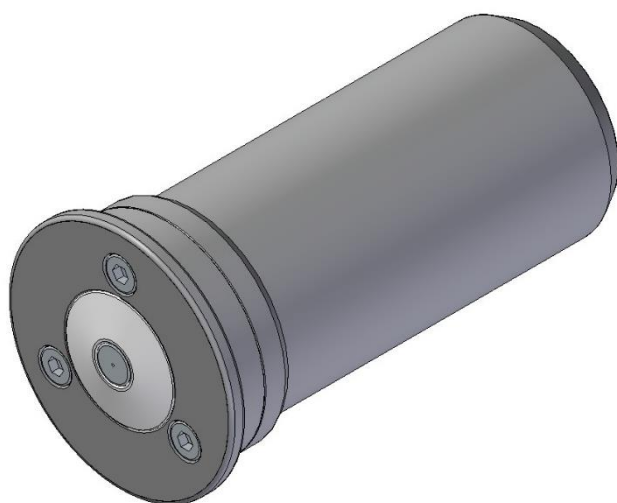




# DC-Meter

## MA\_DC-Meter



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**DC-Meter Component Maintenance Manual**

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Item Name: **DC-Meter**

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*Table 0-1: Authorizations Table*

# 1.0 Administration

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## 2.0 Introduction

This manual contains the description, as well as instruction for use and maintenance directions for the DC-Meter.

**Note:** This manual must be read to its full extent prior to any usage, testing or maintenance of the DC-Meter.

### 2.1 Log of Revisions

The following table summarizes the issue and amendment level evolution, tracing the changes in the affected paragraphs.

Issue	Amendment	Date	Description	Affected paragraphs
1	0	10.02.2017	First release of document	-
2	0	01.06.2020	Presentation and layout of the whole manual revised	-
2	1	20.11.2020	Amendment Frontpage Amendment Service Address	5.3 / 5.4 / 6.

*Table 0-1: Log of Revisions*

### 2.2 Definitions

“ULD” and “ULB” has the same meaning. These are acoustic beacons fitted to aviation flight recorders such as the Cockpit Voice Recorder or the Flight Data Recorder or to maritime Voyage Data Recorders.

“LF-ULD” is an acoustic beacon fitted to the aircraft fuselage.

“Beacon” in this document has the same meaning as ULD.

“Sleep mode current” means the current which is required to power the internal micro-controller while the ULD is not activated.

“Multimeter” or a “Multitester”, is an electronic measuring instrument that combines several measurement functions in one unit. A typical multimeter can measure voltage, current, and resistance.

“Operating / transport temperature range” is the environmental temperature range which the DC-Meter can be exposed to either during usage or during transportation.


### 2.3 Abbreviations

<i>LF-ULD</i> .....	<i>Airframe Low Frequency Underwater Locating Device</i>
<i>PNR</i> .....	<i>Part number</i>
<i>ULB</i> .....	<i>Underwater Locator Beacon</i>
<i>ULD</i> .....	<i>Underwater Locating Device</i>

### 3.0 General

#### 3.1 Description

The DC-Meter is a battery-powered measurement device for measuring the sleep mode current of ULDs and LF-ULDs.

 The DC-Meter meets the requirements of the EU-Directives for CE marking.

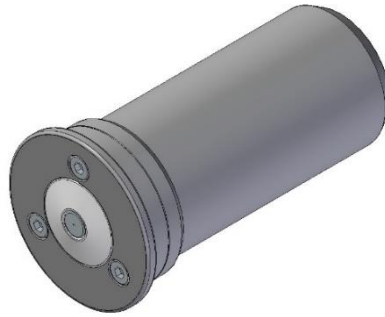


Figure 1: DC-Meter

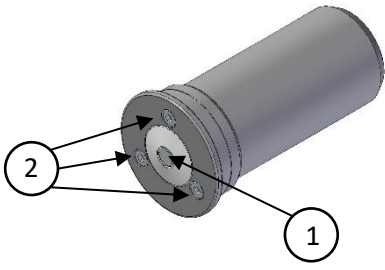
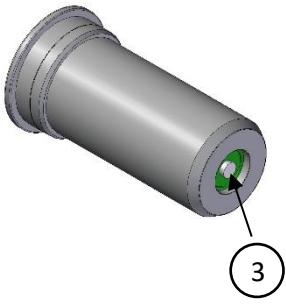
#### 3.2 Specification

Technical data:

Power supply:	Lithium Battery NOVEGA 18g (PNR 17350)
Operating / transport temperature range:	-55°C (-67°F) to +85°C (+185°F)
Size:	Length 62,1 mm (2,44 inch), Ø large 33 mm (1,30 inch)
Weight:	88 g (3,1 oz)

