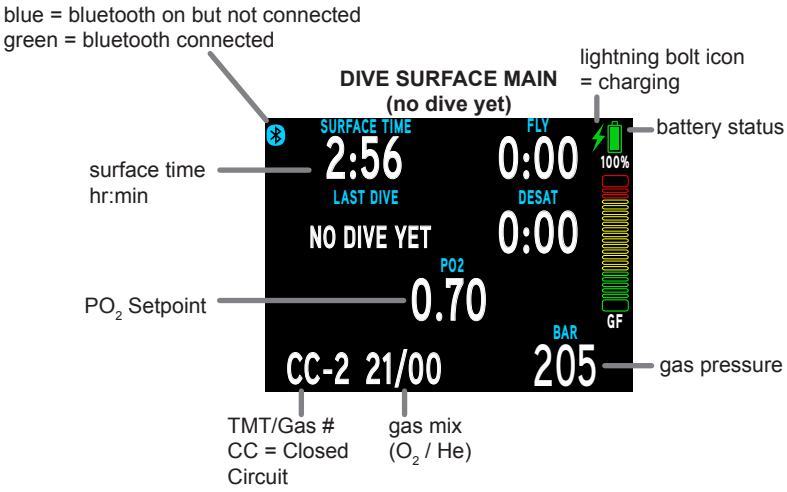
ACHIEVEMENTS

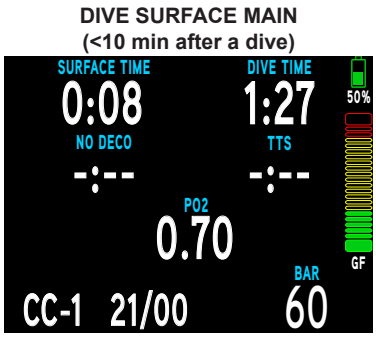
The DSX tracks diving achievements. When you reach 50, 100, 250, 500, or 1,000 dives on your DSX you will see a screen of recognition upon start up. If you press the Right button, the message will clear but continue to display upon start up. If you press the Left button, the message will clear and not show again.

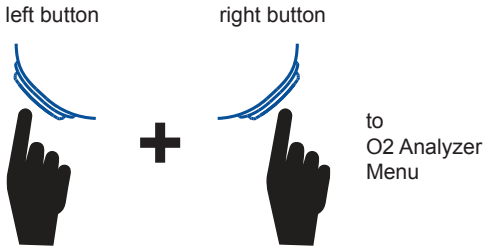
CC (CLOSED CIRCUIT) SURFACE MODE

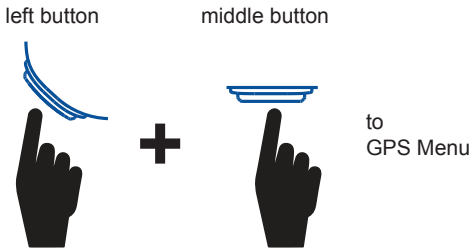
ON THE SURFACE BEFORE A DIVE

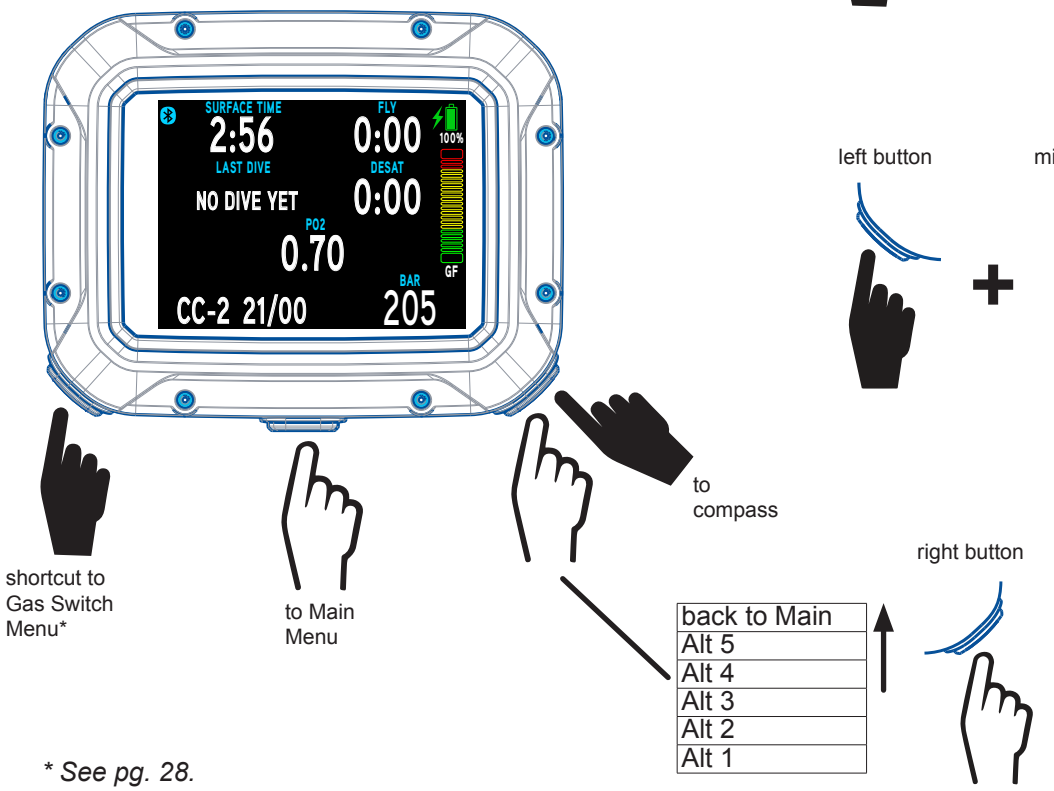
The Dive Main screen will display the Surface Time, PO_2 (partial presssure of oxygen) setting, the selected gas mix. The surface time displayed is the time since activation or the surface interval after a dive.







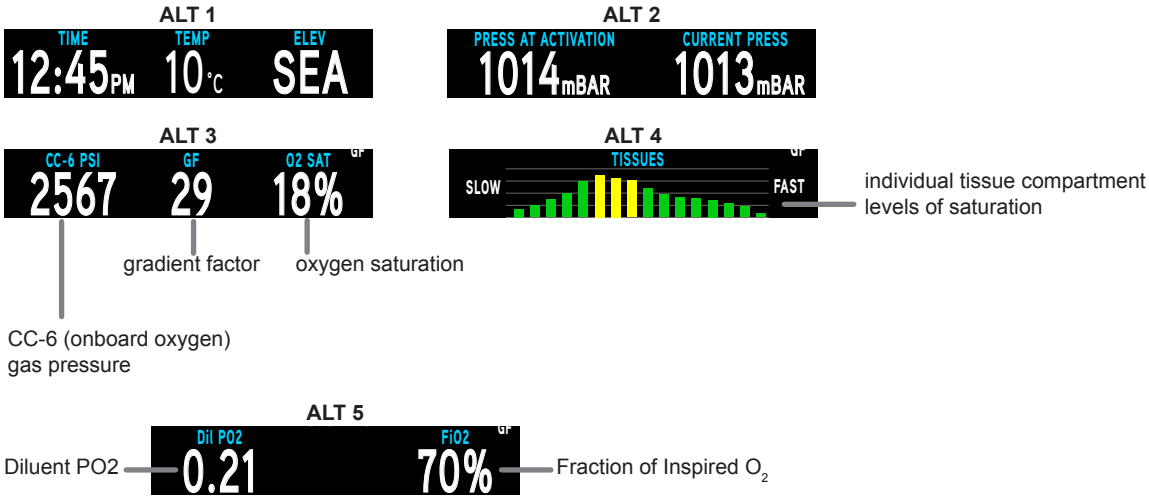




See pg. 28.

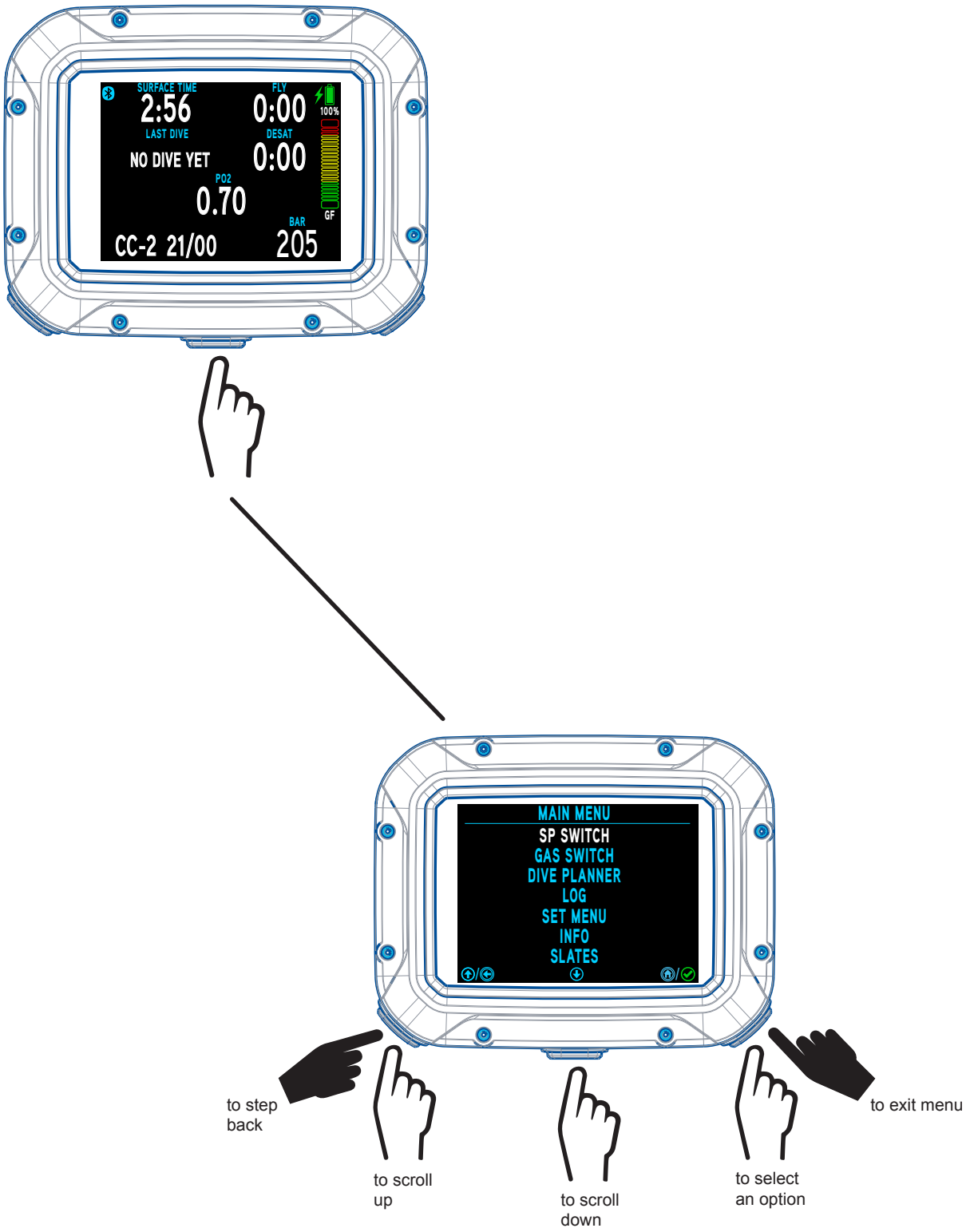
ALT SCREENS

The Alternate screens change the last line of data. The different alternate screens can be accessed by pressing the right button.



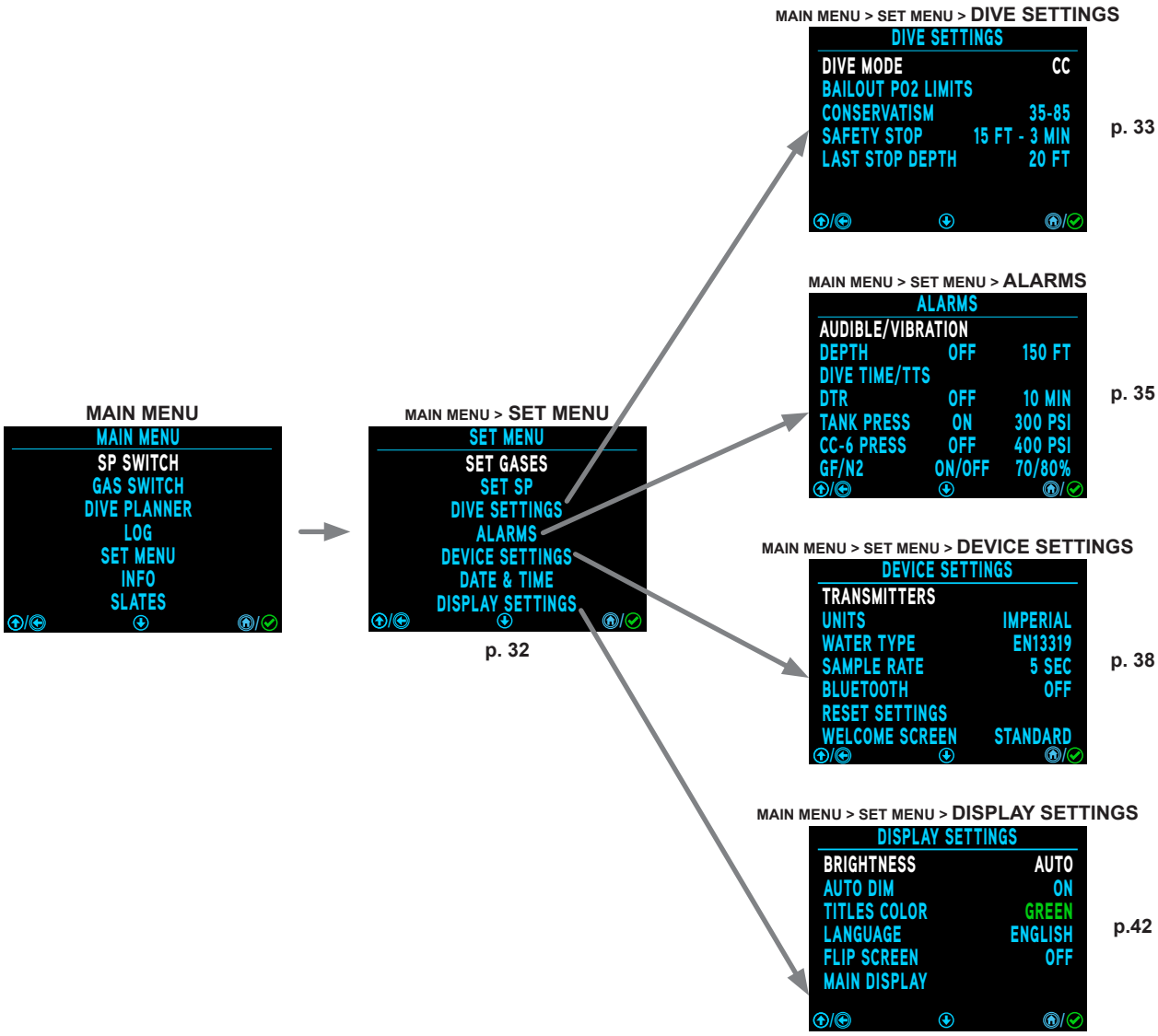
CC MAIN MENU

To change DSX settings you must navigate through the CC Main Menu. Enter the menu by pressing the middle button. Press the right button to choose options from the CC Main Menu. All CC Main Menu options will be discussed in the order they appear in the menu below.



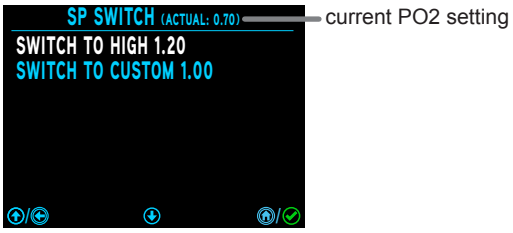
KEY SUBMENUS

The DSX has many settings. Below is a chart to help you navigate the key Submenus.



1. SP (SETPOINT) SWITCH

The DSX is capable of 3 (Low, High, Custom) preset internal PO_2 setpoints (Main Menu > Set Menu > Set SP). The active setpoint will not be an option in the menu. If you decide to stay with the active (current) setpoint, allow the DSX to time out of the menu or hold the left button to return to the CC Main Menu.



2. GAS (& TRANSMITTER) SWITCH

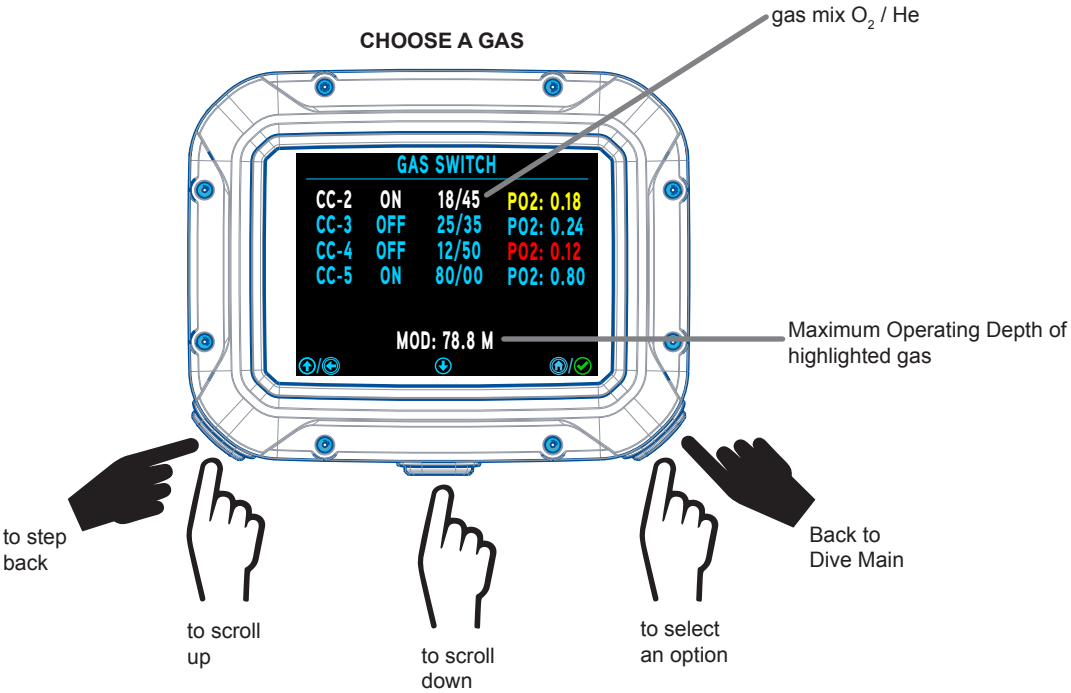
⚠ WARNINGS:

- **Historically, many accidents and near misses have occurred by switching to the wrong gas at the wrong depth. DO NOT attempt gas switch decompression dives without proper education and training to do so from an internationally recognized training agency.**
- **Diving deeper than 39 m (130 ft), will greatly increase your risk of decompression sickness.**
- **Decompression diving is inherently hazardous and greatly increases your risk of decompression sickness, even when performed according to the dive computer's calculations.**
- **Using a DSX is no guarantee of avoiding decompression sickness.**
- **The DSX enters Violation Mode when a situation exceeds its capacity to predict an ascent procedure. These dives represent gross excursions into decompression that are beyond the boundaries and spirit of the DSX's design. If you are following these dive profiles, Apeks advises that you should not use an DSX.**
- **If you exceed certain limits, the DSX will not be able to help you get safely back to the surface. These situations exceed tested limits and can result in loss of some functions for 24 hours after the dive in which a violation occurred.**

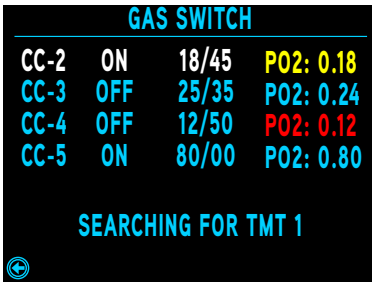
OVERVIEW

- The Gas Switch Menu cannot be accessed during the sounding of alarms.
- If an alarm strikes while in the Gas Switch Menu, the switch operation is terminated (reverting to the CC Main screen).
- The current gas and CC-6 gases will not be listed in the gas switch menu.

