

# User Manual

Ear protection caps  
with ECC basic and  
ECC silence  
hands free system



*Now with new PPE approval according to Category III*

Congratulations!

Now you are in possession of a high-quality device from our special-development. This was designed, manufactured and tested down to the last detail with the latest technology.

Surely, you would like to fully exploit the technical possibilities of your device, so please pay close attention to the operating and installation instructions in your own interest.

The necessary handles are not complicated. If you still have questions, please contact your dealer or directly us.

We are happy to advise you.

Your AKE-team

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## Illustration



Fig. : Team of an ECC hands-free system in ear protection, here ECC silence.

- ① Noise compensating close talk microphone (Signal microphone)
- ② Marking for speech direction
- ③ Flexible microphone boom
- ④ Charge connection
- ⑤ Volume plus
- ⑥ Volume minus
- ⑦ Function display
- ⑧ On- / Off- and multifunction button (MFB)
- ⑨ Microphone for ambient noise control
- ⑩ Interchangeable antenna

**Important!** Before you start using the **ECC** hands-free system, please read these lines carefully and follow the respective safety instructions!

## Application examples

The **ECC** hands-free system offers a full duplex multi-user communication system integrated in ear protection capsules, developed by **AKE**.

The **ECC** hands-free system allows up to eight participants to be paired per team. At the same time, four participants can talk and hear (full-duplex) without any operation. **ECC silence** also supports swap operation for all paired participants, see page 8 for details.

The main field of application of the **ECC** hands-free system is especially for difficult work in the team and in the field of view of the participants.

An observer outside the danger zone can warn the endangered person at any time - even if that person is currently speaking! The hands remain free to hold on, for example in case of danger of falling. Thus, help can be called in immediately in extreme danger situations.


An integrated Bluetooth® interface enables the wireless connection of the following Bluetooth® devices (combination A, B or C):


A	Mobile phone
B	Two-way-radio
C	Smartphone

## Commissioning of the full-duplex team hands free connection

The **ECC** hands-free systems (**E**asy **C**onnect **C**ommunication) developed by **AKE** are extremely easy to connect wirelessly. Once paired devices connect automatically. Please pair **new devices** once as follows:

**In two easy steps to the destination:** (For more than 4 team members, see details on page 8.)

1. Turn on **all** the devices of a team in a timely manner by briefly pressing the multifunction button  for all of them - indicated by a fast alternating flashing (red / blue). [ ● ● ]


2. Make **one** device to a team leader system, by briefly pressing the plus button  once – Displayed by slow alternating flashing (red / blue). [ ● ● ]

The connection will now be made automatically within 30 seconds. A short beep (low / high) indicates that the respective speech connection is active. The selected team composition is saved automatically. Repeat this procedure if not all devices are connected.

To switch off, press and hold the multifunction button  until the "Power off" announcement.



**From now on you only need to switch on the devices for hands-free operation (with automatic conference hands-free operation for three or more devices)**

If desired, the speech connection can be switched to standby and also activated again by briefly pressing the multifunction button  once in each case.

**Display:**

Device when pairing ● ●	Member is paired ●	Team leader is searching – ●	Connection active ●●●	Connection stand by ●
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On request, individual settings can be made, see section: "System settings".


## The optimal noise cancellation

Whenever ear protection capsules are used in workplaces with high noise pollution, sufficient sound insulation (the HML or SNR value) must also be ensured with built-in electronics.

The **ECC** hands-free system from **AKE** offers a number of measures in order not to exceed the permissible signal level of 85 dB (A) at the ear.

- Ambient noise recorded while speaking is effectively reduced by using a special noise canceling close talk microphone.
- If necessary, the microphone can be locked or released by pressing the volume plus and minus key together.

Additionally at **ECC silence**:

- An electronically controlled environmental signal coupling , allows the hearing of the acoustic environmental information even with hearing protection on the ear, thus a flipping up of the capsules to perceive important environmental signals, such as traffic, etc. is no longer necessary. The hearing protection is activated electronically whenever there are ambient noises that are harmful to hearing.
- An ambient noise dependent, electronically controlled microphone switch (iVOX) activates the signal microphone only when speaking. During pauses in conversation the microphone signal is blocked 100%.
- A monitor tone (side tone) allows the acoustic control of the microphone signal via the loudspeakers. This function can also be switched off if desired.

