Leak Locators of Montana

SEWERIN
Technologies for leak detection.

AQUAPHON®

A 150 Receiver

10.09.2018 a -107668 – en

Operating Instructions

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Technologies for leak detection.

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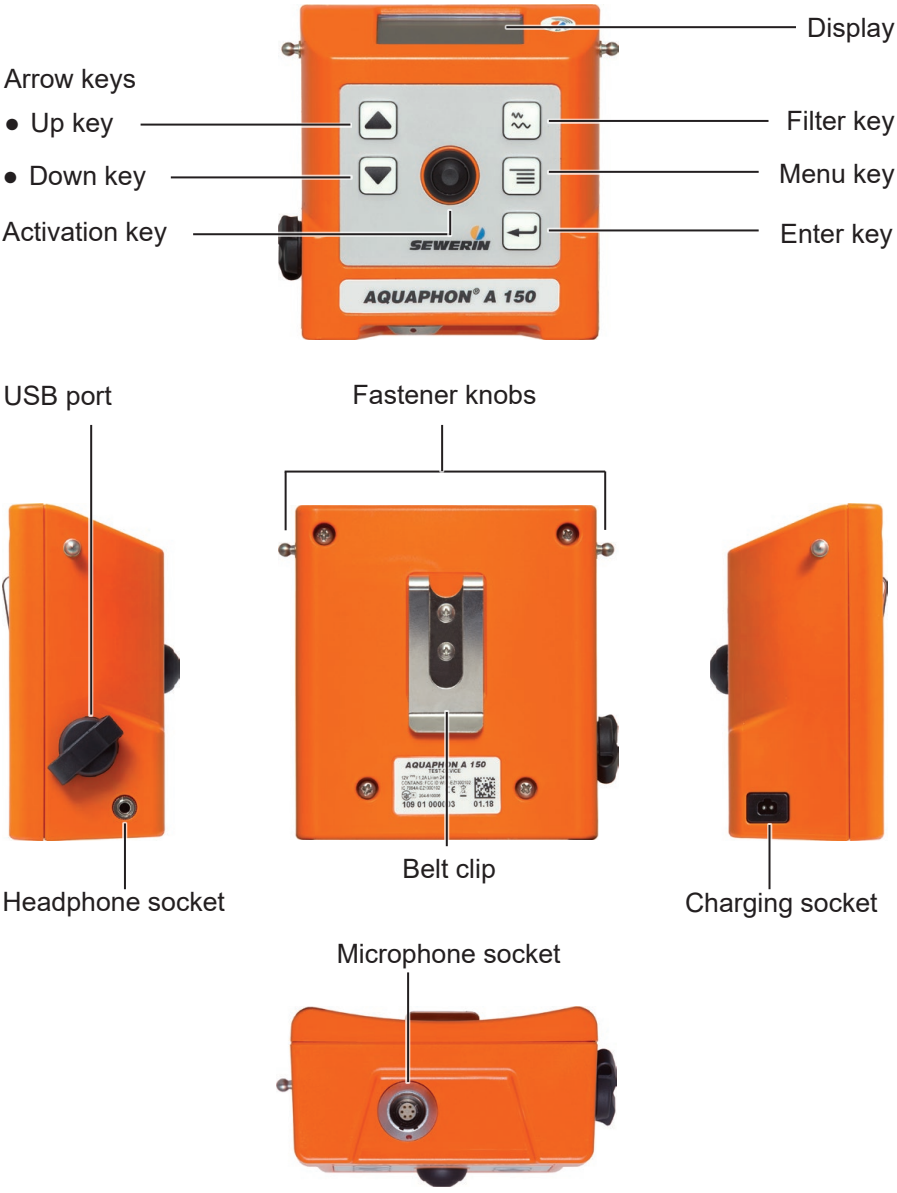

