



TAC-200D

DIVER NAVIGATION BOARD OPERATIONS MANUAL



RJE International, Inc.

YOUR SOURCE FOR DIVER NAVIGATION AND UNDERWATER RELOCATION EQUIPMENT

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WARNING



READ THIS BEFORE USING THE TAC-200D.

The TAC-200D default setting is to measure depth in feet (Imperial). To display depth in meters (Metric), please follow instructions on page 7. Ensure that the DG100 is properly set to measure in feet or meters before diving.

WARNING

Diving is a dangerous and potentially life threatening activity. The TAC-200D series diver navigation board must be used by a person who is certified by a recognized agency (PADI, NAUI, SSI, NASDS, YMCA, etc.). Improper use or misuse of the TAC-200D could result in serious injury or death. Do not use the TAC-200D or any of its components until you have read and fully understand the instructions and safety precautions in this manual. Never rely on the TAC-200D as your sole means of underwater navigation. Always have at least one other means of underwater navigation available.

DG100 SPECIFICATIONS

Depth Range	0-330ft (0-100m)
Depth Tolerance	±1% of full scale
Depth Resolution	0.1ft/0.1m
Display	Red OLED
Timer Tolerance	± 1%
Leg Timer Functions	Start / Pause / Reset
Leg Timer Duration	24 hours max
Battery	Rechargeable Lithium Ion
Battery Life	300 charges
Operational Life (Fully Charged Battery)	16 hours (Low Brightness) 12 hours (High Brightness)
Operating Temperature	29°F - 95°F (-2°C - 42°C)
Storage Temperature	-4°F - 140°F (-20°C - 60°C)
Depth Rated	330ft (100m)
Dimensions	2.1" X 2.2" (5.3cm X 5.6cm)
Weight in Air	2.6oz (72.3gm)

By plotting your dives this way, you become much more efficient underwater and can truly optimize your bottom time. If you have to map an underwater site, the TAC-200D becomes an effective tool.

PREFACE

PROPERTY

The information, descriptions, photos, and illustrations in this manual are the property of RJE International, Inc. Materials may not be reproduced or disseminated without prior written consent of RJE International, Inc.

WARRANTY

RJE International, Inc. warrants the TAC-200D and associated equipment to be free of defects in material and workmanship for a period of one year from date of delivery to the original purchaser. Obligation under this warranty is limited to repair or, at the sole discretion of RJE International, replacement of any product returned to our facility or authorized distributor. All products shall be shipped to RJE **FREIGHT PREPAID** and shall be returned to customer **FREIGHT COLLECT**. Equipment may not be returned without prior authorization which must be requested in writing. Upon authorization a Case Number will be issued. The Case Number must appear on the outside of the shipment, as well as in all pertaining correspondence. Shipments received without a Case Number will be refused by RJE International. This warranty does not apply in cases where the product malfunctions as a result of mishandling or improper use.

LIABILITY

RJE International, Inc. assumes no liability for damages, losses, or cost incurred consequentially through operation or malfunction of any RJE International, Inc. product.

CHANGES

RJE International, Inc. reserves the right to make changes in design or specifications at any time without any obligation to modify previous units. This manual is provided for information and reference purposes only and is subject to change without notice.

We always welcome our customer's feedback and product improvement ideas. If you have any questions or comments, contact us at:

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INTRODUCTION

The TAC-200D Diver Navigation Board was developed for and is used by divers for accurately navigating underwater. Highly reliable and rugged, the TAC-200D consists of three major components: a rugged high impact plastic board (p/n TAC200-1), a large underwater compass (p/n TAC200-2), and a digital depth gauge with timer (p/n DG100). The TAC-200D is supplied in a padded carrying bag (p/n TAC200-4).

The TAC-200D allows the diver to monitor depth, direction and leg time. By using this information, a diver can plot and follow a planned course during a dive with a high level of reliability.

USING THE TAC-200D DIVER NAVIGATION BOARD

Navigating with the TAC-200D is simple once you understand the principle of “elapsed time” as a method of underwater navigation. The key to using “elapsed time” is knowing how long it takes to swim a known distance in a set frame of time. For example, if you consistently travel 30 ft (10m) in 20 seconds, then you can estimate the distance you travel by timing the length of your swim over a given compass heading. To be fairly accurate, you must set this “benchmark” by swimming in a normal, relaxed pace.

Once you have established this “benchmark”, the TAC-200D allows you to plot and follow a predetermined pattern or course for your dive, instead of randomly swimming around. To understand how to plot a course, you must understand how the components of the TAC-200D work together.

Depth and time are tracked on the DG100 depth gauge and timer. Course heading is monitored by the large underwater compass mounted in the center of the TAC200-1 navigation board. The compass card has white luminous digits on a black background for better contrast in poor visibility, and the three compass rose points, North, East, and West, are highlighted.



