

# DIGITAL DEPTH GAUGE

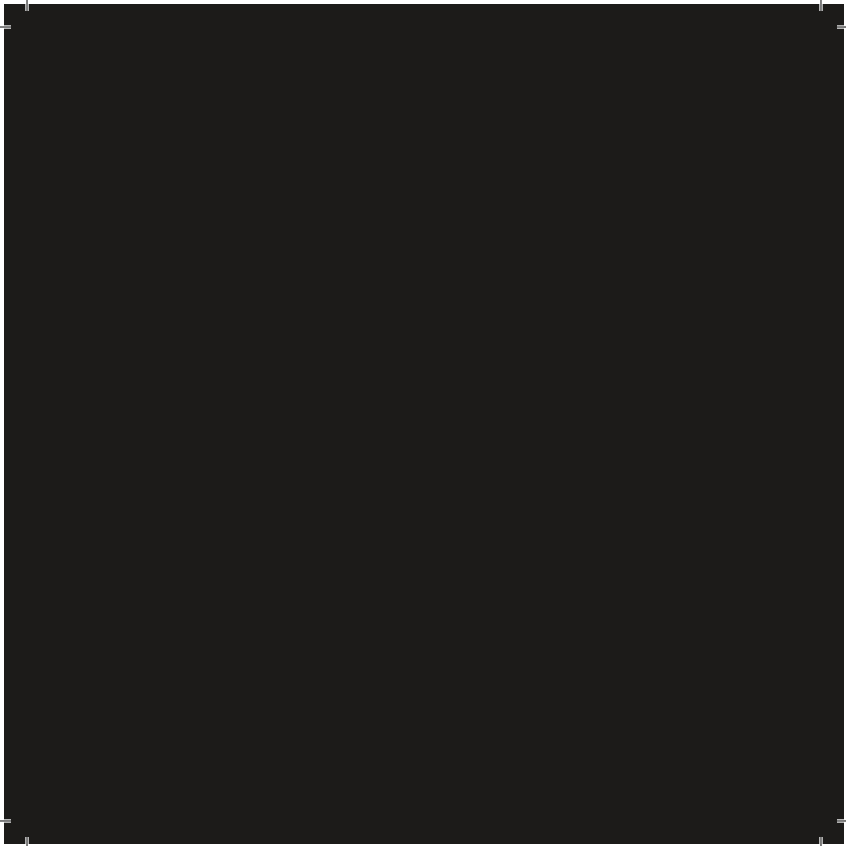
User Instructions BY NORTHERN DIVER



NORTHERN DIVER

0.0 M  
ETM 0:00:00  
ETM 0:00:00  
MAX 0.0

Part No. ND0000628





## IMPORTANT

Please read this user instruction carefully before attempting to use the Digital Depth Gauge as it contains important information on the proper care, handling and use of the equipment. Keep this manual with the equipment.

The safety and performance of the unit depends not only on the Digital Depth Gauge but also on the ancillary equipment used with it. Ensure any ancillary equipment is compatible with the Digital Depth Gauge and other equipment used. These instructions should be retained for reference during the life of the product. If you have any questions concerning the material contained in this manual, please contact the supplier of the equipment.

## INTENDED USE

The Digital Depth Gauge is an advanced diving depth gauge which is simple to use and operate, but underneath that simplicity lies a significant level of technology. Designed ergonomically with military use in mind the unit has a unique single button operation which makes it easier to use than any other unit on the market. Manufactured using the latest CNC 5 axis machinery and machined from a single aluminium billet making it robust and leak tight to 100m. Tested to the relevant test methods of EN 133319:2002 standard and CE marking on the instrument indicates conformity with the directive 2001/95/EC

***Do not use the equipment for any purpose other than its intended application.***

## READ BEFORE USE

Before you start using the Digital Depth Gauge and after reading this manual practice using the gauge on the surface or in shallow dives in safe conditions to get use to the functionality .

### ATTENTION SYMBOLS



*This symbol is used to refer to instructions.*



*This symbol is used to in to indicate information which is crucial to the operation of the device.*

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### 1. Description

The Northern Diver Digital Depth Gauge is an advanced unit using OLED screen technology which is visible in almost any conditions. It has the ability to customise the screen brightness, display time on, to suit the individuals preference. The display indicates the battery condition with a battery symbol, which will flash when there is less than 5 hours of battery life remaining.