Fig. 1: **A 150** receiver viewed from various angles

A 150 receiver

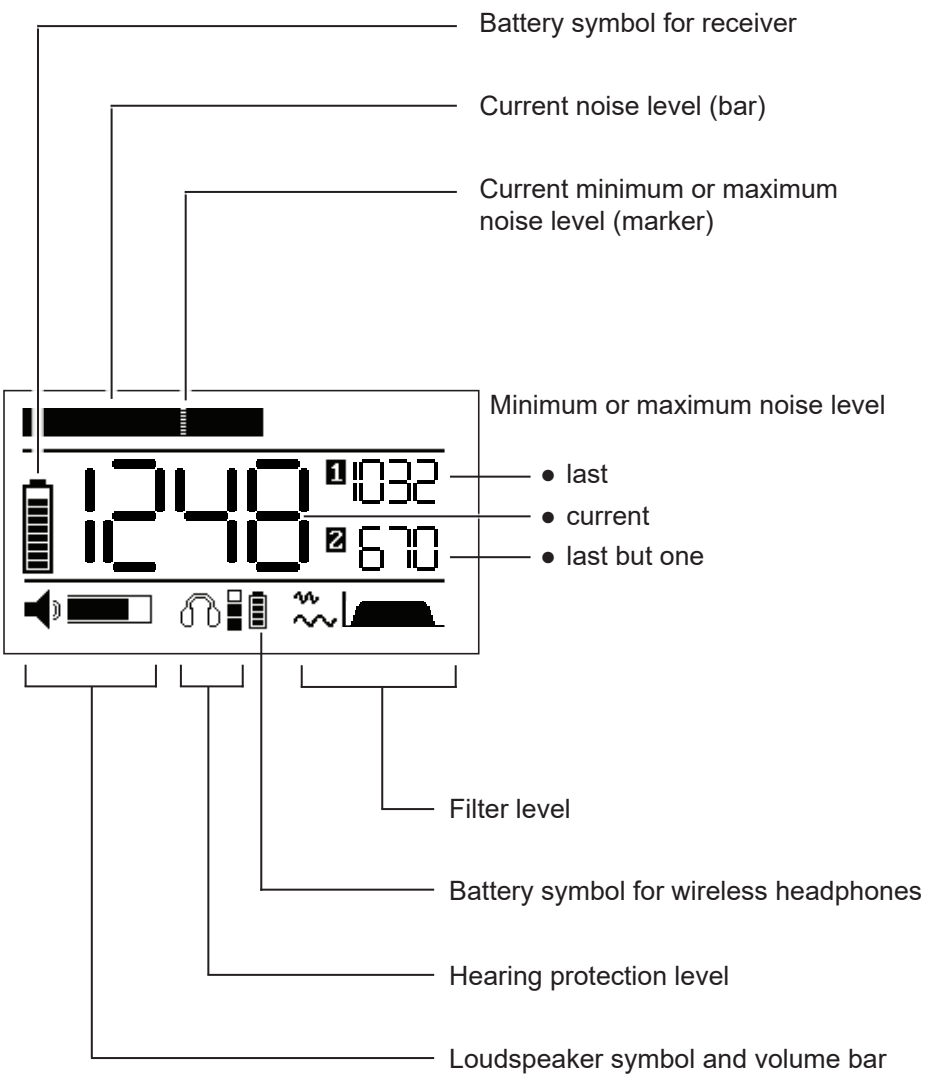

Fig. 2: Display with main view

Illustration of warnings in this document

WARNING!
Risk of personal injury. Could result in serious injury or death.

CAUTION!
Risk of personal injury. Could result in injury or pose a risk to health.

NOTICE!
Risk of damage to property.

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1 Introduction

1.1 Information about this document

This document is a component part of the product.

- Read the document before putting the product into operation.
- Keep the document within easy reach.
- Pass this document on to any subsequent owners.
- Unless otherwise specified, the information in this document refers to the product as delivered (factory settings) and applies to all product variants.
- The product is described with all device features. Not all of the functions described may be available on the product you are using. Please contact the SEWERIN sales department for further information.
- Contradictory national legal regulations take precedence over the information in this document.

Translations

Translations are produced to the best of our knowledge. The original German version is authoritative.

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Registered trademarks

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1.2 Purpose

The **AQUAPHON** system with **A 150** receiver is intended for acoustic water leak detection. The system can be used both outdoors and inside buildings.

The following uses are possible:

- preliminary detection
  - at fittings (e.g. hydrants, slide gates)
- pinpointing leaks
  - on paved surfaces (e.g. asphalt, concrete, paving)
  - on unpaved surfaces (e.g. gravel, crushed rock, grass)

1.3 Intended use

The **AQUAPHON** system with the **A 150** receiver is suitable for the following uses:

- professional
- industrial
- commercial

The **AQUAPHON** system must only be used for the applications specified in section 1.2.

Note:
The appropriate specialist knowledge is required for using the **AQUAPHON** system.

1.4 General safety information

This product was manufactured in accordance with all binding legal and safety regulations.

The product is safe to operate when used in accordance with the instructions provided. However, when handling the product, there may be risks to persons and property. For this reason, always observe the following safety information.

- Observe all the applicable safety standards and accident prevention regulations.
- Use the product only as intended.
- Do not make any changes or modifications to the product unless these have been expressly approved by Hermann Sewerin GmbH.
- Only use accessories and consumables approved by Hermann Sewerin GmbH.
- Always observe the permitted operating and storage temperatures.
- Handle the product carefully and safely both during transport and when working.
- Always adequately cordon off the work area.
- When you are wearing headphones, you are not fully aware of ambient noise. Be especially vigilant, especially in environments with an increased risk of accident (e.g. traffic).
- Do not use the product if it is damaged or faulty.
- Protect the ports and sockets against dirt, and electrical ports in particular against moisture.

2 AQUAPHON system

2.1 General information regarding the system

In order to be able to work with the system, a microphone must be connected to the **A 150** receiver. The microphone picks up noises.

If you press the Activation key on the receiver, you can hear the noises through the headphones. The playback volume is adjustable. The noises are not saved.

2.2 Hearing protection

The system features a hearing protection function which protects the user from sudden loud sound interference. This type of sound interference can occur if a vehicle drives past or if the touch microphone slips off the contact point.

Hearing protection is activated when the predefined hearing protection threshold is exceeded. When the noise from the source of interference ceases, hearing protection switches off again automatically.

The way in which hearing protection works depends on the settings. Further information can be found in section 4.6 on page 24.

Note:
Another way of protecting the hearing from loud noises is to set the volume only as high as is absolutely necessary.

2.3 System components

2.3.1 Overview

The system has a modular construction. The main system components are as follows:

- **A 150** receiver
- Headphones
  - **F8** wireless headphones
  - **K3** headphones
- **TS 150** carrying rod
- Microphones
  - **UM 200** universal microphone
  - **BM 200** or **BM 230** ground microphone
  - **TM 200** touch microphone
- Accessories
  - **AC 200 SK4** case
  - AC/DC adapter **L**, vehicle cable **L**
  - Probe tips and extensions
  - **M 10** tripod

Additional accessories can be added to the system at any time, e.g. for charging.