Table 0-1: Specification

#### 3.3 Device Description

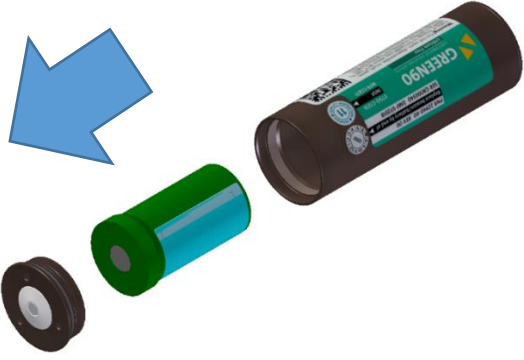

Front side of the DC-Meter	Back side of the DC-Meter	Legend
 <p>Figure 2: Front side of the DC-Meter</p>	 <p>Figure 3: Back side of the DC-Meter</p>	<p>1 – Piston on the front side (negative pole of the included battery and for testing)</p> <p>2 - Three hexagon sockets (positive pole for testing)</p> <p>3 - Piston on the back side (positive pole of the included battery)</p>

### 3.4 Required work equipment

Provision of work equipment			
Article	Description	Specification	Quantity
-	Standard Multimeter for current and voltage measurement	DC Voltage 0,1 mV – 10 V Direct Current 0,1 μA – 10 μA	1 piece
-	Allen key (for opening the DC-Meter)	2mm	1 piece

## 4.0 Test Procedure

### 4.1 Measuring the sleep current of ULDs

4.1.1	Open the ULD as described in the corresponding manual.		
4.1.2	Remove the battery by tilting the ULD (as shown in Figure 4).	 <p><i>Figure 4: Removing the battery out of the ULD as an example image</i></p>	
4.1.3	Insert the DC-Meter into the ULD with the back side first instead of the battery (as shown in Figure 5).	 <p><i>Figure 5: Insert the DC-Meter into the ULD as an example image</i></p>	

#### 4.1.4 Turn the multimeter on.

**Note:** The multimeter must be set to  $\mu\text{A}$  (Microampere). Make sure that the test prods are correct connected at the multimeter.



Figure 6: Settings at the multimeter for current measuring as an example image

#### 4.1.5 Connect the test prods of the multimeter with the correct poles of the DC-Meter (as shown in figure 7):

- ➔ Connect the piston at the front side of the DC-Meter with the negative pole.
- ➔ Connect one of the hexagon sockets at the front side of the DC-Meter with the positive pole

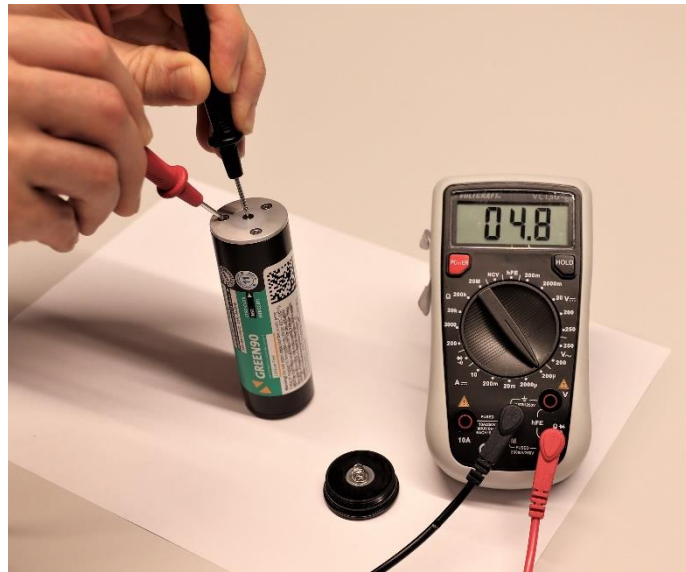


Figure 7: Connecting the DC-Meter with the Multimeter as an example image

#### 4.1.6 Check the current.

Range of values:  $0 \mu\text{A} < I < 8 \mu\text{A}$

**Note:** The measured value may vary, therefore, please wait until the value has stabilized.

#### 4.1.7 Remove the DC-Meter from of the ULD.

#### 4.1.8 Proceed as described in the corresponding manual.

## 4.2 Measuring the sleep current of LF-ULDs

4.2.1 Open the LF-ULD as described in the corresponding manual.

4.2.2 Remove the battery by tilting the LF-ULD (as shown in Figure 8).



Figure 8: Removing the battery out of the LF-ULD

4.2.3 Insert the DC-Meter into the LF-ULD with the back side first instead of the battery (as shown in Figure 9).



Figure 9: Insert the DC-Meter into the LF- ULD



4.2.4 Turn the multimeter on.

**Note:** The multimeter must be set to Microampere (e.g. 200  $\mu$ A). Make sure that the test prods are correct connected at the multimeter.