### Intelligent Voice switch (iVOX)

**!** In order to take full advantage of this type of noise reduction, the microphone should be placed close to the mouth. The sound entry opening is marked, it should point towards the mouth.

If the voice switch is active, the monitor sound should also be on.


Please note that the noise insulation will only be guaranteed in the long term if an authorized specialist company installs and maintains the electronics.

## Shading and range

The practical range depends on many factors. In free field can be achieved under ideal conditions to over 1 km. For strong shadows, e.g. through reinforced concrete walls, the range can, however, drop to a few meters.

In practical operation, even obstacles between 100 and 500 m are possible on level terrain, from three devices, through integrated repeater operation, accordingly more range. In battery saving mode, the range is reduced, see section: "System settings".

Exiting the receiving area is indicated acoustically and the search starts.  
**After returning within 15 minutes, the voice connection is automatically reconnected.**

Thereafter, the search of the partner is terminated, but it can be reactivated by the team leader at any time by pressing the multifunction button  for about one second.

**Display:** Both, leaving the receiving area, as well as the search, are optically signaled.

Out of range   15 sec. then 	Team leader is searching  
---	--

## Adjusting the range by selecting the antenna

The following comparison values apply to the approximate range depending on the type of antenna used compared to the standard antenna (*Art.-No., Type, Length, Range*):

Art.-No.	Type	Length	Range app.
14129	Stub antenna, for close range	30 mm	50 %
14141	<b>Standard antenna</b> , is sufficient in most cases	110 mm	<b>100 %</b>
14153	Long antenna, for long range	190 mm	150 %
14191	Special antenna, for stationary use	370 mm	>200 %

## Increased range via the repeater function (ECC basic, silence and hand-held)

The ECC-system in which the team leader has been activated can be used as a repeater to increase the range (up to factor 2) in connection with two other devices.

## Increase the range via external devices

You can combine the ECC system to increase the range with a two-way-radio, with integrated Bluetooth® interface or with an external Bluetooth® adapter.

If all call partners have a mobile phone with a Bluetooth® interface, a voice connection can also be established via the GSM network with the appropriate range

*If only two systems are used, you can skip the following section.*

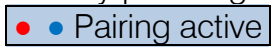
## Hands-free mode with more than two systems in a team

*With more than two participants, it is advisable – as in a telephone conference – to maintain discussion discipline, which is all the more important the more people are in the team. For large teams, we recommend limiting the conference to a maximum of four participants.*

Especially in dangerous situations, it is important for a team leader to take over the leading of the conversation. Therefore each ECC hands-free system is equipped with a special "team leader" function. In this operating mode, the system offers important advantages for team management, allowing the team leader to control conversations.

- The Team leader coordinates the conversations and maintains the voice connection.
- The connection is made in a star shape, with the Team leader in the center.
- If one or more participants of the team are on standby, the Team leader can at any time with one click on his multifunction button Ⓞ restore the voice connection to all.
- The team leader can act as a repeater, e.g. by using this occupies a locally elevated position. This can increase or even double the reach between the participants.
- The team leader automatically checks the authorization of the participants and thus protects against eavesdropping by unauthorized persons.



## Subsequent pairing of further team members

Switch off all ECC systems. Then put the team leader into pairing mode by pressing the multifunction button Ⓞ for one second when switching on, **Display:** . Switch on the new device to be paired. The new participant is automatically added to the team after successful pairing. Repeat this procedure for all new devices to be paired.


**To remove paired devices**, see page 13 "Secure deletion of existing pairings and settings"

## Connecting latecomers or temporarily switched off devices

All devices of a team connect automatically, when they are switched on within 2 minutes each.

After this time, the connection can be established manually as follows (the team leader must be switched on): Press the multifunction button  for approx. one second if the voice connection is active and switch on the latecomer. The search is visually signaled to the team leader, **Display:** .

### **Hirarchie change (team member becomes team leader)** (Only available at ECC silence)

**Only** switch on the team leader device, red-blue alternating flashing  and briefly press the Minus key once. This deletes the team leader function. Then switch on all participants promptly and turn a device into a new team leader / repeater by briefly pressing the Plus key once - all connections will now be established within approx. 30 seconds.

