SEWERIN
Technologies for leak detection.

AQUAPHON®

A 50 receiver

Operating instructions

17.07.2017 a – 107489 – en

A 50 receiver

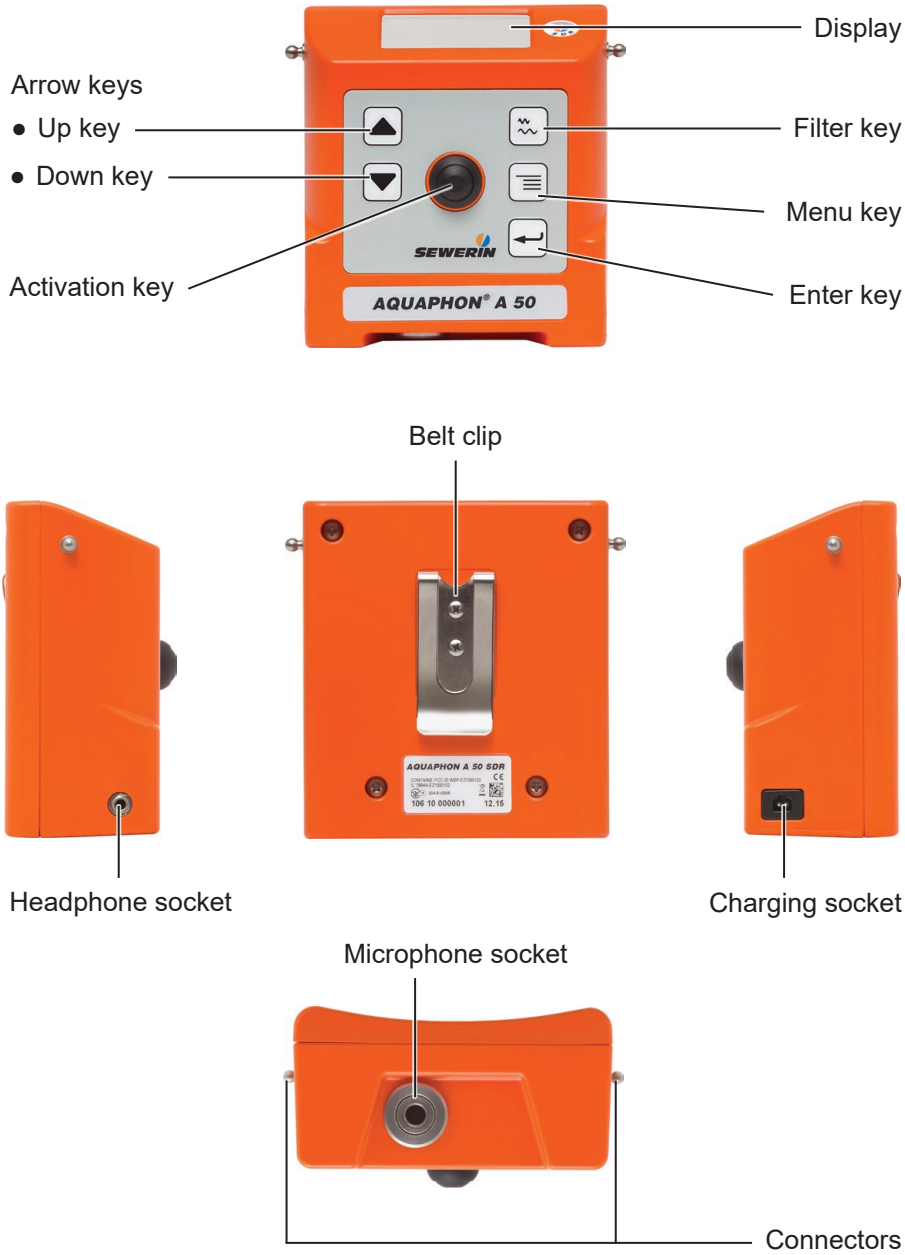

Fig. 1: **A 50** receiver viewed from various angles

A 50 receiver

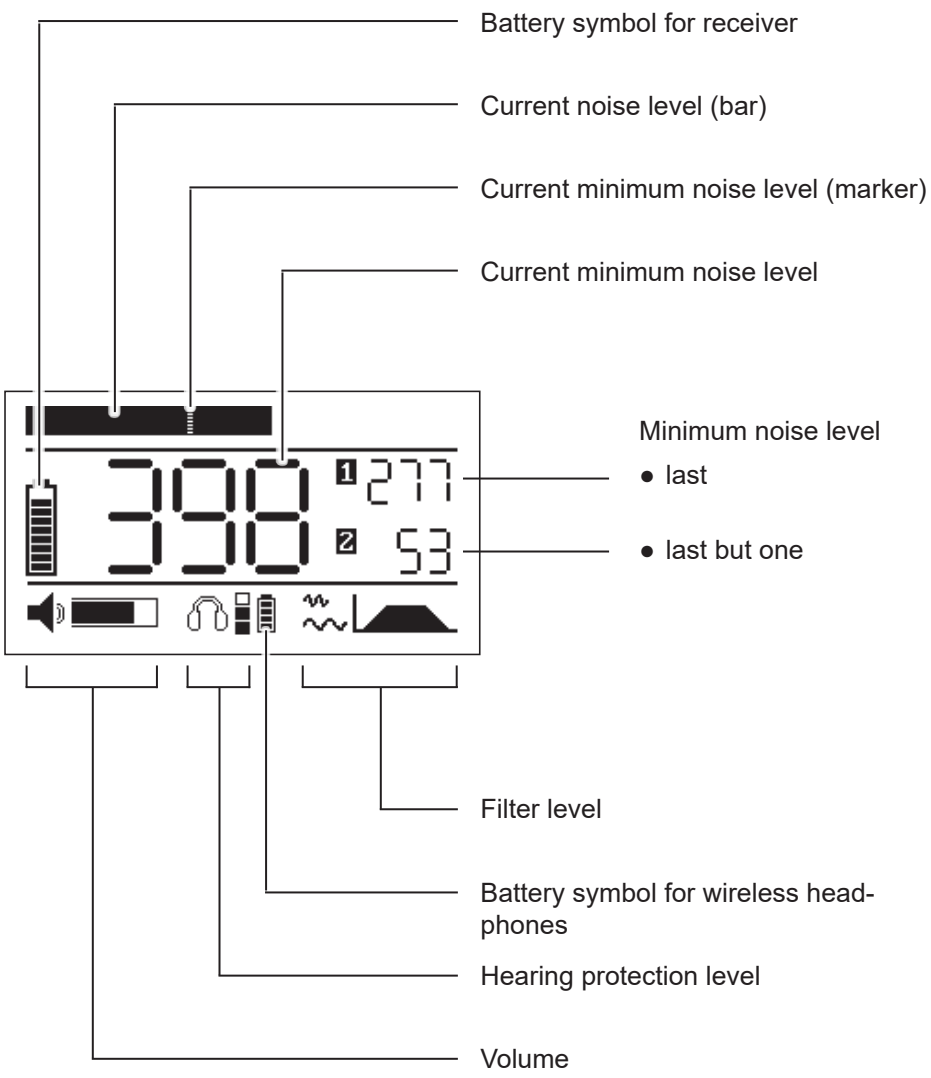

Fig. 2: Display with main view

Information about this document

Warnings and notes in this document mean the following:

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.

Note:
Tips and important information.

Numbered lists (numbers, letters) are used for:

- Instructions that must be followed in a certain order

Lists with bullet points (point, dash) are used for:

- Lists
- Instructions that only involve one step

Numbers between forward slashes /.../ refer to the referenced documents.

1 Introduction

1.1 Warranty

The following instructions must be complied with in order for any warranty to be applicable regarding functionality and safe operation of this equipment.

