



ULYSER

Document number CMM_685_Ulyser




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Ulyser Component Maintenance Manual

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2.0 Introduction

This manual contains the description, as well as instructions for use and maintenance directions for the Ulyser.

Note: This manual must be read completely before using the Ulyser.

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	-
1	1	04.07.2017	Change figures and content	2.1 - 4.5
1	2	26.09.2017	Amendment content	1.0
2	0	25.06.2019	Layout und content revised	1.0 - 9.0
2	1	24.10.2019	CAGE Code and ECCN inserted, ULD Report Creator Software update to 3.1	Title Page 7.0
2	2	08.09.2020	Case for the Ulyser has changed, photos have been exchanged	-
2	3	21.01.2021	Amendment Description "signal ok" icon	4.3.4 6.2 6.3
2	4	15.03.2021	Amendment Description "Now the jacks/plug can be removed"	6.2 6.3

Table 2-1: Log of Revisions

2.2 Definitions

"Activated" means the ULD / LF-ULD is transmitting pulses.

"ULD / LF-ULD Revalidation" means battery replacement of the ULD / LF-ULD.

"Signal" means an acoustic sound emitted by the ULD / LF-ULD.

"Pulse" in this document has the same meaning as signal.

"Pulse repetition rate" is the number of pulses emitted by the ULD / LF-ULD in a specific time, measured in pulses per second (pulses/s).


"Qualified technician" means qualified aircraft mechanic.

"Service Operation Mode" means that the ULD / LF-ULD is activated and is transmitting pulses.

"Sleep Mode" means that the ULD / LF-ULD is not activated and is not transmitting pulses.

"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.

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2.3 Abbreviations

- ECCN*.....*Export Control Classification Number*
- LF-ULD**Airframe Low Frequency Underwater Locating Device*
- PNR*..... *Part number*
- SER*..... *Serial number*
- ULB* *Underwater Locator Beacon*
- ULD*..... *Underwater Locating Device*

3.0 General

3.1 Description

The Ulyser is a battery-powered receiver for acoustic signals with a frequency of 5 to 50 kHz. The Ulyser receives the acoustic signals via an integrated microphone. The received signals are optically displayed via a blinking symbol and acoustically via an integrated loudspeaker. With a Ulyser a functional test of a ULD / LF-ULD can be performed. The Ulyser measures the battery voltage and reads out data of the ULD / LF-ULD. This data can be analysed with a special software.

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



Figure 1: Ulyser

3.2 Type Plate Example

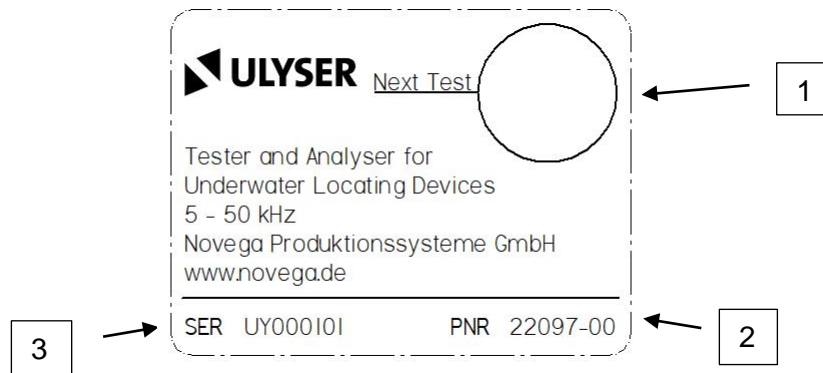


Figure 2: Type Plate Example

Legend:

- 1 Works Test Sticker (see chapter 3.3)
- 2 Part number (PNR)
- 3 Serial number (SER)

3.3 Works Test Sticker

The works test sticker indicates the date of the next recommended works test. The marked works test sticker is positioned in such a way that the line points to the month when the next works test should be performed. The year of the next recommended test is found in the middle of the sticker.

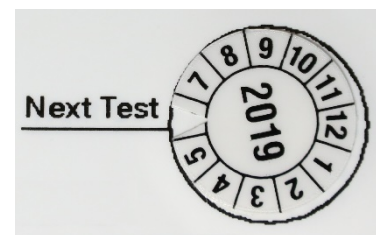


Figure 3: Works Test Sticker

3.4 Specification

Measurement range:

Voltage:	2.8 to 3.6 V
Frequency:	5 kHz to 50 kHz


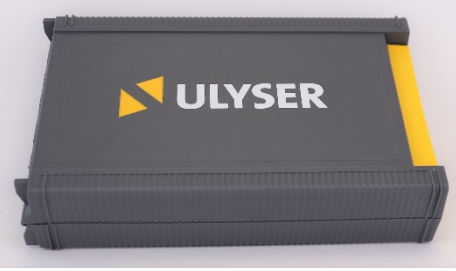
Technical data:

Power supply:	Button cell Lithium Type CR2032 / 3 V
Operating temperature range:	-20 °C (-4 °F) to + 60 °C (140 °F)
Protection class:	IP44
Size (L x W x H):	94 mm (3.70 inch) x 49 mm (1.93 inch) x 16 mm (0.63 inch)
Weight:	55 g (1.9 oz)

Table 3-1: Specification

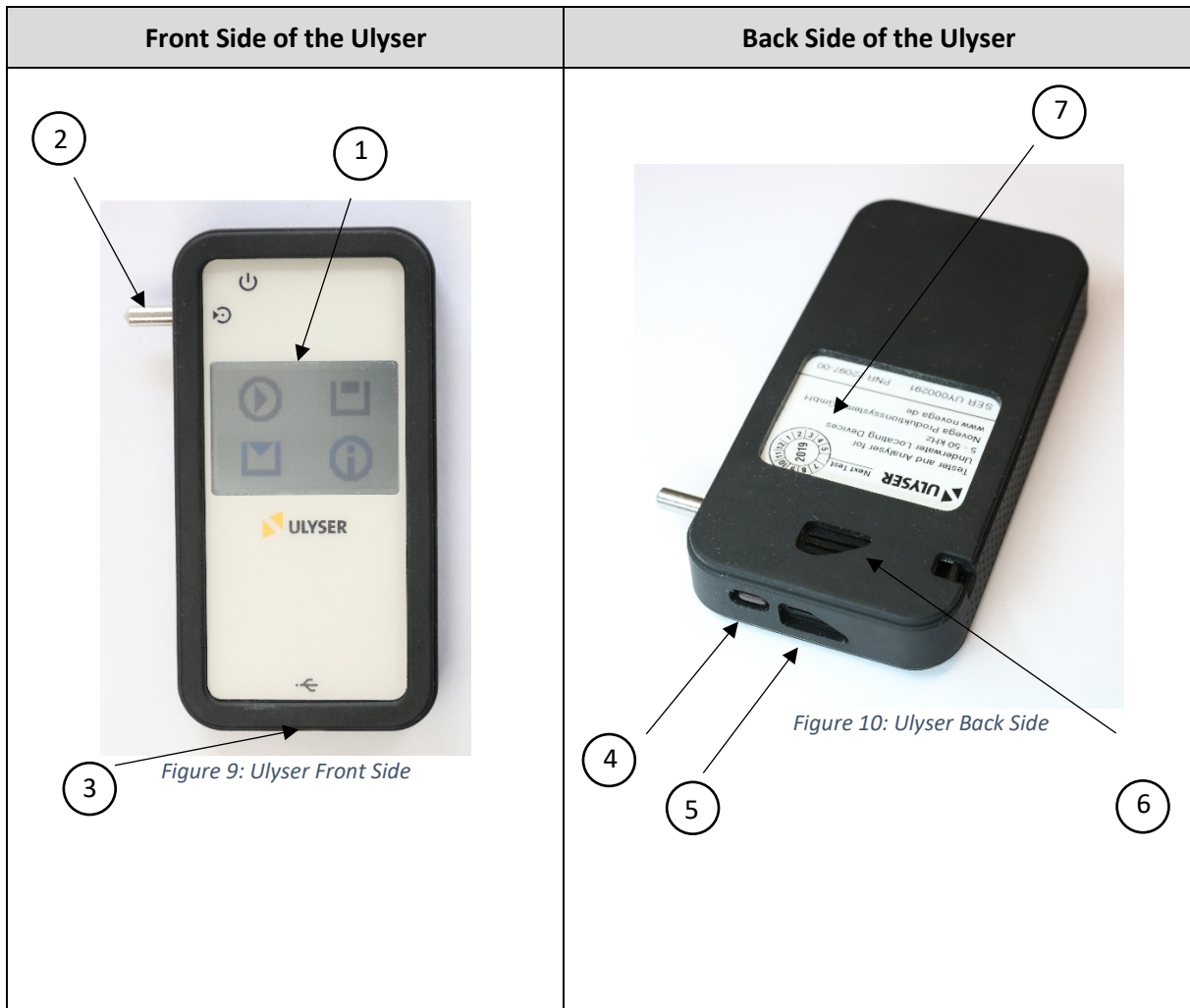
3.5 List of Components

Component	Figure	Ulyser Maritime	Ulyser Aviation
1. Ulyser	 <i>Figure 4: Ulyser</i>	✓	✓
2. Short USB Cord	 <i>Figure 5: Short USB Cord</i>	✓	✓
3. Activation Cord	 <i>Figure 6: Activation Cord</i>	✓	✓

Component	Figure	Ulyser Maritime	Ulyser Aviation
4. Activation Cord for SID88	 <i>Figure 7: Activation Cord for SID88</i>		✓
5. Case for the Ulyser and all Components	 <i>Figure 8: Case for the Ulyser</i>	✓	✓