2.3.2 A 150 receiver

2.3.2.1 Setup

For overviews including all part names for the receiver, see the front cover flap (fig. 1).

Keys

The receiver has the following keys:

- Activation key

For starting and ending a measurement (listening to noises).

- Arrow keys

For adjusting the volume.
For changing settings and filter limits.

- Filter key

For switching between the main view and the **Filter** view.

- Menu key

For switching between the main view and the **Settings** view.

- Enter key

In the **Filter** and **Settings** views: for selecting the settings.

Connections

The receiver has the following connections:

- Charging socket — For charging the rechargeable battery.
  The following can be connected:
  – connection cable in case
  – **M4** AC/DC adapter
  – **M4** vehicle cable
- Microphone socket — For connecting a microphone.
  The following can be connected:
  – **UM 200** universal microphone
  – **TS 150** carrying rod
- Headphone socket — For connecting the **K3** headphones.
- USB port — For servicing purposes.

Display rotation

The orientation of the display can be adjusted to the position in which the receiver is used. If the receiver is rotated horizontally through 180° about its longitudinal axis, the display rotates too.

Fastener knobs

The **EA** carrying strap can be attached to the fastener knobs.

Carrying options

The receiver can be carried as follows when in use:

- worn around the neck (with the **EA** carrying strap)
- clipped to the waistband (with the belt clip)
- held in the hand

2.3.2.2 Activation key operating modes

There is a choice of two operating modes for the Activation key.

- Hold mode

  The Activation key is held down for the desired duration of the measurement.

- Toggle mode

  The Activation key is pressed briefly to start the measurement. The Activation key is pressed briefly again to end the measurement.

The operating mode is selected in the **Settings** view.

2.3.2.3 Noise level display

The following noise levels are shown on the display in the main view:

- Current noise level
- Minimum or maximum noise level
  - current
  - last
  - last but one

Whether or not the minimum noise level or maximum noise level is displayed depends on the **MODE** setting.

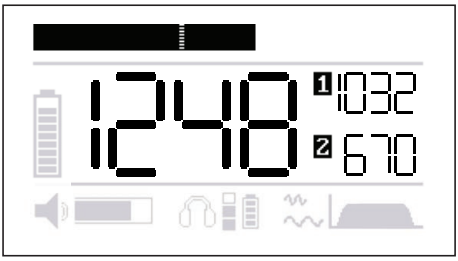


Fig. 3: Graphical and numerical noise level display in minimum noise level function
Top: Current noise level (bar) and current minimum noise level (marker in bar)
Middle: Current minimum noise level (*here*: 1248)
Right: [1] Last minimum noise level (*here*: 1032) and [2] Last but one minimum noise level (*here*: 670)

Fig. 4: Graphical and numerical noise level display in maximum noise level function
Top: Current noise level (bar) and current maximum noise level (marker outside of bar)
Middle: Current maximum noise level (*here*: 173)
Right: [1] Last maximum noise level (*here*: 398) and [2] Last but one maximum noise level (*here*: 546)

Note:
If you switch from the main view to the **Settings** or **Filter** view, the saved noise level will be deleted.

Current noise level

The current noise level is always displayed as soon as the system is ready for use. It is displayed in the form of a black bar.

Minimum or maximum noise level

The level is the measured value for a current or complete measurement.

- Current level

  The current minimum or maximum noise level is displayed in the middle of the main view as a numerical value. It also appears as a dashed line in the bar (minimum noise level) or to the right of the bar (maximum noise level).

- Last level

  When a measurement has been completed, what was until then the current minimum or maximum noise level is displayed as the last level next to [1].

- Last but one level

  When the next measurement has been completed, the last minimum or maximum noise level becomes the last but one level and is displayed next to [2].

2.3.2.4 Power supply

The **A 150** receiver is powered by a special, permanently installed lithium-ion rechargeable battery.

Only SEWERIN service personnel or other authorised specialists may replace the lithium-ion rechargeable battery.

WARNING! Risk of explosion due to short-circuit
Faulty lithium-ion rechargeable batteries can explode due to internal short-circuit.

- Components containing a faulty lithium-ion battery must not be shipped.

However, in the event of a fault the lithium-ion rechargeable battery must be removed before shipping the device. Information about handling faulty lithium-ion batteries can be found in section 6.4 on page 32.

Information about charging the rechargeable battery can be found in section 5.1 on page 28**.**

2.3.3 Microphones

The following microphones are available:

- **UM 200** universal microphone
- **TM 200** touch microphone
- **BM 200** and **BM 230** ground microphones

The microphones can be used for both preliminary detection and for pinpointing leaks. The suitability of a microphone for a particular use is very much dependent on the nature of the contact point.

An overview of which microphones are suitable for which purposes can be found in section 7.2 on page 36.

The **UM 200** universal microphone has a cable which allows it to be connected directly to the receiver. The other microphones are connected to the receiver using the **TS 150** carrying rod. The A 150 receiver automatically detects the various microphone types when they are connected.

Fig. 5: Top: **UM 200** universal microphone,
TM 200 touch microphone
Bottom: **BM 200** ground microphone,
BM 230 ground microphone

CAUTION!

The **UM 200** universal microphone can be used with a contact adapter. The contact adapter contains a strong magnet.

- Keep the contact adapter away from magnetic storage media (e.g. hard drives, credit cards) and medical devices (e.g. pacemakers, insulin pumps).

2.3.4 TS 150 carrying rod

The **TS 150** carrying rod is used to hold different microphones. The carrying rod is connected to the A 150 receiver via the microphone socket.