The unit displays current depth, maximum depth, dive duration and dive duration exceeding maximum depth (6 meters adjustable). Once the depth is lower than 0.5 meters, data logging of the current depth and total dive duration begins. This data is saved internally as a 'dive history set'. If the depth remains at less than 0.3 meters for more than 30 minutes, the data logging is stopped. If the unit remains at less than 0.3 meters for 60 minutes the unit auto powers off. The display brightness is initially set to dim. The user can press the button for more than 2 seconds to increase the brightness to full. The user can press and release the button to immediately reduce the brightness back to dim. When at high brightness for more than 10 seconds, brightness automatically reduces to dim.

If the brightness is dim and the button is pressed, the display goes off but the unit continues to data log. If the display is off and the button pressed, the display immediately goes to dim brightness.

The dive data sets can be downloaded from the unit using an optical interface, connected to a PC/laptop. The data will be stored on the laptop in a spreadsheet format for easy analysis. Other calibration features will also be adjustable using the interface lead such as the display brightness. The duration for power off and display brightness switching can also be changed. These operations will be accessed away from the dive site. The diver options are intentionally limited to simplify the unit's operation in a stressful environment.

The battery is changed by drying the outer case and then removing a cover which contains an O ring pressure seal. The lithium cell is readily available from commercial battery suppliers. The O ring should be checked for damage and a small amount of silicone grease applied to protect the seal. This operation will be typically carried out by the user, away from the dive site.

## 2. Instructions For Use.



**CAUTION: Do Not Use When Low Battery Indicator Is flashing.**  
**The battery should be changed immediately before further use.**

### 2.1 Powering Sequences



**Power Off**



**Power On**  
Press and hold for 4 seconds  
for display on



**Power Off**  
Press and hold for 5 seconds  
to power off from any mode

### 2.2 Increase Brightness



**Display Off**



**Display On**  
Quick press display on



**Display Bright**  
Press for 2 seconds to display  
bright



## 2.3 Decrease Brightness

- Auto Display returns to low after 10 sec's. Auto Display goes off after 2 mins.



**Display Bright**



**Display On**

Quick press display on



**Display Off**

Quick press display off

## 2.4 Turning On :- Visual Display On.



## 2.5 Battery Indicator :-



100%



75%



50%



25%

- 2.6 **Depth** :- Tracks current Depth Increasing up to 99.0m.
- 2.7 **Elapsed Time (ET)** :- Starts after start depth of 0.5m.  
**Elapsed Time Stop** :- After 10 mins less than Finish Depth of 0.4m.
- 2.8 **ETM Starts** :- Starts at greater than max safe depth (6m).  
**ETM Stops** :- Stops at less than max safe depth.
- 2.9 **Max Depth** :- Tracks Max Depth Increasing up to 99.9m.
- 2.10 **Switch blink Indicator** :- Indicates switch operation when display is on or bright.
- 2.11 **Auto Off** :- After 30 mins below Dive Finish Depth 0.4m.  
**Auto Off Disabled** :- Above Dive Start 0.5m.
- 2.12 When below dive finish depth of 0.4m (i.e. 0 to 0.4m) elapsed time continues for 10 mins.
- 2.13 During dive, no auto power down after 30 mins.



**Refer to instructions for screen display**

### 3. Battery Replacement.



+ 3.6V AA LITHIUM -  
14500 BATTERY

- 3.1 The depth gauge has been designed to use a small coin to remove the battery cap for battery replacement.
- 3.2 Place the small coin into the battery cap slot and unscrew anti clockwise to remove battery cap. Tilt the depth gauge body and the (AA 3.6V Lithium battery) will fall out for replacement.
- 3.3 Replace battery with the (+) positive end first and re-screw battery cap back on clockwise until tight and flush with case to ensure water tightness. Make sure the o ring is still in place on the battery cap and add a small amount of silicon grease if required.



***CAUTION: Battery replacement should be done in a dry clean environment away from water ingress areas. Important replace battery with the (+) positive end first.***

#### **4. Calibration Instructions.**

- 4.1 Offset calibration by quick pressing on switch in first 2 seconds after power up.
- 4.2 When battery replaced, display shows normal 1atm of pressure (i.e. approx 10m depth) use depth offset calibration (step 4.1 or 5.14) to adjust to zero.
- 4.3 Usability above sea level :- Re-calibrate by using the quick pressing on switch in the first 2 seconds after power up.



**If unit is not reading 0.0m on initial switch on refer to the above instructions for re-calibration.**

## 5. Installing The Digital Depth Gauge Software To Your PC.

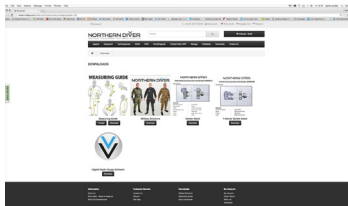
The Digital Depth Gauge Software can be found on the USB supplied.