If the device was not yet a team leader, it first goes into pairing mode and saves the new team composition.

### **Multiple team leaders work alternately** (Only available at ECC silence)

Any number of team leader devices can be paired with the team and then alternately connected to the team. To do this, switch off the old team leader device and then quickly switch on the new team leader device. The devices connect automatically.



Note that only **one** team leader at a time may be in the team!  
We recommend labeling the team leader device accordingly.

### **Automatic swap for additional employees** (Only available at ECC silence)

If you have paired more than four devices, all others devices can be connected in swap mode:

- Turning off a device connected to the team leader
- Switching on a paired but not currently connected device (within 2 minutes)






The team leader device now automatically connects the new entry with the team.

## Commissioning of the Bluetooth® -interface

The integrated Bluetooth® interface enables the wireless connection of a smartphone, etc. with the profiles HFP and AVRCP (recommended from version 4.0).

### **Pairing with a Bluetooth® device**

Switch on only one ECC hands-free system by briefly pressing the multifunction button  red and blue alternating flashing indicates the pairing-  or search mode . Bring the Bluetooth® device to be paired into pairing mode as well. The ECC system remains in pairing readiness for other Bluetooth® devices for one minute, as long as it is not connected to any other ECC device.



If other ECC units are connected,  
You should turn it off when pairing with other Bluetooth® devices.

For menu-driven phones, you'll typically find the option "Search for nearby Bluetooth devices". If you select this function then the **AKE ECC** system should be displayed for pairing. If you are asked for a password after confirming, enter 0000. For instructions on pairing Bluetooth® devices, refer to their respective manual.



After successful pairing, the alternating flashing is ended. Now switch off your **ECC** unit. The next time you switch on all paired devices are automatically connected. Note that the phone must be set to "auto-connect".



Do not pair the same phone with two **ECC** systems in the team, otherwise operating problems are possible!

## Use with smartphone, etc.


**Display:**

• Call active

•• Stereo active

••• Mobile stand by


### Accept phone calls

Shortly press the multifunction button  once. At many mobile phones it is possible to activate the automatic call acceptance. This would reduce the handling to a minimum.

### Reject incoming phone calls

During an incoming call, briefly press the multifunction button  1 sec. to reject the call.

### End phone calls

Shortly press at the multifunction button  or just wait until your calling partner hangs up, the connection will automatically end.

### Making phone calls

If you wish to make phone calls, you have to enter the phone number at your mobile phone or use redialing.

### Audio-Player

The use of an audio player (or equivalent device for entertainment purposes) is not permitted for devices that transmit safety-related communication.


### Adjust the volume

The volume can be adjusted separately for each operating mode both on the **ECC** system and on the mobile phone. When the highest or lowest volume is reached, a corresponding beep sounds.

### Connect devices automatically

Not all mobile phones automatically connect, when they are switched on, the connection can then be activated via the mobile phone menu. If the mobile phone is already switched on, the Bluetooth electronics of the **ECC** system tries to establish the connection automatically when switching on. Some cell phones then require a confirmation.

### Voice control (not available on all mobile phones)

Press the multifunction button  for about 1 second to start the voice control. For many devices, you will now have to wait for the ready tone next to the confirmation tone, then clearly state the required command (see the operating instructions for the connected device).

**Other**, every 30 sec. 2 short low tones: connection to the mobile phone interrupted.



Do not use these functions to switch off the microphone!  
Instead, press Plus & Minus together 1 x briefly.

## PETeam hands-free operation in combination with a smartphone, etc.

During the music operation or during a telephone conversation, the speech connection to other team members is blocked. In case of a request from the team, the voice connection will be automatically restored in the case of music operation; a call waiting tone will be

transmitted during telephone operation. A control tone indicates if the internal speech connection is active again.

**Due to the higher priority of the team leader, there are differences in the operation of multi-user (from 3 participants) communication compared to the team members:**

	<b>Team member</b>	<b>Team leader</b>
Team function in music or phone operation	The speech connection to the team will be interrupted. The connection between the team leader and the other team members remains	The team talk will be ended, all other team members go to standby <sup>1</sup>
Talk request during a call	Each team member can knock on the team leader by briefly pressing the multifunction button ⑧	The team leader can knock on all team members at any time by briefly pressing the MFB <sup>2</sup> ⑧
Return to the team on a phone call	A click on the multifunction button ⑧ ends the phone call and the team member is again connected to the team	A click on the multifunction button ⑧ ends the phone call and the team call is continued

<sup>1</sup>) If the team leader makes a call in multi-user mode, it is not permitted for other users to make calls at the same time.