Fig. 6: **TS 150** carrying rod

NOTICE!

Constant or jerky tensile forces can compromise or damage the cable connection to the carrying rod.

- Never carry the carrying rod by its cable.

3 Using the system

3.1 Preparing the system

A microphone must be selected for the intended use.

An overview of the configuration options for the microphones depending on the intended use can be found in section 7.3 on page 37.

Prepare the microphone for the intended use:

- Attach any accessories required to the microphone.
- Connect the microphone to the **TS 150** carrying rod if necessary.

3.2 Starting up the system

To start up the system, perform the following steps in any order:

- connect microphone or carrying rod
- connect headphones

3.2.1 Connecting the microphone or carrying rod

The receiver switches on as soon as a microphone or the test rod is connected.

- Plug the microphone or the carrying rod into the microphone socket on the receiver.

  When inserting the plug, please ensure that the two red dots are lined up.

  The receiver switches on. A start screen appears on the display for approx. 5 seconds. The connected microphone type appears.

3.2.2 Connecting the headphones

3.2.2.1 F8 wireless headphones

The **A 150** receiver automatically detects the **F8** wireless headphones when they are within range.

Once connected, the small battery symbol for the wireless headphones will appear in the main view.

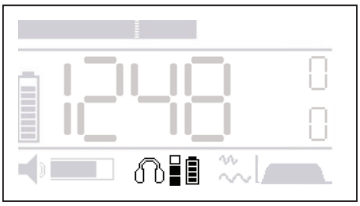


Fig. 7: **F8** wireless headphones ready for use
(battery symbol for wireless headphones visible)

3.2.2.2 K3 headphones

The **K3** headphones are connected to the receiver by cable.

1. The **K3** headphones must be used with the 3.5 mm phone jack. Remove the adapter (6.3 mm) from the phone jack if necessary.
2. Plug the phone jack into the headphone socket on the receiver.

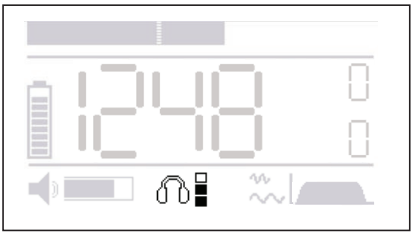


Fig. 8: **K3** headphones ready for use

3.3 Starting and ending a measurement

To listen to noises you must start a measurement.

Measurements are started and ended using the Activation key. How the Activation key is used depends on the selected operating mode. Information about the operating modes can be found in section 2.3.2.2 on page 8.

The system is ready for use. The display shows the main view. The headphones symbol is crossed out (fig. 9).

- Press the Activation key to start and end a measurement.

  Noises can be listened to when a measurement is running. The headphones symbol is not crossed out.

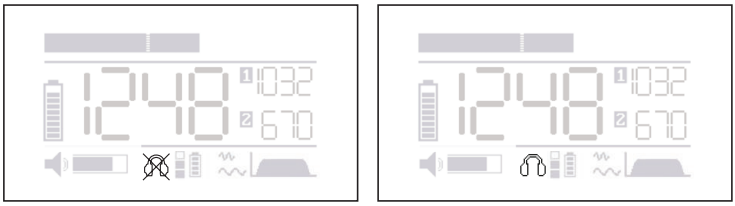


Fig. 9: Headphones symbol when the system is ready for use
Image left: Symbol crossed out, i.e. no measurement in progress or hearing protection threshold exceeded during a measurement
Image right: Symbol not crossed out, i.e. measurement in progress and noises can be heard

Further information about the hearing protection threshold can be found in section 4.6 on page 24.

If the headphones symbol is crossed out during a measurement ...

- The hearing protection threshold has been exceeded during the measurement. As soon as the noise level falls below the hearing-protection threshold again, the symbol appears without a cross through it.
- No measurement is in progress because the measurement was not started correctly. Check the setting for the operating mode of the Activation key to see if the Activation key has been used accordingly.

3.4 Adjusting the volume

CAUTION! Health hazard
Loud noises can damage the hearing and lead to irreversible health problems.
- Always adjust the volume to the current situation.
- Choose as low as possible a volume.

Any change to the volume can be heard immediately through the headphones. The volume bar will change in the main view.

The main view is open.

- Press the Down key to lower the volume.
- Press the Up key to increase the volume.

3.5 Filtering noises

Filters can be used to filter out sound interference. Leak noises are more audible with the right filter settings.

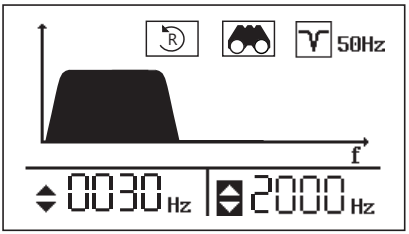


Fig. 10: **Filter** view
Bottom left: Lower filter limit (*here:* 30 Hz)
Bottom right: Upper filter limit (*here:* 2000 Hz)
The symbol for the upper filter limit is inverted, which means that this filter limit can now be adjusted.

Fig. 11: Symbols in the **Filter** view:
RESET, SCAN, **NOTCH FILTER** (*here*: 50 Hz)

The following filters can be used:

- bandpass
- notch filter

3.5.1 Using bandpass

The bandpass filter limits can be set to filter out sound interference in the upper or lower frequency range. Any change to the filter limits can be heard immediately through the headphones.

The filter limits can be set manually and automatically (**SCAN**).

