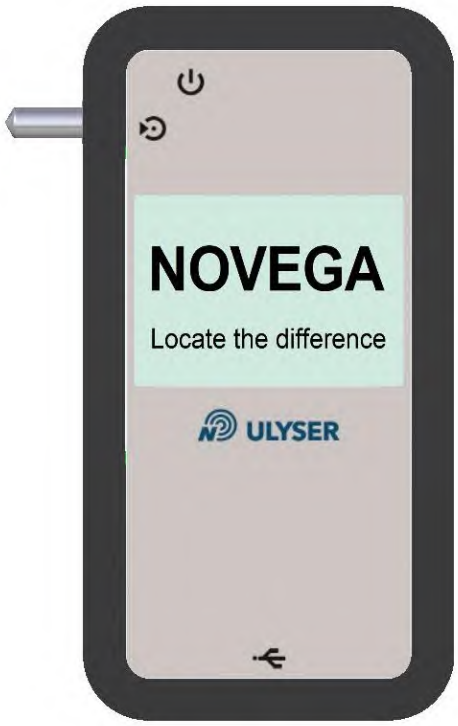
ULYSER

Document number CMM_685_Ulyser



Ulyser Component Maintenance Manual

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PNR: 20538-00
Cage Code: CG871
ECCN: EAR99

Rev02

Item Type:	**Tester and Analyser for Underwater Locating Devices**
Item Name:	**Ulyser Aviation**
PNR:	**20538-00**

Company: **Novega Produktionssysteme GmbH**
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Table 1-1: Authorizations Table

1 Administration

1.1 Table of Contents

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List of Tables

2 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 revision evolution, tracing the changes in the affected paragraphs.

Revision Number	Issue Date	Description	Affected paragraphs
01	22 Mar 2024	Initial Issue	-
02	09 Aug 2024	Amendment	3.1

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 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.

“Other ULD” means non Novega-ULD

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 General

3.1 Description

The Ulyser is a battery-powered receiver for acoustic signals with a frequency range 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 the Ulyser a functional test of an ULD/LF-ULD can be performed. Both Novega and devices of other manufacturers can be tested with it. The Ulyser measures the battery voltage and reads out data of the ULD/LF-ULD. Only data from Novega devices 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

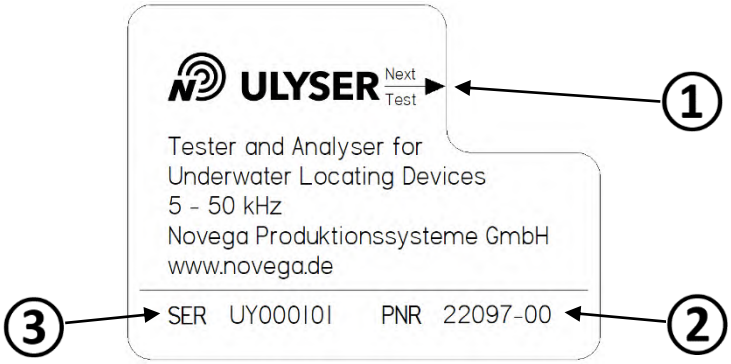


Figure 2: Type Plate example

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

Table 3-1: Type Plate information

3.3 Works Test Sticker

The Works Test Sticker (Figure 3) indicates the date of the next recommended works test. The marked Works Test Sticker is positioned in such a way that the arrow 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.

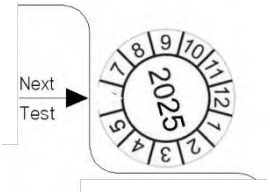


Figure 3: Works Test Sticker

3.4 Specification

Measurement range:	
Voltage:	2 to 4 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 3-2: Specification