NOTE: CC-6 is fixed at 99/00 (O_2 / He) and is reserved for the onboard oxygen tank of your CCR (Closed Circuit Rebreather).

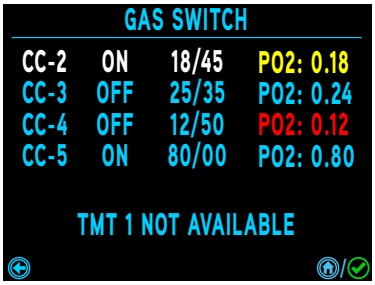


SEARCHING FOR TRANSMITTER



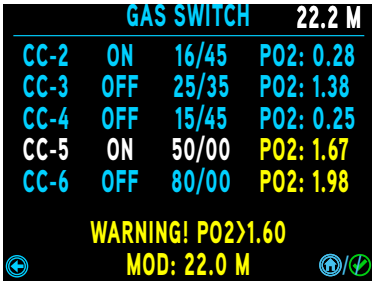
NOTE: If no TMT is assigned to the highlighted gas the Searching Screen will be bypassed.

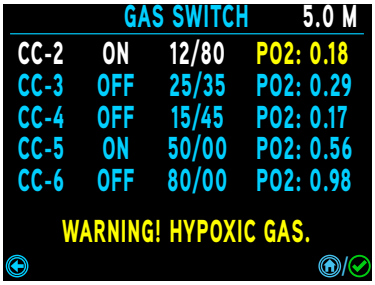
If the transmitter is not reporting, a message will be displayed for 10 seconds. If the gas switch is made, the DSX will calculate for the gas change but the CC Main screen will show a lost transmitter signal.

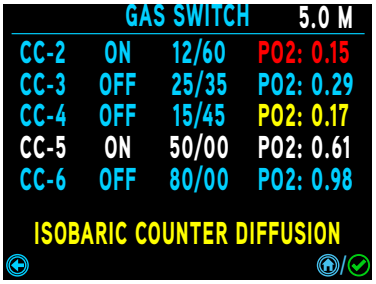


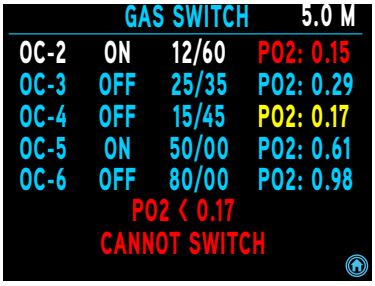
If the current PO_2 value is not optimal or the gas has a risk of isobaric counterdiffusion, then a warning will display when that gas is highlighted. The diver may override the DSX and force the gas switch by pressing the right button except in the case of "PO2 < 0.17" (only applies to open circuit gases).

⚠ **WARNING: Switching to gases with a PO_2 above 1.6 has a high risk of oxygen poisoning, convulsions, and drowning. Doing so should always be avoided. It is intended as a last resort option because of the likelihood of injury or drowning. Always dive within your training, experience, and skill level.**









3. DIVE PLANNER

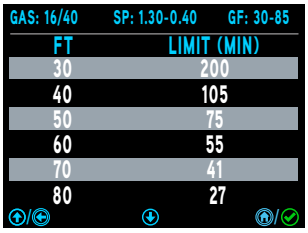
This feature allows you to plan and simulate dives. You may choose to use either the Time Limits or Dive Simulator tools.

CHOOSE A TOOL

A. TIME LIMITS

This mode calculates dive depth and time limits. To do so, it accounts for any residual nitrogen, oxygen, helium, surface intervals, the programmed gas mix, and PO_2 settings. Either NO DECO (No Decompression) or O2 TIME limits are displayed, depending on whether nitrogen/helium or oxygen levels will be the limiting factor.

NOTE: Depths exceeding the MOD (Maximum Operating Depth), if nitrox, or that have less than 1 minute allowed dive time will not be displayed.



B. DIVE SIMULATOR

The Dive Simulator allows users to create decompression ascent plans using the active gas mix. The user simply needs to input some variables for the proposed dive. First select a setting. Then change the setting and save it. Next choose the Simulate Dive option to calculate the simulation.

NOTE: The Dive Simulator uses a descent rate of 18 m/min (60 ft/min) and an ascent rate of 9 m/min (30 ft/min) for calculations.

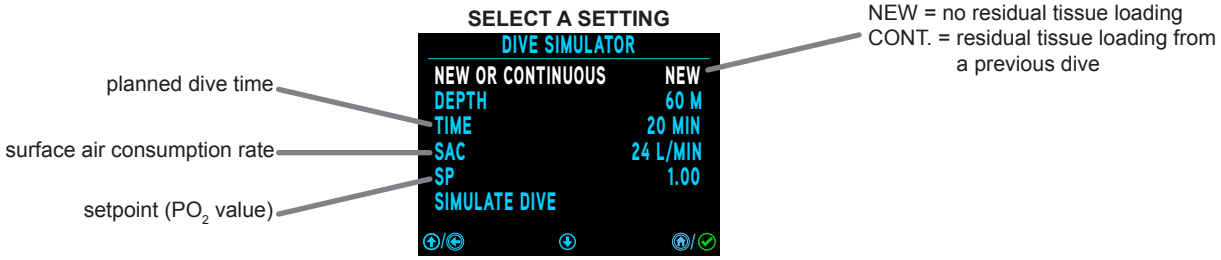
NOTE: If the user selects a dive time that does not allow enough time for descent, at the rate of 18 m/min (60 ft/min), to the set depth, a message of "NOT ENOUGH TIME FOR THE DESCENT" will display when calculating.

NOTE: If no decompression is required no plan will be provided and the message "NO DECO" is provided.

NOTE: The messages "NOT ENOUGH TIME FOR THE DESCENT" or "MAXIMUM CEILING EXCEEDS 130 M (400 FT)" indicate that you need to correct your dive plan.

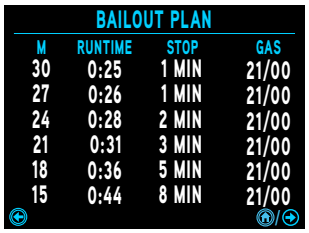
NOTE: The message "DECO TIME > 99 MIN" indicates your planned dive exceeds the limits of this dive planner.

SELECT A SETTING

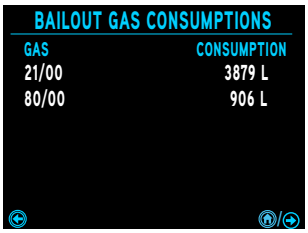


DECOMPRESSION PLAN

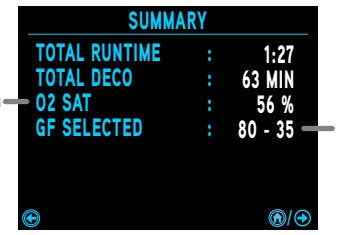
BAILOUT PLAN



BAILOUT GAS CONSUMPTION



DIVE PLAN SUMMARY



oxygen saturation

gradient factor

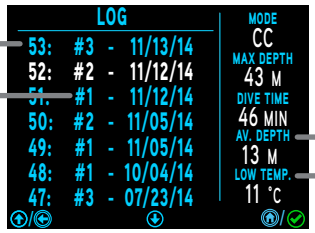
4. LOG

The log stores Information from dives for viewing.

- If no dives are recorded, the message NO DIVES RECORDED YET will be displayed.
- There is a maximum of 99 entries overall. After exceeding 99 entries, the oldest entries will be deleted to allow space for the new entries.
- Dives per operation cycle will be designated DIVE 1 through 24.
- Dives are numbered starting with 1 each time the DSX is activated. After 24 hours elapse with no dive, the first dive of the next period of operation is called Dive #1.
- In the event that Dive Time exceeds the maximum value, the Dive Time will be recorded as the maximum value in the Log upon surfacing of the unit.

NOTE: New data will automatically overwrite the oldest data in memory when the memory becomes full. If you do not remember to log or download your dives, they will be lost when the memory overwrites. See the Upload/Download section p. 87 of this manual for instructions on downloading dives.

LOG DATA 1



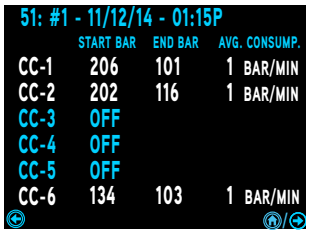
record number

dive number

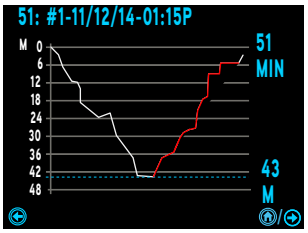
average depth

lowest temperature

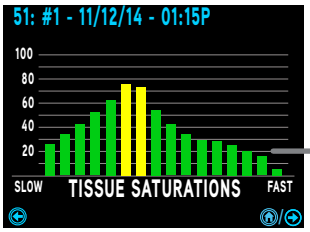
LOG DATA 2



LOG DATA 3



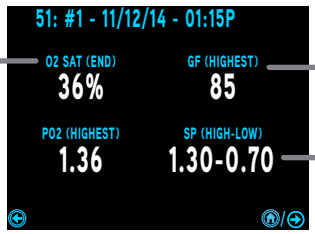
LOG DATA 4



O_2 saturation at the end of the dive

16 compartments listed from slow to fast tissues

LOG DATA 5



highest gradient factor reached

SP = setpoint

5. SET MENU

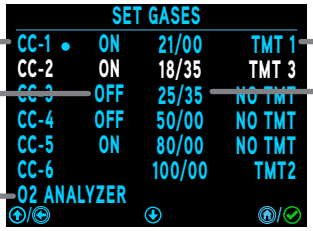
This submenu allows you to setup your DSX preferences.

A. SET GASES

Within this submenu you can change the available gas mixes or acces the Oxygen analyzer feature. Gas CC-6 is permanently assigned to the onboard oxygen cylinder. The user shall be able to set the remaining 5 CC gases (diluents, CC-1 to CC-5) ON or OFF* and adjust FO2 from 7% to 100% and FHe from 0% to 93%.

NOTE: The current gas cannot be set OFF. If the user tries to do so, the message "The actual gas cannot be set OFF" will be displayed.

CHOOSE A GAS TO SET OR O2 ANALYZER



gas number

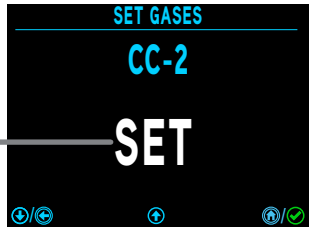
assigned transmitter

gas status OFF/ON/SET

gas mix (O_2 / He)

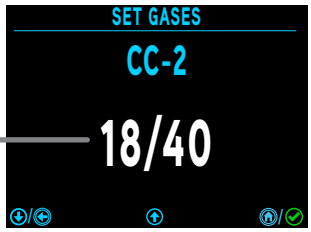
see p. 80

CHANGE GAS STATUS



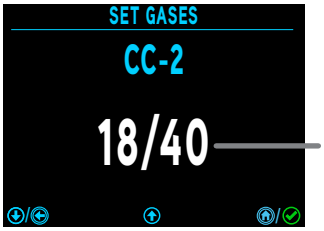
ON/OFF/SET

SET OXYGEN PERCENTAGE



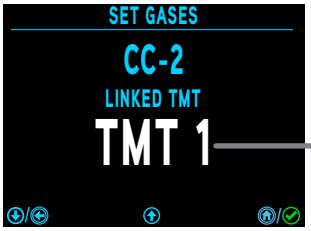
O_2 (first 2 digits flashing)

SET HELIUM PERCENTAGE



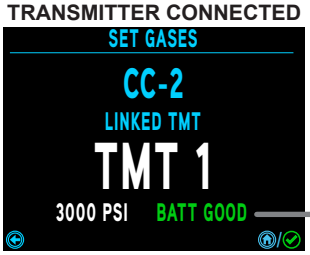
Helium (last 2 digits flashing)

ASSIGN A TRANSMITTER



NO TMT or TMT 1 - 6

TRANSMITTER CONNECTED



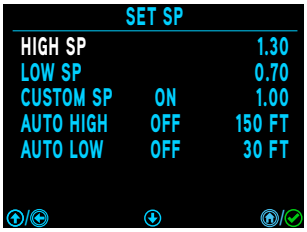
transmitter status

NOTE: If you try to assign a transmitter that was already assigned to another gas the DSX will indicate this and require you to confirm the change.

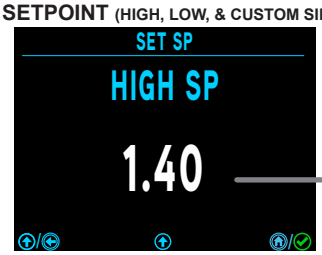
B. SET SP (SETPOINT)

This feature allows the user to set the setpoints (PO_2) used for closed circuit rebreather dive calculations and control auto setpoint switch settings. The DSX allows the user to set a low, high, and a custom setpoint (unique to DSX). Custom setpoint can be programmed with a higher PO_2 value than setpoint high, which may be used in the deco portion of the dive if the diver chooses. The custom setpoint allows more dive flexibility without the need to adjust the setpoint low or high values while underwater. Though the use of this feature is entirely up to the user, and they may actually choose any PO_2 setting they wish for the custom setpoint value, allowing for multiple dive scenarios. They may also set the feature to off if they prefer a more traditional approach.

CHOOSE A SETTING



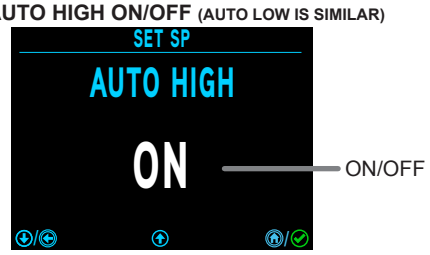
SET SETPOINT (HIGH, LOW, & CUSTOM SIMILAR)



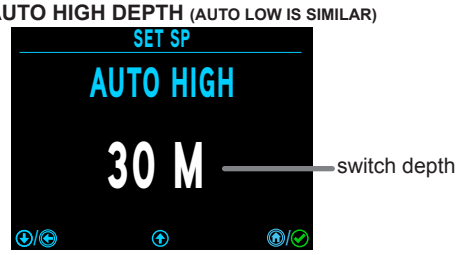
NOTE: The Custom SP (Setpoint) can't be switched off while it is the active setpoint.

The Auto High setting assigns a depth to switch to the setpoint high during descent. While Auto Low assigns the depth to switch to the low setpoint during ascent.

SET AUTO HIGH ON/OFF (AUTO LOW IS SIMILAR)

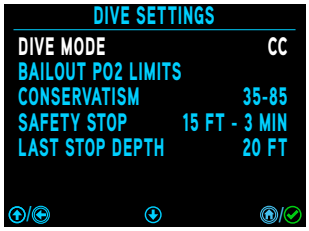


SET AUTO HIGH DEPTH (AUTO LOW IS SIMILAR)



C. DIVE SETTINGS

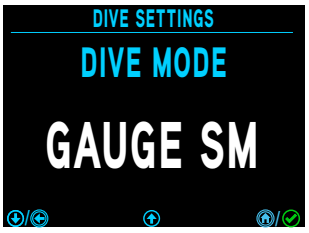
This submenu allows you to control the DSX dive settings.



i. MODE

This screen allows you to access the CC (Closed Circuit), OC (Open Circuit), SM (Sidemount), GAUGE SM (Sidemount), or Gauge Modes.

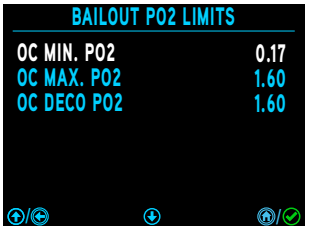
NOTE: Initiating a dive in Gauge SM (Sidemount) or Gauge Mode will block the use of the other modes for 24 hours.



ii. BAILOUT PO2 LIMITS

This feature allows you to set minimum and maximum PO_2 (partial pressure of oxygen) limits for open circuit bailout.

SELECT LIMIT TO CHANGE



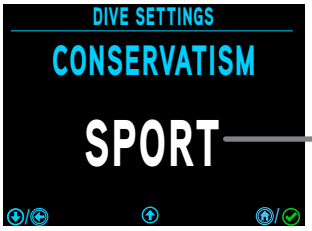
SET MIN PO2 (MAX & DECO ARE SIMILAR)

iii. CONSERVATISM

This feature allows you to adjust how conservative the DSX dive calculations will be. The DSX utilizes gradient factors to make these adjustments. You may choose either Sport or Tec setting options. The Tec settings allow a greater range of adjustments. The Sport Conservatism option simplifies things with 3 preset options: LOW (GF: 90-90), MEDIUM (GF: 35 - 80), and HIGH (GF: 30-70).

NOTE: If the SPORT setting is selected, only the N2 Bar Graph shall be displayed even if Gradient Factor Bar Graph is selected in Display Settings Menu.

CHOOSE SPORT OR TEC



or TEC

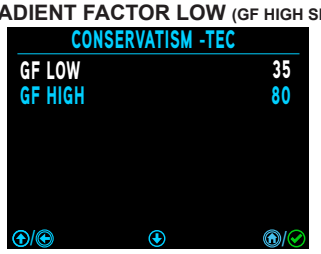
SET SPORT CONSERVATISM

or LOW, MEDIUM

OR

CHOOSE GF LOW OR HIGH SETTING

SET GRADIENT FACTOR LOW (GF HIGH SIMILAR)



iv. SAFETY STOP

The Safety Stop feature can be set ON or OFF. If SET is selected, you may choose from an available 3 or 5 min Safety Stop at depths of 3, 4, 5, or 6 m (10, 15, or 20 ft).

NOTE: Decompression stops will override safety stops if triggered.

SET SAFETY STOP

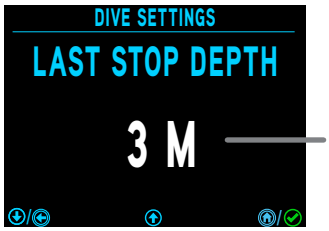
SET SAFETY STOP DEPTH

SET SAFETY STOP TIME

v. LAST STOP DEPTH

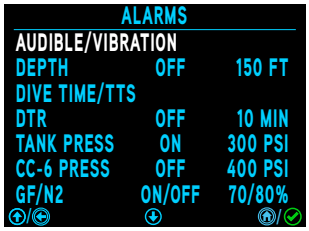
The Last Stop Depth feature allows the user to restrict how shallow the last stop in a decompression profile will be. This is useful if the surface conditions make holding a decompression stop at deeper depth a safer option. Setting choices include 3 or 6 m (10 or 20 ft).

WARNING: Starting a decompression dive with less than ideal surface conditions increases your risk. This feature is just a tool. Only dive within your abilities and training.



D. ALARMS

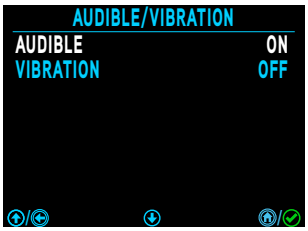
This submenu allows you to change the DSX alarm settings.



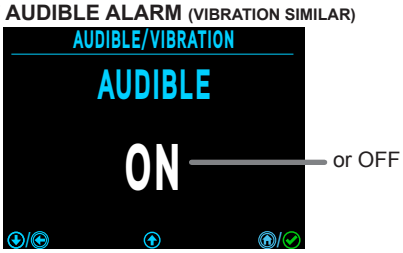
i. AUDIBLE/VIBRATION

The Audible Alarm allows you to set audible and vibration alarms ON or OFF.