The set filter limits are always saved automatically for every microphone type. When the system is switched on, the settings last used for a microphone type will be available again.

3.5.1.1 Manually adjusting the bandpass

The main view is open.

1. Press the Filter key.

   The **Filter** view appears.

2. Change the settings.

   a) Keep pressing the Enter key until the symbol in front of the filter limit you wish to change is inverted.

   b) To change the filter limit:

   − press the Up key to increase the value.

   − press the Down key to lower the value.

3. Press the Filter key again to apply the settings. The receiver returns to the main view.

3.5.1.2 Scanning the bandpass

The scanning function is used to suggest filter settings suitable for the current location scenario. These can be applied to the measurement or further manually adjusted.

The maximum available frequency range is always scanned, not just the frequency range currently displayed.

1. Press the filter key.

   The **Filter** view appears.

2. Keep pressing the Enter key until the **SCAN** symbol is inverted.

3. Press the Up or Down key to start scanning.

   Once the scanning process is complete, the filtered noises will be audible.

4. If necessary, optimise the filter settings manually (see section 3.5.1.1 on page 17).

5. Press the filter key again to go back to the main view.

3.5.2 Using the notch filter

Live cables can produce sound interference. The notch filter can reduce this type of interference. To do so, you will need to select the frequency of the mains (50 Hz or 60 Hz).

The following settings can be selected:

- 50 Hz
- 60 Hz
- OFF

The main view is open.

1. Press the Filter key.

   The **Filter** view appears.

2. Keep pressing the Enter key until the **NOTCH FILTER** symbol is inverted.

3. Press the Up or Down key until the required setting appears.

4. Press the Filter key again to apply the setting. The receiver returns to the main view.

3.5.3 Resetting filter settings

The filter settings for the connected microphone can be reset to the factory settings at any time.

The main view is open.

1. Press the filter key.

   The **Filter** view appears.

2. Keep pressing the Enter key until the **RESET** symbol is inverted.
3. Press the Up or Down key.

   The filter settings will be deleted immediately without confirmation.

4. Press the filter key again to go back to the main view.

3.6 Switching off the system

NOTICE!

The microphone plugs have a mechanical lock which prevent the plug from accidentally coming out of the microphone socket.

- Always hold the plug by the plug housing when disconnecting the microphone/carrying rod from the receiver.

The system is switched off as follows:

- Disconnect the microphone from the receiver. To do so, unplug the microphone/carrying rod from the microphone socket on the receiver.

  The receiver switches off.

4 Settings

4.1 Overview

Operation of the system can be configured to your individual requirements.

The individual settings are saved until the next change. The factory settings can be restored at any time.

The settings are changed by pressing the menu key in the **Settings** view. The view comprises two sections. Press the Enter key to switch between the two sections.

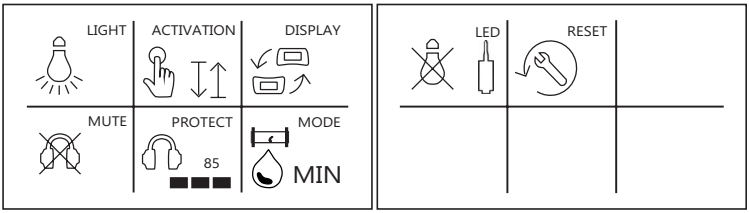
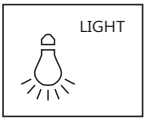


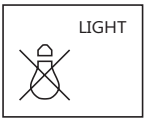
Fig. 12: **Settings** view
Image left: Section 1 Image right: Section 2

4.2 Backlight (LIGHT)

The receiver display features a backlight.



Backlight activated



Backlight deactivated

Changing the LIGHT setting

The system is ready for use. The display shows the main view.

1. Press the Menu key.

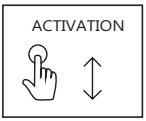
   The **Settings** view appears. **LIGHT** is inverted.

2. Change the setting.
   - Press the Down key to deactivate the function.
   - Press the Up key to activate the function.

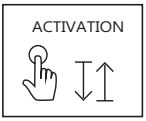
3. Press the Menu key to apply the settings. The receiver returns to the main view.

4.3 Operating mode (ACTIVATION)

There is a choice of two operating modes for the Activation key.



Hold mode



Toggle mode

Information about the operating modes can be found in section 2.3.2.2 on page 8.

Changing the ACTIVATION setting

The system is ready for use. The display shows the main view.

1. Press the Menu key.

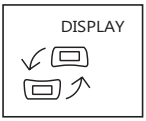
   The **Settings** view appears.

2. Keep pressing the Enter key until **ACTIVATION** is inverted.

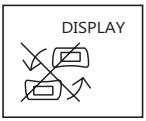
3. Change the setting.
   - Press the Down key to activate Toggle mode.
   - Press the Up key to activate Hold mode.
4. Press the Menu key to apply the settings. The receiver returns to the main view.

4.4 Display rotation (DISPLAY)

If the receiver is rotated through 180° about its longitudinal axis, the display follows the movement.



Display rotation activated



Display rotation deactivated

Changing the DISPLAY setting

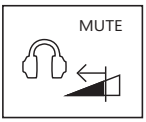
The system is ready for use. The display shows the main view.

1. Press the Menu key.

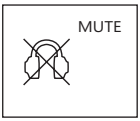
   The **Settings** view appears.
2. Keep pressing the Enter key until **DISPLAY** is inverted.
3. Change the setting.
   - Press the Down key to deactivate the function.
   - Press the Up key to activate the function.
4. Press the Menu key to apply the settings. The receiver returns to the main view.