3.5 Component Scope

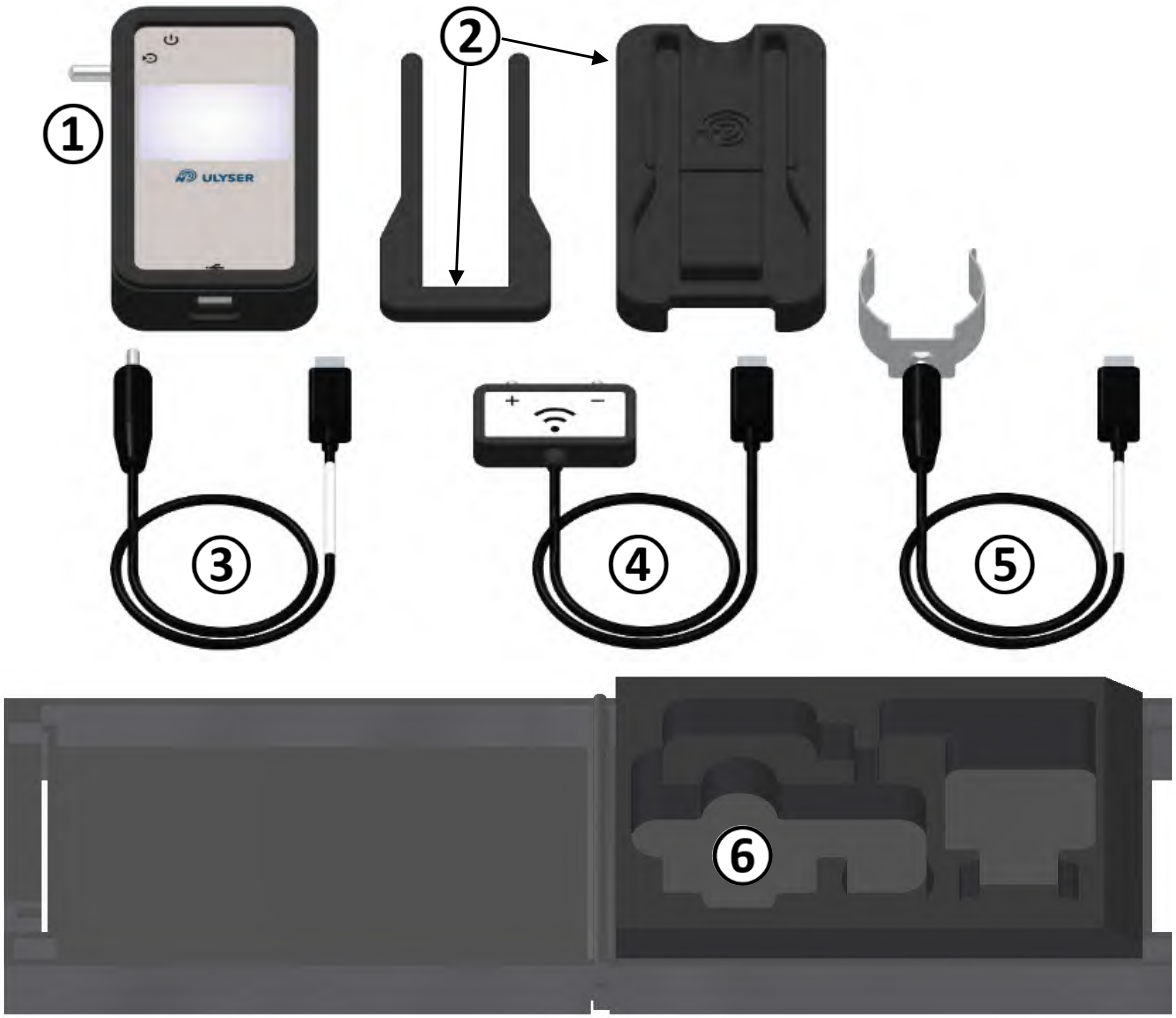


Figure 4: Component scope

Position	Name	PNR
1	Ulyser	22097-00
2	Device Support	25106-00
3	Activation Cord	21860-00
4	Activation Cord SID88	21950-00
5	Activation Clamp	25110-00
6	Case	25114-00

Table 3-3: Component scope

4 Device and Setup Description

4.1 Device Description

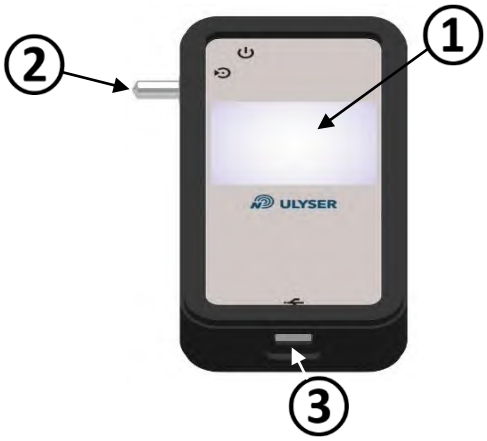


Figure 5: Ulyser front side

Figure 6: Ulyser back side

Position	Name
1	Touchscreen
2	Jack/measuring adapter
3	USB Micro-B Port
4	On/Off-Button
5	Loudspeaker
6	Microphone
7	Works Test Sticker

Table 4-1: Device description

4.2 Setup Equipment for Measurement

The following equipment constellations must be used to measure the corresponding ULD/LF-ULD type. Make sure you know the type (ULD or LF-ULD with one or two water switch pins) and also its correct polarity. The information can be found in the ULD/LF-ULD manual.

This is essential to perform a proper measurement!

The following cases show the different ULD/LF-ULD types and polarities of the corresponding test equipment.

4.2.1 Using Device Support

Place both parts of the Device Support (Figure 7 and chapter 3.5) on the table. The Novega Logo must be visible the right way round on the top side. Put the Ulyser on it. The elevation of the Device Support (yellow marked) containing the Logo must fit into the cut-out of the Ulyser silicone sleeve (Figure 7). Place the other part on the left side.

Note: The Ulyser must be positioned properly on the Device Support.

Figure 7: Using Device Support

4.2.2 Setup for ULD types with two water switch pins

Figure 8: ULD type with two water switch pins

Note: The polarity of the ULD must be known!

Equipment required (Figure 9 and chapter 3.5):

- Ulyser
- Activation Cord
- Device Support

Insert the USB Micro-B plug into the USB socket of the Ulyser (Figure 9).

Polarity:

+ Positive Pole: Jack of Activation Cord

- Negative Pole: Jack of the Ulyser

Figure 9: Setup for measurement of ULD types with two water switch pins

4.2.3 Setup for ULD types with one water switch pin

Figure 10: ULD type with one water switch pin

Note: The polarity of the ULD must be known!
Note: Here the entire housing forms the positive pole (red marked in Figure 10).
Equipment required (Figure 11 and chapter 3.5):

- Ulyser
- Activation Clamp
- Device Support

Insert the USB Micro-B plug into the USB socket of the Ulyser (Figure 11).

Polarity:
+ Positive Pole: Activation Clamp
- Negative Pole: Jack of the Ulyser

Note: Never use this clamp for devices with two water switch pins!