CHOOSE AUDIBLE OR VIBRATION SETTING

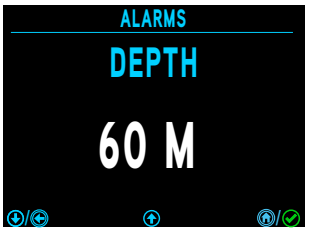


SET AUDIBLE ALARM (VIBRATION SIMILAR)

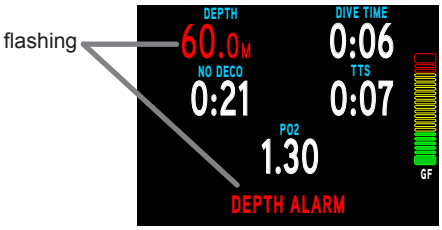


ii. DEPTH

The Depth Alarm allows you to set a maximum depth alarm. Selections include OFF or 10 - 130 m (30 - 420 ft).



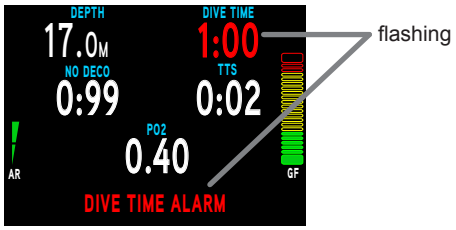
DEPTH ALARM TRIGGERED



iii. DIVE TIME/TTS (TIME TO SURFACE)

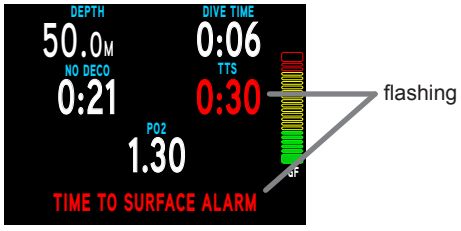
The Dive Time Alarm allows you to set an alarm to go off at a predetermined amount of dive time. Settings include OFF or 10 - 180 min.

DIVE TIME ALARM TRIGGERED



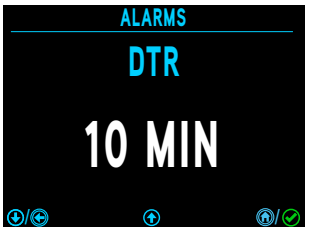
The Time To Surface feature calculates the amount of time to surface safely, meeting all decompression requirements, from the current point in the dive. It is constantly being updated during the dive. The Time To Surface Alarm allows you to set an alarm to go off at a predetermined value of time required to surface. Settings include OFF or 10 - 180 min.

TTS ALARM TRIGGERED

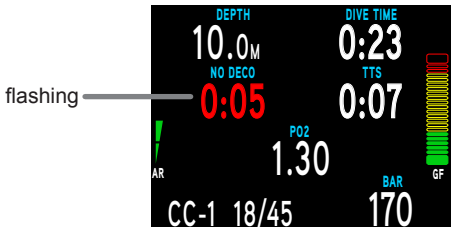


iv. DTR

The Dive Time Remaining Alarm allows you to set an alarm to go off with a designated reserve. Settings include OFF or 1 - 20 min of dive time remaining.



DTR ALARM TRIGGERED



flashing

v. TANK PRESS

The Tank Pressure Alarm monitors the active gas. It allows you to set an alarm to trigger at a designated tank pressure. The default setting is 50 BAR (800 PSI).

TANK PRESS ALARM TRIGGERED

flashing

vi. CC-6 PRESS

The CC-6 Pressure Alarm monitors the onboard oxygen tank. It allows you to set an alarm to trigger at a designated tank pressure. The default setting is 50 BAR (800 PSI).

CC-6 PRESS ALARM TRIGGERED

flashing

vii. GF/N2

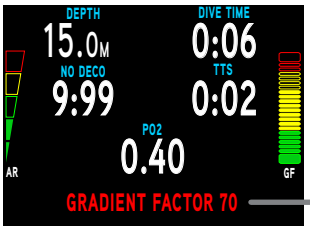
This feature allows you to set an alarm to go off at a predetermined level of GF (Gradient Factor) or N2 (inert gas) bar graph being filled.

SET GF THEN N2

ON, OFF, SET
set options: 20 – 89

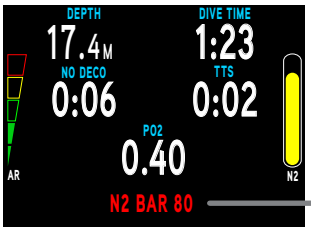
ON, OFF, SET
set options: 70% – 99%

GF ALARM TRIGGERED



flashing

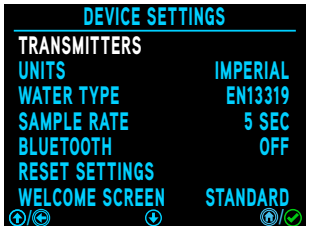
N2 ALARM TRIGGERED



flashing

E. DEVICE SETTINGS

Within the Device Settings menu you can customize the following seven operational functions.



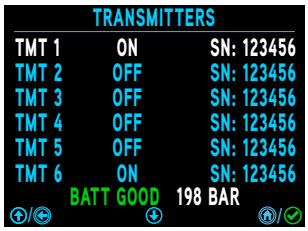
i. TRANSMITTERS

The DSX can use up to 6 transmitters (P/N NS119115) in Dive Mode to monitor gas supplies. The Transmitters Menu allows for the programming of the wrist unit to receive the signals from selected Apeks transmitters. See the Dive Mode Features section (p. 21) for further information on transmitters.

You can scroll up or down to highlight a TMT (transmitter). When a transmitter is highlighted the DSX will scan for that transmitter's pressure and battery status. If the DSX does not connect to the highlighted transmitter within 10 seconds, the message "NOT AVAILABLE" will display.

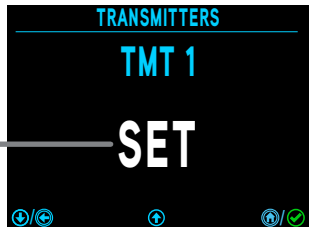
Pressing the right button while a TMT number is highlighted will allow you to assign a new serial number or modify an existing entry (use the last 6 digits of the serial number found on the transmitter).

SELECT A TRANSMITTER ASSIGNMENT



CHOOSE AN OPTION

ON, OFF, SET



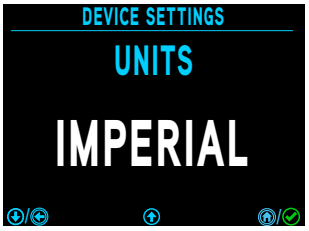
SET SERIAL NUMBER

NOTE: The serial number can be located on the transmitter.

ii. UNITS

The Units feature allows you to select whether Metric (M, BAR) or Imperial (FT, PSI) units of measure will be displayed.

⚠ **WARNING: All depth related settings and alarms shall be reset after changing the units from imperial to metric or metric to imperial.**



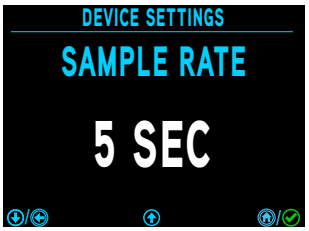
iii. Water Type

The Water Type feature allows you to set SALT, FRESH, or EN13319 (a European CE standard for dive computers) water environment for accurate depth calculations.

iv. SAMPLE RATE

The Sample Rate controls how frequently the DSX stores a data snapshot for Diverlog+ Download during a dive. Setting options are 2, 15, 30, or 60 second intervals. Shorter intervals will provide a more precise record of your dives.

NOTE: New data will automatically overwrite the oldest data in memory when the memory becomes full. The DSX Log and Diverlog + Download data is stored separately in different partitions of the memory. The Log only stores a short summary of each dive. Alternately, the Diverlog + Download function stores much larger files for each dive. Depending on the chosen settings and dive durations, it is possible to see dives stored in the DSX's onboard Log that have already been overwritten in the Diverlog + Download Partition. Choosing a longer Sample Rate interval will consume less memory per dive. Remember to download your dives more frequently if you are using a shorter Sample Rate interval.

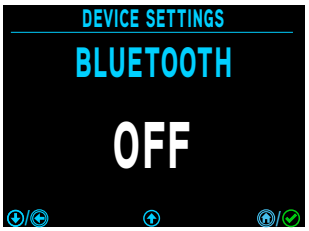


DIVE & GAUGE MODE DOWNLOAD MEMORY CAPACITY	
SAMPLE RATE (seconds)	MAXIMUM HOURS
2	218
15	1638
30	3276
60	6553

v. BLUETOOTH

Within this screen the Bluetooth® may be turned ON or OFF. When Bluetooth® is turned on it will operate in sniffing mode (searching for compatible devices) while on the surface. Comunication with your DSX must be initiated with your mobile device using the DiverLog+ Application.

NOTE: When Bluetooth® is ON the Bluetooth® icon will be displayed when on the surface with the screen activated. The icon will be blue if the receiver is turned on but the DSX is not connected to a smart device. The icon will be green if connected to a smart device. Bluetooth® connection is temporarily deactivated when a dive is started. The DSX returns to "sniffing" mode when the DSX returns to Surface Mode after a dive.



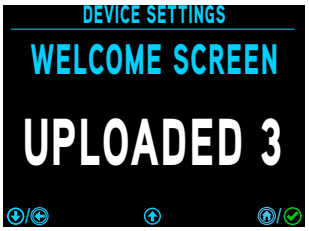
vi. RESET SETTINGS

This feature allows you to restore the many DSX settings to their original factory default settings.

NOTE: This function will ask you to confirm your selection but it will not erase your dive data.

vii. WELCOME SCREEN

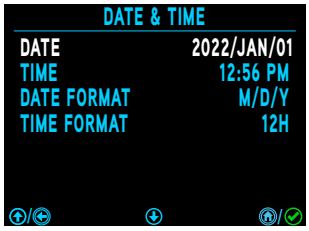
This feature allows you to customize the welcome screen of your DSX. You may upload up to three image files(.jpg, .png, .bmp, or pdf) using the DiverLog + app. The three image files shall be named UPLOADED 1, UPLOADED 2 and UPLOADED 3.



Doc. 12-7969 Doc. 12-7969 r09 (9/22/22)

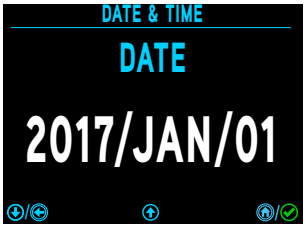
F. DATE & TIME

Within this menu you can set the date, time of day, and time formats.



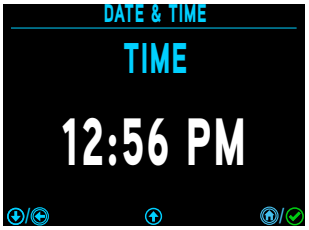
i. DATE

Set the year, month, and day in order. The corresponding digit will flash, allowing it to be set.



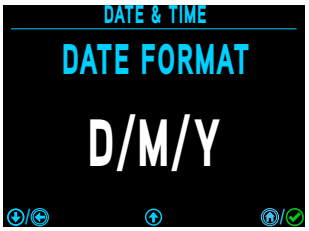
ii. TIME

Set the time of day.



iii. DATE FORMAT

You can choose between D/M/Y (Day/Month/Year) and M/D/Y (Month/Day/Year).

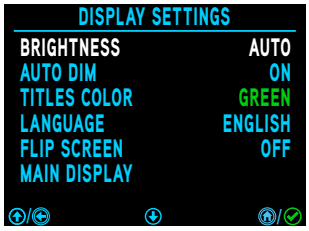


iii. TIME FORMAT

Choose your preferred hour format (12 or 24 hour).

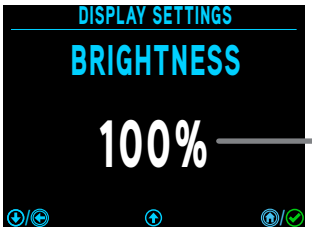
G. DISPLAY SETTINGS

Within this menu you can adjust multiple display settings.



i. BRIGHTNESS

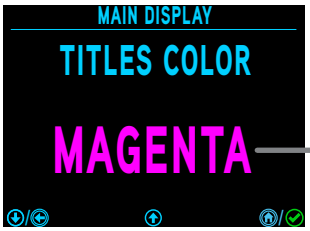
This setting allows you to adjust the brightness of the screen.



AUTO or 10-100%

ii. TITLES COLOR

This setting enables the user to change the titles (labels) of information displayed in Main Displays.



cyan, green, white, orange, or magenta

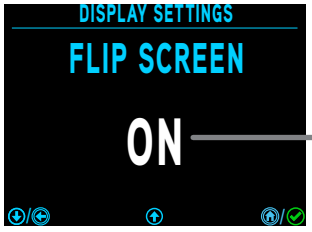
iii. LANGUAGE

This setting enables the user to change the displayed language.

English, German, French, Italian, Spanish, Simplified Chinese, Russian, Portuguese, Polish, Korean, Czech, or Traditional Chinese

iv. FLIP SCREEN

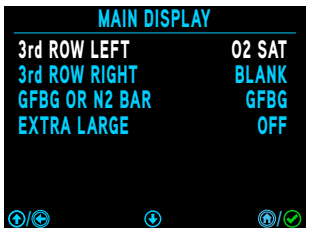
This setting enables the user to flip the display 180 degrees.



ON or OFF

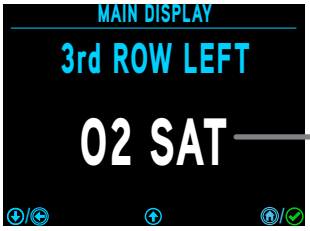
H. MAIN DISPLAY

Within this menu you can customize the data shown on the Main Display.



i. 3rd ROW LEFT

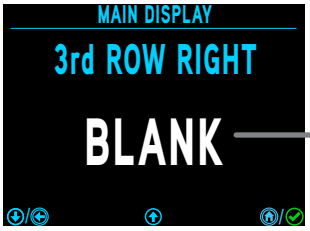
This option allows you to change what is displayed on the lower left of the Dive Main screen.



blank, O2 sat, GF, ceiling, max depth, average depth, real time, diluent PO2, FiO2

ii. 3rd ROW RIGHT

This option allows you to change what is displayed on the lower right of the Dive Main screen.

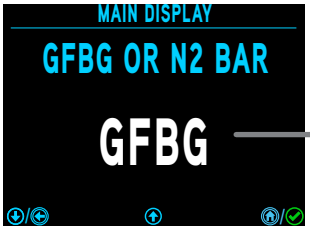


blank, O2 sat, GF, ceiling, max depth, average depth, real time, diluent PO2, FiO2

iii. GFBG or N2 BAR

This option allows you to change what bar graph is displayed on the main screen. You may choose either Gradient Factor or N2.

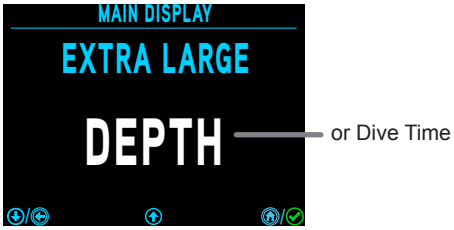
NOTE: See pg. 16 for further details on Gradient factor and N2 Bar Graphs.



or N2 bar

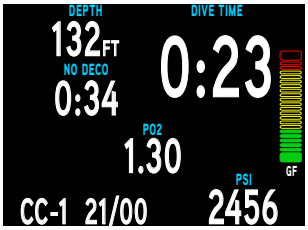
iv. EXTRA LARGE

When this setting is set to ON, this function modifies the dive main display to have an extra large depth or dive time displayed. To allow space to do this, TTS (Time To Surface) is moved to Dive Alt 1.



EXTRA LARGE DEPTH

EXTRA LARGE DIVE TIME



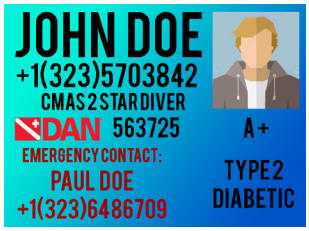
6. INFO

This submenu allows you to access personal and historical data contained in your DSX.

A. MY INFO

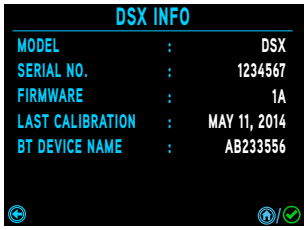
This screen displays personal information. Information must be entered using the Diverlog + application interface.

NOTE: The "My Info" feature allows the diver to clearly identify their computer from others. It also can provide information to medical rescue teams if the diver is unable to do so. The diver uploads the data via a mobile device of their choosing, utilizing our DiverLog + app. Our company does not collect or store any of this personal data. Data is only stored on your personal devices. It is strictly for your personal use as the owner of this product. With this in mind, consider who may be able to gain access to your devices before adding any vulnerable data to them.



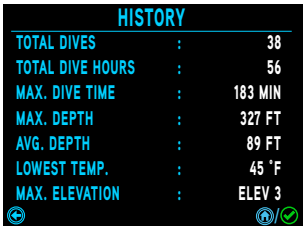
B. DSX INFO

Information displayed on the DSX Info screen should be recorded and kept with your sales receipt. It will be required in the event that your DSX requires factory service.



C. HISTORY

History is a summary of basic data recorded during all dives.

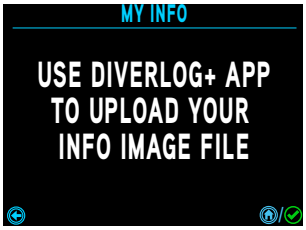


D. MANUFACTURER

This screen displays manufacturer information.

7. SLATES

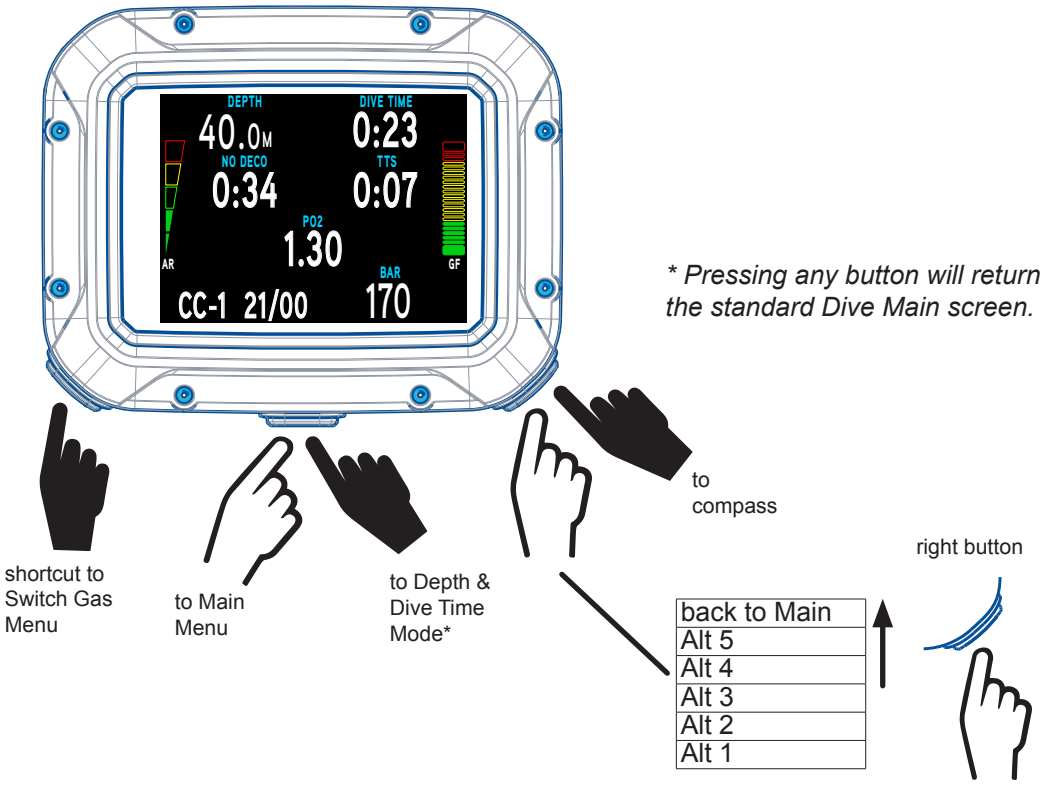
The DSX allows you to save up to 10 image files to DSX using the DiverLog + app. If the image size does not fit the DSX screen size and ratio, the DiverLog + software shall allow adjustment of the image to fit the DSX screen. These slates may be used as dive aids, maps, fish identification; etc.