4.5 Hearing protection (MUTE)

The hearing protection function determines whether noises can be listened to through the headphones above the hearing protection threshold.



Listen to muted noise



Do not listen to noise

Changing the MUTE settings

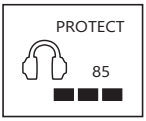
The system is ready for use. The display shows the main view.

1. Press the Menu key.

   The **Settings** view appears.
2. Keep pressing the Enter key until **MUTE** is inverted.
3. Change the setting.
   - Press the Down key to listen to muted noise.
   - Press the Up key to choose not to listen to the noise.
4. Press the Menu key to apply the settings. The receiver returns to the main view.

4.6 Hearing protection threshold (PROTECT)

The hearing protection threshold is the volume limit above which hearing-protection is activated.



Hearing protection threshold (*here:* level 4)

The hearing protection threshold can be set to four levels.

Level	Display	Protective effect	Hearing protection threshold
1	□□□	none	—
2	■□□	low	approx. 105 dB
3	■■□	medium	approx. 95 dB
4	■■■	high	approx. 85 dB

Changing the PROTECT setting

CAUTION! Health hazard

Loud noises can damage the hearing and lead to irreversible health problems.

This danger also applies to sudden loud sound interference.

If you select a very high hearing protection threshold, hearing protection only takes effect with very loud noises. Therefore, the protective effect is low.

- Always adjust the hearing protection threshold to the current situation.
- Choose as low as possible a hearing protection threshold.

The system is ready for use. The display shows the main view.

1. Press the Menu key.

   The **Settings** view appears.
2. Keep pressing the Enter key until **PROTECT** is inverted.
3. Change the setting.
   - Press the Down key to select a lower hearing protection threshold.
   - Press the Up key to select a higher hearing protection threshold.

   SEWERIN recommends: pressing the Activation key to hear the effect of the change on the noise playback.
4. Press the Menu key to apply the settings. The receiver returns to the main view.

4.7 Minimum noise level or maximum noise level (MODE)

This function is used to specify which noise level is displayed.

Changing the setting for MODE

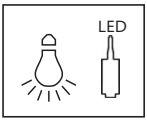
The system is ready for use. The display shows the main view.

1. Press the Menu key.

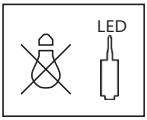
   The **Settings** view appears.
2. Keep pressing the Enter key until **MODE** is inverted.
3. Change the setting.
   - Press the Down key to display the minimum noise level.
   - Press the Up key to display the maximum noise level.
4. Press the Menu key to apply the settings. The receiver returns to the main view.

4.8 Light on the microphone (LED)

This function is used to switch the light on the **UM 200** and **TM 200** microphones permanently on or off



Light on microphone switched on



Light on microphone switched off

Changing the setting for LEDs

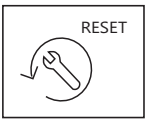
The system is ready for use. The display shows the main view.

1. Press the Menu key.

   The **Settings** view appears.
2. Keep pressing the Enter key until **LED** is inverted.
3. Change the setting.
   - Press the Up key to turn on the LEDs on the microphone.
   - Press the Down key to turn off the LEDs on the microphone.
4. Press the Menu key to apply the settings. The receiver returns to the main view.

4.9 Factory settings (RESET)

This function restores all individual settings to the factory settings. Factory settings are the settings on the receiver at the time of delivery.



Restore settings to factory settings

An overview of the factory settings can be found in section 7.4 on page 38.

Restoring settings to factory settings

The system is ready for use. The display shows the main view.

1. Press the Menu key.

   The **Settings** view appears.

2. Keep pressing the Enter key until **RESET** is inverted.

Note:
The settings are reset immediately and with no further warning. Saved measurement data is also deleted.

---

3. Press either the Down key or the Up key.

   The device is immediately restored to factory settings. The receiver will restart.

5 Maintenance and servicing

5.1 Charging the batteries

The batteries for the following components must be recharged when necessary:

- **A 150** receiver (lithium-ion rechargeable battery)
- **F8** wireless headphones (NiMH rechargeable battery)

The components can be left connected to the power supply once they are fully charged.

There are two ways of charging the components:

- all of the components simultaneously in the case
- each component individually

The permitted temperature range must be observed during charging. If the temperature rises above or falls below the limit values, charging is interrupted until the temperature is within the permitted range again.

5.1.1 Recharging batteries in the case

The rechargeable batteries for the components can all be charged at the same time in the **AC 200 SK4** case. The case is connected to the power supply using AC/DC adapter **L** or vehicle cable **L**.

The AC/DC adapter and the vehicle cable are available to buy as accessories.

The connection cable for the components can be found in the case. There is a power connector on the outside of the case.

Fig. 13: Case with connection cables (white circles) and power connector on outside (black arrow).

1. Place the components in their dedicated compartments in the **AC 200 SK4** case.
2. Connect the components using the connection cables.
3. Connect the case to the power supply. Charging starts automatically.

5.1.2 Charging batteries using the AC/DC adapter or vehicle cable

The components are connected directly to the power supply using AC/DC adapter **M4** or vehicle cable **M4** for recharging. Each component is charged individually.

5.2 Care

To care for the components, simply wipe them down with a damp cloth.

SEWERIN recommends removing significant contamination immediately.

A 150 receiver display

The display is sensitive to mechanical and chemical stress.