Figure 11: Setup for measurement of ULD types with one water switch pin

4.2.4 Setup for LF-ULD types with two water switch pins

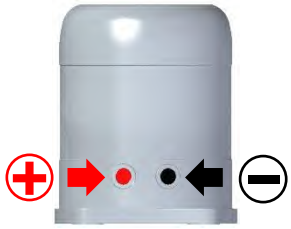


Figure 12: LF-ULD type with two water switch pins

Note: The polarity of the LF-ULD must be known!

Equipment required (Figure 13 and chapter 3.5):

- Ulyser
- Activation Cord SID88

Insert the USB Micro-B plug into the USB socket of the Ulyser (Figure 13).

Polarity: as shown on the plug.

Figure 13: Setup for measurement of LF-ULD types with two water switch pins

4.2.5 Setup for LF-ULD types with one water switch pin

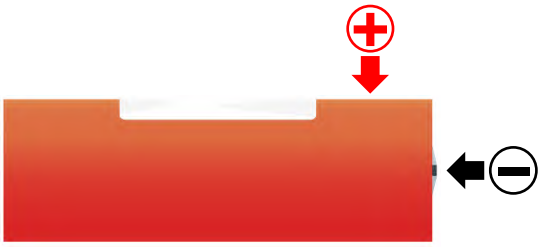


Figure 14: LF-ULD type with one water switch pin

Note: The polarity of the LF-ULD must be known!

Note: Here the entire housing forms the positive pole (red marked in Figure 14).

Equipment required (Figure 15 and chapter 3.5):

- Ulyser
- Activation Cord

Insert the USB Micro-B plug into the USB socket of the Ulyser (Figure 15).

Polarity:

+ Positive Pole: Jack of Activation Cord

- Negative Pole: Jack of the Ulyser

Figure 15: Setup for measurement of LF-ULD types with one water switch pin

4.3 Menu Description

This chapter describes the menu items.

4.3.1 Start Screen

Switch on the Ulyser by pressing the On/Off-Button until the Start Screen (Figure 16) appears.

Note: The Ulyser switches off automatically two minutes after the last operation.

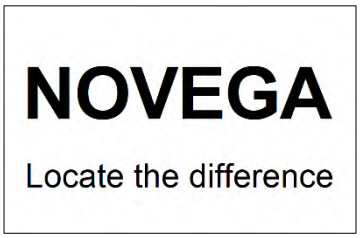


Figure 16: Start Screen

4.3.2 Start Menu

Four different functions (buttons see below and on Figure 17) can be selected in the Start Menu:

- Measurement Novega
- Memory
- Sending
- Measurement Other

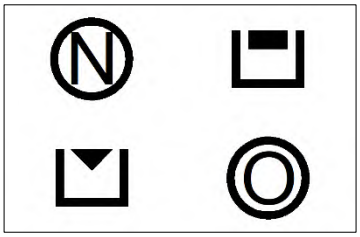


Figure 17: Start Menu

4.3.3 Connecting Screen for Novega-ULD/LF-ULD

By pressing the Measurement Novega-button in the Start Menu the function test starts and the Connecting Screen (Figure 18) is shown.
An ULD/LF-ULD can be connected now.

Note: To return to the Start Menu (Figure 17) tap the screen.

If the Ulyser is successfully connected to an ULD/LF-ULD, the measurement process for the functional test starts automatically. The Process Bar (Figure 19) 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 (Figure 20).

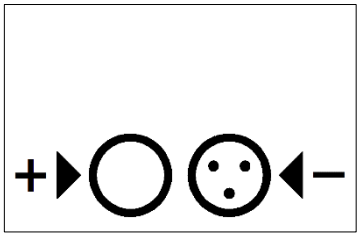


Figure 18: Connecting Screen for Novega ULD/LF-ULD

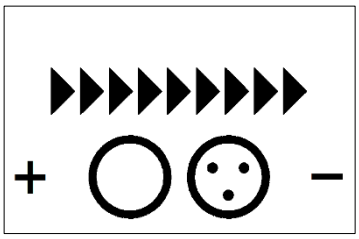


Figure 19: Connecting Screen with process bar

4.3.4 Measurement Screen for Novega-ULD/LF-ULD

If the measurement is successful, the measurement data will be read out from the ULD/LF-ULD, displayed and automatically stored on the Ulyser (Figure 20).

- 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.
- The battery voltage value is displayed.
- The year of manufacture is displayed.
- The serial number is displayed.

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 (Figure 21). Please note the pulse repetition rate of the ULD/LF-ULD.

Note: Return to the Start Menu (Figure 17) by tapping the screen.

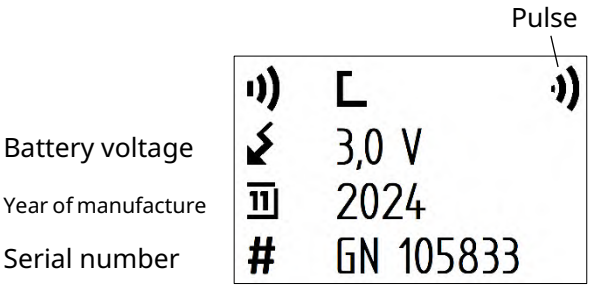


Figure 20: Measurement Screen example (Novega)

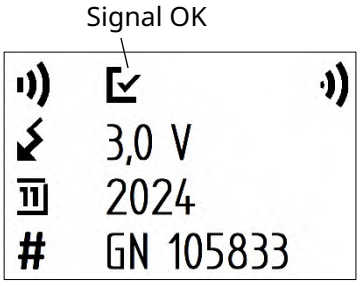


Figure 21: Measurement Screen example (Novega) with Signal OK-symbol

4.3.5 Memory Screen

By pressing the Memory-button, the last stored measurement data of a Novega device is displayed (Figure 22).