4.0 Device Description of the Ulyser



4.1 Device Description



Legend:










- 1 Touchscreen
- 2 Jack / Measuring Adapter
- 3 USB Micro B Port
- 4 On / Off Button
- 5 Loudspeaker
- 6 Microphone
- 7 Works Test Sticker

4.2 Setup the Ulyser

Setup for ULD: Ulyser with Activation cord	Setup for LF-ULD: Ulyser with Activation cord for LF-ULD
 <p align="center"><i>Figure 11: Setup Ulyser for ULD</i></p>	 <p align="center"><i>Figure 12: Setup Ulyser for LF-ULD</i></p>

4.3 Menu Description

This chapter describes the menu items. The measurement sequences are explained in chapter 6.

<p>4.3.1 Start Screen Turn the Ulyser on by pressing the on / off button until the start screen appears.</p> <p>Note: The Ulyser turns off automatically 2 minutes after the last operation.</p>	 <p><i>Figure 13: Start Screen</i></p>
<p>4.3.2 Start Menu Four different functions can be selected in the start menu:</p> <ul style="list-style-type: none"> - Measurement  - Memory  - Sending  - Info Screen  	 <p><i>Figure 14: Start Menu</i></p>
<p>4.3.3 Connecting Screen</p> <p>By pressing the measurement button  in the start menu the function test starts and the connecting screen is shown.</p> <p>A ULD / LF-ULD can be connected now.</p> <p>Note: Return to the start menu by tapping the screen.</p> <p>If the Ulyser is successfully connected to a ULD / LF-ULD, the measurement process for the functional test starts automatically. The process bar is displayed and the ULD / LF-ULD is activated. Successfully measuring is confirmed by a single beep, the Ulyser automatically switches to the measurement screen.</p>	 <p><i>Figure 15: Connecting Screen</i></p>  <p><i>Figure 16: Connecting Screen with Process Bar</i></p>

4.3.4 Measurement Screen

If the measurement is successful, the measurement data will be read out from the ULD / LF-ULD, displayed and automatically stored on the Ulyser.



- The pulse symbol represents the visualization of every received pulse.
- The pulse symbol stays active (also visible in the start menu), as long as the Ulyser receives a signal.

Note: Furthermore, the received signal is reproduced simultaneously in an audible way for human ears.



- The signal ok symbol appears after the Ulyser has received three pulses. Please note the pulse repetition rate of the ULD / LF-ULD.

Note: Return to the start menu by tapping the screen.

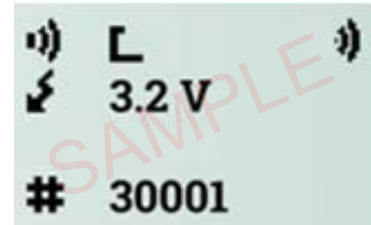
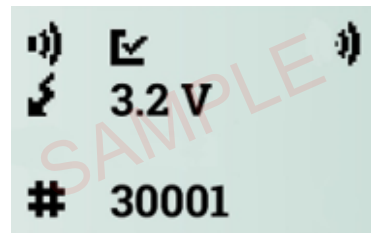


Figure 17: Measurement

Signal OK




Battery voltage

Serial number

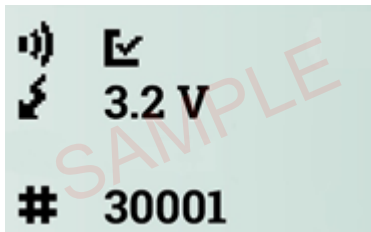
Figure 18: Measurement Signal OK Symbol

4.3.5 Memory Screen

By pressing the memory button , the last stored measurement data is displayed.

Note: Return to the start menu by tapping the screen.

Signal OK




Battery voltage

Serial number

Figure 19: Memory Screen


4.3.6 Sending Screen


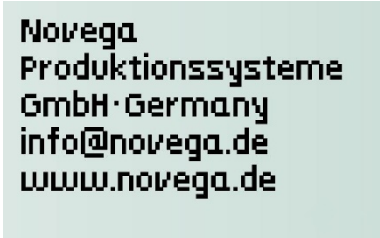
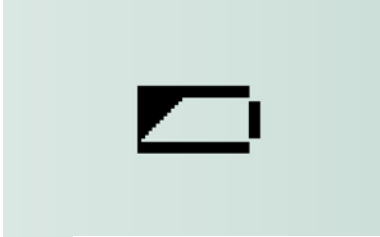
By pressing the sending button , the Ulyser sends the last measured data.

Note: The Ulyser returns to the start menu automatically.