CC (CLOSED CIRCUIT) DIVE OPERATION

INITIATING A DIVE

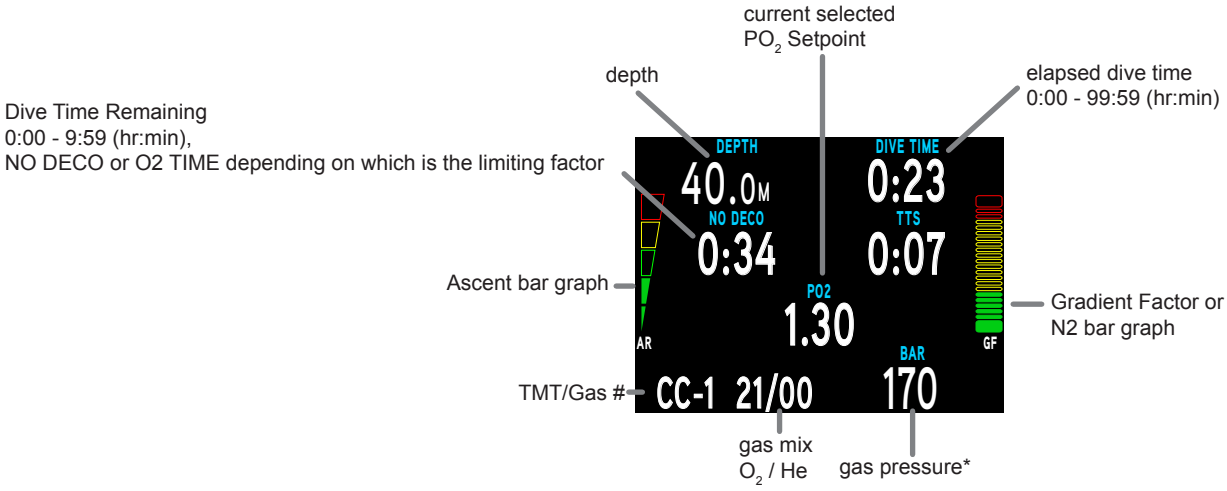
With the DSX in CC Mode, a dive will commence upon descending to 1.5 m (5 ft) for at least 5 seconds. Below is a diagram to help you navigate CC Dive Mode functions.



NO DECOMPRESSION DIVE MAIN

From the Main screen you can see all critical dive parameters. During a dive an audible alarm may sound and the priority of information displayed may change. This is to indicate a safety recommendation, warning, or alarm. The following information in this chapter demonstrates and describes an uneventful dive, in terms of safety. Alarms are described in the Complications section of this chapter.

⚠ **WARNING: Before diving with the DSX take time to familiarize yourself with both normal and alarm conditions of operation.**



ALT SCREENS

The Alternate screens change the last line of data. The different alternate screens can be accessed by pressing the right button.

ALT 1

ALT 2

max depth

decompression ceiling

average depth

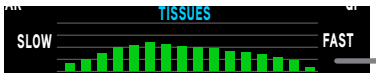
ALT 3

oxygen saturation

CC-6 (onboard oxygen) gas pressure

gradient factor

ALT 4



individual tissue compartment levels of saturation

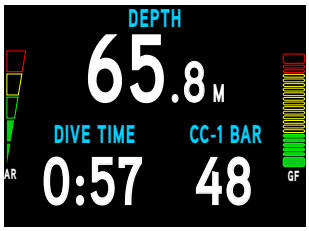
ALT 5

Diluent PO2

Fraction of Inspired O_2

DEPTH & DIVE TIME

This feature simplifies the display and makes depth and Dive Time the focus. You can access this screen by holding the middle button. Pressing any button while in this screen is displayed will return you to the standard Dive Main Screen.



MAIN MENU

Within the Dive Menu you can make adjustments to your DSX as needed during the dive.

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1. SP (SETPOINT) SWITCH

This menu allows the manual switching of the PO_2 setpoint. The DSX is capable of 3 (Low, High, Custom) preset internal PO_2 setpoints. The active setpoint will not be an option in the menu. If you decide to stay with the active (current) setpoint, allow the DSX to time out of the menu or hold the left button to return to the CC Dive Main Menu.

NOTE: If the Custom Setpoint is set off, it will not display in this menu.

2. GAS (& TRANSMITTER) SWITCH

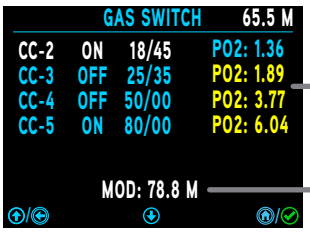
⚠ WARNINGS:

- **Historically, many accidents and near misses have occurred by switching to the wrong gas at the wrong depth. DO NOT attempt gas switch decompression dives without proper education and training to do so from an internationally recognized training agency.**
- **Diving deeper than 39 m (130 ft), will greatly increase your risk of decompression sickness.**
- **Decompression diving is inherently hazardous and greatly increases your risk of decompression sickness, even when performed according to the dive computer's calculations.**
- **Using a DSX is no guarantee of avoiding decompression sickness.**
- **The DSX enters Violation Mode when a situation exceeds its capacity to predict an ascent procedure. These dives represent gross excursions into decompression that are beyond the boundaries and spirit of the DSX's design. If you are following these dive profiles, Apeks advises that you should not use a DSX.**
- **If you exceed certain limits, the DSX will not be able to help you get safely back to the surface. These situations exceed tested limits and can result in loss of some functions for 24 hours after the dive in which a violation occurred.**

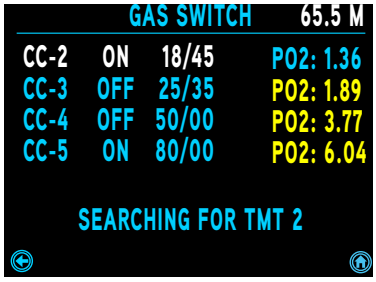
OVERVIEW

- The Gas Switch Menu cannot be accessed during the sounding of alarms.
- If an alarm strikes while in the Gas Switch Menu, the switch operation is terminated (reverting to the CC Dive Main screen.
- The current gas and CC-6 gases will not be listed in the gas switch menu.

NOTE: CC-6 is fixed at 99/00 (O_2 / He) and is reserved for the onboard oxygen tank of your CCR (Closed Circuit Rebreather).

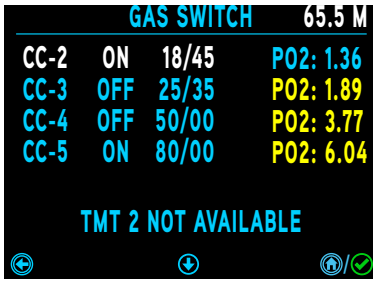


SEARCHING FOR TRANSMITTER



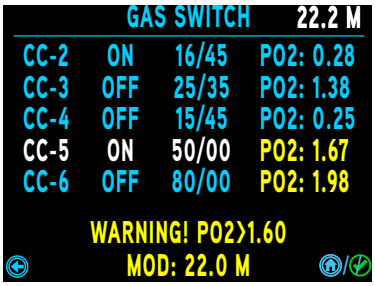
NOTE: If no TMT is active the Searching screen will be bypassed.

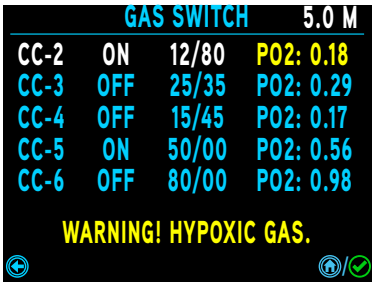
If the transmitter is not reporting, a message will be displayed for 10 seconds before switching gas. Afterwards, the DSX will calculate for the gas change but the CC Dive Main screen will show a lost transmitter signal.

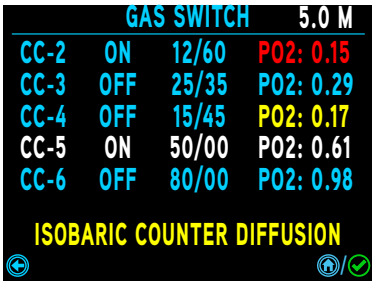


If the current PO_2 value is not optimal or the gas has a risk of isobaric counterdiffusion, then a warning will display when that gas is highlighted. The diver may override the DSX and force the gas switch by pressing the right button.

⚠ **WARNING: Switching to gases with a PO_2 above 1.6 has a high risk of oxygen poisoning, convulsions, and drowning. Doing so should always be avoided. It is intended as a last resort option because of the likelihood of injury or drowning. Always dive within your training, experience, and skill level.**







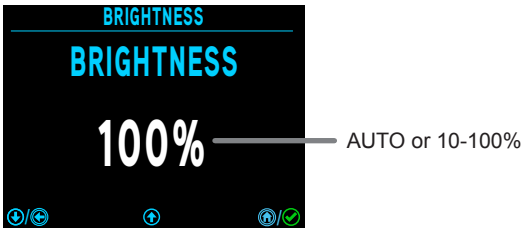
3. SWITCH CC > OC

During a CCR dive you may need to bailout to open circuit tanks. The Switch CC > OC feature allows you to calculate for for this by switching the DSX to Open Circuit Dive Mode.

4. BRIGHTNESS

This setting allows you to adjust the brightness of the screen.

SET BRIGHTNESS LEVEL



5. DIVE MENU

Within the Dive Menu you can change dive settings and preview your dive profile and any required decompression stops.

A. SET SP (SETPOINT)

Dive Mode Set SP screens and function are identical to Surface Mode, see pg. 33.

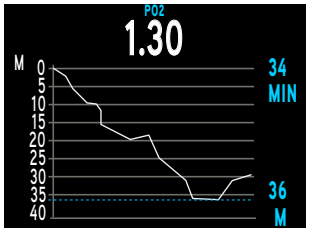
B. SET GASES

Dive Mode Set Gases screens and function are identical to Surface Mode, see pg. 32.

NOTE: It is not possible to change the settings of the gas currently in use while diving.

C. DIVE PROFILE GRAPH

This screen provides the diver a visual profile of the dive up to the current point.



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D. BAILOUT PO2 LIMITS

Dive Mode Bailout PO2 Limits screens and function are similar to the Surface Mode, see pg. 34.

E. DECO STOPS

This feature allows the diver to preview currently required decompression stops.

NO DECO STOPS

DECO STOPS PREVIEW

F. SET GF HIGH

This feature allows the diver to increase the gradient factor high during the dive.

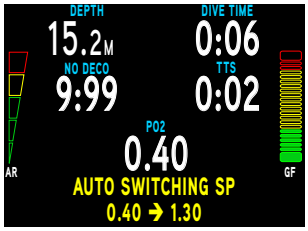
NOTE: Only values higher than the current GF High setting will be displayed.

6. SLATES

This feature allows you to scroll through the images you uploaded to your DSX via the DiverLog + application by repeatedly pressing the right button.

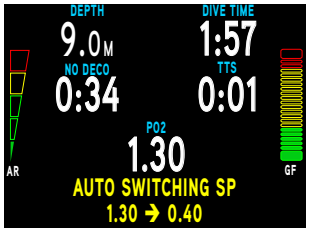
AUTO SWITCH TO HIGH SETPOINT

If the Auto Switch to High SP is set on, a message will be displayed and the DSX will beep 3 times when the depth is reached upon descent.



AUTO SWITCH TO LOW SETPOINT

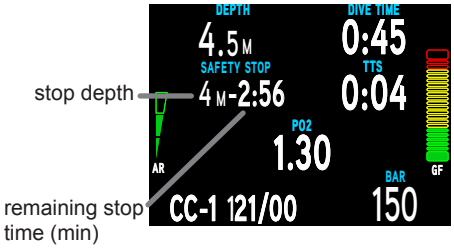
If the Auto Switch to Low SP is set on, a message will be displayed and the DSX will beep 3 times when the depth is reached upon ascent.



SAFETY STOP MAIN

If triggered, the Safety Stop will activate upon ascent to within 1.5 m (5ft) deeper than the Safety Stop depth on a No Decompression dive. The stop time will then countdown to 0:00. See Safety Stop in the Dive Features chapter for further details.

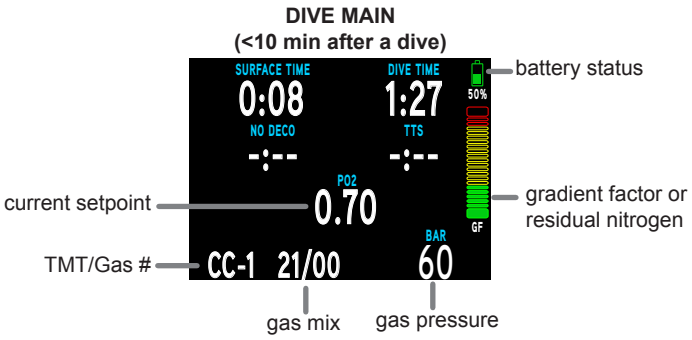
NOTE: The DSX does not penalize for a missed Safety Stop.



SURFACING

Upon ascending to 0.9 m (3 ft) the DSX transitions to Dive Surface Mode.

NOTE: The DSX requires a 10 minute surface interval to record a subsequent dive as a separate dive in the Log. Otherwise, the dives will be combined and recorded as a single dive in the DSX memory.



COMPLICATIONS

The preceding information has described standard dive operations. Your new DSX is also designed to help you to the surface in less than ideal situations. The following is a description of these situations. Take some time to familiarize yourself with these operations before diving your DSX.

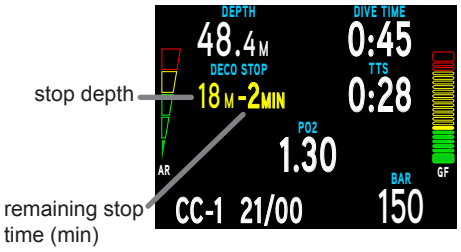
DECOMPRESSION

Decompression (deco) Mode activates when theoretical No Decompression time and depth limits are exceeded. Upon entry into deco, the audible alarm will sound. The full N2 bar Graph and Up Arrows will flash until the audible is silenced.

To fulfill your decompression obligation, you should make a safe controlled ascent to a depth slightly deeper than, or equal to, the required stop depth indicated and decompress for the stop time indicated. The amount of decompression credit time that you receive is dependent on Depth, with slightly less credit given the deeper you are below the Stop Depth indicated. You should stay slightly deeper than the required Stop Depth indicated until the next shallower Stop Depth appears. Then you can slowly ascend to that indicated Stop Depth but not shallower.

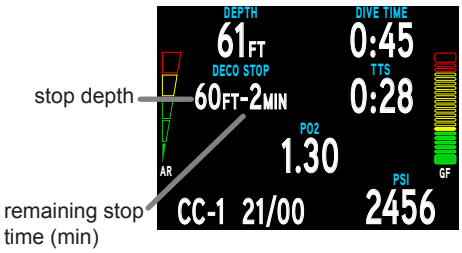
DECOMPRESSION ENTRY

Upon entry into decompression (deco) the audible alarm will sound until the audible is silenced. DECO STOP, N2 or GF Bar Graph shall flash during the audible alarm. Additionally, the stop depth and stop time values will be displayed.



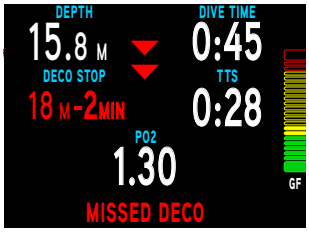
DECOMPRESSION STOP MAIN

Decompression (deco) Stop Main will display upon ascending to within 3 m (10 ft) below the Deco Stop depth. While the Deco Stop Main is displayed, you may access and scroll through the Deco Alt Screens by pressing the right button. They are similar to the CC Dive Alt Screens.



MISSED DECOMPRESSION STOP

When the depth is shallower than the deepest Stop Depth for over a minute, the Missed Deco alarm will be triggered. Down arrows will flash and a "MISSED DECO" mesage will be displayed.



CONDITIONAL VIOLATION (CV)

Conditional Violation activates when the gradient factor exceeds 90 for less than 5 minutes.

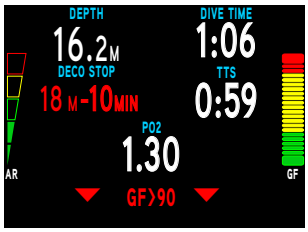
- Credit is not given for off gassing while the gradient factor exceeds 90.
- Operation will revert to Decompression or No Decompression Modes when the gradient factor drops below 90.
- Operation will enter Delayed Violation 1 when the diver exceeds gradient factor 90 for over 5 minutes.

DELAYED VIOLATION 1 (DV 1)

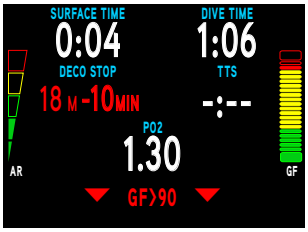
Delayed Violation 1 activates when the gradient factor exceeds 90 for more than 5 minutes. DV1 is a continuation of CV. DV1 differs from Conditional Violation in that the DSX will enter Violation Gauge Mode 5 minutes after surfacing. This is regardless of clearing the decompression stops before surfacing.

- Credit is not given for off gassing while the gradient factor exceeds 90.
- Operation will revert to Decompression or No Decompression Modes when the gradient factor drops below 90.
- 5 minutes after surfacing the DSX will enter Violation Gauge Mode.

DV1 CC DIVE MAIN



DV1 < 5 MIN ON SURFACE



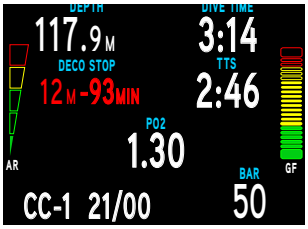
DELAYED VIOLATION 2 (DV 2)

The DSX will enter Delayed Violation 2 when any single decompression stop exceeds 90 mins or the decompression ceiling becomes 120 m (400 ft).

- 5 minutes after surfacing the DSX will enter Violation Gauge Mode.

DECO CEILING DEEPER THAN 120 M

DECO STOP EXCEEDS 90 MIN



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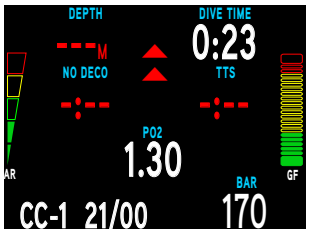
DELAYED VIOLATION 3 (DV 3)

If you descend deeper than 130 m (426 ft), the delayed Violation 3 alarm will be triggered. Current depth, decompression data, and TTS (Time To Surface) will be replaced with dashes.

- Upon ascending above 130 m (426 ft), current depth will be restored. However, the log for that dive will display dashes for max depth.
- If the diver follows all decompression requirements, there will be no Violation Gauge Mode lockout on the surface.
- Log Mode for the dive will display Max Depth as 3 dashes (- - -).



VIOLATION GAUGE MODE (VGM) DURING A DIVE

During Dive Mode dives, operation will enter VGM when a decompression stop exceeds 99 mins or the decompression ceiling becomes 120 m (400 ft). Upon activation the audible alarm will sound and the graphic "VIOLATION" will flash in place of decompression data and and TTS. After the audible alarm stops, the message "VIOLATION" will be solid. VGM turns the DSX into a digital instrument without any decompression or oxygen related calculations or displays. Operation would then continue in VGM during the remainder of that dive and for 24 hours after surfacing.