Note: Return to the Start Menu (Figure 17) by tapping the screen.

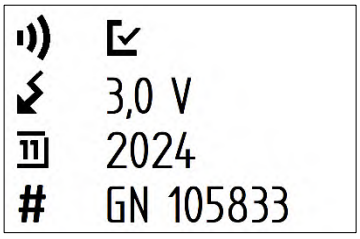


Figure 22: Memory Screen example

4.3.6 Sending Screen

By pressing the Sending-button, the Ulyser sends the last measured data (Figure 23).

Note: The Ulyser returns to the Start Menu (Figure 17) automatically.

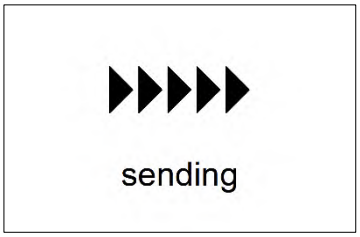


Figure 23: Sending Screen

4.3.7 Connecting Screen for Other ULD/LF-ULD

By pressing the Measurement Other-button in the Start Menu the function test starts and the Connecting Screen (Figure 24) is shown.

A non Novega-ULD/LF-ULD can be connected now.

Note: To return to the Start Menu (Figure 17) tap the screen.

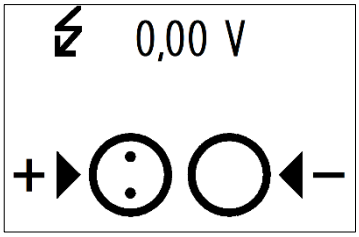


Figure 24: Connecting Screen (other)

4.3.8 Measurement Screen for other ULD/LF-ULD

If the Ulyser is successfully connected to a non Novega-ULD/LF-ULD, the following is shown (Figure 25):

- The battery voltage value is displayed.
- The Pulse-symbol represents the visualization of every received pulse.

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 (Figure 26). Please note the pulse repetition rate of the ULD/LF-ULD.

Note: Return to the Start Menu (Figure 17) by tapping the screen.

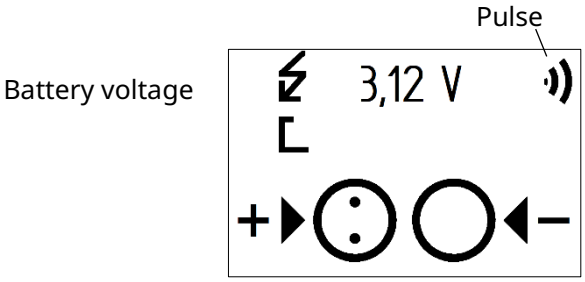


Figure 25: Measurement Screen example (other)

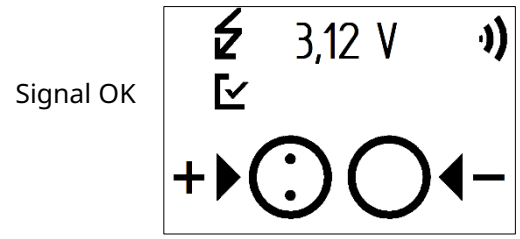


Figure 26: Measurement Screen example (other) with Signal OK-symbol

4.3.9 Low Battery Screen

This screen (Figure 27) is displayed, as soon as the Ulyser has a low battery level. The battery needs to be replaced (see chapter 7.1).

Note: The Low Battery Screen is only displayed after the Start Screen (Figure 16), when the device is turned on. Then the Ulyser automatically switches into the Start Menu (Figure 17).

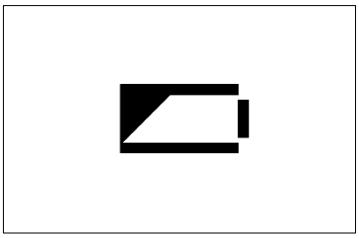


Figure 27: Low Battery Screen

5 Test Procedure

5.1 General

Clean the water switch pins and the housing of the ULD/LF-ULD with a soft cloth and a mild detergent before each test, and dry them carefully with a clean cloth. Also make sure that the jack of the Ulyser and the contact pins/clamp of the corresponding measuring equipment are clean.

The Ulyser is a sensitive instrument. It is to be protected from moisture and destruction!

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

5.2 Switching On/Off the Ulyser

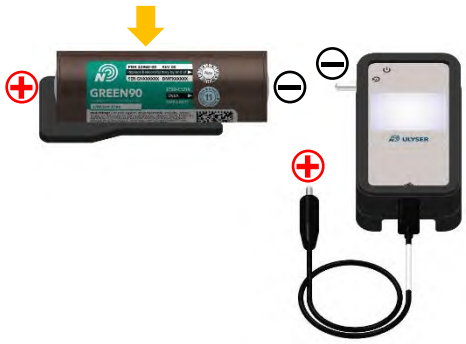
Switch on the Ulyser by pressing the On/Off-Button (Figure 28) until the start screen (Figure 16) appears.
Switch it off by pressing the On/Off-Button until the screen disappears.

Figure 28: Switch On/Off the Ulyser

Note: The Ulyser turns off automatically two minutes after the last operation. Data of the last readout remain recorded under normal conditions (e.g. battery level is not low) on the Ulyser.