Now let's plot a dive to see how the TAC-200D really works. We are able to cover a distance at 30 ft (10m) in 20 seconds, which is our benchmark. Using this benchmark, let's plot a dive to a reef that is located north of the shoreline, 270 ft (82m) offshore in 40 ft (12m) of water. In planning this dive, we will explore the reef in a westerly direction and then return to our entry point.

For the first leg of the dive, we will plot a course along a heading of 0° North for 3 minutes. We should cover a distance of 270 ft and be on the reef. Now for leg 2, we will plot a course on a heading 270° West for 10 minutes. This means we cover a distance of 900 ft while exploring the reef. After the end of leg 2, it's time to start planning our return to the entry point. But first, let's plan on exploring the area between the reef and shoreline. To do this, we plot our next course heading for leg 3 on heading 180° South for 1 minute. This means, we will transverse 90 ft (27m) along the bottom toward the shore. Here, we will turn to a heading of 90° East for 10 minutes which places us back in the middle of leg 1. Now, all we do is turn to a heading of 180° South and head for shore.

TAC-200D Diver Navigation Board

DG100 MAINTENANCE PRECAUTIONS

The DG100 is designed to need very little maintenance to meet its functional requirements. Although it is built for the rigors of underwater use, the DG100 is a precision instrument and should be treated as such. Avoid violent bumps and drops that could affect the pressure transducer and reliability of the gauge. Do not exceed the maximum depth of 330ft (100m) as this may damage the unit.

DG100 MAINTENANCE AND STORAGE

After every use, clean the DG100 - use mild soap and rinse with fresh water. Store in a cool and dry location when not in use. Replace the strap if it becomes frayed or damaged.

TAC200-1 NAVIGATION BOARD

The TAC200-1 Navigation Board is a rugged, high impact plastic board that is the base for the TAC-200D Navigation System. The TAC200-2 Underwater Compass and DG100 are both mounted on the TAC200-1 to complete the system. The hardware used to mount the TAC200-2 Underwater Compass is made out of non-corrosive material and will provide you with many years of service.

TAC200-2 UNDERWATER COMPASS

The TAC200-2 Underwater Compass is designed and manufactured for the rigors of underwater use. The rugged housing is depth compensated and should give you many years of dependable use with proper care. A black compass card with luminous heading markers allows you to maintain a course heading, even in the worst visibility, for up to eight hours.

Illuminating the compass can be achieved by shining a bright light or UV light on the compass card for several minutes. This activates the luminous properties of the card and allows you to visually see the compass at night or in poor visibility conditions for up to eight hours. The longer you expose the card to light, the longer it glows underwater.

TAC200-2 UNDERWATER COMPASS MAINTENANCE

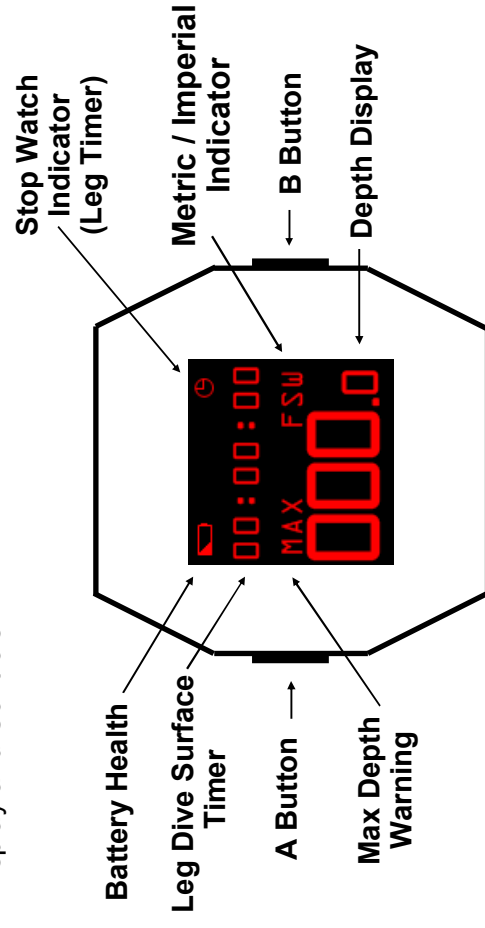
The TAC200-2 Underwater Compass requires very little care. However this is a precision instrument and should be treated as such. The entire compass should be periodically removed from the TAC200-1 Board and rinsed with clear water and dried with a soft cloth to maintain clear vision. If air bubbles appear in the dome or any other problems should occur, contact RJE International, Inc. for service.

DG100 Digital Depth Gauge and Timer

The DG100 is a digital depth gauge that measures and displays depth accurately from 0 to 330ft (0-100m). Using a state-of-the-art pressure transducer, the DG100 depth resolution is 0.1ft (0.1m).