- Always use a clean, soft cloth to clean the display.
- Never use cleaning agents containing aggressive constituents (e.g. acidic or abrasive constituents) to clean the display.

TS 150 carrying rod

- Never use compressed air or a water jet for cleaning.

Microphones

- Microphones can be rinsed under running water.

5.3 Maintenance

If the rechargeable battery of the **A 150** receiver is not used for a long time, its durability and capacity may be reduced.

- You should charge the battery at least once every 6 months.

SEWERIN recommends having the system serviced regularly by SEWERIN Service or an authorised professional. Only regular maintenance can ensure that the system is always ready for use.

6 Troubleshooting

6.1 A150 receiver

If a fault occurs on the receiver, an error message is displayed (fig. 14). The error can only be rectified by SEWERIN Service.

Fig. 14: Error message

- Send the receiver to SEWERIN Service for repair.

6.2 F8 wireless headphones

If the battery symbol for the wireless headphones does not appear:

- check that the wireless headphones are switched on. If the wireless headphones are switched on, the green LED will illuminate. Switch on the wireless headphones if necessary.
- check the power supply to the wireless headphones. If necessary, recharge or replace the batteries.

6.3 Charging the batteries

If the ambient temperature falls below 0 °C or rises above 40 °C during charging, the charging process will automatically stop. A temperature warning will appear on the display.

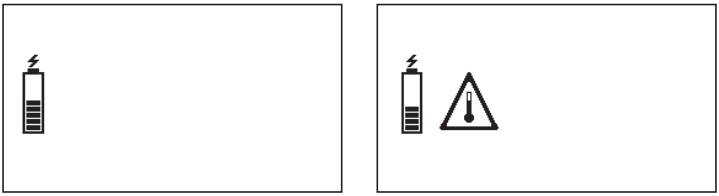


Fig. 15: Display when charging
Image left: Standard charging
Image right: Warning if the temperature is outside the permitted range

The warning will disappear as soon as the temperature is within the permitted range again. Charging will continue.

6.4 Handling defective lithium-ion batteries

Lithium-ion batteries are always classed as dangerous goods for transport purposes.

The transport of defective lithium-ion batteries is restricted (e.g. air freight is not permissible). Where transport is permitted (e.g. by road or rail), it is subject to strict regulations. Defective lithium-ion batteries must, therefore, be removed from components before sending them by post. Transport by road or rail is subject to the provisions set out in the latest version of the ADR[1] regulations.

NOTICE! Risk of damage when removing lithium-ion rechargeable batteries

The battery compartments of the components contain parts that are susceptible to damage when removing the rechargeable batteries.

- Lithium-ion batteries may only be removed if you have legitimate grounds to suspect that the battery may be defective.
- Only SEWERIN Service personnel or other authorised specialists may replace the rechargeable batteries.

---

[1] French abbreviation for the Accord européen relatif au transport international des marchandises Dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

6.4.1 Identifying a defective battery

If one of the following criteria applies, the lithium-ion battery is defective[2]:

- Housing damaged or badly deformed
- Liquid leaking from battery
- Smell of gas from battery
- Rise in temperature with the receiver switched off (more than hand-hot)
- Plastic parts melted or deformed
- Connection leads melted

6.4.2 Removing the battery from the A 150 receiver

The battery is located inside the device.

The receiver must be switched off.

1. Loosen the four screws securing the bottom section of the housing.
2. Carefully lift off the bottom section of the housing.

   The top section and the bottom section of the housing are connected by means of the cable from the battery to the circuit board.
3. Disconnect the defective battery from the power supply by carefully unplugging the white connector from the circuit board.
4. The battery is fixed in place in the bottom section of the housing by means of a retaining plate. Loosen the three screws on the retaining plate.
5. Remove the battery.
6. Screw down the retaining plate again.
7. Screw the bottom section of the housing to the top section again.

[2] According to: EPTA – European Power Tool Association

7 Appendix

7.1 Technical data

7.1.1 A 150 receiver

Device data

Dimensions (W × D × H)	115 × 65 × 114 mm
Weight	0.4 kg
Material	polycarbonate (housing)

Certificate

Certificate	FCC, CE, IC, MIC

Device elements

Display	2" FSTN display 240 × 128 pixels, LED backlight
Processor	DSP 16 bit
Operation	membrane keypad with 5 keys 1 activation key

Operating conditions

Operating temperature	-20 °C – +50 °C
Storage temperature	-25 °C – +50 °C
Humidity	15 % – 90 % r.h., non-condensing
Protection rating	IP65
Non-permitted operating environments	in potentially explosive areas

Power supply

Power supply	lithium-ion battery (rechargeable) [1357-0002], built-in
Operating time, typical	> 20 h
Battery power	24 Wh
Charging time	< 7.5 h
Charging temperature	0 °C – +40 °C
Charging voltage	12 V
Charging current	0.6 A
Charger	M4 AC/DC adapter

Measurement

Filter	bandpass, adjustable filter limits: – lower filter limit: 0/30/60/120/250/500 Hz – upper filter limit: 300/500/850/1000/1250/1500/2000/3000/ 4000/8000 Hz notch filter: 50 Hz, 60 Hz, off
Sampling rate	16 Bit, 48 kHz
Indication range	0 – 1999 digits

Data transmission

Transmission frequency	2.408 – 2.476 GHz, 38 channels
Radio range	> 2 m
Transmission bandwidth	0 – 12 kHz
Communication	SDR (Sewerin Digital Radio)
Power output	10 mW