To extract from the USB drag and drop the software to your desktop.



If you do not have the USB you can download the software by visiting the downloads page on our website

[www.ndiver-military.com](http://www.ndiver-military.com)

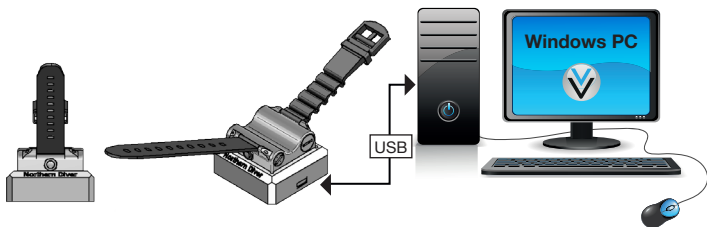


Once you have successfully installed the software the icon (shown right) will be found on your desktop.



## 5A. Linking The Docking Station With Your PC Software.

### IR Data Transfer Via Docking Stations :-



### ✓ Depth Timer User Interface:-

1. Connect docking station to PC using USB cable.
2. Install PC software to find communication channel link.
3. Control Panel > Device Manager > Ports(Com&LPT) > USB Serial Port (COM6).
4. Double click onto ✓ **Digital Depth Gauge Software :-**  
(This should now be installed on your desktop).



**IMPORTANT:**  
*You must make a note of the COM number e.g. (COM6)*

5. Switch Digital Depth Gauge on and place into docking station.

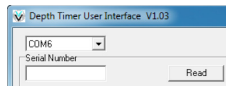
The on/off button on the gauge must be facing the Northern Diver logo on the docking station.



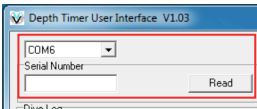
6. Select correct **COM** from pull down menu e.g. (COM6)

> **Select Serial Number > Read.**

This will read the Serial Number of the Digital Depth Gauge you have docked in the station e.g. (1002).

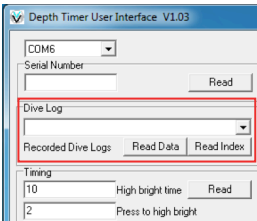


## 6. Customizing The Preset Data.



### > Select Serial Port

The Device Serial Number will be shown

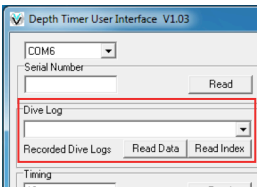


## RECORDED DIVE LOG

### > Select Read Index

This reads all the dive log history logged into the Digital Depth Gauge and lists them in the drop down menu e.g. **Index 1 - (12.30.57time) - (19/03/15date)** (**Entries=500**).

### > Select a Dive Log



### > Select Read Data

This converts the data into a \*.csv file.

The \*.csv file can be used to analyse the data via excel.



## TIMING

These settings are pre set and can be read by selecting the **Read**. To adjust highlight the required setting and adjust the time to the new required time and select **Write**. To confirm new setting select **Read** again and the figure should be the same as the new figure you entered.

Value	Setting	Action
10	High bright time	Read
2	Press to high bright	
120	Low bright time	
2	Cal reset enabled	
600	Dive idle time	
1800	Auto power off	
4	Press to pwr up	
5	Press pwr down	Write
Display		
100	High Brightness	Read
0	Low Brightness	Write

**Note:** Each time you open the User Interface the default settings will show until you **Read** the new settings.

**High bright time** - Display time remains at high brightness

**Press to high bright** - Time button is pressed to switch from low to high brightness.

**Low bright time** - Display time remains at low brightness.

**Cal reset enabled** - Time after power up that the user can press button to recalibrate depth sensor.

**Dive idle time** - Time device remains idle between dives. This setting means surface intervals can be performed without the Digital Depth Gauge resetting for a new dive when you resume the dive mission.

**Auto power off** - The Digital Depth Gauge shuts down if not in use after the selected time.

**Press to pwr up** - Time button is pressed to power up.

**Press pwr down** - Time button is pressed to power down.

## DISPLAY

These settings are pre set and can be read by selecting the Read. To adjust highlight the required setting and adjust the brightness as required and select **Write**. To confirm new setting select **Read** again and the figure should be the same as the new figure you entered.