5.3 Functional Test and Readout of Novega-ULD

Perform the following steps for the functional test and readout of a Novega-ULD

5.3.1 Place the required equipment on the table as described in chapter 4.2.2 and put the ULD on the fixture provided. **Ensure the correct polarity alignment of ULD and Ulyser!** (see Figure 29)	 *Figure 29: Prepare measurement of Novega ULD*
5.3.2 Switch on the Ulyser (see chapter 5.2).	
5.3.3 Press the Measurement Novega-button Ⓝ to start the functional test.	

5.3.4

Connect both jacks with the corresponding water switch pins of the ULD (Figure 30).

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 sleep mode.

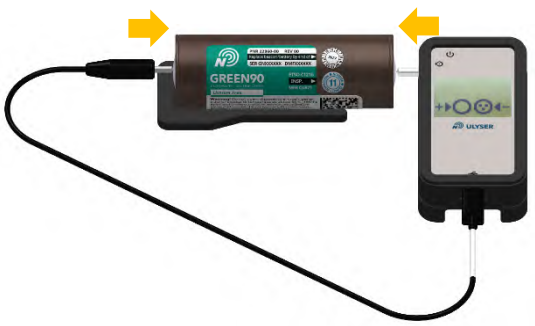


Figure 30: Connect with ULD

5.3.5

The measurement process for the functional test starts automatically. The Process Bar is displayed (Figure 19) and the ULD is activated. Successfully measuring is confirmed by a single "beep". The Ulyser automatically switches to the Measurement Screen (Figure 20). Now the jacks can be removed (Figure 31).

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 sleep mode.

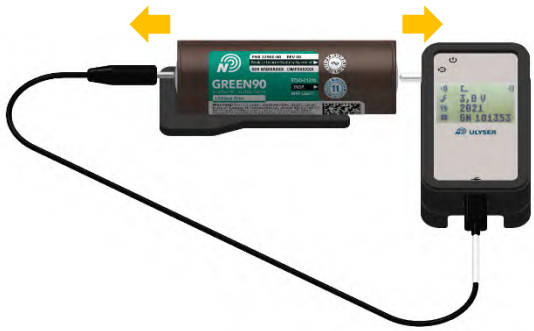


Figure 31: Remove jacks after connecting successfully

5.3.6

The acoustic signal emitted by the activated ULD can be checked with the Ulyser (Figure 32).

Note: The Ulyser has to be held in direction of the ULD to prevent losing the acoustic signal.

Figure 32: Checking the acoustic signal

5.3.7

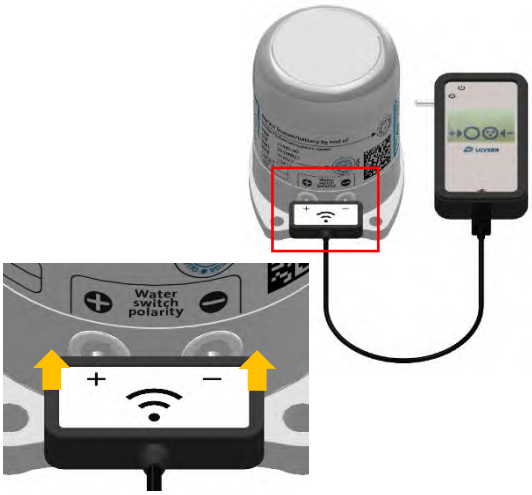
The functional test is successful when the Signal OK-symbol ☑ appears. The Ulyser has received three valid pulses.

Note: Measurement data are still displayed after performed testing.

Note: To ensure that the ULD switches back into sleep mode, wait until the pulse symbol on the display disappears and the audible pulse repetition of the Ulyser stops.

5.4 Functional Test and Readout of Novega-LF-ULD

Perform the following steps for the functional test and readout of a Novega-LF-ULD

5.4.1 Place the required equipment on the table as described in chapter 4.2.4. **Ensure the correct polarity alignment of LF-ULD and Ulyser!** (Figure 33)	 *Figure 33: Prepare measurement of Novega-LF-ULD*
5.4.2 Switch on the Ulyser (see chapter 5.2).	
5.4.3 Press the Measurement Novega-button Ⓝ to start the functional test.	
5.4.4 Connect the plug with the corresponding water switch pins of the LF-ULD (Figure 34). 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 sleep mode.	 *Figure 34: Connect with LF-ULD*

5.4.5

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 (Figure 20). Now the plug can be removed (Figure 35).

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 sleep mode.

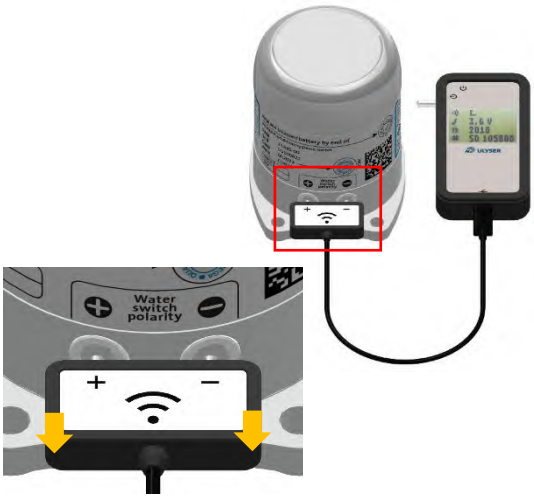


Figure 35: Remove the plug

5.4.6

The acoustic signal which the activated LF-ULD emits can be checked with the Ulyser (Figure 36).