The DG100 also tracks dive time automatically once activated, and will store the total dive time upon surfacing. In addition to tracking the total dive time, the DG100 also tracks leg times. The leg time functions are independent of the dive time. Upon surfacing, the DG100 switches to "Surface Mode" and the surface timer activates. While in "Surface Mode" the DG100 memory can be accessed and allows the diver to recall and display their deepest excursion. When recalling the max depth, the total dive time is also displayed.

- Display and Controls



Depth readings are provided to the diver through a large Red OLED display on the bottom of the screen. Both dive and leg times are displayed at the top of the screen. The DG100 buttons supply access to these functions. All functions of the DG100 are controlled through buttons on each side of the display. Buttons are operated in two modes: Short Press or Long Press. Short Press is defined as less than 1 second. Long Press is defined as lasting 2 seconds or more.

DISPLAY STATUS INDICATOR ABBREVIATIONS:

MAX = Maximum Depth
FSW = Feet of Sea Water
MSW = Meters of Sea Water

HIBERNATION MODE

Once the DG100 is on the surface for 1 minute the unit will enter “Hibernation Mode” and shut down. To wake the unit and enter “Surface Mode”, short press the A or B Button. While in “Hibernation Mode” the DG100 will enter “Dive Mode” automatically once immersed in water to a depth of approximately 3 feet (1 meter). However, if the DG100 has been in “Hibernation Mode” for more than 24 hours a short press of the A or B Button is required to turn the unit on.

SURFACE MODE

To enter “Surface Mode”, short press the A or B Button. While in “Surface Mode” long press the B Button to display the maximum depth and duration of the last dive. You can also toggle to the “Stopwatch Mode” by short pressing the A and B Buttons together.

DIVE MODE

Once activated, the DG100 will display depth and track the length of the dive. While in “Dive Mode” long pressing the B Button will display the maximum depth obtained for 2 seconds. You can also toggle to the “Stopwatch Mode” by short pressing the A and B Buttons together.

MAX DEPTH INDICATOR

The “MAX” status indicator will illuminate once the DG100 exceeds the programmed maximum depth. The “MAX” indicator will remain on and can only be reset by entering “Dive Mode” from “Surface Mode”.

DIVE AND SURFACE TIMER

Once the DG100 is activated underwater, a timer starts to monitor the length of the dive. The DG100 will stop monitoring the length of the dive once the unit is less than 3 ft (1 m) from the surface for more than 1 minute. After 1 minute near the surface, the DG100 starts to monitor the surface time for up to 24 hours. The surface interval time will reset on the next dive, once the unit exceeds a depth of 3 ft (1m).

STOPWATCH MODE

While in “Surface Mode” or “Dive Mode” pressing the A and B Buttons together toggles the unit to “Stopwatch Mode”. This mode allows the operator to start, stop, and reset a “Leg Timer” independent of the dive and surface times. Short press the B Button to start and pause the “Leg Timer”. Short press the A Button to zero the “Leg Timer”. Pressing the A and B Buttons together toggles the unit back to “Surface Mode” or “Dive Mode”.

OPERATIONS MENU

The “Operations Menu” allows the user to set brightness, max depth alert and select imperial (feet) or metric (meters) operation. The “Operations Menu” can be accessed only from “Surface Mode” by long pressing the A Button. Short press the A Button to scroll through the menu options and short press the B Button to change the settings. The menu item selected is underlined. Surface brightness can be set to: Low, Med, and High. Max Depth can be set to 0 – 330 feet in 3 foot increments, or 0 – 100 meters in 1 meter increments. While in max depth setting, pressing and holding the B Button allows the user to fast scroll through the values. Meter/Feet can be set to FSW feet of sea water or MSW meters of sea water. Exit Menu returns to “Surface Mode”. The bottom of the Operations Menu displays the firmware revision and revision date.

Battery Maintenance

The DG100 comes with a rechargeable Lithium Ion battery that provides up to 16 hours of continuous use. The battery can be charged over 300 times to provide over 4,800 hours of dive time. Upon activation, the battery health indicator (see below) is displayed on the top-left corner of the display. When fully charged, the battery indicator will appear solid red.



Battery Charging

Connect the supplied charging cable to the DG100 by clamping the cable's tab into the corresponding slot on the back of the DG100, aligning the cable contacts with the contacts on the back of the DG100. Plug the USB end of the charging cable into the connector on the supplied power adapter, and plug the power adapter into an AC outlet. The battery health indicator will begin flashing on and off. The DG100 will charge to 90% in 2 to 3 hours and to 100% in 6 hours. Once charged the battery health indicator will stop flashing. Once the unit has completed charging, remove the charging cable from the DG100. After charging, short press the A Button to update the battery health display.