<sup>2</sup>) MFB: Multifunction button



The team leader coordinates the conversations and maintains the voice connection. He should neither make phone calls nor listen to music in security-relevant situations.

Since the devices are designed for safety-relevant communication, they may not transmit signals for entertainment purposes.

**Display:**    • Call active    •• Stereo active    ••• Team voice connection

If desired, e.g. For security reasons, the Bluetooth® connection can be locked for Team Hands-Free Operation, see section "System settings".

## Care of the device and charging the battery

The capsule can be cleaned with a damp cloth and some liquid dish washing detergent. Should water penetrate, switch off the device immediately. Remove padding and foam for cleaning and drying. Store the device in a dry place!

Do not forget to charge the integrated lithium-ion battery at least every 3 months, as well as before use. To do this, connect the USB plug to a USB charging adapter or a PC. No guarantee in case of inadmissible voltage at the charging connection!

The function indicator ⑦ lights up red during charging and changes to blue when the battery is full. The electronics then automatically go to trickle charge.



Never use the **ECC** hands-free system while charging!

If the battery has not been charged for a long time, it is possible that it is deeply discharged. The **AKE ECC** electronics tries deeply discharged batteries again to regenerate, the load control then will blink until the battery is ready to charge again. If the battery cannot be recharged, it must be replaced.

**Display:**    • ... Battery regenerate    -- battery is charging    -- battery is full

If you do not need the maximum range, we recommend reducing the output power so that you can double the Battery discharge time, see section "System settings ...".

## System settings using the buttons

All system settings are saved and remain even after switching off.

Press PlusⓈ & MinusⓂ together 1 x briefly: Switches the signal microphone on and off <sup>1</sup>

For all other settings you need the pairing mode, just switch on **only one** Bluetooth device!

As long as the display alternately flashes blue and red, you can change the settings:

Plus-button Ⓢ push 1 x briefly:	Activates the team leader operation <sup>1</sup>
Minus-button Ⓜ push 1 x briefly:	Deactivates team leader operation <sup>1</sup>
Plus-button Ⓢ short double-click:	Activates High-Power mode for maximum reach. <sup>1</sup>
Minus-button Ⓜ short double-click:	Activates power saving mode with shorter range <sup>1</sup>
Multifunction buttonⓈ short double-click:	Reset to factory settings and power off

Additionally at ECC silence:

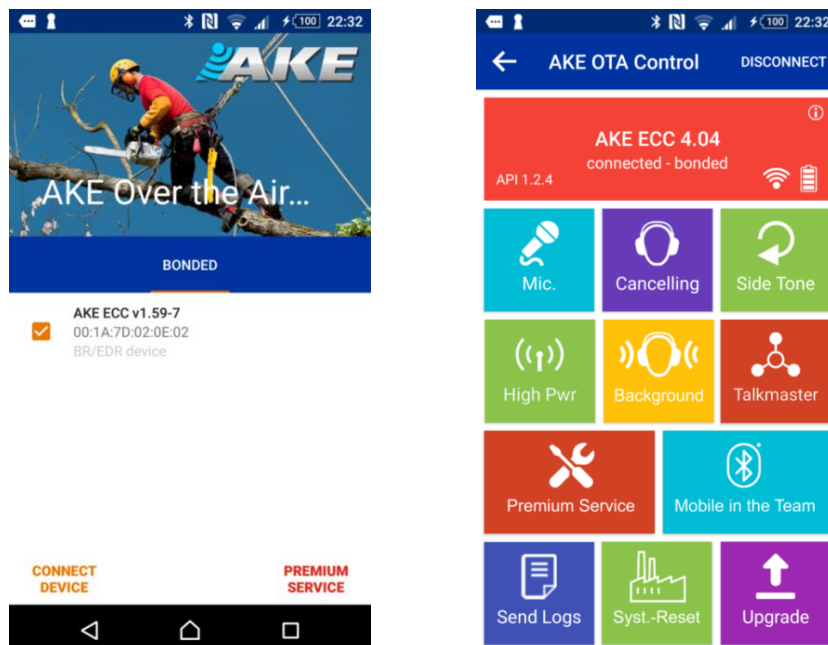
Plus-button Ⓢ push for 1 second:	Activates or deactivates background noise control <sup>1</sup>
Minus-button Ⓜ push for 1 second:	Activates or deactivates Voice switch and monitor sound <sup>1</sup>

<sup>1</sup>) Tone low / high: Function is activated, tone high / low: Function is deactivated.