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

Figure 36: Checking the acoustic signal

5.4.7

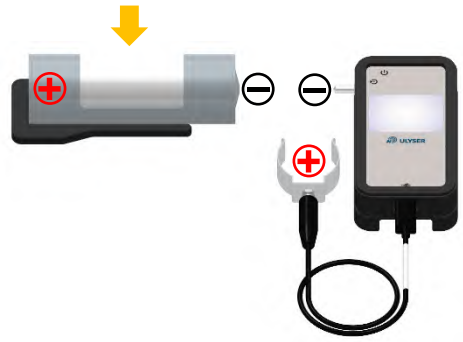
The functional test is successful when the Signal OK-symbol appears. The Ulyser has received three valid pulses.

Note: Measurement data are still displayed after performed testing.

Note: To ensure that the LF-ULD switches back into sleep mode, wait until the pulse symbol on the display disappears and the audible pulse repetition of the Ulyser stops.

5.5 Functional Test and Readout of Other ULD with one Pin

Perform the following steps for the functional test of a non Novega-ULD with one water switch pin

5.5.1 Place the required equipment on the table as described in chapter 4.2.3 and put the ULD on the fixture provided. **Ensure the correct polarity alignment of ULD and Ulyser!** (Figure 37)	 *Figure 37: Prepare measurement of other ULD with one water switch pin*
5.5.2 Switch on the Ulyser (chapter 5.2).	
5.5.3 Press the Measurement Other-button ◎ to start the functional test.	
5.5.4 The Connecting Screen (Figure 24) appears. Plug the clamp on the housing of the ULD next to the type plate and connect the jack of the Ulyser with the single water switch pin of the ULD (Figure 38). Maintain the connection until the measurement is completed. Note: The correct polarity between Ulyser and ULD is essential to perform the measurement properly! Note: The clamp must not contact the type plate!	 *Figure 38: Connect with ULD*
5.5.5 The Measurement Screen (Figure 25) appears and the voltage value is displayed. After three seconds the Ulyser repeats the emitted signals of the ULD by signals audible for the human ear (“beep”). Maintain the connection (Figure 39).	 *Figure 39: Check the acoustic signal and maintain connection*

5.5.6

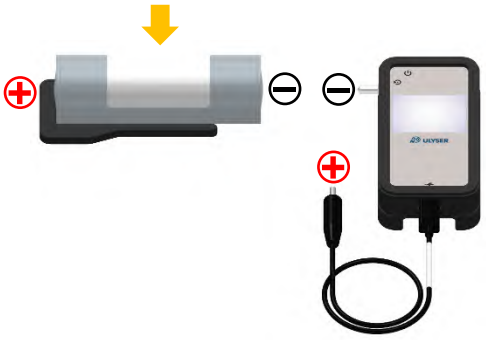
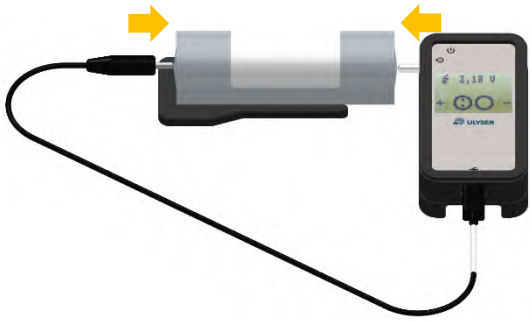
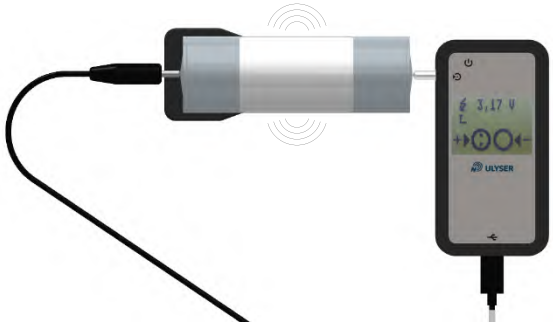
The functional test is successful when the Signal OK-symbol ☑ appears. The Ulyser has received three valid pulses. As long as the contact is maintained, the Ulyser repeats the signals of the ULD.
Jack and clamp can be removed (Figure 40).

Note: The voltage value and the Signal OK-symbol are still displayed after measuring.

Figure 40: Remove jack and clamp

5.6 Functional Test and Readout Other ULD with two Pins

Perform the following steps for the functional test of a non Novega-ULD with two water switch pins

5.6.1 Place the required equipment on the table as described in chapter 4.2.4 and put the ULD on the fixture provided. **Ensure the correct polarity alignment of ULD and Ulyser!** (Figure 41)	 *Figure 41: Prepare measurement of other ULD with two water switch pins*
5.6.2 Switch on the Ulyser (chapter 5.2).	
5.6.3 Press the Measurement Other-button ◎ to start the functional test.	
5.6.4 The Connecting Screen (Figure 24) appears. Connect both jacks with the corresponding water switch pins of the ULD (Figure 42). Maintain the connection until the measurement is completed. Note: The correct polarity between Ulyser and ULD is essential to perform the measurement properly!	 *Figure 42: Connect with ULD*
5.6.5 The Measurement Screen (Figure 25) appears and the voltage value is displayed. After three seconds the Ulyser repeats the emitted signals of the ULD by signals audible for the human ear (“beep”). Maintain the connection (Figure 43).	 *Figure 43: Check the acoustic signal and maintain connection*

5.6.6

The functional test is successful when the Signal OK-symbol ☑ appears. The Ulyser has received three valid pulses. As long as the contact is maintained, the Ulyser repeats the signals of the ULD.
Jacks can be removed (Figure 44).

Note: The voltage value and the Signal OK-symbol are still displayed after measuring.

