



# TAC-200D

## DIVER NAVIGATION BOARD OPERATIONS MANUAL



***RJE International, Inc.***

YOUR SOURCE FOR DIVER NAVIGATION AND UNDERWATER RELOCATION EQUIPMENT

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Operating Temperature	29°F - 95°F (-2°C - 42°C)
Housing	Injected molded plastic
Depth Rated	330ft (100m)
Dimension	3.5" x 2.5" x 1.0" (89mm x 64mm x 25mm)
Weight in Air	3.35oz (95gr)

## WARNING

**Diving is a dangerous and potentially life threatening activity. The TAC-200D series diver navigation boards 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 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.**

## TAC-200D MAINTENANCE

The TAC-200D is very reliable piece of equipment and needs very little service. It is recommended that the board and all of it's components be rinsed with fresh water after every dive, wiped down with a clean cloth, and stored in a cool, dry place. Periodically, you need to disassemble the system and clean all the components separately.

The TAC-200D and its components are designed for the rigors of underwater use and should provide many years of use, but keep in mind the TAC-200D is a diving instrument and should be treated as such.

## CUSTOMER SUPPORT

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

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 TAC-200D Diver Navigation Board Operations Manual  
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Plug USB connector from DG100 Battery Charger (DG100-01) into the back of the DG100 and then plug the charger into a 110/220 volt outlet. The DG100 will charge to 100% in 12 hours and charge to 90% in 2 to 3 hours.



In addition, the DG100 can be charged using a standard USB to mini-B cable connected to a standard PC. This function is also used to change the state of the of display from Imperial to Metric units. (see page 9)

## • MAINTENANCE

Although built for the rigors of underwater use, the DG100 is a precision tool and should be treated as such. Avoid violent bumps and drops that could effect the reliability of the gauge. The DG100 is completely potted and there is very little maintenance involved with the unit. Do not exceed the maximum depth of 330ft (100M) as this may damage the unit.

## O-RING REPLACEMENT

There are two o-rings seated in the battery charging compartment located at the back of the DG100. It is recommend that these o-rings get replaced every 12 to 18 months of use. Please contact RJE International to order these o-rings under part number DG100-02.

## SWITCH COVER CLEANNG

Occasionally, the cover over switches “A” and “B” will trap sand and debris. To clean the switch assembly, remove the switch cover plate by unscrewing two Allen head screws at the back of the DG100. Remove plate slowly to ensure that the switch springs do not get lost. Reinstall the battery cap (to protect the USB connector) and carefully rinse assembly and switch cavity with fresh water. Dry gauge and reassemble.

## • DG100 SPECIFICATIONS

Depth Range	0-330ft (0-100m)
Depth Tolerance	Typically $\pm 2\%$
Depth Resolution	0.1ft/0.1m
Altitude Compensation	6000ft (1,828m)
Display	Red LED
Dive Timer Tolerance	$\pm 1\%$
Leg Timer Functions	Start / Pause / Reset
Led Timer Duration	99 hours max
Battery	Rechargeable Lithium Polymer
Battery Life	300 charges
Operational Life	20 hours

# 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, on 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 purpose only and is subject to change without notice.

# INTRODUCTION

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

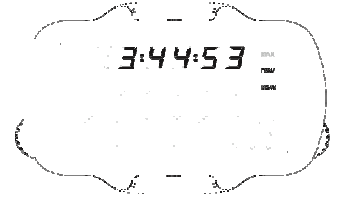
The TAC-200D allows the diver to monitor depth, direction and leg time. By using this information, a diver can plot and follow a planned course during a dive with a high level of reliability.



TAC-200D Diver Navigation Board

- **SURFACE MODE WITH BATTERY CHARGER CONNECTED**

When the unit is connected to the charger cable it will automatically enter **SURFACE MODE**. Functions are identical with the exception of the A & B Button Together.



A-Button and B-Button Together will toggle the unit between Imperial and Metric depth units. The corresponding Status LED will subsequently be illuminated.



- **HIBERNATIO MODE**

In **HIBERNATION MODE** the screen will not display any information. To wake unit, press either the A or B button momentarily.



When the unit wakes from **HIBERNATION MODE** the six digit serial number is shown on the top row of the display and battery health is shown as a percentage, 100% = 3.7V, 0% = 3.0V.