VIOLATION GAUGE MODE (VGM) ON THE SURFACE

The message VIOLATION is displayed until 24 hours elapse with no dives. During that 24 hours, all surface menus and screens shall be available except those associated with decompression calculations, such as Gas Switch, Switch SP, Switch Dive Mode, Set Gases, Set SP, O2 Limits, Set GF, Safety Stop, Last Stop, Dive Planner, O2 Narcotic.

- In the event that a dive is made during the 24 hour lockout period, another full 24 hour surface interval must then be served before all functions are restored.

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HIGH O2 SAT (OXYGEN SATURATION)

Warning >> at 80 to 99% (240 OTU)
Alarm >> at 100% (300 OTU)

Warning

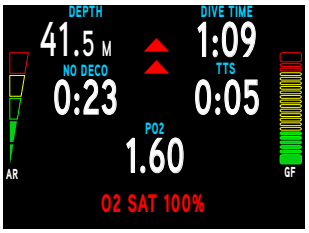
When O_2 reaches the Warning Level, the audible alarm sounds and the O2 SAT (saturation) value will flash at the bottom of the screen. Displaced data will be restored when the audible alarm is silenced. The yellow up arrow will flash until O2 Sat decreases below 80%.

NOTE: The Up Arrow will not flash if the DSX is in decompression.

Alarm

If O2 SAT reaches the Alarm level (100%), the audible alarm sounds and the O2 SAT (saturation) value will flash at the bottom of the screen. Displaced data will be restored when the audible alarm is silenced. Red up arrows will flash until O2 Sat decreases below 100%.

NOTE: The Up Arrows will not flash if the DSX is in decompression.



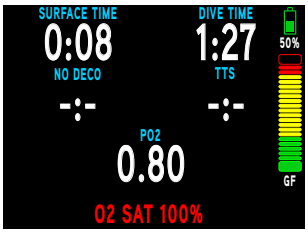
HIGH O2 ON SURFACE WHEN GF ≤ 90

If O2 equals 100%, it is to flash in red at bottom. When O2 becomes less than 100%, the standard Surface Main screen shall be restored.

HIGH O2 ON SURFACE WHEN GF > 90.

If O2 equals 100%, it is to flash in red at bottom.

- The Gradient Factor Bar Graph willl flash until GF is less than 90 or for 5 min.
- If the O2 Sat becomes less than 100% during the first 5 minutes after surfacing, the DSX will enter Delayed Violation 1.
- If the O2 Sat becomes less than 100% during the first 5 minutes after surfacing, the DSX will enter Delayed Violation 1.
- If the O2 Sat remains 100% longer than 5 minutes after surfacing, operation will revert to Violation Gauge Mode for 24 hours.



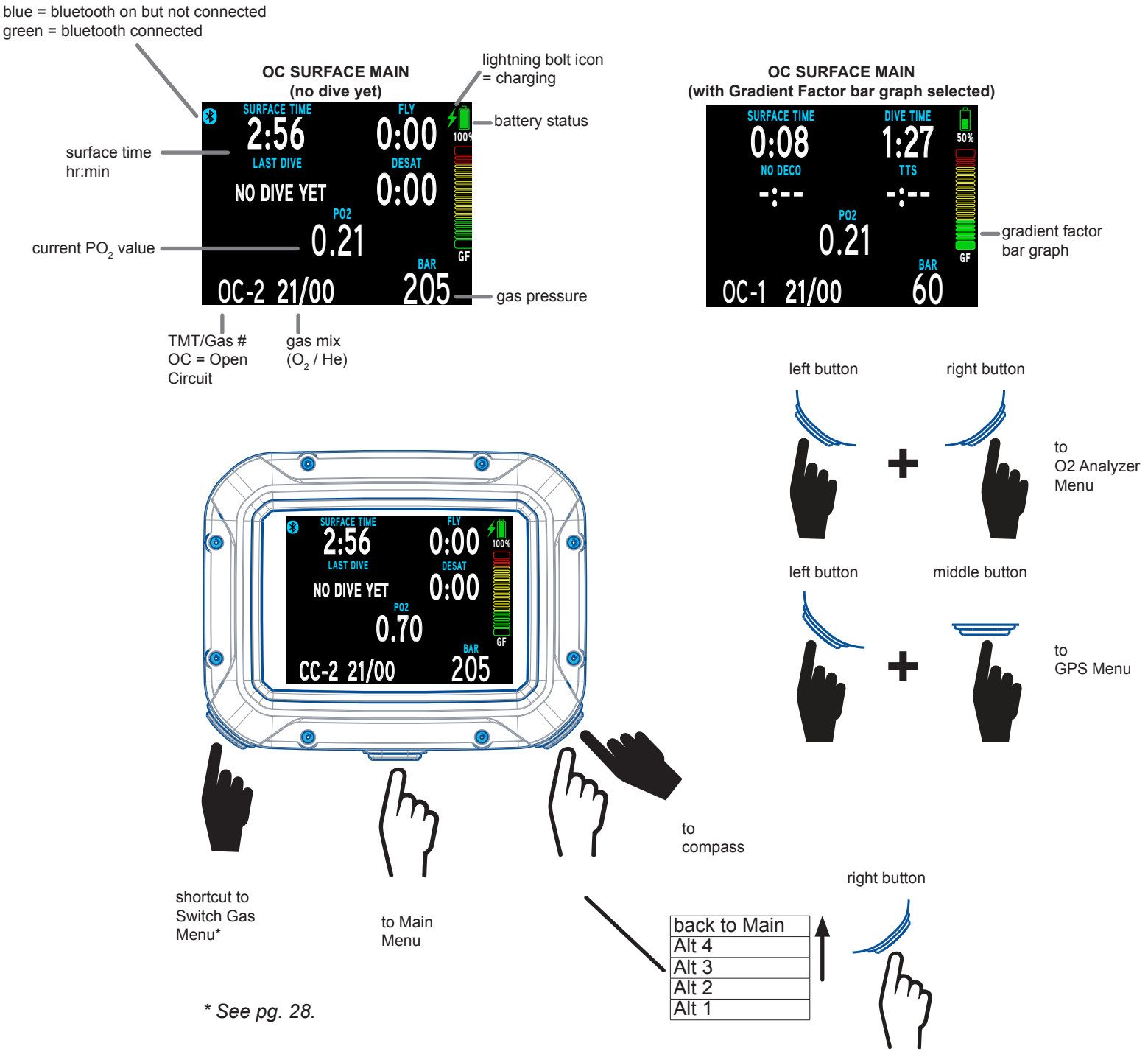
OC (OPEN CIRCUIT) MODE

OVERVIEW

The OC Mode is intended for OC (open circuit) dives utilizing air, nitrox, and/or trimix gases.

ON THE SURFACE BEFORE A DIVE

The Dive Main screen will display the SURF-T (Surface Time) and the selected gas mix (O_2 / He). The surface time displayed is the time since activation or the surface interval after a dive.



* See pg. 28.

NOTE: OC Surface Data (alternate) screens and Menu options are similar to those described previously for CC Surface Mode. See the CC Surface Mode chapter for further details. Only features that differ significantly are discussed here.

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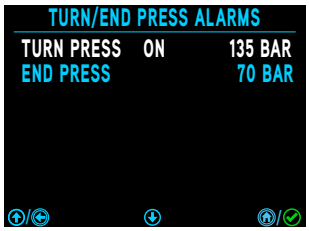
TURN/END PRESS ALARMS

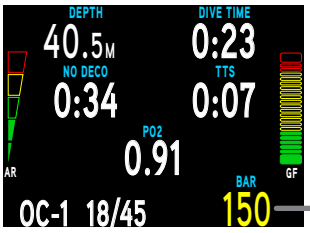
The Turn/End Pressure Alarm submenu allows you to adjust these alarms. Options include ON, OFF, or SET.



1. TURN PRESS ALARMS

The Turn Pressure Alarm monitors the active gas. It allows you to set an alarm to trigger at a designated "turn back" tank pressure. Settings include 70 - 200 bar (1000 - 3000 psi).

TURN PRESS ALARM TRIGGERED



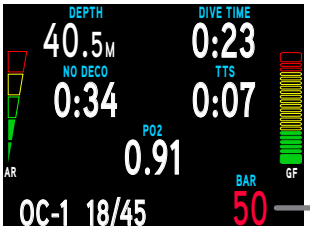
flashing

2. END PRESS

The End Pressure Alarm allows you to set an alarm for when you reach a designated end pressure. The default setting is 50 bar (800 psi).

NOTE: The Pressure Alarm only considers the active gas when diving with multiple gas transmitters.

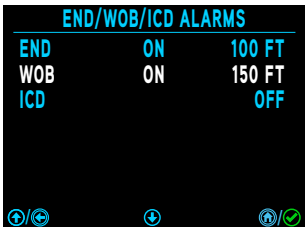
END PRESS ALARM TRIGGERED



flashing

END/WOB/ICD ALARMS

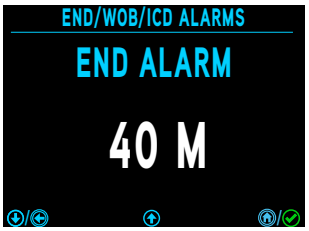
The END/WOB/ICD Alarm submenu allows you to adjust these alarms.



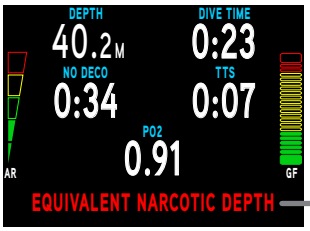
1. END (EQUIVALENT NARCOTIC DEPTH)

Air diving is used as the scale and method of measuring equivalency. The diver chooses a narcotic threshold depth for an air dive. Using this measure, the diver applies this narcotic threshold to any other breathing gas resulting in a different depth but with equal narcotic levels as their limits.

NOTE: Equivalent Narcotic Depth stands for the limit set and not the current (actual) depth. Instead it measures the equivalent depth of diving with air in terms of narcosis levels.



END ALARM TRIGGERED

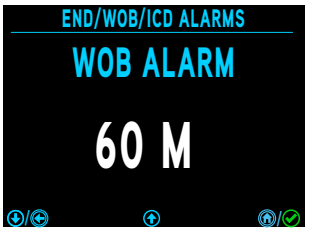


flashing

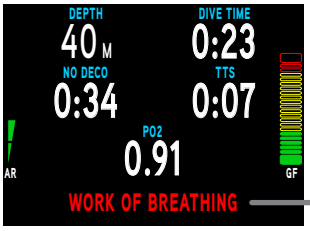
2. WOB (WORK OF BREATHING)

Similar to the END Alarm, air diving is used as the scale and method of measuring equivalency. The addition of helium in trimix gas makes it less dense than air. Therefore it takes less work to inhale and exhale trimix compared to air at the same depth. The WOB alarm allows the diver to select a depth that breathing air would be comfortable for them. Then the DSX takes the selected air depth and will trigger a WOB Alarm when the gas in use reaches the equivalent gas density.

NOTE: The Work Of Breathing stands for the limit set and not the current (actual) depth. Instead it measures the equivalent depth of diving with air in terms of work of breathing.



WOB PRESS ALARM TRIGGERED

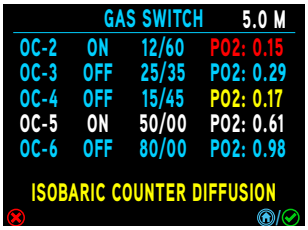


flashing

3. ICD (ISOBARIC COUNTERDIFFUSION)

When set on, this alarm will warn you of switching to a gas that puts you at risk of Isobaric Counterdiffusion.

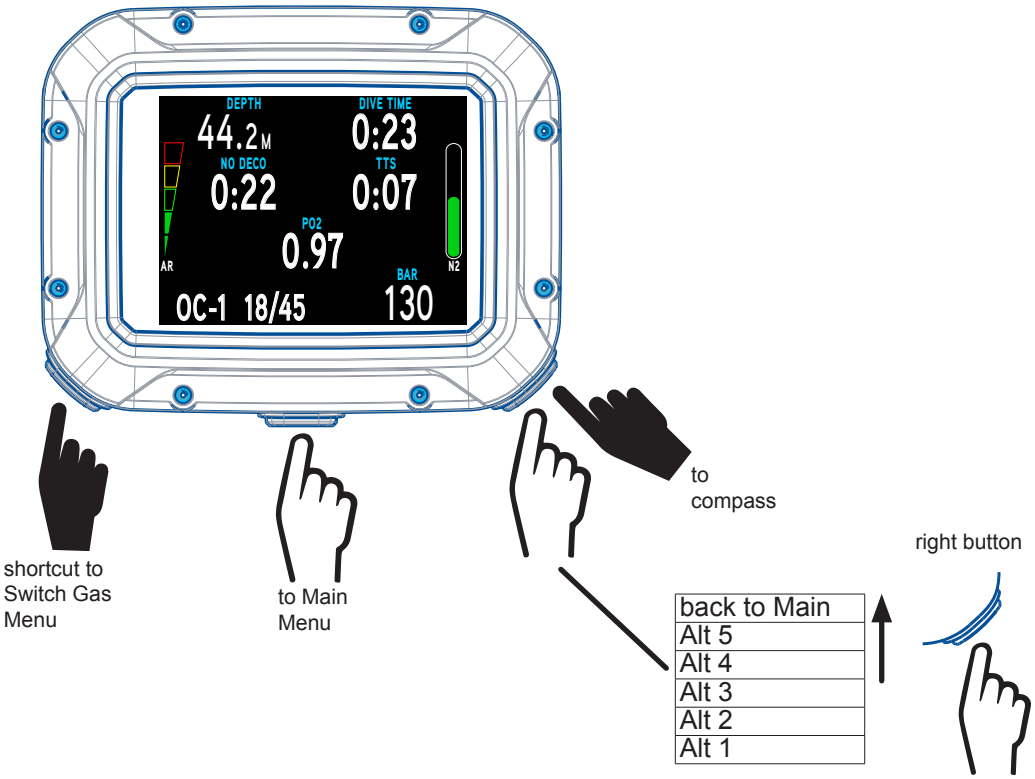
ICD WARNING TRIGGERED



Doc. 12-7969 Doc. 12-7969 r09 (9/22/22)

INITIATING A DIVE

With the DSX in OC Mode, a dive will commence upon descending to 1.5 m (5 ft) for at least 5 seconds. Below is a diagram to help you navigate OC Dive Mode functions.



NOTE: Switch Gas and Main Menu options are similar to those described previously in the CC Dive Mode chapter.

OC DIVE MODE COMPLICATIONS

The preceding information has described standard dive operations. Your new DSX is also designed to help you to the surface in less than ideal situations. Many of these alarm conditions are similar to CC Mode and discussed in the CC Mode Dive chapter. This section covers complications unique to open circuit diving. Take some time to familiarize yourself with these operations before diving your DSX in open circuit modes.

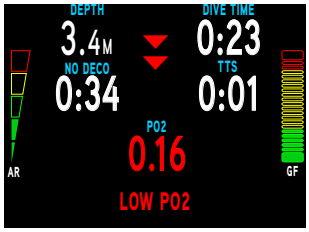
NOTE: The CC Dive Mode and OC Dive Mode share many alarms. This section covers alarms not discussed in the CC Dive Mode Complications.

GAS SWITCH WARNING

If multiple gases are set on and the current gas is not the best gas when approaching the decompression stop zone, the DSX will warn you to switch gases. You must confirm the gas switch by pressing the Right button. If the gas switch is not confirmed or the Left button is pressed during the audible alarm, no switch will be made. Though you may still manually switch gases at any time throughout the dive by using the Switch Gas Menu.

LOW PO_2 ALARM

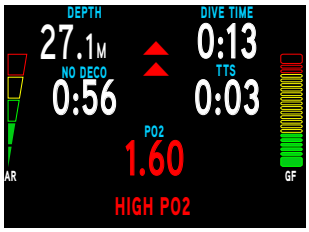
The Low PO_2 Alarm triggers when the current PO_2 decreases below the OC Min PO_2 value set in Dive Settings Submenu, see p. 34. Red down arrows will flash until the PO_2 increases.



HIGH PO_2 ALARM

The High PO_2 Alarm triggers when the current PO_2 increases above the OC Max PO_2 value set in Dive Settings Submenu, see p. 34. Red up arrows will flash until the PO_2 decreases below the OC Max PO_2.

NOTE: The High PO_2 Alarm during Deco is similar but uses the OC Deco PO_2 as the threshold during decompression.



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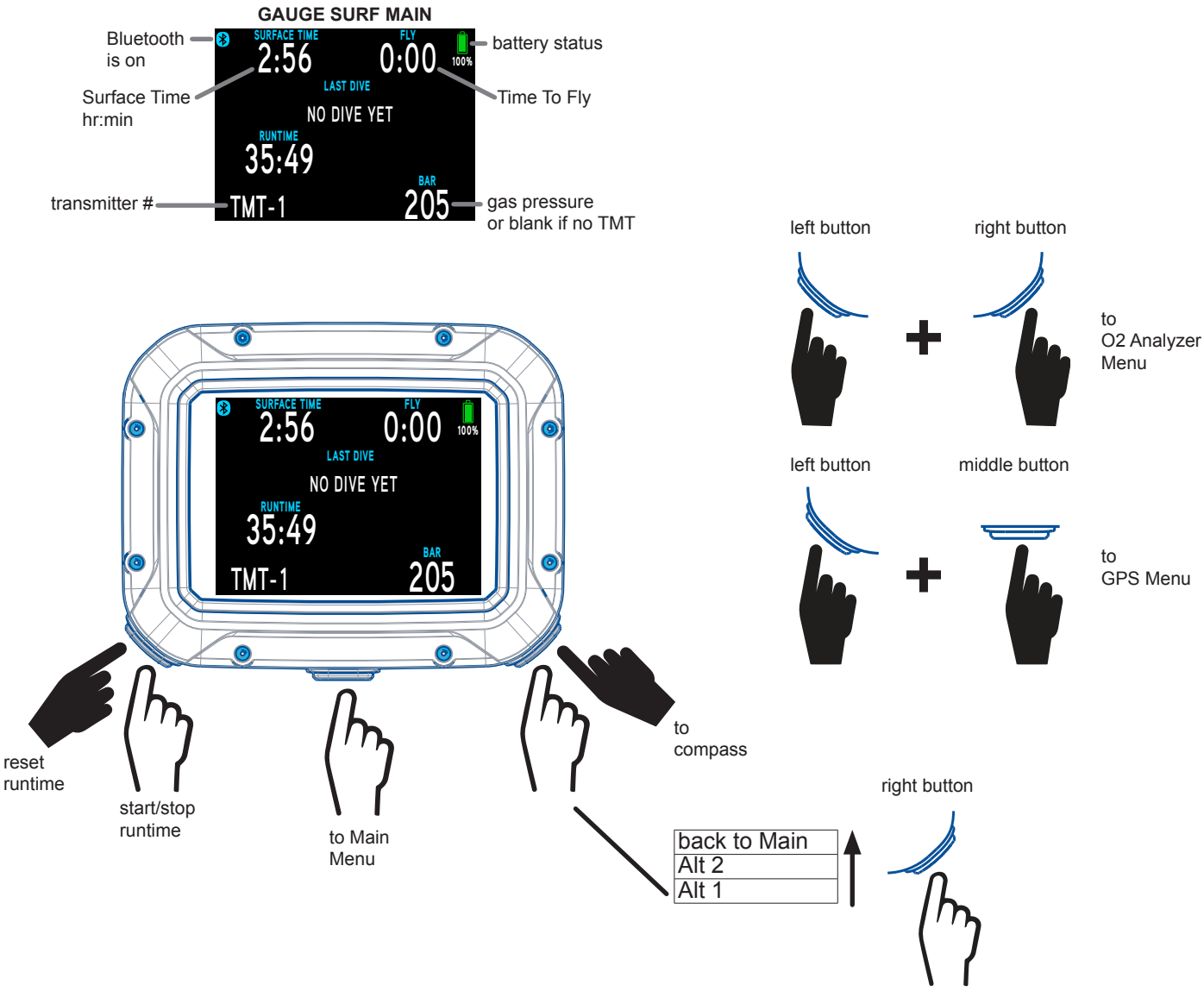
GAUGE MODE

ON THE SURFACE BEFORE A DIVE

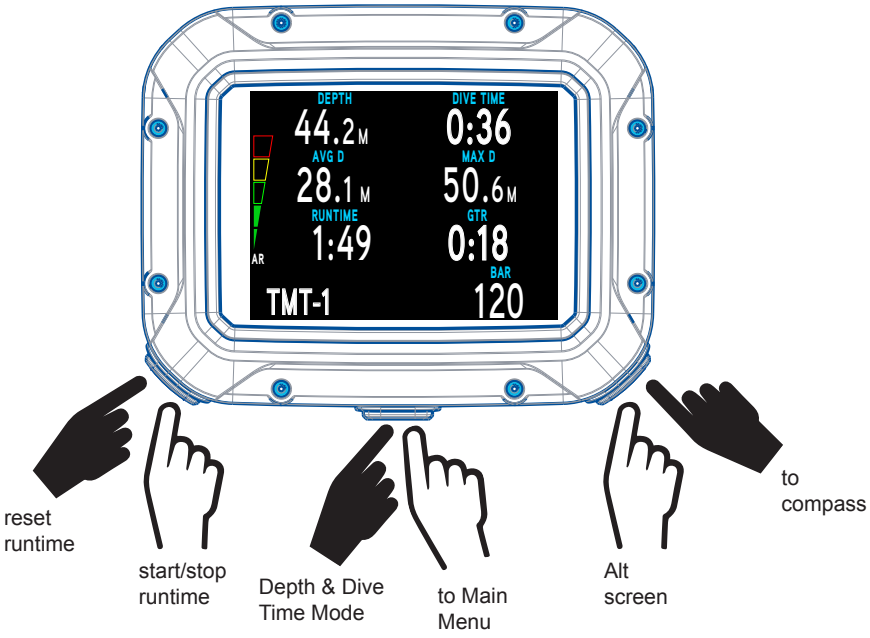
Gauge Surface Main is a simplified version of OC Mode. This mode is for when all you need is a depth timer. Unlike OC Mode, there will be no tissue saturation, oxygen information, or gas mix values displayed.