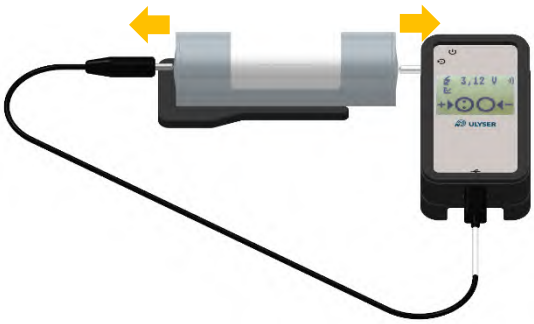
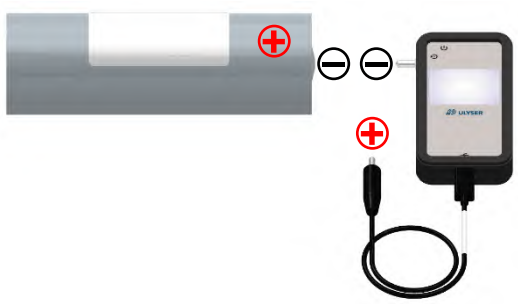
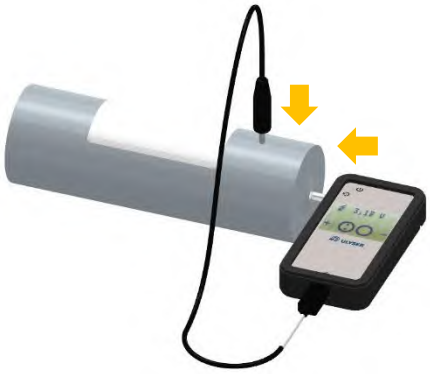
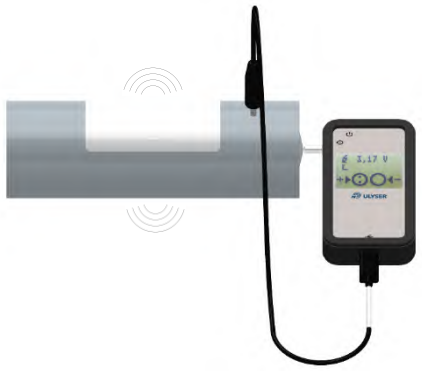


Figure 44: Remove the jacks

5.7 Functional Test and Readout Other LF-ULD with one Pin

Perform the following steps for the functional test of a non Novega-LF-ULD with one water switch pin

5.7.1 Place the required equipment on the table as described in chapter 4.2.5. **Ensure the correct polarity alignment of LF-ULD and Ulyser!** (Figure 45).	 *Figure 45: Prepare measurement of other ULD with two water switch pins*
5.7.2 Switch on the Ulyser (see chapter 5.2).	
5.7.3 Press the Measurement Other-button ◎ to start the functional test.	
5.7.4 The Connecting Screen (Figure 24) appears. Connect both jacks of the Ulyser with the corresponding poles of the LF-ULD (Contact the water switch pin and the housing). Maintain the connection until the measurement is completed (Figure 46). Note: The correct polarity between Ulyser and LF-ULD is essential to perform the measurement properly!	 *Figure 46: Connect with LF-ULD*

5.7.5 The Measurement Screen (Figure 25) appears and the voltage value is displayed. After three seconds the Ulyser repeats the emitted signals of the ULD by signals audible for the human ear (“beep”). Maintain the connection (Figure 47).	 *Figure 47: Check the acoustic signal and maintain connection*
5.7.6 The functional test is successful when the Signal OK-symbol ☑ appears. The Ulyser has received three valid pulses. As long as the contact is maintained, the Ulyser repeats the signals of the ULD. Jacks can be removed (Figure 48). Note: The voltage value and the Signal OK-symbol are still displayed after measuring.	 *Figure 48: Remove the jacks*

6 Fault Isolation

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

6.1 General Faults

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 7.1.
	The battery was not inserted correctly.	Check the battery, follow the instructions in chapter 7.1.
	The wrong battery type has been inserted.	Check the battery, follow the instructions in chapter 7.1.
	Defect of the Ulyser.	Contact our service department (Service Address).
Testing with the Ulyser does not deliver the expected result. Note: For fault prevention and the complete testing procedure with the Ulyser please follow the instructions of chapter 5 step by step.	The battery level of the Ulyser is too low. Note: The low battery screen is only displayed after the start screen (see chapter 4.3.9).	Restart the Ulyser (chapter 5.2) to check if the low battery screen is displayed. In case of this replace the battery and follow the instructions in chapter 7.1. Start the functional test again.
	Bad contact on the water switch pins/housing of the ULD/LF-ULD.	Clean the water switch pins and the housing of the ULD/LF-ULD with a soft cloth and a mild detergent. Start the functional test again.
	Defect of the Activation Cord.	Contact our service department (Service Address).
	Defect of the Activation Cord SID88.	Contact our service department (Service Address).
	Defect of the Activation Clamp.	Contact our service department (Service Address).
	Defect of the ULD/LF-ULD.	Check the ULD/LF-ULD.
	Defect of the Ulyser.	Contact our service department (Service Address).