Figure 20: Sending Screen


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<p>4.3.7 Info Screen</p> <p>By pressing the info button , the info screen is displayed.</p> <p>Note: Return to the start menu by tapping the screen.</p>	 <p><i>Figure 21: Info Screen</i></p>
<p>4.3.8 Low Battery Screen</p> <p>This screen is displayed, as soon as the Ulyser has a low battery level. The battery needs to be replaced (see chapter 8.1).</p> <p>Note: The low battery screen is only displayed after the start screen (see chapter 4.3.1) when the Ulyser is turned on. Then the Ulyser automatically switches to the start menu.</p>	 <p><i>Figure 22: Low Battery Screen</i></p>

5.0 Fault Isolation

Faults that can occur are shown in the table below with their probable causes and the correction action.

Fault	Probable cause	Correction action
The Ulyser cannot be turned on.	The battery level of the Ulyser is too low.	Replace the battery, follow the instructions in chapter 8.1.
	The battery was not inserted correctly.	Check the battery, follow the instructions in chapter 8.1.
	The wrong battery type has been inserted.	Check the battery, follow the instructions in chapter 8.1.
	The Ulyser is defect.	Contact our service department (Service Address).

Fault	Probable cause	Correction action
Testing with the Ulyser does not deliver the expected result.	Contact has lost during measurement or readout has failed. Note: The error message <i>“Reading incomplete retry in 66 sec”</i> appears at the Ulyser after starting measurement.	Start the functional test again. Note: The next measurement can be performed when the ULD / LF-ULD drops back into the sleep mode after 60 seconds.
	The poles have been inverted. Note: The error message <i>“Check polarity retry in 66 sec”</i> appears at the Ulyser after starting measurement.	Note the correct orientation of the ULD / LF-ULD and start the functional test again. Note: The next measurement can be performed when the ULD / LF-ULD drops back into the sleep mode after 60 seconds.
	For fault isolation and the complete testing procedure with the Ulyser please follow the instructions of chapter 6 step by step.	Start the functional test again. Note: The next measurement can be performed when the ULD / LF-ULD drops back into the sleep mode after 60 seconds.
	The battery level of the Ulyser is too low. Note: The low battery screen is only displayed after the start screen (see chapter 4.3.8).	Replace the battery, follow the instructions in chapter 8.1.
	Defect of the ULD / LF-ULD	Check the ULD / LF-ULD.
	Defect of the Ulyser	Contact our service department (Service Address).
	Defect of the activation cord	Contact our service department (Service Address).
Impossibility of switching the ULD / LF-ULD in the “service operation mode”.	Bad contact on the water switch pins of the ULD / LF-ULD	Clean the water switch pins of the ULD / LF-ULD with a soft cloth and a mild detergent.
	Defect of the ULD / LF-ULD	Check the ULD / LF-ULD.
The signal ok Symbol  does not appear.	The Ulyser has not received three pulses. Note the pulse repetition rate of the ULD / LF-ULD.	Hold the Ulyser in the direction of the ULD / LF-ULD to prevent losing the acoustic signal.
	The Ulyser is no longer in the service operation mode.	Start the functional test again. Note: The next measurement can be performed when the ULD / LF-ULD drops back into the sleep mode after 60 seconds.

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6.0 Test Procedure

6.1 General

Clean the water switch pins of the ULD / LF-ULD with a soft cloth and a mild detergent before each test of the ULD / LF-ULD, and dry them carefully with a clean cloth. The Ulyser is a sensitive instrument. Therefore, it is to be protected from moisture and destruction.

Note: Surrounding sounds can affect the measurement by triggering an acoustic signal.

Note: The Ulyser turns off automatically 2 minutes after the last operation, data of the last readout remains recorded under normal conditions (e.g. battery level not low) on the Ulyser.

6.2 Functional Test and Readout ULD

Perform the following steps for the functional test with the ULD:


- Step 1: Plug the activation cord to the USB port.
- Step 2: Turn the Ulyser on by pressing the on / off button until the start screen appears.
- Step 3: Press the measurement button  to start the functional test.
- Step 4: Connect both jacks with the correct poles of the ULD. Note the correct orientation of the ULD (see figure 23, 24, 25).



Figure 23: Functional Test with an example ULD

Note: The error message **“Check polarity retry in 66 sec”** appears when the poles have been inverted. In this case the ULD is also activated. The value time of 66 seconds is necessary because the ULD is in the service operation mode. The next measurement can be performed when the ULD drops back into the sleep mode.

- Step 5: The measurement process for the functional test starts automatically. The process bar is displayed and the ULD is activated. Successfully measuring is confirmed by a single beep, the Ulyser automatically switches to the measurement screen. Now the jacks can be removed.

Note: The error message **“Reading incomplete retry in 66 sec”** appears when contact is lost during measurement or the readout has failed. The ULD is activated. The value time of 66 seconds is necessary because the ULD is in the service operation mode. The next measurement can be performed when the ULD drops back into the sleep mode.

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Step 6: The acoustic signal which the activated ULD emits can be checked with the Ulyser.

Note: The Ulyser has to be held in the direction of the ULD to prevent losing the acoustic signal (see figure 26).