NOTE: Gauge Surface alternate screens and Menu options are similar to those described previously for CC Mode. See the CC Surface Mode chapter for further details.

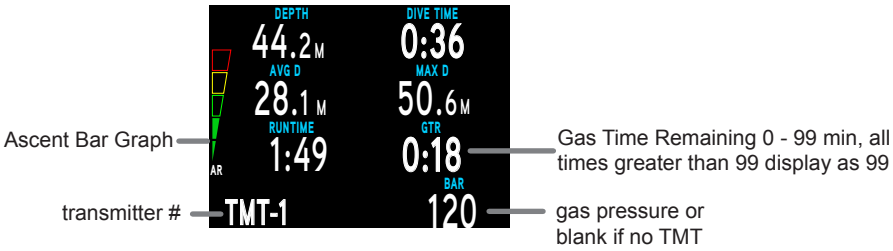
INITIATING A DIVE

With the DSX in Gauge Mode, a dive will commence upon descending to 1.5 m (5 ft) for longer than 5 seconds. Below is a diagram to help you navigate Gauge Dive Mode functions. The dive will end and revert to Surface Mode upon ascent to 0.9 m (3 ft) of depth for at least 1 second.



GAUGE DIVE MAIN

The Gauge Dive Main provides basic information including ascent rate, depth, average depth (AVG D), runtime, Transmitter number, dive time, max depth (MAX D), gas pressure, and GTR (gas time remaining).



NOTE: Gauge Dive function, menus, and screens are similar to those described previously for CC Mode. See the CC Dive Mode chapter for further details.

RESET AVERAGE DEPTH

The Gauge Dive Mode allows you to reset the Average Depth via the Main Menu during a dive.

CONFIRM AVERAGE DEPTH RESET

SM (SIDEMOUNT) MODES

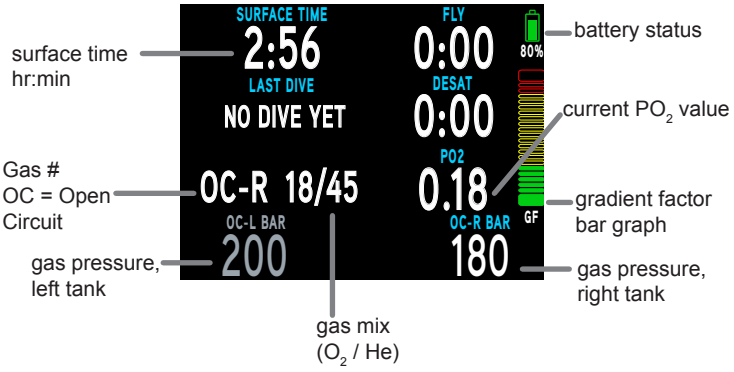
OVERVIEW

The Sidemount and Sidemount Gauge Modes are similar to the OC and Gauge Modes respectively but add sidemount features. In these modes both of your primary tank pressures can be displayed on the Main Screen at the same time. There are also reminders to switch back and forth between the left and right primary tanks at a set pressure interval. Choose Sidemount Gauge if you are calculating decompression and oxygen loading independently of your DSX.

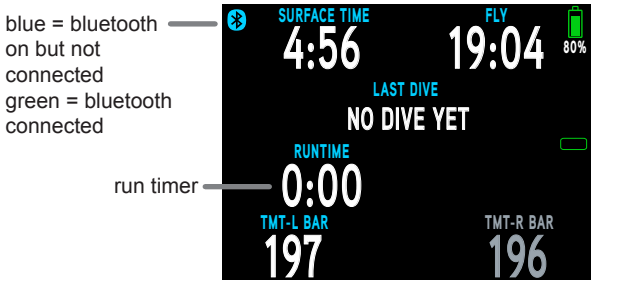
ON THE SURFACE BEFORE A DIVE

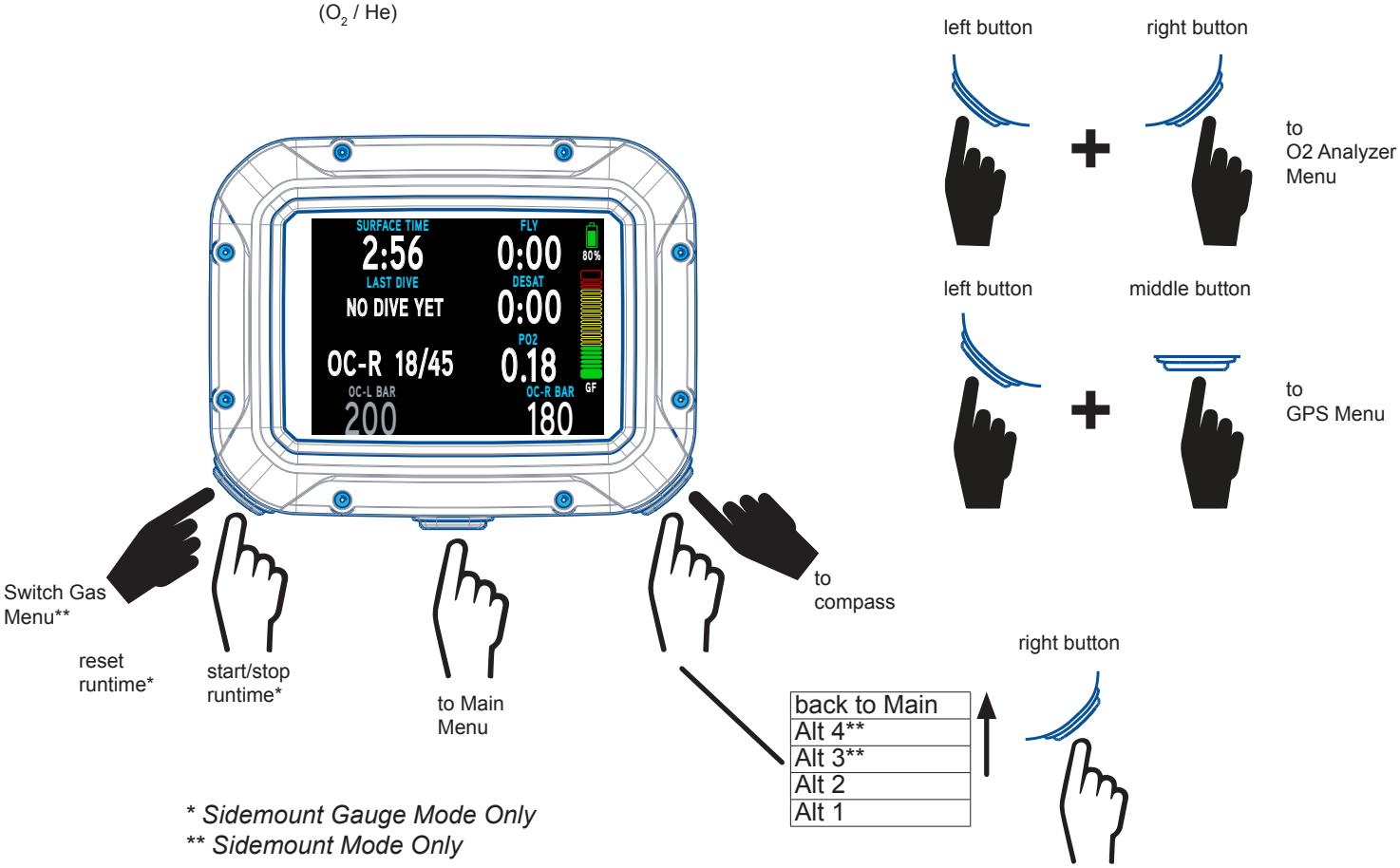
The Dive Main screen will display the SURF-T (Surface Time) and the selected gas mix (O_2 / He) in Sidemount Mode. The surface time displayed is the time since activation or the surface interval after a dive. The active tank transmitter will be displayed in white while the other in gray.

SM SURFACE MAIN
(with Gradient Factor bar graph selected)



SM GAUGE SURFACE MAIN
(with Gradient Factor bar graph selected)





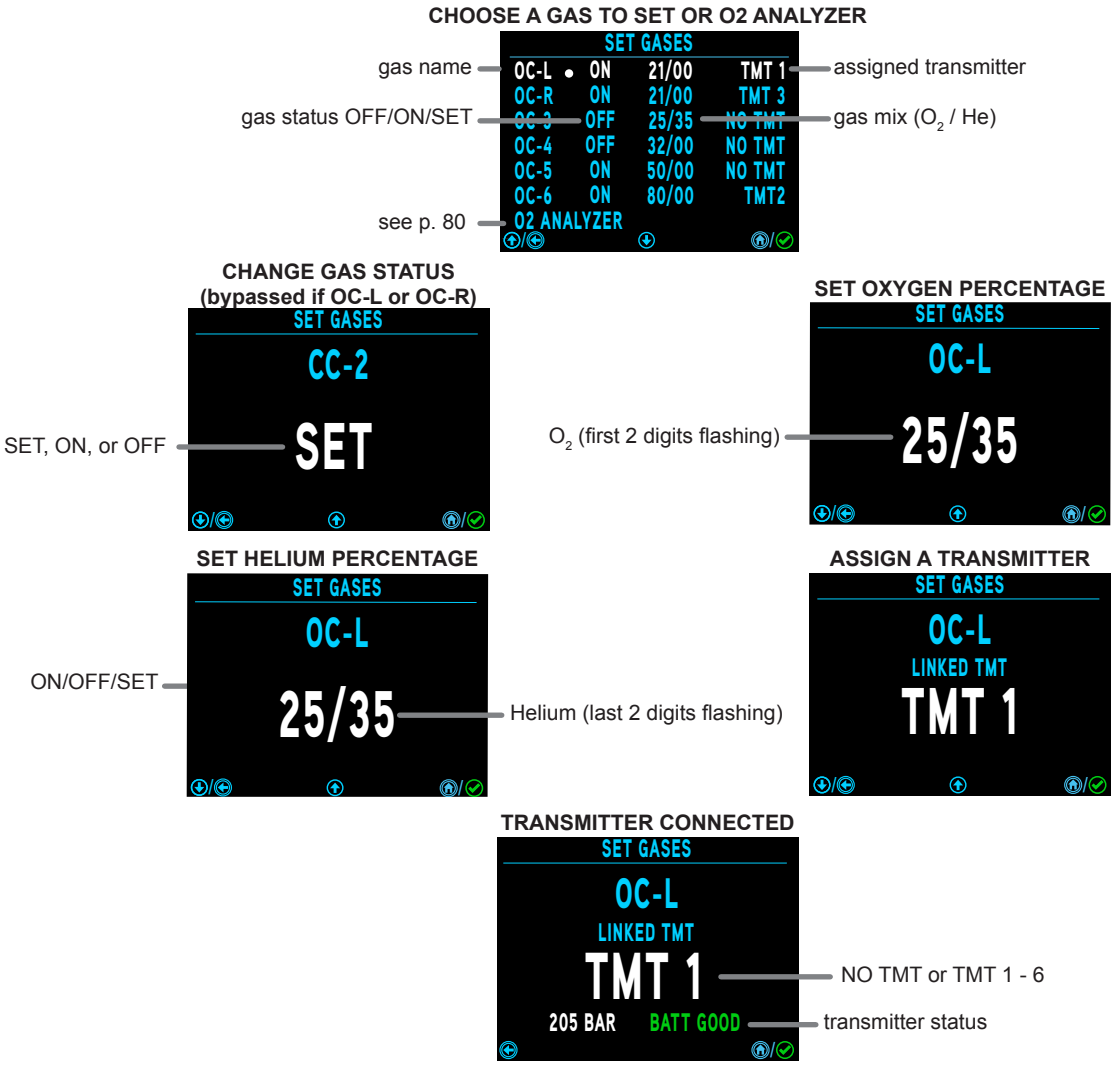
** Sidemount Gauge Mode Only*
*** Sidemount Mode Only*

NOTE: Sidemount and Sidemount Gauge Surface Data (alternate) screens and Menu options are similar to those described previously for CC Surface Mode. See the CC Surface Mode chapter for further details. Only features that differ significantly are discussed here.

SET GASES

The Set Gases Menu in Sidemount Mode is similar to CC and OC Modes but it is unique because OC-L and OC-R selections share the same gas mix settings. Changing either one results in the other being changed to match. Gases may be set to an FO2 from 7% to 100% and FHe from 0% to 93%. Gases OC-3 through OC-6 may be set ON or OFF. Gases OC-L and OC-R may not be switched off.

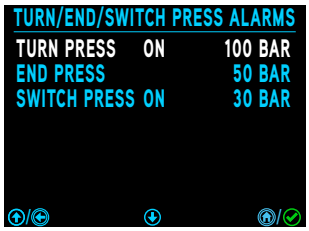
NOTE: The OC-L and OC-R gases cannot be set OFF.



NOTE: If you try to assign a transmitter that was already assigned to another gas the DSX will indicate this and require you to confirm the change.

TURN/END/SWITCH PRESS ALARMS

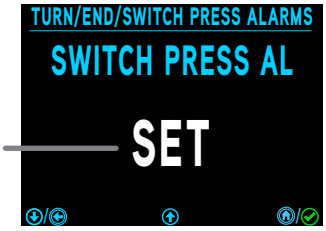
This menu includes Turn and End Pressure Alarms which are identical to OC Mode (p. 61). Switch Pressure alarm is specific to Sidemount and Sidemount Gauge Modes.



1. SWITCH PRESS ALARMS

The Switch Pressure Alarm monitors the the OC-L and OC-R gases. It assists you in balancing your primary tank pressures during the dive. It allows you to set a reminder to trigger at designated switch pressure intervals. Settings include 10 to 100 bar (100 to 1500 psi). When the reminder is triggered a green arrow will point to the gas you should switch to and that gas will display green until the switch is made.

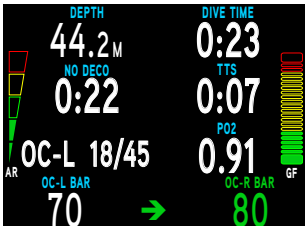
CHOOSE ALARM STATUS



SET, ON, or OFF

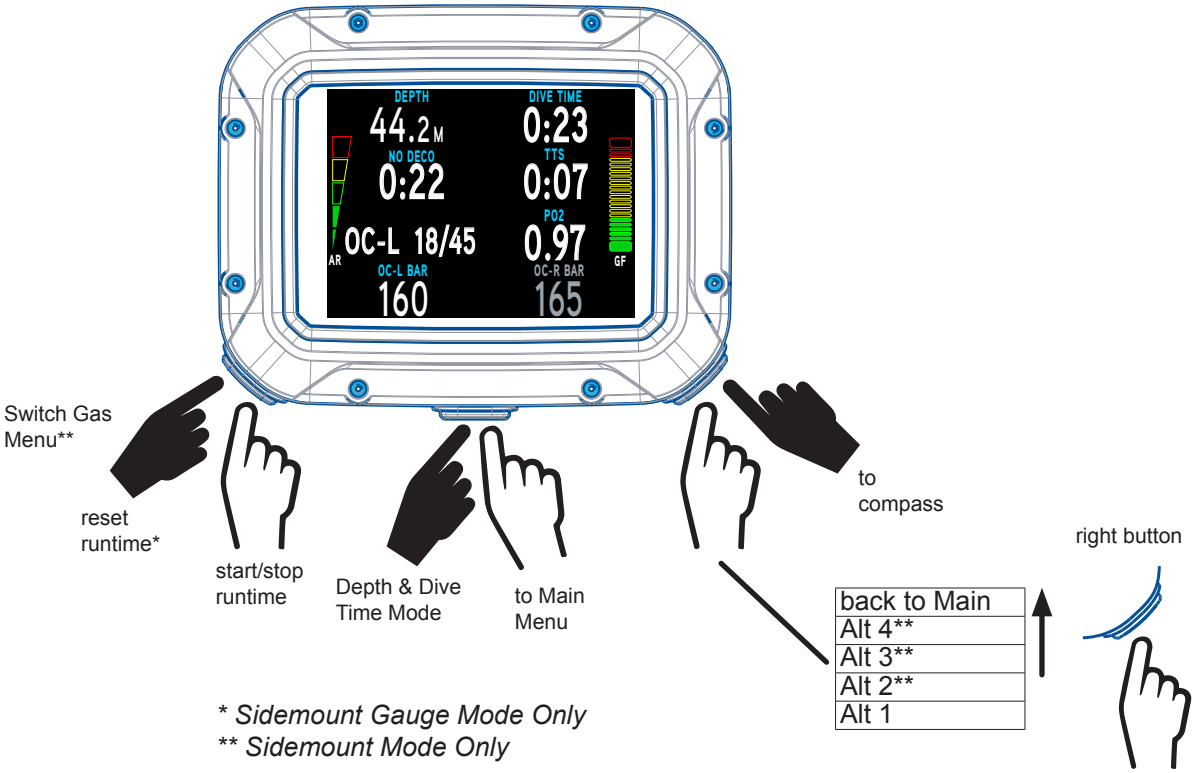
SET INTERVAL

SWITCH PRESS ALARM TRIGGERED



INITIATING A DIVE

With the DSX in Sidemount or Sidemount Gauge Mode, a dive will commence upon descending to 1.5 m (5 ft) for longer than 5 seconds. Below is a diagram to help you navigate Dive Mode functions. The dive will end and revert to Surface Mode upon ascent to 0.9 m (3 ft) of depth for at least 1 second.