## System settings, Premium-Service and Upgrade over App

- **Simple operation on the device and still individual system settings possible.** With the Over The Air Control App you can easily make the appropriate adjustments to the respective work environment, background noise, etc.
- **You need technical help?** With the Over The Air Control app you can request the manufacturer premium service.
- **Keep your ECC system up to date.** With the Over The Air Control app, you can upgrade wirelessly with any Android phone.

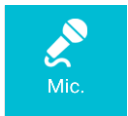
### The Over The Air Control App



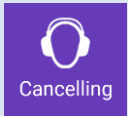
Download the latest **AKE Over the Air Control App** from **Google-Store** or from the homepage [www.ake-elektronik.de](http://www.ake-elektronik.de) to your Android phone and install it. Connect the **ECC** to your mobile phone via Bluetooth® and open the App. Activate the displayed connection **AKE ECC ...** and select **CONNECT DEVICE**.



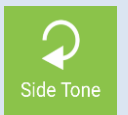
In the first field, various device information such as device name, software version number, Bluetooth address, battery charge level, battery mode, receive field strength and more can be queried.



Deactivates the signal microphone ④, if desired. Ambient noise via the signal path is then blocked. It is recommended if the subscriber only receives messages (without App: Press plus & minus together 1 x briefly).



*Only ECC silence:* intelligent microphone switch (iVOX), the noise-compensated microphone ④ only switches on when speaking. Surrounding sounds via the signal path are 100% locked during the speech pauses.



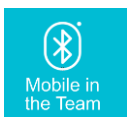
*Only ECC silence:* Activates the "Monitor sound". This allows the acoustic control of the electronic speech recognition via the speakers (should always be switched on, if the intelligent Voice switch is active, see above)



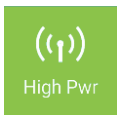
*Only ECC silence:* Enables the perception of ambient signals even with hearing protection, no need to flip up the hearing protectors. Inadmissibly loud ambient noise is automatically muted.



Enables the activation or deactivation of the team leader mode, with the deactivation all team settings are deleted and recreated with the activation, see section "Changing the team composition"



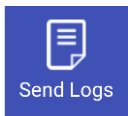
Activates the permissibility of a Bluetooth® connection to the mobile phone, especially in teamwork (always permitted in individual operation). Disable this setting if mobile phone operation is not allowed in teamwork.



Activates or deactivates the power saving mode. Low-power mode doubles the battery life with reduced range.



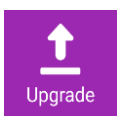
Starts the premium service direct connection to the manufacturer. Qualified emergency aid for all users with a service contract (additional costs may arise).



Allows sending log files with device settings, etc. to the manufacturer's premium service to make troubleshooting easier. No personal data will be transmitted.



System reset, all changes are reset to factory settings, all pairings are deleted and the ECC system switches off. The team leader is also deactivated and must be reactivated if necessary.



Starts the wireless upgrade process. To do this, copy the new device software to the mobile connected via the app. You will receive the appropriate upgrade software from the manufacturer.

## Possible malfunctions and her cause. software reset

### Very slow pairing or no pairing possible:

In the near of strong W-LAN hotspots, the usable frequencies may be overloaded; pair the devices outside these ranges.

### Device out of range, connection lost, LEDs flash 2 x red:

If the connection is not restored automatically, reduce the distance within ¼ hour. In the receiving area, the devices should then connect again.

### Disturbances and interruptions:

Radio waves in the frequency range used (2.4 GHz) reflect very strongly on buildings, etc., and there is constant interference during the change of location and thus field strength fluctuations. As a result, disruptions and crashes are possible.

If the team leader makes a call in multi-user mode, no other participants should be on the phone at the same time; otherwise, it may not be possible to reconnect to them.