Step 7: The functional test is successful when the “signal ok” icon (see figure 18) appears, the Ulyser has received three valid pulses.

Note: To be sure, that the ULD switches back to the “sleep mode”, wait until the pulse symbol on the display disappears and the audible pulse repetition of the Ulyser stops.



Figure 24: Connected with Minus Pole (Battery Cap with 3 Boreholes)



Figure 25: Connected with Plus Pole



Figure 26: Checking the Acoustic Signal

6.3 Functional Test and Readout LF-ULD

Perform the following steps for the functional test with the LF-ULD:



- Step 1: Plug the activation cord for LF-ULD in the USB port.
- Step 2: Turn the Ulyser on by pressing the on / off button until the start screen appears.
- Step 3: Press the measurement button  to start the functional test.
- Step 4: Connect the plug with the correct poles of the LF-ULD. Note the correct orientation of the plug (see figure 27, 28).



Figure 27: Functional Test with an example LF-ULD

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Note: The error message **“Check polarity retry in 66 sec”** appears when the poles have been inverted. In this case the LF-ULD is also activated. The value time of 66 seconds is necessary because the LF-ULD is in the service operation mode. The next measurement can be performed when the LF-ULD drops back into the sleep mode.

Step 5: The measurement process for the functional test starts automatically. The process bar is displayed and the LF-ULD is activated. Successfully measuring is confirmed by a single beep, the Ulyser automatically switches to the measurement screen. Now the plug can be removed.

Note: The error message **“Reading incomplete retry in 66 sec”** appears when contact is lost during measurement or the readout has failed. The LF-ULD is activated. The value time of 66 seconds is necessary because the LF-ULD is in the service operation mode. The next measurement can be performed when the LF-ULD drops back into the sleep mode.

Step 6: The acoustic signal which the activated LF-ULD emits can be checked with the Ulyser.

Note: The Ulyser has to be held in the direction of the LF-ULD to prevent losing the acoustic signal (see figure 29).

Step 7: The functional test is successful when the “signal ok” icon (see figure 18) appears, the Ulyser has received three valid pulses.

Note: To be sure, that the LF-ULD switches back to the “sleep mode”, wait until the pulse symbol on the display disappears and the audible pulse repetition of the Ulyser stops.



Figure 28: Connecting



Figure 29: Checking the Acoustic Signal

7.0 ULD Report Creator

7.1 Setup ULD Report Creator

To transfer the readout data from the Ulyser to the PC, the ULD Report Creator needs to be installed on the PC. The software is provided as zip-file by e-mail. Uninstall an old software version before installing a new software version.

Note: The ULD Report Creator Software requires a computer with Window 7 or higher and “Microsoft.NET Framework 4.6.1” or higher as minimum system requirements.

Perform the following steps to setup the ULD Report Creator:

Step 1: Start the ULD Report Creator.



Step 2: Fill in the fields marked in red with your company data (see figure 30).

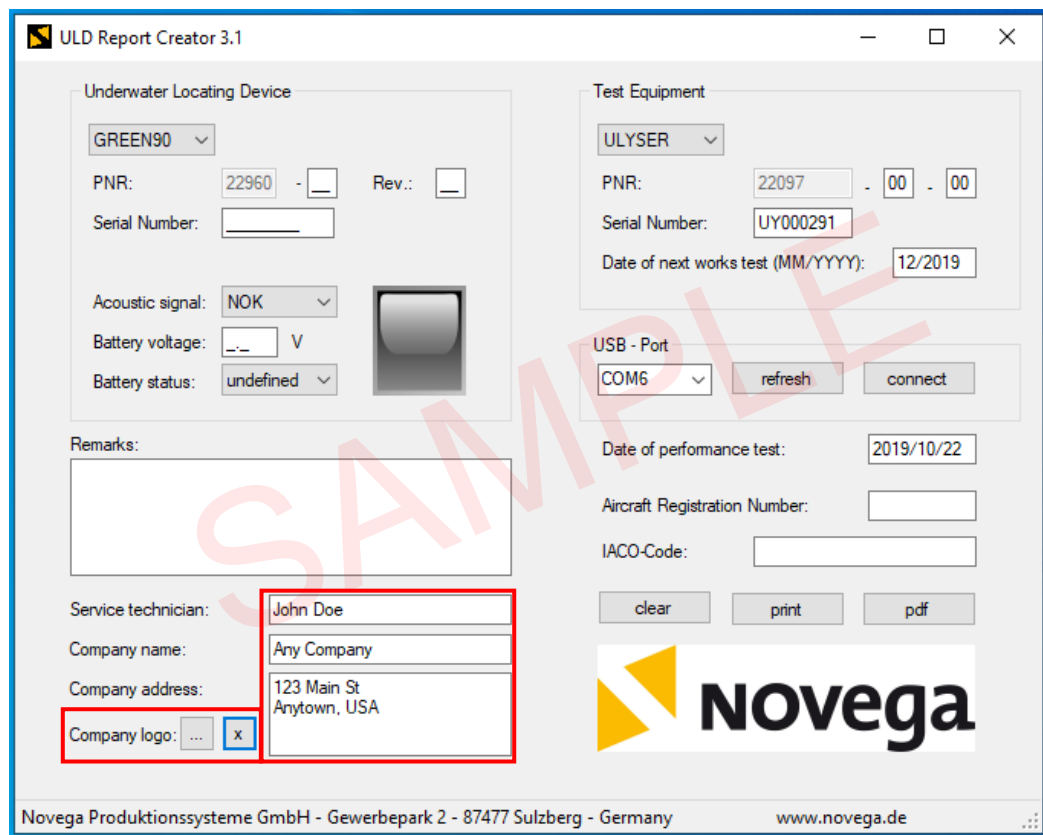
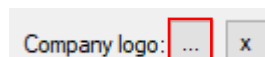