- **BATTERY CHARGING**

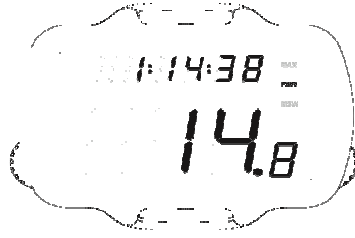
The DG100 comes with a rechargeable battery that provides up to 20 hours of continuous use. The battery, can be recharged over 300 times before having to replace the unit. Upon activation, the display briefly indicates the battery health in a form of percentage, 100% is fully charged. It is recommended that you charge the DG100 before every dive.

To charge the DG100, remove the battery charge cap from the back of the unit by turning it counter clockwise until the slots line up. Use a flat object to lift the cap from the body of the DG100.



## • DIVE MODE

The unit will enter **DIVE MODE** upon registering an increase of approximately 1 meter of sea water. While in **DIVE MODE** it is not possible to hibernate the unit. A single press of the A-Button will register nothing.



B-Button Hold will toggle between the current depth and maximum depth obtained during the dive. The MAX Status LED will illuminate. Dive Timing functions are not affected. A-Button and B-Button Together will switch the unit from **DIVE MODE** to **STOPWATCH MODE**. Upon re-entering **DIVE MODE** the overall dive duration will be shown.

## • STOPWATCH MODE

A-Button Long Hold = Reset / Lap Function  
B-Button Press = Start / Stop Stopwatch



## • SURFACE MODE

The unit will enter **SURFACE MODE** either when awakening from **HIBERNATION MODE** or when connected to the battery charger.

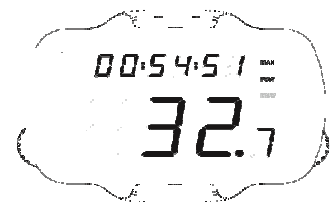
On first use the unit will commence a surface timer. If the unit has been under pressure in the past 24 hours it will show the current surface interval.

### FUNCTIONS:

A-Button Long Press will switch the unit from **SURFACE MODE** to **HIBERNATION MODE**

B-Button Hold will display the maximum depth and duration of the last dive performed.

A-Button and B-Button Together will switch the unit from **SURFACE MODE** to **STOPWATCH MODE**.



# USING THE TAC-200D DIVER NAVIGATION BOARD

Navigating with the TAC-200D is simple once you understand the principle “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 at 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 of 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 of 270° west for 10 minutes. This means we cover a distance of 900 ft. while exploring the reef. At the end of leg 2, it's time to start planning our return to the entry point. But first, let's plan on exploiting the area between the reef and shoreline. To do this, we plot our next course heading for leg 3 on a heading of 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.

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 for the job as well.

## 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 the DG100 are both mounted onto 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 should 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 excites 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 excite the card with light, the longer it glows underwater.

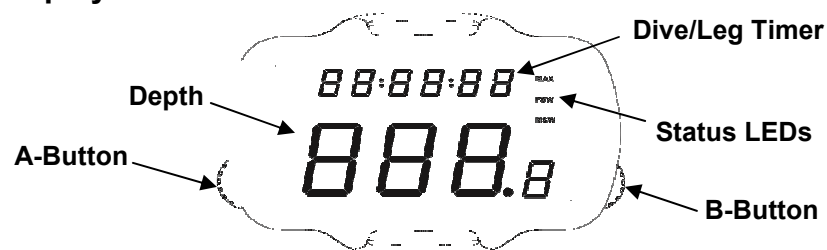
The TAC200-2 Underwater Compass requires very little care. However it is a precision instrument and should be treated as such. The entire compass should be periodically removed from the TAC200-1 Board and rinsed with clear water and dried with a soft cloth to maintain clear vision. If air bubbles appear 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) and is altitude compensated to 6,000ft (1,828m). In addition, the DG100 also warns the diver if he exceeds 33ft (10m) with a flashing indicator on the display.

The DG100 also tracks the 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 allowing the diver to recall his deepest excursion and display it. When recalling the max depth, the total dive time is also displayed. Other depth gauges can be supplied with the TAC-200D series board. Contact a RJE International sales representative to discuss these options.

### Display and Controls



Depth readings are provided to the diver through a large Red LED display on the bottom of the display. Both dive and leg times are displayed at the top of the display. The DG100 buttons allow access to these functions. Using an built in ambient light sensor, the DG100 automatically adjust brightness of the display.

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 Hold. In Short Press operation it is the release of the button that performs the desired function, this is intentional so as to avoid accidental button activation. A Long Hold is defined as lasting 2 seconds or more.

### STATUS LED:

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