- Read these operating instructions prior to operating the product.
- Use the product only as intended.
- Repairs and maintenance must only be carried out by specialist technicians or other suitably trained personnel. Only spare parts approved by Hermann Sewerin GmbH may be used when performing repairs.
- Changes or modifications to this product may only be carried out with the approval of Hermann Sewerin GmbH.
- Use only Hermann Sewerin GmbH accessories for the product.

Hermann Sewerin GmbH shall not be liable for damages resulting from the non-observance of this information. The warranty conditions of the General Terms and Conditions (AGB) of Hermann Sewerin GmbH are not broadened by this information.

In addition to the warnings and other information in these Operating Instructions, always observe the generally applicable safety and accident prevention regulations.

The manufacturer reserves the right to make technical changes.

1.2 Purpose

The **AQUAPHON** system with **A 50** receiver is intended for electro-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)

Note:
The descriptions in these operating instructions relate to the system as delivered (factory settings). The manufacturer reserves the right to make changes.

1.3 Intended use

The system is intended for professional industrial and commercial use. The appropriate specialist knowledge is required to operate the system.

Note:
If necessary, learn more about the principles of the technology before commencing practical work with the system.

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

1.4 General safety information

This product was manufactured in accordance with all binding legal and safety regulations. It corresponds to the state of the art and complies with conformity requirements. The product is safe to operate when used in accordance with the instructions provided.

However, if you handle the product improperly or not as intended, the product may present a risk to persons and property. For this reason, observe the following safety information without fail.

Risk of personal injury (health risk)

- Handle the components carefully and safely both during transport and when working.
- Proceed with extreme caution in the vicinity of electrical lines.

Hazards for the product and other property

- Always handle the components carefully.
- Do not drop the components.
- Do not place the components in places where they are at risk of falling.
- Before starting work, check that the components are in good working order. Never use damaged or defective components.
- Ensure that no dirt or moisture gets into the connections on the components.
- Always observe the permitted operating and storage temperatures.

2 AQUAPHON system

2.1 General information regarding the system

In order to use the system for leak detection, a microphone must be connected to the A 50 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 (section 4.5 on page 23).

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 50** receiver, in the following product variants:
  - with SDR[1] radio module 
  - without SDR radio module
- Headphones
  - **F8** wireless headphones (**A 50** with SDR only)
  - **K3** headphones (wired)
- Microphones
  - **UM 50** universal microphone
  - **TS 50** test rod

  The microphones have to be used in conjunction with accessories.
- Accessories
  - Probe tips and extensions, available in various lengths
  - **M 10** tripod
  - **RP 10** resonance plate

The system components can be carried and stored in a bag or rucksack if required.

Additional accessories can be added to the system at any time.

Note:
Detailed information about the headphones can be found in the associated operating instructions.

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[1] Sewerin Digital Radio

2.3.2 A 50 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 variables to be set.

Connections

The receiver has the following connections:

- Charging socket — For charging the rechargeable battery.
  The following can be connected:
  – **M4** AC/DC adapter
  or
  – **M4** vehicle cable
- Microphone socket — For connecting a microphone.
  The following can be connected:
  – **UM 50** universal microphone
  or
  – **TS 50** test rod
- Headphone socket — For connecting the **K3** headphones.

Display rotation

The orientation of the display can be adjusted to the position in which the receiver is used. If the receiver is rotated through 180° about its longitudinal axis, the display rotates too. This function ensures that the display remains easy to read, regardless of the position in which the receiver is used.

Connectors

The **EA** carrying strap can be attached to the connectors.

2.3.2.2 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

2.3.2.3 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.

2.3.2.4 Noise level display

The following noise levels are shown simultaneously on the display in the main view (fig. 3):

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

Note:
If you switch from the main view to the **Settings** or **Filter** view, the noise level display disappears.