### Speech is too quiet or microphone does not turn on:

Check the microphone arrangement, the mic. should have lip contact.

### Noise, etc .

Reduce the volume, at very high volume settings system typical signals (noise, soft singing, etc.) can be heard.


### Feedback effects:

Turn down the volume and turn on the electronics only if the earmuffs are used properly.

### Inexplicable malfunctions, device no longer reacts:

Switch the devices off and on again, if this is not possible, charge the battery, when the USB plug is plugged in a software reset is automatically performed. If this does not help either, delete the memory, see next section.

## Secure deletion of existing pairings and settings

Just switch on the team leader device. **Display:** |  and press the multifunction button® 2 times in quick succession (short double-click!). The device switches off automatically when all pairings and user settings have been deleted. Continue on page 5, section: "Commissioning the full-duplex team hands free connection".

## Technical specifications

### Bluetooth® System:

Version: 4+

Profiles: HFP, AVRCP, BLE

### Team communication:

Proprietary **AKE ECC** hands free system

### Swap-Mode (only ECC silence):

pair up to 8 systems and easily change participants in team mode

### Transmission power:

Class 1 (100 mW), Power Saving Function Class 2 (2,5 mW)

Automatic power adjustment via RSSI

### Receive sensitivity:

Low-noise amplifier, noise floor typical 2 dB

**Maximum range:** (free field with 3 dBi antennas)

Low Power > 100 m<sup>1</sup>, High Power > 500 m, with repeater function up to 1 km<sup>1</sup>

**Battery:**

Lithium-Ionen-Polymer 3,75 V, 600 mAh

Charging time: 3 - 4 hours

Talk time: About 8 hours<sup>2</sup>

Team leader (with 4 devices at maximum distance) >5 hours

Stand by: 3 days

**Charge input:**

Mikro-USB, 5V DC, max 200 mA, reverse polarity protected

Battery regeneration when deep discharge

**Signal microphone:**

High quality noise compensated close talking system

Input sensitivity: -42 dB (0dB=1V/ $\mu$ Bar)

Noise attenuation in speech recognition > 20 dB

Noise attenuation in the speech pauses > 20 dB, **ECC silence** 100%

**Outside noise control (only ECC silence):**

Noise microphone with transmission of ambient signals up to 85 dB(A) at the ear, Shut-off reaction time <50 ms (suitable for shooting)

**Loudspeaker:**

Terminal resistance: 32 Ohm (**ECC silence:** 2 x 32  $\Omega$ )

Output power: 0,2 Watt (**ECC silence:** 2 x 0,2 Watt)

**Amplifier:**

Maximum output power at 8  $\Omega$  and  $U_{Batt}=3,6$  V: 0,72 Watt (**ECC silence:** 1,44 W)

Permissible output impedance: 3 Ohm

Frequency range: 20 Hz bis 20 KHz

**Stand by:**

Stand by current: < 1  $\mu$ A

Wake Up time after standby: < 27 ms

Quiescent current: 5 mA

**Weight of electronics:** Incl. battery about 40 grams

## Important notes for your safety

Switch off this appliance immediately and hand it over to an authorized service center if there are any unacceptable noise levels or other abnormalities. In case of violent destruction, the built-in battery may catch fire. We assume no responsibility for incorrect settings, malfunctions or improper use. Only use accessories approved by AKE.



Observe the PPE regulations  
for occupational safety and health!!

<sup>1</sup> Under optimal conditions

<sup>2</sup> May be very different depending on the operating mode and ambient temperature

## User information, hints and warnings for AKE capsule hearing protection with built-in ECC basic and ECC silence hands-free system

The EU directive regulates the requirements for protective equipment at the workplace (PPE). From 2018, new stricter regulations will apply, according to which hearing protection will now belong to category III. Category III covers only those risks that can lead to very serious consequences such as death or irreversible damage to health.

The following obligations in relation to the essential health and safety requirements apply only where there is a risk of hearing damage to the wearer of the personal protective equipment concerned.