Figure 30: ULD Report Creator: Your Company Data

Step 3: It is possible to upload an own company logo



for the test report (see figure 30):

Note: At the next software start, the entered data will be displayed again.

7.2 Data Transfer

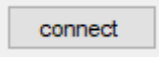
Perform the following steps to transfer the data:

Step 1: Turn on the Ulyser.

Step 2: Connect the Ulyser to the PC with the short USB cord.

Step 2: Start the ULD Report Creator if the software is not already open.



Step 3: Select the USB port in the ULD Report Creator window that connects the Ulyser to the computer and press the connect button  (see figure 31).

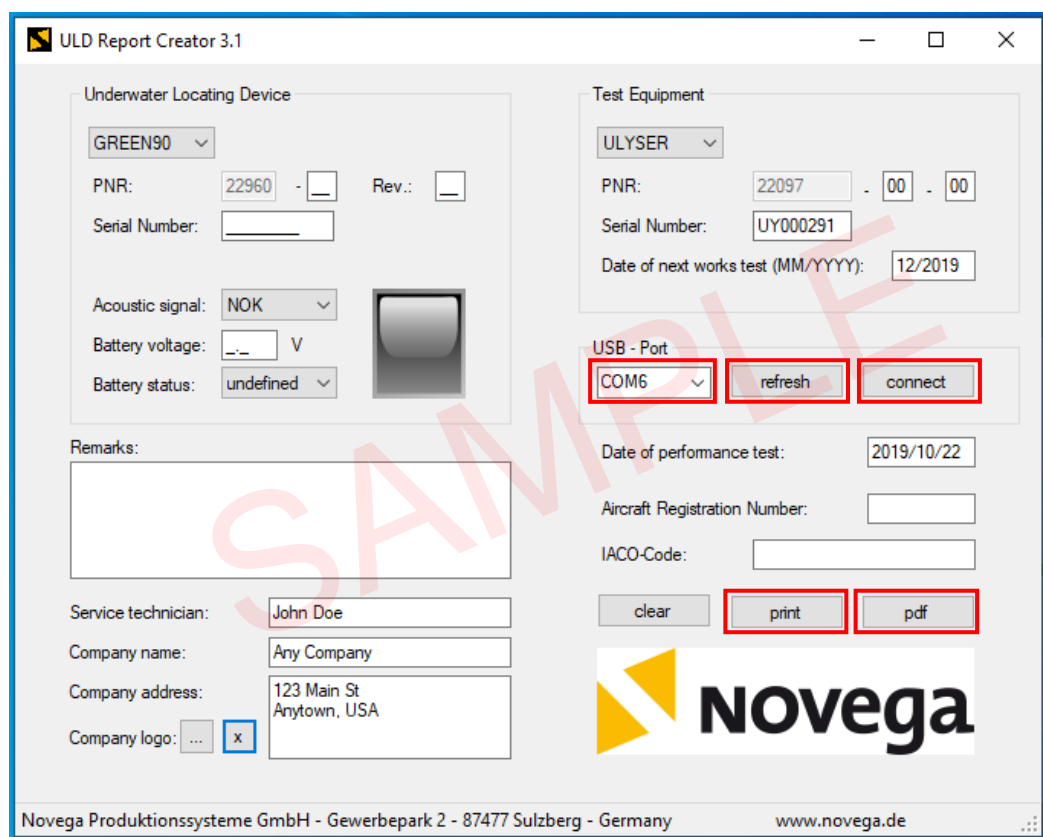
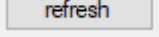
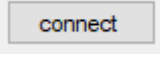
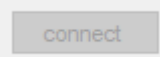



Figure 31: ULD Report Creator: Connecting

Note: If no COM Port is available, reconnect the Ulyser and try it again

(see Step 1 and 2) or press the refresh button  in the ULD Report Creator window and press the button  again (see figure 31)

Note: If the Ulyser is correctly detected, the button  is disabled (see figure 33).