6.2 Faults when measuring Novega-ULD/LF-ULD

Fault	Probable cause	Correction action
Testing with the Ulyser does not deliver the expected result. Note: For fault prevention and the complete testing procedure with the Ulyser please follow the instructions of chapter 5 step by step.	Contact has lost during measurement or readout has failed. Note: The error message ***"Reading incomplete retry in 66 sec"*** appears at the Ulyser after starting measurement.	Ensure that the water switch pins and the housing of the ULD/LF-ULD are clean and also the jacks/plug of the Ulyser. Start the functional test again. Note: The next measurement can be performed when the ULD/LF-ULD drops back into sleep mode after 66 seconds.
	The poles have been inverted. Note: The error message ***"Check polarity retry in 66 sec"*** appears at the Ulyser after starting measurement.	Note the correct polarity between ULD/LF-ULD and Ulyser and start the functional test again. Note: The next measurement can be performed when the ULD/LF-ULD drops back into sleep mode after 66 seconds.
	The wrong measurement mode is active. Note: The error message ***"Change to N"*** appears.	Return to the Start Menu (chapter 4.3.2) and choose the correct measurement button. For Novega ULD/LF-ULD choose ***"N".*** Start the functional test again.
Impossibility of switching the ULD/LF-ULD into "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. Start the functional test again.
	Defect of the ULD/LF-ULD	Check the ULD/LF-ULD.
The Signal OK-symbol ☑ does not appear.	The ULD/LF-ULD is no longer in 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 66 seconds.
	The Ulyser did not receive three pulses. Note the pulse repetition rate of the ULD/LF-ULD.	Start the functional test again and hold the Ulyser in the direction of the ULD/LF-ULD to prevent losing the acoustic signal.

6.3 Faults when measuring Other ULD/LF-ULD

Fault	Probable cause	Correction action
Testing with the Ulyser does not deliver the expected result. E.g.: the Ulyser gives no response; the Ulyser does not switch into the Measurement Screen after connecting; no voltage value is displayed, only "beep" is emitted, etc. Note: For fault prevention and the complete testing procedure with the Ulyser please follow the instructions of chapter 5 step by step.	Bad contact on the water switch pins or the housing of the ULD/LF-ULD	Clean the water switch pins and the housing of the ULD/LF-ULD with a soft cloth and a mild detergent. Start the functional test again.
	The poles have been inverted.	Note the correct polarity between ULD/LF-ULD and Ulyser and start the functional test again.
	The wrong measurement mode is active.	Return to the Start Menu (chapter 4.3.2)and choose the correct measurement button. For other (non Novega) ULD/LF-ULD choose *"O"*. Start the functional test again.

7 Maintenance

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

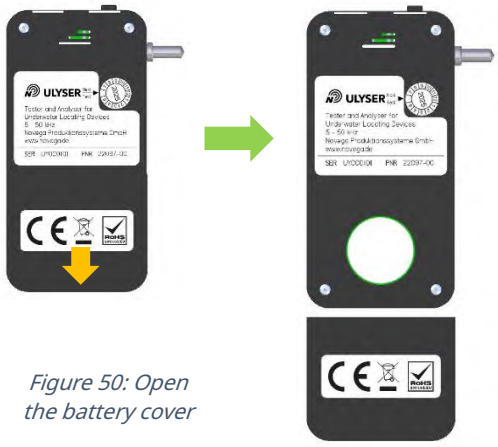
7.1 Battery Replacement

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 Low Battery-symbol appears on the screen (chapter 4.3.9). The battery needs to be replaced.

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

Note: The Low Battery Screen (chapter 4.3.9) is only displayed after the start screen when the Ulyser is switched on. Then as usual the Ulyser automatically switches to the Start Menu (chapter 4.3.2).

Perform the following steps to replace the battery

7.1.1 Clean the Ulyser with a soft, anti-static and dry cloth.	
7.1.2 Wear an ESD grounding wristlet to protect the electronic.	
7.1.3 Remove the silicone sleeve (Figure 49).	 *Figure 49: Remove the silicone sleeve*
7.1.4 Open the battery cover on the back side of the Ulyser by pulling it in the direction shown (Figure 50).	 *Figure 50: Open the battery cover*

7.1.5
Replace the battery. Attend to the correct polarity when inserting the new battery (plus pole on top, see Figure 51).

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

Figure 51: Replace the battery

7.1.6
Discard the used battery.

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

7.1.7 Close the battery cover (Figure 52).

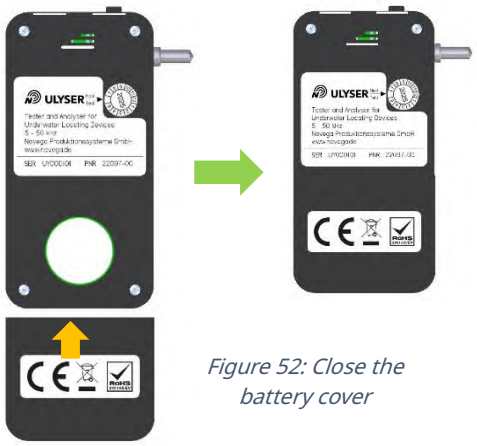


Figure 52: Close the battery cover

7.1.8 Mount the silicone sleeve (Figure 53)

Figure 53: Mount the silicone sleeve

7.2 Annual Works Test

An annual works test is recommended. Due to this please send the Ulyser to our service department. Please provide all required information for the return. We will 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 3.3).

7.3 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).

7.4 Returns

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

- Reason for return
- Serial number of the Ulyser
- Order (if required) for replacement of the Ulyser
- Company
- Contact data (name, telephone, e-mail address)

7.5 Service Address

Novega Produktionssysteme GmbH
Gewerbepark 2 | 87477 Sulzberg (See) | **Germany**
Fon: (+49) 8376-92990-0
E-Mail: info@novega.de
www.novega.de

8 Warranty and Guaranty

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