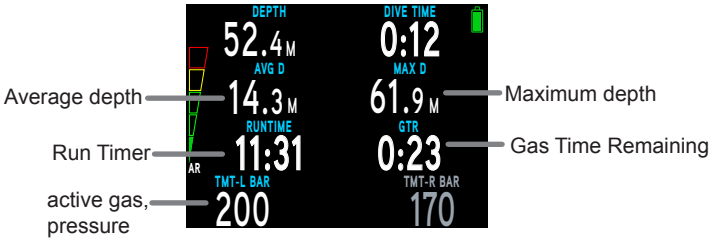
** Sidemount Gauge Mode Only*
*** Sidemount Mode Only*

DIVE MAIN

The Dive Main provides basic information such as ascent rate, No Decompression, depth, average depth (AVG D), runtime, Gas/Transmitter number, dive time, max depth (MAX D), gas pressure, and GTR (gas time remaining).

SIDEMOUNT DIVE

SIDEMOUNT GAUGE DIVE



NOTE: Sidemount and Sidemount Gauge Dive functions, menus, and screens are similar to those described previously for CC and OC Mode. See the CC Dive Mode and OC Mode chapters for further details.

NAVIGATION

COMPASS

The DSX is equipped with an advanced 3D digital compass. Compass Mode can be activated by holding the Right button for at least 2 seconds.

- When no heading is set, the heading degrees remain green.
- The heading degrees are green when on a set heading, red when on reverse (reciprocal) heading, and yellow when off of those two headings.

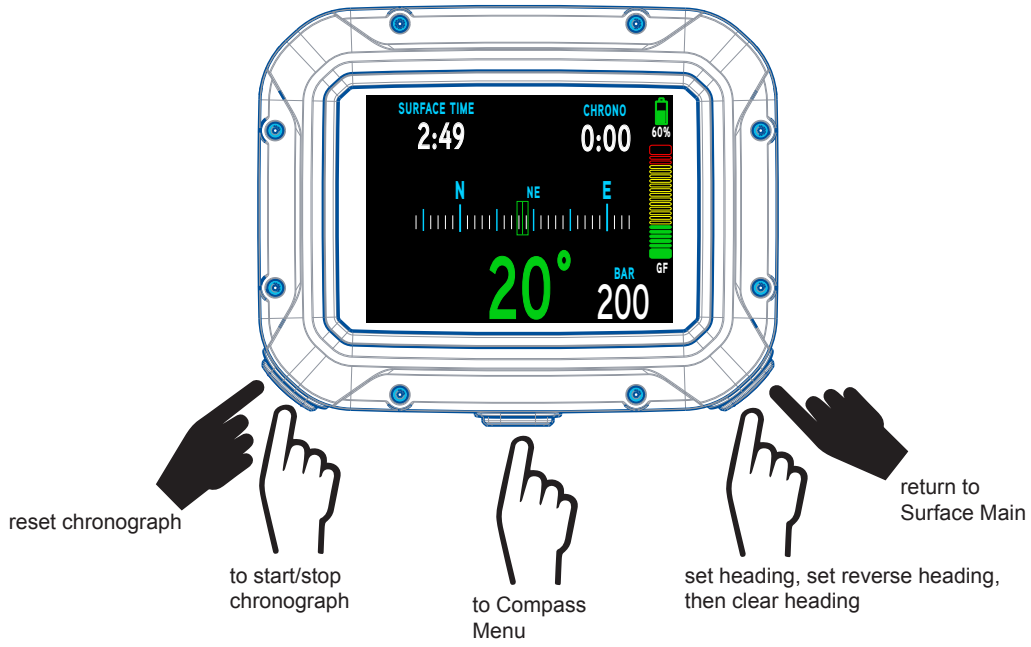
NOTE: Calibrate the compass before use.

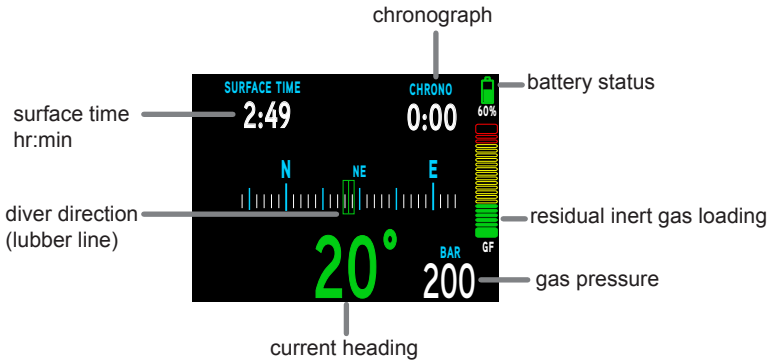
NOTE: Similar to an analog compass, magnetic and ferrous metals can cause erratic and erroneous readings.

NOTE: When alarms are triggered, operation in Compass Mode will be terminated and the Dive Main screen will be displayed, describing the alarm condition. Compass Mode can then be reentered by holding the Right button for 2 seconds after the alarm has been cleared/acknowledged.

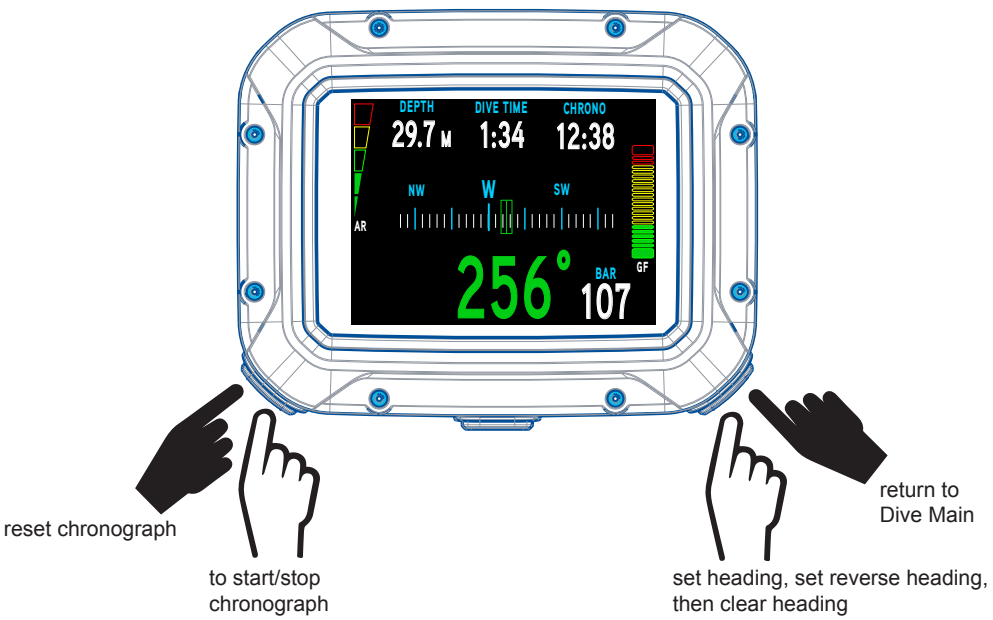
WARNING: You must become thoroughly familiar with setup and operation of the DSX Digital Compass before using it as your primary device for navigation. Failure to do so could result in serious errors relating to activities involving navigation.

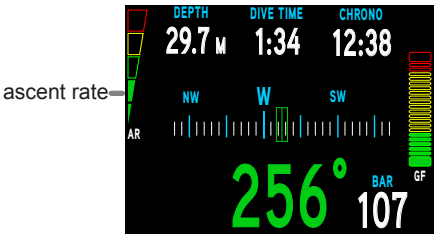
COMPASS MAIN
(while on surface)





COMPASS MAIN
(during a dive)





COMPASS MAIN MENU

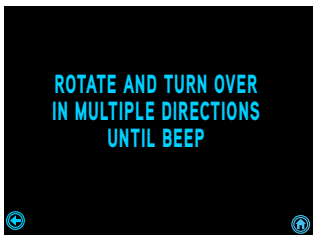
The Main menu allows you to adjust compass accuracy.

NOTE: The Main Menu can only be accessed while on the surface. During a dive the DSX will use the last saved settings when accessing the Compass Mode.

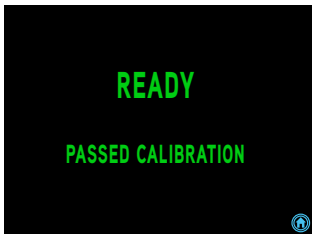
CALIBRATE

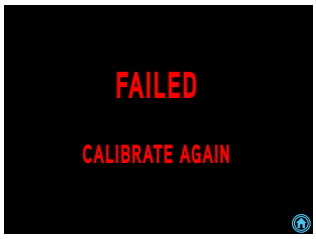
You may need to calibrate the compass from time to time to compensate for any magnetic interference (new dive location or other surrounding changes). The Calibration selection in the Compass Main Menu allows you to initiate a calibration.

To calibrate the DSX, select Calibrate from the Compass Main Menu. Then follow the onscreen prompts. Rotate and turn the DSX in as many different directions as possible until the unit beeps.



The message READY PASSED CALIBRATION or FAILED CALIBRATE AGAIN will then appear.





SET DECLINATION

Magnetic declination or variation measures the angle between the Earth's magnetic north and true north. The declination value for any region can be found on current geographical charts. By correcting for declination, you can achieve a more accurate compass reading.

NOTE: Magnetic north changes over time; so use only current geographical charts to obtain the declination value for any geographical region.

SET REFERENCE HEADING

Pressing the Right button while on the Compass Main screen will set a heading. The heading is then represented by a green marker. Pressing the Right button a second time will reverse the heading. The reverse heading is then represented by a red marker. Pressing the Right button again will clear the heading. Arrows will appear to show you the direction to correct your course if you are significantly off course.

ON HEADING
(heading set to 228°)

OFF HEADING
(heading set to 228°)

ON REVERSE HEADING
(heading set to 132°)

GPS

The DSX is equipped with a GPS receiver to aid with surface navigation. GPS Mode can be activated by holding the Left and Middle button for at least 2 seconds.

NOTE: GPS only functions in Surface Mode.

NOTE: The DSX screen should be facing the sky for best satellite reception.

⚠ WARNING: You must become thoroughly familiar with setup and operation of the DSX GPS before using it as your primary device for navigation. Failure to do so could result in serious errors relating to activities involving navigation.

GPS MENU

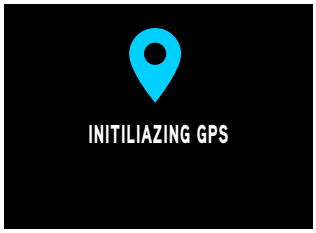
The GPS Menu allows you to manage GPS use.

GPS INITIALIZATION

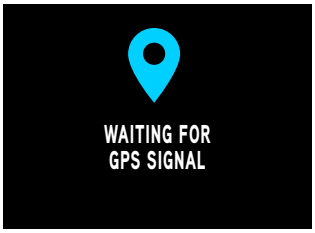
When saving the current location or activating the wayfinder, the GPS system needs to initialize (connect and receive multiple global positioning satellite signals). The below screens will display during this process. If the signal is not found, press any button to return to the menu, reposition your DSX (ensuring the screen is facing the unobstructed sky), and try the process again.

NOTE: The DSX screen should be facing the sky for best satellite reception.

STARTUP



SEARCHING FOR SATELLITES



CONNECTION NOT ESTABLISHED

1. GET CURRENT LOCATION

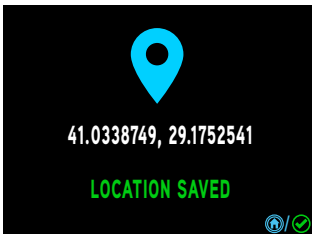
When get the current location is selected from the menu, the DSX shall initialize the GPS, see above. There will be a confirmation message when the location is saved to your DSX.

NOTE: Locations will be saved with date and time entries. Custom names can be added via the DiverLog + application.

NOTE: If the location list capacity is full, the warning "SAVED LOCATIONS LIST IS FULL. THE OLDEST LOCATION WILL BE DELETED. PROCEED?" shall be displayed when Save Location is selected.

STORE A LOCATION

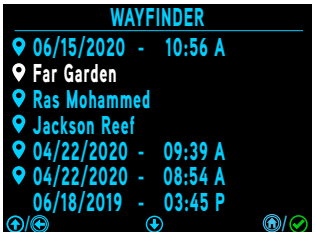
CONFIRMATION



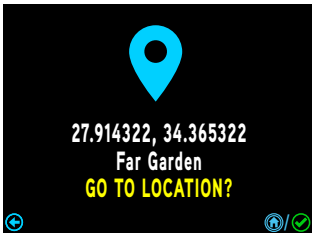
2. WAYFINDER

The Wayfinder feature uses GPS to guide you to a specific point. When Wayfinder is selected from the GPS Menu, the list of any saved locations shall be displayed with the most recently saved one on top. The navigational directions will be provided via an interface very similar to the compass feature.

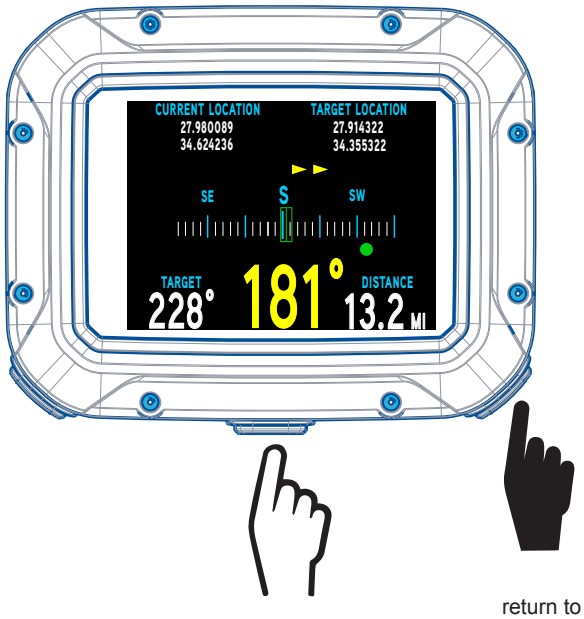
CHOOSE A LOCATION



CONFIRM CHOICE



WAYFINDER OP MAIN



to Wayfinder Menu

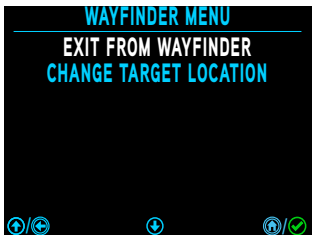
return to Surface Main

NOTE: The Wayfinder Op Main shall replace Compass Op Main while the Wayfinder Mode is active. When active, you may go back and forth between Surface Main and Wayfinder Op Main by holding the Right button. The Compass Op Main shall be restored again as the default function after reaching your selected target location in Wayfinder Mode or you select Exit From Wayfinder in the Wayfinder Menu.

NOTE: 0.1 km (or 0.1 mi) is the smallest unit of distance displayed on the DSX screen. Distance values less than that will display as 0.1 km (or 0.1 mi). Continuing on your heading until the message YOU HAVE REACHED YOUR TARGET is displayed.

A. WAYFINDER MENU

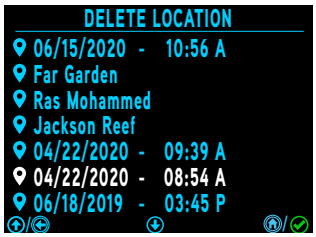
This menu allows you to exit from the Wayfinder function or select a new target location.



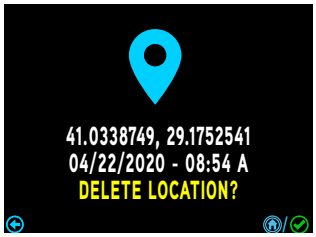
3. DELETE LOCATION

Using the Delete Location option in the GPS Menu will allow you to free up memory for new locations.

CHOOSE A LOCATION



CONFIRM DELETION



OXYGEN ANALYZER

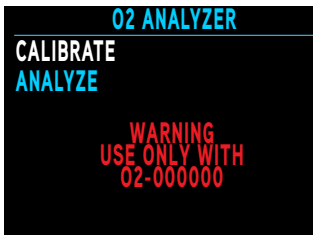
OVERVIEW

The DSX can be used with the O2 Analyzer accessory and an "R22D" style oxygen sensor (sold separately) to analyze the oxygen content of your diving cylinders.

⚠ DANGER: DO NOT use expired sensors. Follow all O2 sensor manufacturer recommendations for handling and use of their sensor.

⚠ DANGER: Allow new O2 sensors to acclimate and stabilize in air after opening, following all sensor manufacturer guidelines.

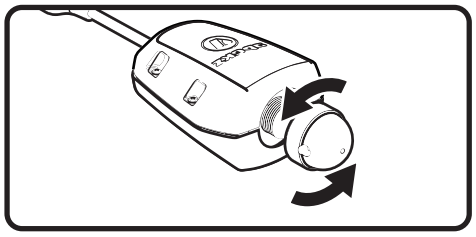
⚠ DANGER: Your new DSX and O2 Analyzer cable are paired and precisely tuned at the factory, to compensate for resistance in the cable. ONLY use the cable that ships with your DSX. The cable serial number (labeled on the cable) must match the serial number that displays on your DSX (O2 Analyzer Sub Menu) screen. Contact your Apeks Dealer for assistance if the Oxygen Analyzer cable ever needs to be replaced.



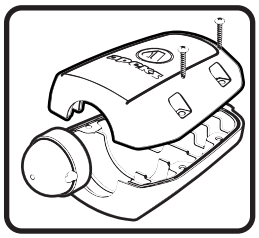
O2 ANALYZER DISASSEMBLY/ASSEMBLY

Disassembly:

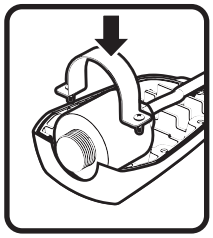
1. Remove the the dome cap by turning it counter clockwise.



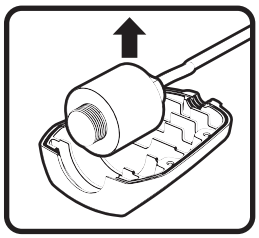
2. Remove the four retaining screws from the O2 Analyzer housing with a philips head screwdriver.



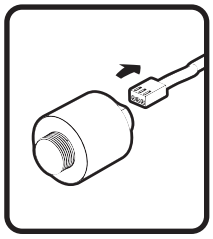
3. Remove the sensor strap, and retaining screws with a philips head screwdriver.



4. Remove the O2 sensor, cable, and seal into the O2 Analyzer housing.

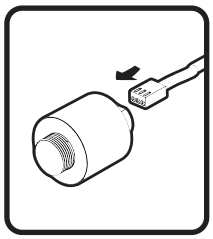


5. Carefully unplug the molex connector from the O2 sensor connector.

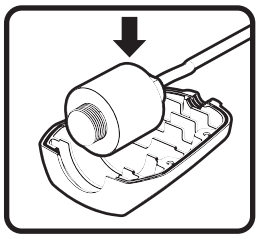


Assembly:

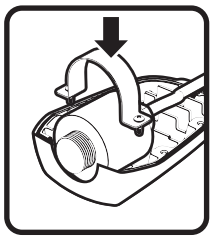
1. Carefully plug the O2 analyzer cable into the O2 sensor.



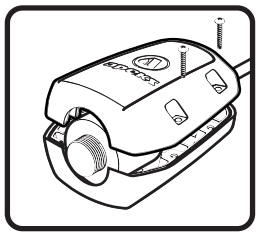
2. Place the O2 sensor, cable, and seal into the O2 Analyzer housing. Ensure the seal groove is clean and the seal is seated properly.