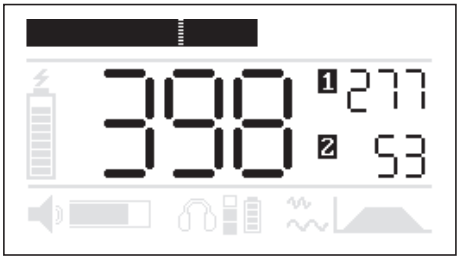


Fig. 3: Graphical and numerical noise level display
Top: current noise level (bar) and
current minimum noise level (marker in bar)
Middle: current minimum noise level (*here:* 398)
Right: [1] last minimum noise level (*here:* 277) and
[2] last but one minimum noise level (*here:* 53)

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 noise level

The minimum noise level relates to an ongoing or completed measurement.

- Current minimum noise level

  The current minimum noise level is displayed in the middle of the main view as a numerical value and as a marker in the bar.

- Last minimum noise level

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

- Last but one minimum noise level

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

2.3.2.5 Power supply

The **A 50** 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.

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 5.4.2 on page 29.

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.

Information about charging the rechargeable battery can be found in section 5.1 on page 27.

2.3.3 Microphones

The following microphones are available:

- **UM 50** universal microphone
- **TS 50** test rod

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 the configuration options for the microphones can be found in section 6.2 on page 36.

The microphones have a fixed cable with which they are connected to the receiver.

The microphones must always be used in conjunction with suitable accessories.

UM 50 universal microphone

Fig. 4: **UM 50** universal microphone with microphone protector

Suitable accessories:

- Probe tip, usually with extensions
- **M 10** tripod
- **M 10** contact adapter

CAUTION!

The contact adapter for the **UM 50** universal microphone 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).

Microphone protector

The universal microphone comes with a rubberised protective cover to protect the microphone from external damage.

Wind shield

The two-piece wind shield can protect the universal microphone against exterior noise interference (sound insulation).

Using the wind shield only makes sense if the microphone is fitted with a protective cover and the tripod is used.

TS 50 test rod

Fig. 5: **TS 50** test rod

Suitable accessories:

- Probe tip, optionally with extensions
- **RP 10** resonance plate, optionally with **M 10** tripod

Safety information about handling the TS 50

- Handle the test rod carefully and safely both during transport and when working.

  Exercise particular caution if the probe tip is screwed onto the test rod.
- Do not lean on the test rod.
- Never carry the test rod by its cable.

3 Using the system

3.1 Preparing the system

A microphone must be selected and prepared for the intended use. The microphones can only be used in conjunction with screwed-on accessories.

An overview of the configuration options for the microphones depending on the intended use can be found in section 6.2 on page 36.

- Screw the appropriate accessory to the microphone.

SEWERIN recommends protecting the **UM 50** universal microphone from external damage. Before using the microphone for the first time, put on the protective cover supplied.

3.2 Switching on the system

How the system is switched on depends on which headphones are used.

3.2.1 A 50 receiver only

The **A 50** receiver switches on automatically as soon as a microphone (universal microphone or test rod) is connected.

3.2.2 System with F8 wireless headphones

When using the **F8** wireless headphones the system is switched on as follows:

1. Switch on the **F8** wireless headphones.
2. Connect a microphone (universal microphone or test rod) to the receiver by plugging the phone jack into the microphone socket on the receiver.

   The receiver switches on. A start screen appears on the display.

   Then the main view appears (fig. 6). The system is ready for use once the small battery symbol for the wireless headphones is visible.

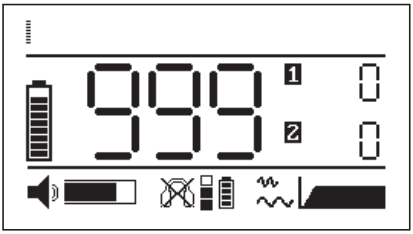


Fig. 6: System with **F8** wireless headphones ready for use (battery symbol for wireless headphones visible)

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

- Check that the wireless headphones are switched on. Is the green LED on?
- Check the power supply to the wireless headphones. Do the batteries need recharging or replacing?

3.2.3 System with K3 headphones

When using the **K3** headphones the system is switched on as follows:

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. Connect the headphones to the receiver by plugging the phone jack into the headphone socket on the receiver.
3. Connect a microphone (universal microphone or test rod) to the receiver by plugging the phone jack into the microphone socket on the receiver.