Additional data

Transport	AC 200 SK4 case
Shipping instructions	UN 3481: lithium-ion batteries contained in equipment or lithium-ion batteries packed with equipment net weight of battery/batteries: 0.098 kg

7.1.2 TS 150 carrying rod

Device data

Dimensions (H × Ø)	690 × 32 mm
Weight	1.1 kg
Material	stainless steel, aluminium, plastic

Device elements

Interface	ODU MINI-SNAP

Operating conditions

Operating temperature	-20 °C – +70 °C
Storage temperature	-20 °C – +70 °C
Humidity	100 % r.h.
Protection rating	IP65
Permitted operating environments	outdoors, in building
Non-permitted operating environments	in potentially explosive areas

Additional data

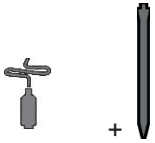
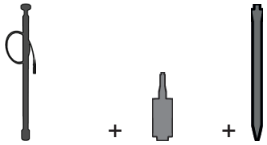
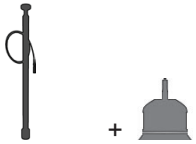
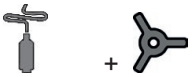
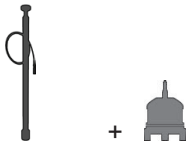
Cable type	FM1 D 5.0 mm
Cable length	1.3 m
Transport	AC 200 SK4 case

7.2 Suitability of microphones

The overview below shows which microphones are suited to which purposes and contact points.

Purpose	Contact point	Microphone	
Leak detection	paved		**BM 200**
	unpaved paved		**BM 230**
	unpaved paved fitting universal		**UM 200**
Pipeline location	paved		**BM 200**
	unpaved paved		**BM 230**
	unpaved paved		**UM 200**
Prelocation	fitting		**TM 200**

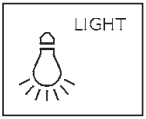
7.3 Microphone configuration options

Use	Contact point	Configuration
Preliminary detection	fitting	 **UM 200** probe tip optional: extensions
		 **TS 150** **TM 200** + probe tip optional: extensions
	magnetic	**UM 200** **M 10** contact adapter
Pinpointing leaks	paved	 **TS 150** **BM 200**
	paved unpaved	 **UM 200** **M 10** tripod
		 **TS 150** **BM 230**

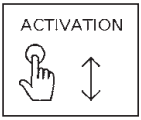
Note: Symbols not to scale.

7.4 Factory settings

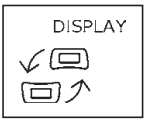
The receiver is delivered with the following default settings:



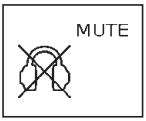
Backlight activated



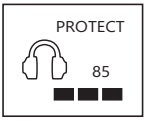
Hold mode



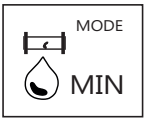
Display rotation activated



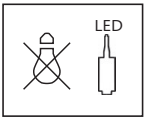
Do not listen to noise



Hearing protection threshold: level 4



Minimum noise level



Light on microphone switched off

Bandpass:	lower filter limit	0 Hz
	upper filter limit	8000 Hz
notch filter:	(deactivated)	

7.5 Accessories

Part	Order number
BM 200 ground microphone	EM24-10000
BM 230 ground microphone	EM25-10000
TM200 touch microphone	EM20-10200
Probe tip M10 / 350 mm	4000-1213
Probe tip extension 600	4000-1215
Probe tip extension 300	4000-1216
UM200 universal microphone	EM20-10300
AC 200 SK4 case	ZD59-10000
EA carrying system	3209-0021
AC/DC adapter L	LD26-10000
Vehicle cable L 12 V =	ZL05-10200

Other accessories are available for the **AQUAPHON** system. Please contact our SEWERIN sales department for further information.

7.6 Declaration of conformity

Hermann Sewerin GmbH hereby declares that the **A 150** receiver fulfils the requirements of the following Directives:

- 2011/65/EU
- 2014/53/EU

The complete declaration of conformity can be found online.

7.7 Advice on disposal

The European Waste Catalogue (EWC) governs the disposal of appliances and accessories in accordance with EU Directive 2014/955/EU.

Description of waste	Allocated EWC waste code
Device	16 02 13
Disposable battery, rechargeable battery	16 06 05 / 20 01 34

Alternatively, used equipment can be returned to Hermann Sewerin GmbH.

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Hermann Sewerin GmbH
Robert-Bosch-Straße 3
33334 Gütersloh, Germany
Tel.: +49 5241 934-0
Fax: +49 5241 934-444
www.sewerin.com
info@sewerin.com

SEWERIN SARL
17, rue Ampère – BP 211
67727 Hoerdt Cedex, France
Tél. : +33 3 88 68 15 15
Fax : +33 3 88 68 11 77
www.sewerin.fr
sewerin@sewerin.fr

SEWERIN IBERIA S.L.
Centro de Negocios “Eisenhower”
Avenida Sur del Aeropuerto
de Barajas 28, Of. 2.1 y 2.2
28042 Madrid, España
Tel.: +34 91 74807-57
Fax: +34 91 74807-58
www.sewerin.es
info@sewerin.es

Sewerin Ltd
Hertfordshire
UK
Phone: +44 1462-634363
www.sewerin.co.uk
info@sewerin.co.uk

Sewerin Sp.z o.o.
ul. Twórcza 79L/1
03-289 Warszawa, Polska
Tel.: +48 22 675 09 69
Tel. kom.: +48 501 879 444
www.sewerin.pl
info@sewerin.pl