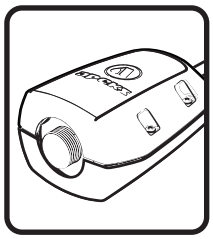


3. Replace the O2 sensor strap and install the retaining screws. DO NOT overtighten.

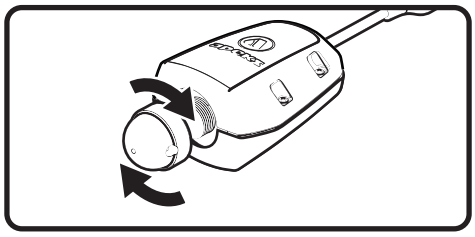


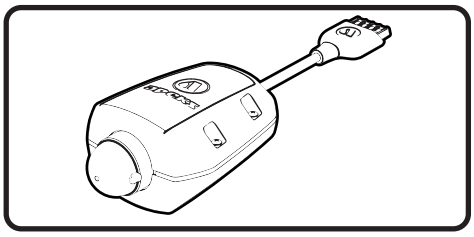
4. While ensuring not to pinch the O2 analyzer cable, replace the O2 analyzer housing cover. Then install the retaining screws. DO NOT overtighten.





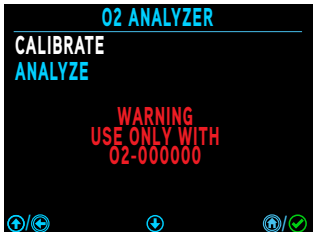
5. Screw the dome cap clockwise onto the O2 sensor threads, as shown. DO NOT overtighten.





USING THE O2 ANALYZER WITH THE DSX

First plug the O2 Analyzer cable into the DSX. To access the O2 Analyzer menu, hold the Left and Right buttons while on the Surface Main screen in CC, OC, or SM Mode. Alternately, O2 Analyzer is an option in the Set Gases Menu of those modes, see p. 32. The first step to use the analyzer is to calibrate the sensor.



⚠ DANGER: Your new DSX and O2 Analyzer cable are paired and precisely tuned at the factory, to compensate for resistance in the cable. ONLY use the cable that ships with your DSX. The cable serial number (labeled on the cable) must match the serial number that displays on your DSX (O2 Analyzer Sub Menu) screen. Contact your Apeks Dealer for assistance if the Oxygen Analyzer cable ever needs to be replaced.

CALIBRATION

Changing enviornmental conditions and the diminishing output of an O_2 sensor can affect the gas analysis. For this reason it is good practice to calibrate periodically, minimum of every day of use. Set the FO_2 (Fraction of Oxygen) of the known gas.

1. Hold the O2 Analyzer dome cap firmly against the known (control) gas tank valve or expose in air. Slowly open the tank valve only part way if using a cylinder gas to calibrate with. The flow rate should not be excessive (≤ 10 liters per minute).
2. Expose the sensor until the DSX confirms the calibration.
3. If any error codes are displayed, take corrective action before attempting to calibrate again.
4. After successful calibration you may use the Analyze feature.

⚠ DANGER: Moisture in the gas can create false readings.

⚠ DANGER: DO NOT proceed until a good calibration is achieved.

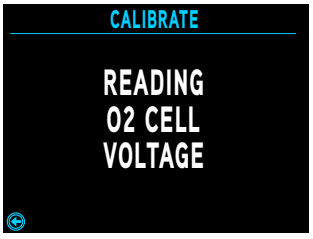
NOTES: DO NOT calibrate with excessive flow rates (greater than 10 liters per minute).

NOTES: Dropping or mishandling the O2 Analyzer can damage the O_2 Sensor or electronics. It is also important to keep the O2 Analyzer dry.

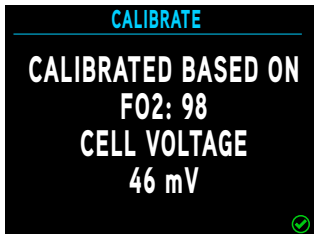
SELECT THE CALIBRATION GAS

START GAS FLOW & START CALIBRATION

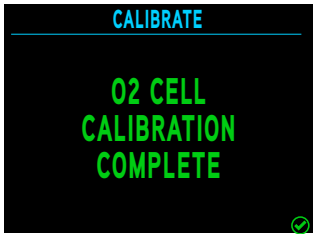
CONTINUE HOLDING DOME CAP AGAINST TANK VALVE



CALIBRATION REPORT



SUCCESSFUL CALIBRATION



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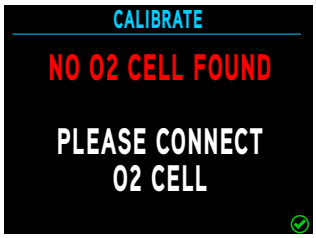
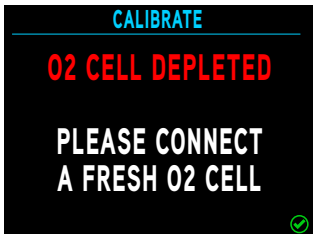
CALIBRATION ERRORS

Your O2 Analyzer may fail to calibrate. The DSX will indicate recommended corrective actions to take.





ANALYZE

The DSX allows you to analyze the oxygen content of your cylinders and to then assign this oxygen reading to a gas in the OC or CC gas lists. You need to calibrate the sensor before analyzing. Under certain conditions the DSX may require you to calibrate again. If this is the case, the DSX will prompt you to do so.

1. Start with dry breathing grade gas from a reputable supplier.
2. Confirm Helium content separately with a helium analyzer if using a helium mix. The Apeks O2 Analyzer is not capable of analyzing helium.
3. Calibrate the sensor if appropriate, see previous Calibration section.
4. Hold the O2 Analyzer dome cap firmly against the known (control) gas tank valve. Slowly open the tank valve only part way. The flow rate should not be excessive (≤ 10 liters per minute).
4. Start the analysis following the prompt on your DSX screen.
5. Expose the sensor until the DSX produces an analysis report, and confirm the results. If you select NO, the DSX will return you to the O2 Analyzer Menu where you may analyze again or calibrate as needed.
6. If you confirm the analysis results, you may choose to assign the FO_2 reading to a gas in the DSX gas lists. If NO is chosen you will be returned to the menu, and you may stop here.
7. If you chose to assign the FO_2 value to a gas list, you will need to set the FHe (Fraction of Helium) first. Set 00 if diving nitrox.
8. Choose the gas list that you want to add this gas mix to.
9. Chose the gas identity (number) to assign this gas mix to.
10. Confirm your choice.

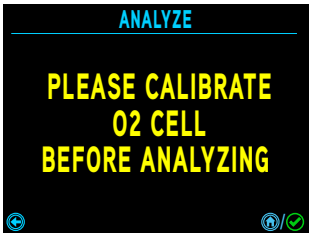
DANGER: Moisture in the gas can create false readings.

NOTES: Analyze any helium content with a helium analyzer first if you want to use this menu to assign the gas mix to a gas list in the DSX. Alternately, you may manually add the gas mix via the gas settings menus.

NOTES: DO NOT analyze gas with excessive flow rates (greater than 10 liters per minute).

NOTES: Dropping or mishandling the O2 Analyzer can damage the O_2 Sensor or electronics. It is also important to keep the O2 Analyzer dry.

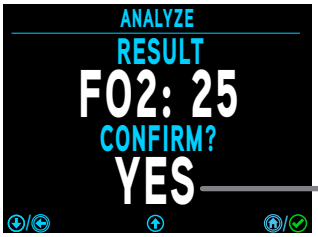
CALIBRATE FIRST



START GAS FLOW & START ANALYSIS

CONTINUE HOLDING DOME CAP AGAINST TANK VALVE

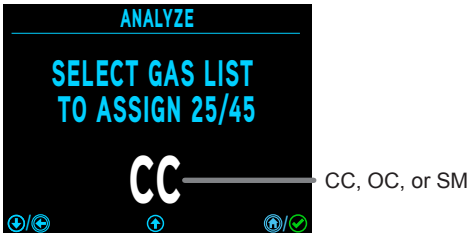
CONFIRM ANALYSIS



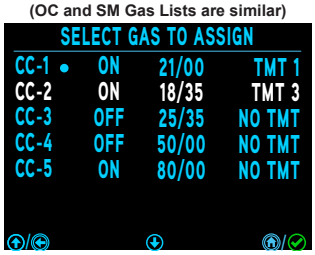
ADD TO GAS LIST

SET HELIUM CONTENT

SELECT GAS LIST



ASSIGN GAS MIX
(OC and SM Gas Lists are similar)



REFERENCE

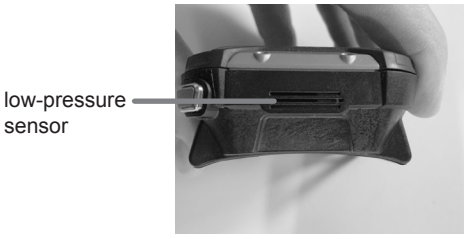
UPLOADING/DOWNLOADING

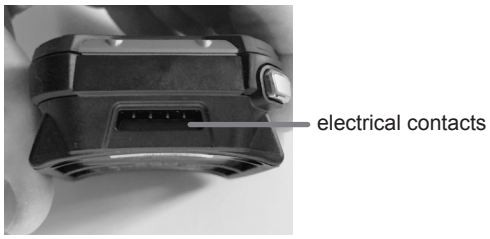
As previously described (page 40), the DSX can be paired using the Bluetooth® feature. This requires a mobile device running Diverlog + software and equipped with Bluetooth® functionality. Follow the Diverlog + instructions on how to pair your devices and use the upload/download features.

CARE AND CLEANING

Protect your DSX from shock, excessive temperatures, exposure to chemicals, and tampering. Protect the lens against scratches with lens protector. Small scratches will naturally disappear underwater.

- Soak and rinse the DSX in fresh water at the end of each day of diving, and check to ensure that the areas around the low pressure (depth) sensor, electrical contacts, and buttons are free of debris or obstructions.
- To dissolve salt crystals, use lukewarm water or a slightly acidic bath (50% white vinegar/50% fresh water). After removal from the bath, place the DSX under gently running fresh water. Towel dry before storing.
- Keep your DSX cool, dry, and protected during transport.





SERVICE

⚠ **WARNING: At a minimum, annually check the elevation reading on the Alt 1 screen (p. 25) and Dive Planner, Time Limits (p. 30) for accuracy. If your DSX is ever out of calibration (incorrect elevation reading, incorrect No Decompression Dive Times in the planner, or showing a depth reading at the surface) or displays an error code message, it must be serviced at the factory before use.**

If required to return your DSX to Apeks:

- Obtain an RA (Return Authorization) number by contacting your regional Apeks customer service. www.apeks-diving.com
- Record all dive data in the Log and/or download the data stored in memory. All data will be erased during factory service.

ALTITUDE SENSING AND ADJUSTMENT

Prior to the first dive of a series of repetitive dives, Altitude (i.e., ambient pressure) is measured upon activation and every 15 minutes until a dive is made.

- While it is operating in Surface Mode after a dive, measurements are taken every 15 minutes during the 24 hour period after surfacing.
- Measurements are only taken when the unit is dry.
- Two readings are taken, the second reading 5 seconds after the first. The readings must be within 1 foot (30 cm) of each other to record that ambient pressure as the current altitude.
- No adjustments are made during any time that the water contacts are bridged.

When diving in high altitude waters from 916 to 4,270 meters (3,001 to 14,000 feet), the DSX automatically adjusts to these conditions providing corrected depth, and reduced No Decompression and O2 Times at intervals of 305 meters (1,000 feet).

At an elevation of 916 meters (3,001 feet), Depth calibration automatically changes from feet of seawater to feet of fresh water. This is the first adjustment to the algorithm. When the Conservative Factor feature is set to ON, No Decompression Times are calculated based upon the next higher 915 meter (3,000 foot) Altitude. All adjustments for altitudes greater than 3,355 meters (11,000 feet) are then made to allowable dive times for 4,270 meters (14,000 feet). At Sea Level, calculations are based upon an altitude of 1,828.8 meters (6,000 feet).

The DSX will not function as a dive computer above 4,270 meters (14,000 feet).

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CHANGING THE STRAPS

Your DSX is packaged with two different strap options, elastic or bungee straps.

Elastic Straps

Installation:

Step 1.Thread the strap through the strap slot.

Step 2. Continue to thread the strap through the opposite strap slot.

Step 3. Thread the strap through the buckle, as shown.

Step 4. Repeat steps 1-3 on the other side with the other strap.

Removal:

Simply, reverse the previous steps for removal.

Bungee Straps

Installation:

Step 1. Cut two equal lengths of bungee.

Step 2. Tie an overhand knot on one end the first bungee.

Step 3. Thread the bungee through one of the bungee holes in the DSX housing, as shown.

Step 4. Thread the other end of the bungee through the opposite hole, adjust the length as needed, and tie another retaining overhand knot.

Step 5. Repeat steps 1-4 on with the other piece of bungee, on the other side of the DSX housing.

Removal:

The overhand knots will eventually take a set and be difficult to untie and remove; the bungees will likely need to be cut off and replaced.

NOTES: There are many methods to attach the bungee cords. This method is simple and recommended because it allows for the redundancy of two straps, keeping you from losing a computer on a dive.

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TECHNICAL DATA

ALTITUDE LEVELS

DISPLAY	RANGE: FEET (METERS)
SEA	0 to 3,000 (915)
EL2	3,001 to 5,000 (916 to 1,525)
EL3	5,001 to 7,000 (1,526 to 2,135)
EL4	7,001 to 9,000 (2,136 to 2,745)
EL5	9,001 to 11,000 (2,746 to 3,355)
EL6	11,001 to 13,000 (3,356 to 3,965)
EL7	> 13,000 (3,965)

OXYGEN EXPOSURE LIMITS

(from NOAA Diving Manual)

PO2 (ATA)	MAX DURATION SINGLE EXPOSURE (MIN)	MAX TOTAL DURATION 24 HOUR DAY (MIN)
0.60	720	720
0.70	570	570
0.80	450	450
0.90	360	360
1.00	300	300
1.10	240	270
1.20	210	240
1.30	180	210
1.40	150	180
1.50	120	180
1.60	45	150

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SPECIFICATIONS

CAN BE USED AS
- Dive Computer: Closed Circuit, Open Circuit, Sidemount (Air, Nitrox, Trimix)
- Digital Depth Gauge/Timer (Gauge or Sidemount Gauge)

DIVE COMPUTER PERFORMANCE
- Bühlmann ZHL-16C algorithm
- Decompression in agreement with Bühlmann ZHL-16C
- No Decompression Deep Stops - Morroni, Bennett
- Decompression Deep Stops (not recommended) - Blatteau, Gerth, Gutvik
- Altitude - Bühlmann, IANTD, RDP (Cross)
- Altitude corrections and O2 limits based on NOAA tables

OPERATIONAL PERFORMANCE

Function:	Accuracy:
• Depth	±1% of full scale
• Timers	1 second per day

Dive Counter:
- Displays Dives #1 to 24 (0 if no dive made)
- Resets to Dive #1, upon diving (after 24 hours with no dives)

Dive Log Mode:
- Stores 99 most recent dives in memory for viewing
- After 99 dives, adds 100th dive in memory and deletes the oldest entry (entry 1)

Altitude:
- Operational from sea level to 14,000 feet (4,270 meters) elevation
- Measures ambient pressure every 30 minutes when inactive, upon activation, every 15 minutes while activated.
- Compensates for Altitudes above sea level beginning at 3,001 feet (916 meters) elevation and every 1,000 feet (305 meters) higher.

Power:
- Rechargeable Lithium.
- The battery is a factory replacement item and is not user serviceable.

Sleep Mode (surface):
- Activates and turns the screen off when 5 minutes elapse on the surface with no button operations.
- Resume operation from Sleep Mode by pressing any button.

Battery Indication:
- Green (Good) - Green Icon displays on the Suface Main. No green battery icon during the dive.
- Amber (Warning) - Amber Icon on the Surface and Dive Main screens.
- Red (Alarm) - Red Icon on the Surface and Dive Main screens. The battery must be recharged before using your DSX.

Operating Temperature:
- Out of the water - between -6.6 and 60 °C (20 °F and 140 °F).
- In the water - between -2.2 and 35 °C (28 °F and 95 °F).

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NUMERIC DISPLAYS:	**Range:**	**Resolution:**
• Dive Number	0 to 24	1
• Max Depth	0 - 130 M (0 - 426 FT)	0.1 M (1 FT)
• FO2 Set Point (Gas 1 - 6) if FHe ≠ 0	07 – 100%	1 %
• FO2 Set Point (Gas 1 - 6) if FHe = 0	21 – 100%	1 %
• FHe Set Point (Gas 1 - 6)	0 – 93%	1%
• PO_2 Value	0.00 to 5.00 ATA	0.01 ATA
• Dive Time Remaining	0:00 – 9:59 (hr:min)	1 minute
• Time To Surface	0:00 – 99:59 (hr:min)	1 minute
• No Decompression Safety Stop Time	5:00 to 0:00 min:sec	1 second
• Decompression Stop Time	0:00 – 99:59 (hr:min)	1 minute
• Elapsed Dive Time	0:00 – 99:59 (hr:min)	1 minute
• Surface Interval Time	0:00 to 23:59 hr:min	1 minute
• Time to Fly & Desaturate	23:50 to 0:00 hr:min*	1 minute
	** starting 10 min after the dive*	
• Temperature	-18 to 60° C (0 to 99° F) if outside of temp range, then displays - -	1°
• Time of Day	0:00 to 23:59 hr:min	1 minute
• PO2 Value	0.00 - 5.00 ATA	.01 ATA
• SP Value	0.40 – 1.50ATA	.10 ATA
• O2 Saturation	0 - 100%	1%
• Latitude	-90° – 90°	0.000001°
• Longitude	-180° – 180°	0.000001°
• O2 Cell Voltage	0 – 100 mV	1 mV

	Limit:
Max Functional Depth:	130 M (426 FT)
Rated Working Pressure:	0 to 300 bar (0 - 4350 psi)

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CONTAINS FCC ID: RYYEYSHSN

FCC COMPLIANCE:

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: 1.) this equipment may not cause harmful interference, and 2.) this equipment must accept any interference received, including interference that may cause undesired operation.

FCC INTERFERENCE STATEMENT:

This equipment has been tested and found to comply with the limits for an Intentional Radiator, a Class B Digital Device, pursuant to Part 15 of FCC Rules, Title 47 of the Code of Federal Regulations. These rules are designed to provide reasonable protection against harmful interference in a commercial or residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

There is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician.

⚠ **CAUTION: Changes or modification to this unit not expressly approved by Apeks could void the user's authority to operate the equipment.**

ABBREVIATIONS/TERMS

ACT = Activation
AL = Alarm
ALT = Alternate
ASC Bar Graph = Ascent Rate
ATA = Standard Atmosphere (unit)
AUD = Audible Alarm
BATT/BAT = Battery
CC = Closed Circuit
CF = Conservative Factor
DCS = Decompression Sickness
DECO = Decompression
DFLT = Default
DS = Deep Stop
DTR = Dive Time Remaining
EDT = Elapsed Dive Time
EL/ELEV = Elevation (altitude)
FLY = Time To Fly
FO2 = Fraction of Oxygen (%)
FORM = Format (date, time)
FT = Feet (depth)
GAUGE = Digital Gauge Dive Mode
GF Bar Graph = Tissue Loading Bar Graph
GTR = Gas Time Remaining
H2O = Water
HIST = History
IMP = Imperial (measure)
LAST = Previous (dive)
M = Meters (depth)
MET = Metric
MIN = Minutes (time)
MOD = Maximum Operating Depth
N2 = Nitrogen
N2 Bar Graph = Tissue Loading Bar Graph
NDL = No Decompression Limit
NO DECO = No Decompression (DTR)
O2 = Oxygen
O2 TIME = Oxygen Time Remaining (DTR)
O2 SAT = Oxygen Saturation
OC = Open Circuit
PC = Personal Computer (download)
PLAN = Dive Planner
PO2 = Partial Pressure of O2 (ATA)
SAFE = Safety (stop)
SAT = Desaturation Time
SEA = Sea Level
SEC = Seconds (time)
SM = Sidemount
SN = Serial Number
SR = Sample Rate
SS = Safety Stop
SURF/SURF-T = Surface Time
TTS = Time To Surface
VIO/VIOL = Violation

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