   The receiver switches on. A start screen appears on the display.

   Then the main view appears (fig. 7). The system is ready for use.

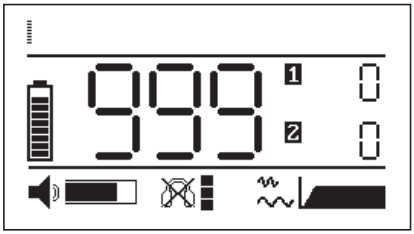


Fig. 7: System with **K3** headphones ready for use

3.3 Switching off the system

The system is switched off as follows:

- Disconnect the microphone from the receiver by pulling the microphone jack out of the microphone socket on the receiver. The receiver switches off.

3.4 Starting and ending a measurement (listening to noises)

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 2.3.2.3 on page 8.

The system is ready for use. The display shows the main view. The headphones symbol is crossed out (fig. 8).

- Use the Activation key to start and end a measurement, according to the selected operating mode.

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

CAUTION! Health hazard!
Loud noises can damage the hearing and lead to irreversible health problems.

- Always adjust the volume and the hearing protection threshold to the current situation.

Information about adjusting the volume can be found in section 3.5 on page 16.

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

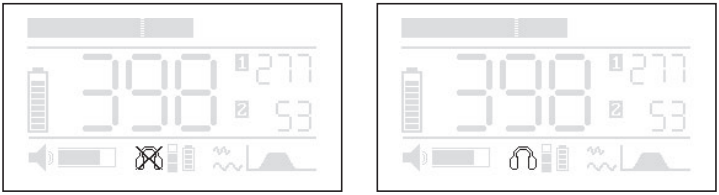


Fig. 8: Headphones symbol when the system is ready for use
Left-hand figure: Symbol crossed out, i.e. no measurement in progress or hearing protection threshold exceeded during a measurement
Right-hand figure: Symbol not crossed out, i.e. measurement in progress

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 operating mode setting for the Activation key. Did you operate the Activation key correctly?

3.5 Adjusting the volume

The volume determines the loudness of the playback of noises through the headphones.

Any change can be heard immediately through the headphones.

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.

The main view is open.

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

3.6 Adjusting the filters

Interference frequencies are filtered out by the filters.

The following filters can be adjusted:

- **Bandpass**

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

  The upper and lower filter limit can each be adjusted in several levels. If 500 Hz is selected for the upper filter limit, the lower filter limit cannot be set greater than 120 Hz.

  Information about the available filter limit levels can be found in section 6.3.1 on page 37.

- **Notch filter**

  When the notch filter is activated, the mains frequency (50 Hz or 60 Hz) is filtered out. This eliminates the influence of current-carrying lines on the noise.

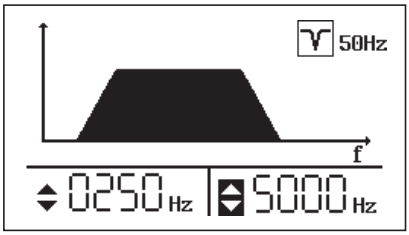


Fig. 9: **Filter** view
Top right: notch filter (*here:* 50 Hz)
Bottom left: lower filter limit (*here:* 250 Hz)
Bottom right: upper filter limit (*here:* 5000 Hz)
The symbol for the upper filter limit is inverted, which means that this filter limit can be adjusted.

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 you wish to change is inverted.

   b) For the filter limits:

   − Press the Up key to increase the value.

   − Press the Down key to lower the value.

   For the notch filter:

   − Press one of the arrow keys to change the setting.
3. Press the Filter key to apply the settings. The receiver returns to the main view.

4 Settings

4.1 Overview

The receiver operating mode, the type of hearing protection and the hearing protection threshold can be configured individually.

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

The settings are changed in the **Settings** view.