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Step 4: Press the sending button  at the Ulyser to transfer the readout data from the Ulyser to the PC.

7.3 Analyse the transferred Data

The analysis of the transferred data is automatically done. The result and the transferred data are automatically filled in the test report. Please check if all automatically transferred data is in accordance with the test data of your device. Please fill out the input fields of the ULD Report Creator window with all required information. In the field Remarks comments about the measurement can be entered.

Note: The “underwater locating device” area is automatically filled out with the transferred data.

7.3.1 Test passed

The test results are shown as passed (see figure 32), if the acoustic signal, the battery voltage and the battery status is ok.

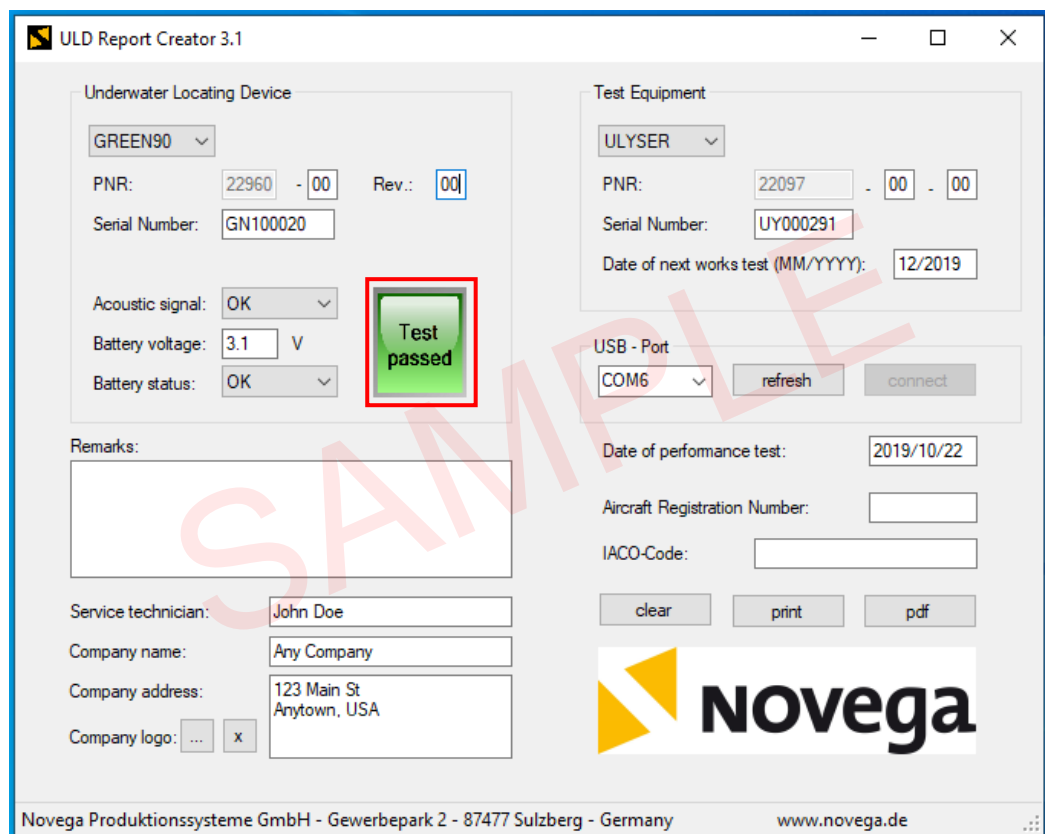



Figure 32: ULD Report Creator Program: Test passed

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7.3.2 Test failed

The test results are shown as failed (see figure 33), if the acoustic signal, the battery voltage or the battery status is not ok.