Figure 10: Settings at the multimeter for current measuring as an example image

4.2.5 Connect the test prods of the multimeter with the correct poles of the DC-Meter (as shown in figure 11):

- ➔ Connect the piston at the front side of the DC-Meter with the negative pole.
- ➔ Connect one of the hexagon sockets on the front side of the DC-Meter with the positive pole



Figure 11: Connecting the DC-Meter with the Multimeter as an example image

4.2.6 Check the current.

Range of values:  $0 \mu\text{A} < I < 8 \mu\text{A}$

**Note:** The measured value may vary, therefore, please wait until the value has stabilized.

4.2.7 Remove the DC-Meter from of the LF-ULD.

4.2.8 Proceed as described in the corresponding manual.

## 5.0 Maintenance

This paragraph contains instructions for the battery replacement of the DC-Meter.

### 5.1 DC-Meter battery check:

#### 5.1.1 Turn the multimeter on.

**Note:** The multimeter must be set to Voltage (e.g. 20 V). Make sure that the test prods are correct connected at the multimeter.



Figure 12: Settings at the multimeter for voltage measuring as an example image

#### 5.1.2 Connect the test prods of the multimeter with the correct poles of the DC-Meter (as shown in figure 13):

- ➔ Connect the piston at the front side of the DC-Meter with the negative pole.
- ➔ Connect the piston at the back side of the DC-Meter with the positive pole
- ➔ Measure the voltage.

**Note:** If the measured battery voltage is below 3.2 V, the battery needs to be replaced.



Figure 13: Measuring the battery voltage of the DC-Meter as an example image

## 5.2 DC-Meter battery replacement

Replace the battery only with the Original Novega Battery, otherwise the guarantees will be void.



The used battery should be disposed of in accordance with all local, state and federal regulations.

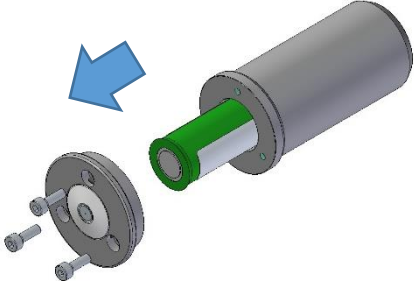
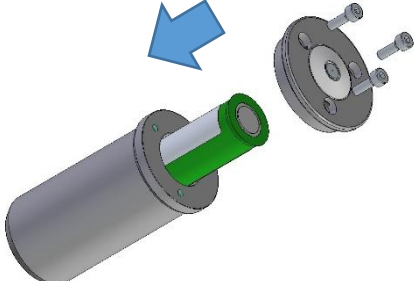
The order number of the battery replacement kit for the DC-Meter is (PNR 22435-00).


**Note:** The battery is not rechargeable.

**Note:** The DC-Meter and also the contained battery should be stored in the original shipping container or adequate packaging.

Ensure that the DC-Meter and also the contained battery is stored at general warehouse conditions not exceeding +45°C (+113°F). The recommended storage temperature should not exceed +30°C (+86°F). Avoid exposure to direct sunlight!

If the voltage drops down to less than 3,2V (see chapter 5.1 DC-Meter battery check), the battery has to be replaced.

5.2.1 Clean the DC-Meter with a soft, anti-static and dry cloth.	
5.2.2 Open the DC-Meter by loosening the three screws of the top lid using an allen key (2 mm) and remove the lid.	 <p><i>Figure 14: Remove the battery out of the DC-Meter</i></p>
5.2.3 Remove the old battery by tilting the DC-Meter	
5.2.4 Insert the new battery and close the DC-Meter by tightening the screws on the lid using the allen key (2mm).	 <p><i>Figure 15: Insert the new battery into the DC-Meter</i></p>
<p><b>Note:</b> Attend to the correct polarity when inserting the new battery (the plus pole first).</p>	

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### 5.3 End of Service Life

Battery replacement is only useful if the DC-Meter is in a good and undamaged condition with full functionality.

Otherwise, the DC-Meter must be taken out of service and disposed of in accordance with all local, state and federal regulations.

For more information on the end of life, please contact our service department ([Service Address](#)).

### 5.4 Returns

Please contact our service department ([Service Address](#)) for clearing the details and planning before returning the DC-Meter.

Required Information:

- Reason for the Return
- Order (if required) for Replacement of the DC-Meter
- Company
- Contact Data (Name, Telephone, e-Mail address)

### 5.5 Service Address

**Novega Produktionssysteme GmbH**

Gewerbepark 2 | 87477 Sulzberg (See) | **Germany**

Fon: (+49) 8376-92990-0

Fax: (+49) 8376-92990-20

E-Mail: [info@novega.de](mailto:info@novega.de)

[www.novega-sky.com](http://www.novega-sky.com)

## 6. Warranty and Guaranty

For further information regarding warranty and guaranty, please contact our service department ([Service Address](#)).

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