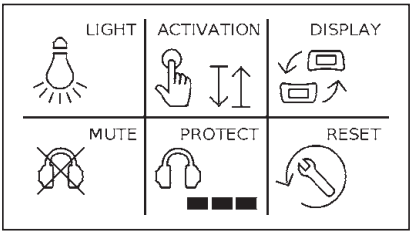
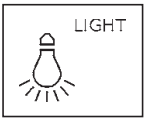


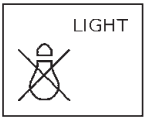
Fig. 10: **Settings** view

4.2 Backlight (LIGHT)

The receiver display features a backlight.



Backlight activated



Backlight deactivated

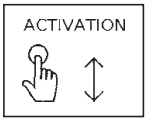
Changing the LIGHT setting

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

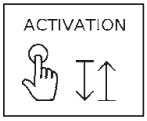
1. Press the Menu key. The **Settings** view appears.
2. Keep pressing the Enter key until **LIGHT** is inverted.
3. Change the setting.
   - Press the Down key to deactivate the function.
   - Press the Up key to activate the function.
4. Press the Menu key to apply the settings. The receiver returns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

4.3 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 2.3.2.3 on page 8.

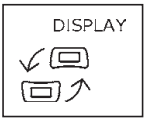
Changing the ACTIVATION setting

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

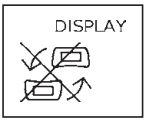
1. Press the Menu key. The **Settings** view appears.
2. Keep pressing the Enter key until **ACTIVATION** is inverted.
3. Change the setting.
   - Press the Down key to activate Toggle mode.
   - Press the Up key to activate Hold mode.
4. Press the Menu key to apply the settings. The receiver returns 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

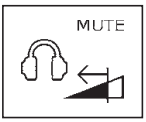
Changing the DISPLAY setting

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

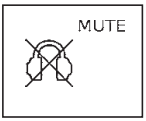
1. Press the Menu key. The **Settings** view appears.
2. Keep pressing the Enter key until **DISPLAY** is inverted.
3. Change the setting.
   - Press the Down key to deactivate the function.
   - Press the Up key to activate the function.
4. Press the Menu key to apply the settings. The receiver returns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

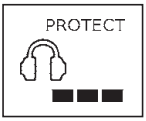
Changing the MUTE settings

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	Hearing protection threshold	Protective effect
1	▭▭▭	very high	low
2	■▭▭	high	medium
3	■■▭	medium	high
4	■■■	low	very high

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.

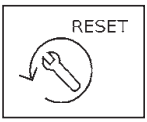
The system is ready for use. The display shows the main view.

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 Factory settings (RESET)

This function restores all individual settings to the factory settings. Factory settings are the settings with which the receiver was supplied to the customer.



Restore settings to factory settings

An overview of the factory settings can be found in section 6.3.2 on page 38.

Restoring settings to factory settings

Note:
The settings are reset immediately and with no further warning.

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.
3. Press one of the arrow keys. All settings are restored to the factory settings.
4. Wait until the main view appears again.

5 Maintenance and error management

5.1 Charging the batteries

The batteries of the following components must be recharged when there are no more segments visible in the corresponding battery symbols:

- **A 50** receiver (lithium-ion rechargeable battery)
- **F8** wireless headphones (NiMH rechargeable battery)

They can also be charged sooner, however, i.e. even when the battery symbols show sufficient remaining capacity.

A 50 receiver

NOTICE!
Reduced battery life when not in use
The battery in the A 50 receiver can discharge (self-discharge) even when the receiver is not in use.
- You should charge the battery at least once every 6 months.

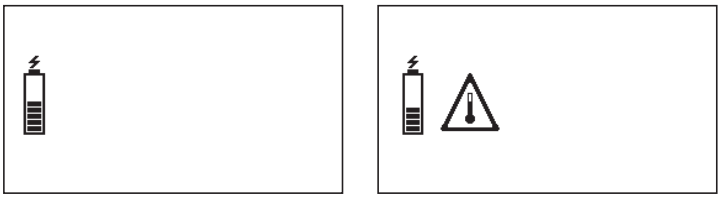


Fig. 11: Display when charging
Left-hand figure: standard charging
Right-hand figure: warning if the temperature is outside the permitted range

The typical charging time is less than 6 hours. The battery is protected against overcharging. Therefore the receiver can be left connected to the power supply once it is fully charged.