The screenshot shows a menu with the following options:

- 1800 Auto power off
- 4 Press to pwr up
- 5 Press pwr down Write
- Display
- 100 High Brightness Read
- 0 Low Brightness Write

The 'Display' section, including the '100 High Brightness Read' and '0 Low Brightness Write' options, is highlighted with a red box.

**High brightness** - Display “High” brightness value (0 - 100)

**Low brightness** - Display “Low” brightness value (0 - 100)

**Note:** Each time you open the User Interface the default settings will show until you **Read** the new settings.

## RUN TIME

The screenshot shows a menu with the following options:

- Run Time Read
- Battery
- 1600 Capacity Read

The 'Run Time' option is highlighted with a red box.

Time device has been fired up.

> **Select Read** this will give you the time the unit has been running since a new battery replacement in Days, hrs, mins, secs.

## BATTERY

The screenshot shows a menu with the following options:

- Run Time Read
- Battery
- 1600 Capacity Read
- Used
- Real Time Clock
- Set RTC Read RTC

The 'Battery' section, including the '1600 Capacity Read' and 'Used' options, is highlighted with a red box.

**Capacity** - Battery capacity mA/Hr

**Used** - Battery capacity used mA/Hr

> **Select Read** this gives you the used figure in mA/Hr, so you can work out the battery life remaining, for e.g. Battery **Capacity** new is 1600 mA/Hr. For example, if used = 66mA/Hr. Used capacity =  $(66/1600) \times 100 = 4\%$  used, 96% remaining.

## REAL TIME CLOCK

Battery  
1600 Capacity Read  
Used

Real Time Clock  
**a.** 7:34 23/06/15 Set RTC Read RTC

Pressure Sensor Offset  
Write Read  
Auto-Reset

> **Select Read RTC.** This reads the time of the Digital Depth Gauge in the docking station.

> **Select Set RTC.** This sets the real time clock to the time that is set on your PC which will let you set the time in different time zones.

> **Select Read RTC.** To confirm the dive time has synchronised.

**a. Device time**

**b. Current time from PC Clock**

## PRESSURE SENSOR OFFSET

Battery  
1600 Capacity Read  
Used

Real Time Clock  
Set RTC Read RTC  
16 07:34 23/06/15

Pressure Sensor Offset  
**a.** 16 07:34 23/06/15 Write Read  
Auto-Reset

Depth  
0.5 Dive start depth Read  
In \* Dive start depth

Timing  
10 High bright time Read  
2 Press to high bright  
120 Low bright time  
**2** Cal reset enabled  
600 Dive idle time

**a. Pressure sensor offset value (-50m to +50m)**

> **Select Read**

This gives you the depth timer gauge offset to display zero depth at sea level.

> **Select Auto Reset**

This will recalibrate the depth sensor offset of the Digital Depth Gauge in the docking station to zero.

> **Select Write**

Write allows manual depth offsets to be made. To confirm a new setting select **Read** again to check the new offset value.

**PLEASE REMEMBER!**

The figure shown in "Cal reset enabled" shows time after power up that the user can press the single button on the depth timer unit to reset depth offset without using PC software.

## DEPTH

To adjust highlight the required setting and adjust the depth as required and select **Write**. To confirm new setting select **Read** again and the figure should be the same as the new figure you entered.

The screenshot shows a software interface for adjusting depth settings. At the top, there is a 'Pressure Sensor Offset' section with a text input field, a 'Write' button, and a 'Read' button. Below this is an 'Auto-Reset' checkbox. The main section is titled 'Depth' and contains three rows of settings, each with a text input field, a label, and a button:

Value	Label	Action
0.5	Dive start depth	Read
0.4	Dive stop depth	Read
6	Max safe depth	Write

A red rectangular box highlights the 'Depth' section, including the three rows of settings.

**Dive start depth** - Depth that dive starts  
(0m to 10m)

**Dive stop depth** - Depth that dive stops  
(0m to 10m)

**Max safe depth** - Max safe depth (1m to 30m)

**Note:** Each time you open the User Interface the default settings will show until you **Read** the new settings.

## 7. Dive Log Data Using Excel.

1. Highlight the field you require as shown (right)
2. Using Excel . . . . Select Insert > Graph
3. Choose the type of graph you want to display your data.  
The examples shown are line graphs.


Please Note: We are using Excel 2007. Steps may vary on other versions.