### Passive soundproofing of the used ear protection capsules according to the PPE regulation

- a) Number of the standard: EN 352-3:2002, PSA-Verordnung (EU) 2016/425
- b) Trademark: AKE Elektronik GmbH & Co.KG
- c) Model name: Hearing protection with ECC basic and ECC silence hands-free system
- e) Type of bracket and sealing pads: wire hanger made of stainless elastic steel, sealing cushions filled with PU foam and covered with PVC foil
- f) List of industrial safety helmets used: Apollo A11, A12, A13, LP2000NL, Satuno S14, S16, S17, S24, S26, S27, Terano T10, T20
- g) Mounting on the helmet: clip-on mounting on 30 mm connector pockets. Insert the plastic tabs provided on the temples into the connector pockets (slots on the helmet) until they audibly click into place
- h) Application: For the earmuffs 2 positions are selectable, 1. parking position, for this purpose the earmuffs can be folded and rotated away from the ear, 2. noise protection position, for this purpose the earmuffs are positioned in such a way that they enclose the ear and snap into place by pressing them towards the head. Noise protection is only guaranteed if both capsules are flush with the head
- i) Size range(s) of the helmet/ear-muffs combination(s) for each wearing method: T10/20 M, L, LP2000NL: L\*, Saturno-series: L\*, A12/22: L\*  
 \*) Warning: This helmet-earmuffs combination is in the "Large size range". Helmet earmuff combinations according to EN352-3 are offered in the "medium size range", the "small size range" and the "large size range". Helmet/earmuff combinations in the "Medium size range" fit the vast majority of users. Helmet/earmuff combinations in the "Small" or "Large" size range are for users for whom helmet/earmuff combinations in the "Medium" size range are not suitable
- j) Sound insulation values:

Frequency in Hz	Mean value in dB	Standard deviation in dB	APV-value in dB
63	17,1	2,8	14,3
125	15,2	3,7	11,5
250	17,5	3,1	14,4
500	21,6	3,6	18,0
1000	29,0	2,1	26,9
2000	32,4	2,5	29,9
4000	41,0	3,7	37,3
8000	42,4	5,3	37,1

SNR-value	H-value	M-value	L-value
26 dB	31 dB	22 dB	17 dB

- k) Recommendations for use: The helmet-earmuff-ear protector combinations may only be fitted, adjusted and maintained in accordance with the manufacturer's instructions. Both hearing protectors must be worn tightly fitting without interruption as long as the noise

continues. The helmet/ear-muff combinations must be checked regularly for the necessity of maintenance

- l) Warning about impairment of the protective effect: If these recommendations are not followed, as well as with thick Eyewear-templates or piercings, an impairment of the protective effect is to be expected!
- m) Notes on cleaning and disinfection: Clean the switched-off device regularly with a soft damp cloth and a little liquid dishwashing detergent. Do not use any solvents and never immerse it in water! Remove the sealing cushion and foam for cleaning and drying. The unit must be stored in a dry place! Use an antiseptic, alcohol-free agent for disinfection
- n) Information on chemical substances. Sealing cushions: PVC foam foil with PU foam filling, insulation insert and microphone POP protection: PU soft foam, shell and antenna: ABS. This product may suffer from certain chemical substances. Further information can be requested from the manufacturer
- o) Wear and tear information: New devices in their original packaging have a practically unlimited shelf life when stored in a dry place at room temperature and protected from light. Ear muffs and especially sealing cushions can wear out with use and should therefore be checked frequently for signs of, for example, cracks and leaks. The manufacturer recommends not to exceed a maximum service life of 4 years
- p) Warning about hygienic coatings: Wrapping the sealing cushions with "hygienic covers" can affect the acoustic performance of the earmuffs
- q) Storage recommendations: Store the device in a clean, dry place at room temperature. Always switch off and dry wet devices immediately!
- r) Information for ordering replacement sealing pads: Item no.: 32386 - consisting of 1 microphone windscreen foam (pop protection), 2 sealing cushions and 4 foam inserts. Please order replacements from your specialist dealer or at <https://shop.ake-electronic.com>
- s) Method of replacing the sealing pad: snap-in fastening, pull off old sealing pad and snap in new one. Check tightness after replacement
- t) Average mass of the ear muffs with electronics: ECC basic 0,356 Kg, ECC silence 0,376 Kg

#### **Level-dependent sound insulation according to PPE regulation**

- a) Number of the standard: prEN 352-4: 2017
- b) Model name: Hearing protection with ECC silence hands-free system. In contrast to the "basic" version, this hearing protection is additionally equipped with a device for level-dependent sound insulation

c) Criterion level:

	Anforderung	ECC Wert
H-Geräusch	97 dB(A)	117 dB(A)
M-Geräusch	96 dB(A)	105 dB(A)
L-Geräusch	94 dB(A)	93 dB(A)*

\*) Permissible, since there is no significant difference for the L-criterion level when switching the level-dependent insulation on or off

- d) Important note: Before use, the user should check that the unit is operating properly. If any distortion or failure is found, the user should follow the manufacturer's recommendations for maintenance

#### **Safety relevant communication (with cell phone or radio) according to PPE regulation**

- a) Number of the standard: prEN 352-6: 2017
- b) Description: This hearing protector is equipped with a device for safety-relevant communication via cell phone or radio
- c) Criterion value of the input signal: -40 dB FS



- d) Relationship between output sound pressure level and input signal in 5 dB steps up to the maximum input signal:

<i>A-weighted diffuse-field related sound level in dB(A)</i>	75	80	82	85	87
<i>Input signal level in dB FS</i>	-46,7	-42,0	-40,0	-36,0	-14,0

- e) Output sound pressure level for the maximum input signal: 87 dB(A)  
 f) Operating time for the maximum input signal corresponding to an equivalent output sound pressure level of 82 dB(A) over 8 h: 2:32 h  
 h) Warning: In PPE applications, this hearing protection must not be used for entertainment purposes, as the output sound pressure level is not limited to the prescribed harmless level (see: RfU 04.052)

### Safety relevant group communication (intercom) according to PPE regulation

- a) Number of the standard: None, because this test is new and not yet included in the standard.  
 b) Description: This hearing protector is equipped with a device for safety-related full-duplex group communication.  
 c) Maximum duration of speech transmission in noise:

high-frequency noises	7:00 h
middle-frequency noises	10:47 h
low-frequency noises	5:40 h

- d) Specification of the maximum sound level of speech in quiet: 82,2 dB(A)  
 e) Specification of the maximum duration of speech transmission at quiet: 7:38 h

## CE marking, test institute and declaration of conformity



**Category III PPE approval:** ECC basic and ECC silence are certified for risks that can lead to very serious consequences such as death or irreversible damage to health.

**Notified testing institute:** Institut für Arbeitsschutz der DGUV, Alte Heerstraße 111, 53757 Sankt Augustin, Kennnummer: 0121.

**Internet address to request the declaration of conformity:** <https://www.ake-elektronik.de/news-support/downloads>

## Warranty and service

The devices are largely protected against moisture, but not waterproof. If water has penetrated once, switch off the device immediately, remove the foam cover and let the device dry completely.

### Warranty

On the electronics we grant the end user a guaranty based of the two-year implied warranty under German law. Hand over the defective device unopened with a detailed error description to your dealer or send it with your purchase document directly to our service department. In case of a third-party modification, any warranty claim expires! Water damage and batteries are excluded from the warranty! Ear protection capsules and their accessories are covered by the warranty of the respective manufacturer.

### Premium-Service



For all devices with a premium service contract, the customer has the option to call for help in the event of problems by phone or app at any time during the

contractually agreed period. For immediate assistance he receives direct access from 9:00 am to 6:00 pm German time via a telephone hotline specially set up for this purpose: +49 (0) 176 / 95 84 81 28.

For **ECC silence** the following applies additionally: In case of repair, the customer will receive a loaner if the repair cannot be completed within 48 hours. Each, one year and two years after the date of purchase, the customer is entitled to a free device check. Defective wearing parts will be exchanged upon request for a fee.

Please send devices for inspection or repair only to the following address: **AKE-Premium-Service, Willi-Bleicher-Str.6, D-73230 Kirchheim**

For distribution outside the EU, please contact the respective importer.

## References to the recycling after the electrical appliance law



This equipment complies with the new European ROHS guideline. If it should not be used any longer, it must not be disposed with regular household garbage but must be turned in at collecting points for electronic waste (free of charge for consumers). This would help us with the recycling of valuable raw materials and at the same time provide a contribution to environmental protection!

Battery recycling: This device contains a lithium-ion polymer battery. Please ensure proper disposal of batteries. Always follow the local laws and regulations for disposal of batteries.