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.

- Connect the receiver directly to the power supply (230°V or vehicle electrical system voltage) via the **M4 AC/DC adapter** or the **M4 vehicle cable**. The display shows that charging is in progress (fig. 11).

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

F8 wireless headphones

For information on charging the battery for the F8 wireless headphones, please refer to the associated operating instructions.

5.2 Care

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

NOTICE! Risk of damage

The display surface of the **A 50** receiver is sensitive to mechanical and chemical stress.

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

SEWERIN recommends removing significant contamination immediately.

5.3 Maintenance

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.

5.4 Solving problems

5.4.1 Error message

If a fault occurs on the receiver, an error message is displayed (fig. 12). The error can only be rectified by SEWERIN Service.

- Send the receiver to SEWERIN Service for repair.

Fig. 12: Error message

5.4.2 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. Therefore, a defective lithium-ion battery must be removed from the receiver before shipping. Transport by road or rail is subject to the provisions set out in the latest version of the ADR[2] regulations.

[2] 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)

NOTICE! Risk of damage

The **A 50** receiver contains parts which may be damaged when the battery is removed.

- The lithium-ion battery 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 battery.

5.4.2.1 Identifying a defective battery

If one of the following criteria applies, the lithium-ion battery is defective[3]:

- 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

5.4.2.2 Removing the battery from the A 50 receiver

The battery is located inside the device.

NOTICE! Risk of damage

Opening the housing can cause components to be damaged.

- It is essential to read section 5.4.2 and section 5.4.2.1 before removing the battery.

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.

[3] Source: EPTA – European Power Tool Association

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 unplugging the white connector on the circuit board.

   Do not under any circumstances rip out the cable.

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.

6 Appendix

6.1 Technical data

6.1.1 A 50 receiver

Device data

Dimensions (W × D × H)	115 × 65 × 114 mm
Weight	0.4 kg
Material	Polycarbonate (housing)
Product variants	– with SDR (Sewerin Digital Radio) – without SDR

Certificate

Certificate	with SDR: FCC, CE, IC, MIC without SDR: FCC, CE

Device elements

Display	2" FSTN display 240 × 128 pixels, LED backlight
Processor	16-bit digital signal processor
Control	Membrane keypad, 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	< 6 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: 500/850/2000/3000/4000/5000/8000 Hz Notch filter: 50/60 Hz, off
Sampling rate	16 bit, 48 kHz
Indication range	0 – 999 digits

Data transmission

Transmission frequency	2.408 – 2.476 GHz, 38 channels
Radio range	> 2 m
Transmission bandwidth	0 – 12 kHz
Communication	dependent on product variant and head-phones used – A 50 with SDR and wireless headphones: wireless – otherwise: cable
Power	10 mW

Additional data

Transport	EA bag, EA rucksack
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

6.1.2 TS 50 test rod

Device data

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

Device elements

Interface	Phone jack 6.3 mm, straight

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

Measurement

Sensitivity	4.7 V/g without filter and amplification (at 1 kHz)

Additional data

Cable type	FM1 D 5.0 mm
Cable length	1.3 m
Transport	EA bag

6.1.3 UM 50 universal microphone

Device data

Dimensions (H × Ø)	90 × 29 mm (excluding cable)
Weight	330 g
Material	Stainless steel

Device elements

Interface	Phone jack 6.3 mm, straight

Operating conditions

Operating temperature	-20 °C – +70 °C
Storage temperature	-20 °C – +70 °C
Protection rating	IP68
Permitted operating environments	outdoors, in building
Non-permitted operating environments	in aggressive media in potentially explosive areas