**Dive Log Data is saved as (\*.csv) which can be used in Excel to create dive log profiles / graphs.**



## 8. Specifications.

Items.	Specifications.	
Product Name	<b>Digital Depth Gauge</b>	
Part Number	<b>ND0000628</b>	
Manufacturers information		Digital Depth Gauge is manufactured in the UK by Northern Diver Ltd
Year of Manufacture	<b>2015</b>	The year of manufacture is given on the serial number label
Regulatory status	EN133319:2002 	Conforms to the requirements of EN 133319:2002: Tested in house. This mark on the product indicates compliance with Directive 2006/95/EC relating to Low Voltage equipment.
Depth Rating		0 - 100 Metres
Depth Accuracy		In accordance with EN 133319:2002 Typically +/- 1%
Battery Life	<b>Consumption</b> 0.07mA 32mA 43mA 5mA	<b>Power Mode</b> Power Down 2.6 Yrs.@20Deg.C Low Display 2 Day's. Bright Display 1 Day. Display Off 15 Day's.
Dimensions and weight	Dimensions Weight	Length 60mm Width 57mm Depth 30mm 130g
Materials		Housing: Aluminium, Battery: 3.6V DC Lithium, Finish: Black Anodise, 316 S/S Spring & Pins
Environmental condition	Ambient temperature	Operational: -10°C to +50°C Storage: -20°C to +60°C

## 9. Care, Storage & Maintenance.

The testing and functionality checks mentioned should be carried out every time the unit is used and at service intervals determined by the service provider. The unit requires minimum maintenance, rinse in fresh clean water after use, wipe external areas dry occasionally, slightly lubricate o ring with silicon grease when battery replacement is required.

The supplier shall warrant the product against defects or faults for a maximum period of 12 months from the date of delivery to end user unit.



***As with any measuring equipment visually inspect before use for damage and wear.***

***The unit contains a calibrated pressure sensor which we recommend needs to be maintained on a annual service regime or part of a Planned Preventive Maintenance (PPM) this service can be carried out at Northern Diver Ltd***

## 10. Fault Finding.

Fault.	Cause.	Remedy.
No Display	Unit is switched off.	Read instructions switch unit on.
	Battery failure.	Replace with new battery.
	Low battery indicator on.	Replace with new battery.
Sensor	Out of calibration.	Read instructions and re-calibrate.

For technical support contact Northern Diver Customer Service Centre on  
Tel +44 (0)1257 256933

## 11. Environmental Protection.

There are no known risks associated with disposal of the Digital Depth Gauge at the end of its working life. All electrical components should be disposed in compliance with Directive 2006/95/EC relating to Low Voltage equipment. Compliant with IEC60086-4 & IEC60079-11 Safety Standards.

## 12. Reporting Complaints.

When a complaint is discovered, immediately contact your supplier of the equipment and provide the following details:

- Customer name and address.
- Person you wish to receive the investigation report if required.
- Serial number where applicable.
- Nature of the complaint and any serious consequences that may have arisen.

***Then segregate the equipment and await instructions from the supplier.***

***Changes*** :- Northern Diver (International) Ltd Is continually developing its product range and reserves the right to alter the above specification without notice.

***Liability***:- Northern Diver (International) Ltd assumes no liability for damages, losses, or cost incurred consequentially through the operation or malfunction of any Northern Diver (International) Ltd product.



### 13. Imperial Version in Feet.

For countries which require imperial units of measurements we have created a version which measures the depth in feet.



The unit works in the exact same way apart from measurement will be displayed in feet, and all the internal setting on the interface display will be in feet as well i.e.

- Pressure sensor offset value (-150 to +150ft)
- Dive starts Depth (0 to 35ft)
- Dive stops Depth (0 to 35ft)
- Max safe depth (1 to 100ft)

**Northern Diver (International) Ltd**

Appley Lane North

Appley Bridge

Lancashire

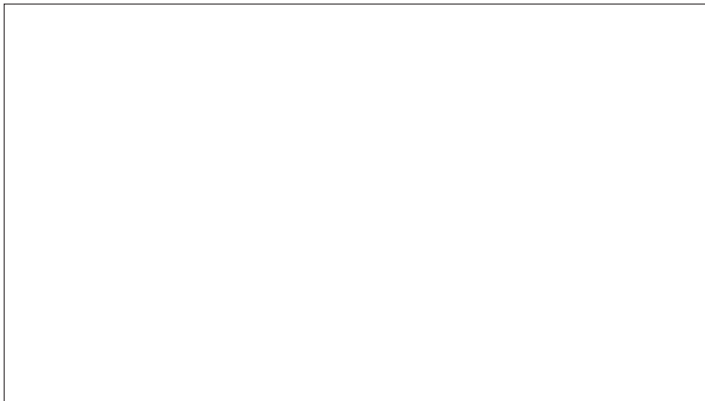
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