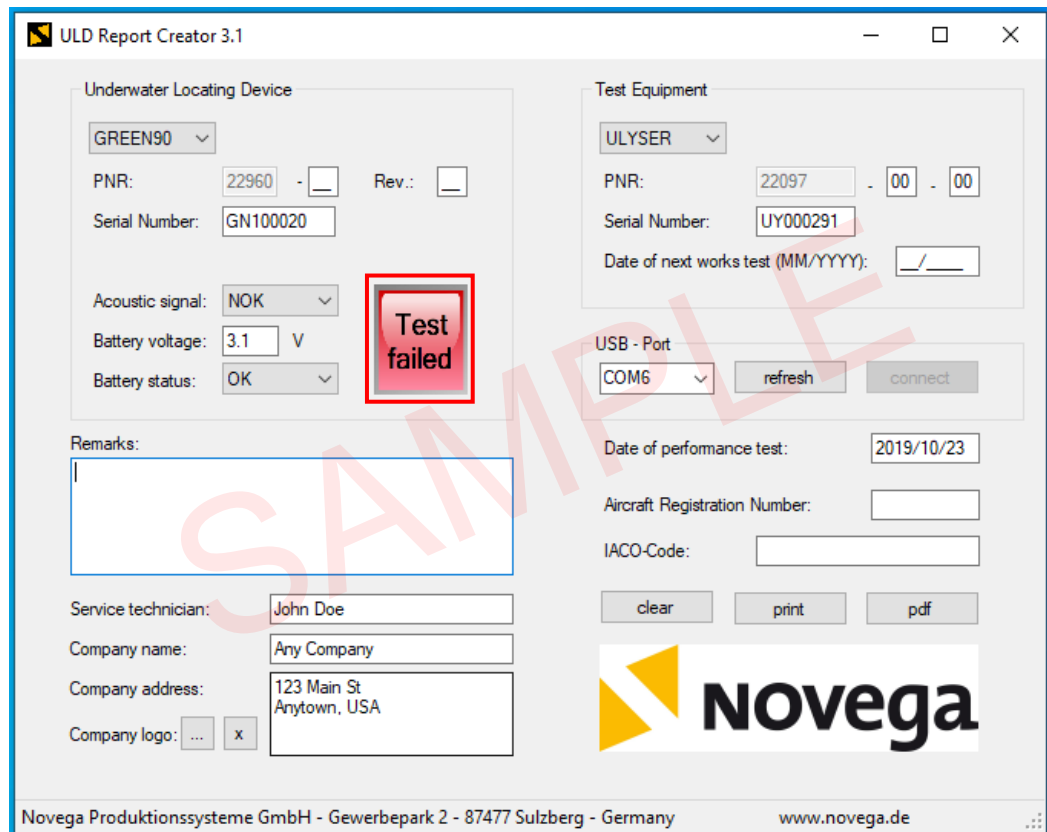


Figure 33: ULD Report Creator Program: Test failed

7.4 Report Creation

Press the print button  or  (see figure 31) to create the test report (see figure 34).

< Your Logo >

Test Report

Underwater Locating Device:	GREEN90
Part Number:	22960-(00) Rev.:(00)
Serial Number:	GN100020
Acoustic signal:	OK
Battery voltage:	3.1 V
Battery status:	OK
Functional test:	Test passed

Test equipment:	ULYSER
Part Number:	22097-(00)-(00)
Serial Number:	UY000291
Date of next works test:	MM/YYYY

Remarks:

Aircraft Registration Number:	
IACO-Code:	

Address:

Service technician:	John Doe
Company name:	Any Company
Company address:	123 Main St Anytown, USA

Date of performance test:	YYYY/MM/DD
---------------------------	------------

Signature service technician

ULD Report Creator 3.1


Figure 34: Test Report

8.0 Maintenance

This paragraph contains instructions for the battery replacement of the Ulyser and information on the annual works test.

8.1 Battery Replacement

The Ulyser contains a button cell lithium battery Type CR2032. The battery is not rechargeable.

As soon as the Ulyser has a low battery level, the following icon  appears on the screen. The battery needs to be replaced.



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

Note: The low battery screen is only displayed after the start screen (see chapter 4.3.8) when the Ulyser is turned on. Then as usual the Ulyser automatically switches to the start menu.

Perform the following steps to replace the battery:

- Step 1: Clean the Ulyser with a soft, anti-static and dry cloth.
- Step 2: Wear an ESD grounding wristlet to protect the electronic.
- Step 3: Remove the silicone sleeve.
- Step 4: Open the battery cover on the back side of the Ulyser.
- Step 5: Replace the battery. Attend to the correct polarity when inserting the new battery (plus pole above).



Figure 35: Battery Cover


Note: Incorrect installation of the battery might cause a damage to the Ulyser electronics.

- Step 6: Discard the used battery.

Note: Discard used batteries according to all local, state and federal regulations. Whenever you do not know how to discard them, contact your local electronics store or waste management company.
- Step 7: Close the battery cover and mount the silicone sleeve.



Figure 36: Battery Replacement

	Document Title:	Ulyser Component Maintenance Manual
	Document Name:	

8.2 Annual Works Test

An annual works test is recommended. Therefore send the Ulyser to our service department. Please provide all required information for the return (see chapter 8.4 Returns). We perform the works test, issue a works test certificate and send the Ulyser back. The recommended implementation date can be read at the works test sticker (see chapter 3.3).

8.3 End of Service Life

The number of possible revalidations is principally unlimited. However, revalidation is only possible if the Ulyser is in a good and undamaged condition with full functionality.

If revalidation is not possible, the Ulyser must be taken out of service and disposed of in accordance with all local, state and federal regulations.

For further information regarding the end of service life, please contact our service department (Service Address).

8.4 Returns

Please contact our service department (Service Address) for clearing the details and planning before returning the Ulyser.

Required Information:

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

8.5 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

www.novega-sky.com

9.0 Warranty and Guaranty

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

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