Power supply

Power supply	External

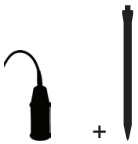
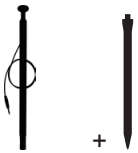
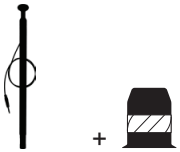
Detection

Sensitivity	5.5 V/g without filter and amplification (at 1 kHz)

Additional data

Cable length	1.3 m or 2.8 m
Transport	EA bag, EA rucksack

6.2 Microphone configuration options

Use	Contact point	Configuration
Preliminary detection	Fitting	 **UM 50** Probe tip optional: extensions
		 **TS 50** Probe tip optional: extensions
	Magnetic	 **UM 50** **M 10** contact adapter
Pinpointing leaks	Paved	 **TS 50** **RP 10**
	Paved Unpaved	 **UM 50** **M 10** tripod
		 **TS 50** **RP 10** **M 10** tripod

Note: Symbols not to scale.

6.3 A 50 receiver

6.3.1 Adjustable filters

6.3.1.1 Bandpass

The bandpass filter limits can be set as follows:

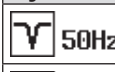
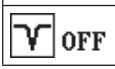
lower filter limit
0 Hz
30 Hz
60 Hz
120 Hz
250 Hz
500 Hz

upper filter limit
500 Hz
850 Hz
2000 Hz
3000 Hz
4000 Hz
5000 Hz
8000 Hz

If 500 Hz is selected for the upper filter limit, the lower filter limit cannot be set greater than 120 Hz.

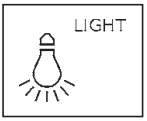
6.3.1.2 Notch filter

The notch filter can be set as follows:

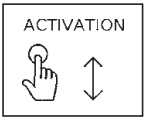
Symbol	Notch filter
	50 Hz
	60 Hz
	deactivated

6.3.2 Factory settings

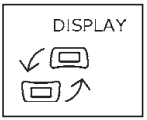
The receiver is delivered with the following default settings:



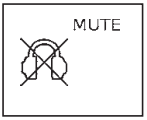
Backlight activated



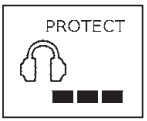
Hold mode



Display rotation activated



Do not listen to noise



Hearing protection threshold: Level 4

Bandpass

lower filter limit	upper filter limit
0 Hz	4000 Hz

Notch filter

Symbol	Notch filter
OFF	deactivated

The receiver can be restored to its factory settings at any time in the **Settings** under **RESET**.

6.4 Accessories

Part	Order number
EM 30 microphone protector	EM30-Z0600
UM 50 wind shield, top section	UM50-Z1000
UM 50 wind shield, bottom section	UM50-Z1100
UM 50 carrying clip	UM50-Z0200
Probe tip M10 / 100 mm	4000-1271
Probe tip M10 / 350 mm	4000-1213
Probe tip extension M10 / 300 mm	4000-1216
Probe tip extension M10 / 600 mm	4000-1215
EM 20 contact adapter	EM20-Z1000
RP 10 resonance plate	EA16-Z1000
M 10 tripod	4000-0966
AC/DC adapter M4	LD10-10001
Vehicle cable M4, 12 V= portable	ZL07-10100
Vehicle cable M4, 12 V= installed	ZL07-10000
EA bag	ZD56-10000
EA rucksack	ZD56-20000

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

6.5 Declarations of conformity

Hermann Sewerin GmbH hereby declares that the **A 50** receiver, variant without SDR radio module, fulfils the requirements of the following Directive:

- **2014/30/EU**

Hermann Sewerin GmbH hereby declares that the **A 50** receiver, variant with SDR radio module, fulfils the requirements of the following Directive:

- **2014/53/EU**

The complete declarations of conformity can be found online.

6.6 Advice on disposal

The European Waste Catalogue (EWC) governs the disposal of appliances and accessories.

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

End-of-life equipment

Used equipment can be returned to Hermann Sewerin GmbH. We will arrange for the equipment to be disposed of appropriately by certified specialist contractors free of charge.

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