SENNHEISER

HMEC 350/352/355
355-C/356/372/450
HMDC 372

Instructions for use

NoiseGard™

Contents

The HMEC 350, HMEC 352, HMEC 355, HMEC 355-C, HMEC 356, HMEC 372, HMEC 450 and HMDC 372 are pilot headsets with closed ear protector headphones and NoiseGard™ active noise compensation for use in helicopters, propeller and turboprop aircraft.

Safety tips

- With the NoiseGard™ active noise compensation turned on, typical aircraft sounds (for example, those from engines, propellers, warning alarms, etc.) may sound different to you. Before operating any aircraft, make sure that, with NoiseGard™ turned on, you can hear and recognize these sounds. Set the volume to safe levels that do not interfere with your ability to hear informational sounds and warning alarms.
- Do not attempt to repair the headset yourself. If problems occur, contact your Sennheiser agent for assistance.
- Only replace parts of the headset whose replacement is described in this manual. All other parts of the headset must be replaced by your Sennheiser agent.
- Do not immerse the headset in water! For information on how to clean the headset, contact your Sennheiser agent.

Headset features

HMEC 350 NoiseGard™ headset

- New active headset with effective attenuation of external noise across the entire frequency spectrum due to NoiseGard™ active noise compensation
- NoiseGard™ active noise compensation provides clear communications even in the noisiest environment
- Improved acoustic properties: The frequency response of the headphones has been optimised in the 1 to 4 kHz region to give significantly increased speech intelligibility over the HMEC 300 series
- Excellent comfort due to very low weight, soft ear cushions and padded headband as well as best possible freedom of movement due to unilateral connecting cable
- Foldable headband for easy and space-saving storage
- Clear communications due to MKE 45-1 pre-polarized condenser microphone with adjustable sensitivity
- Microphone can be easily positioned and worn on either left or right side due to flexible microphone boom with quick-fixing device
- Integrated volume control
- Adaption to the aircraft intercom system via Mono/Stereo switch

- With the NoiseGard™ active noise compensation turned off, the headset can be used as a conventional headset
- Power supply for NoiseGard™ is provided via on-board power supply system, cigarette lighter socket or battery pack
- Fail safe operation in case of power failure
- Supply voltage for the NoiseGard™ system is processed by the in-line electronics in the connecting cable
- Made in Germany, 5-year warranty (HMEC 450: 10-year warranty)

Product variants

HMEC 352 NoiseGard™ headset

The HMEC 352 differs from the HMEC 350 in the following features:

- Connection of microphone and NoiseGard™ electronics via PJ-068 plug

HMEC 355 NoiseGard™ headset

The HMEC 355 differs from the HMEC 350 in the following features:

- No Mono/Stereo switch
- Connection of headphones, microphone and NoiseGard™ electronics to the on-board power supply system (12–35 V DC) via XLR-5 plug

HMEC 355-C NoiseGard™ headset

The HMEC 355-C differs from the HMEC 350 in the following features:

- No Mono/Stereo switch
- Connection of headphones and microphone via XLR-5 plug
- Connection of NoiseGard™ electronics via XLR-3 plug

HMEC 356 NoiseGard™ headset

The HMEC 356 differs from the HMEC 350 in the following features:

- Connection of headphones, microphone and NoiseGard™ electronics to the on-board power supply system (12–35 V DC) via 6-pin Redel plug

HMEC 372 NoiseGard™ headset

The HMEC 372 differs from the HMEC 350 in the following features:

- No Mono/Stereo switch
- Coiled cable
- Connection of headphones and microphone via U-174/U jack plug to a high impedance interface in the helicopter

HMEC 450 NoiseGard™ headset

The HMEC 450 differs from the HMEC 350 in the following features:

- Stylish silver design
- Leatherette ear cushions
- Headband padding can be buttoned

HMDC 372 NoiseGard™ headset

The HMDC 372 differs from the HMEC 350 in the following features:

- No Mono/Stereo switch
- Coiled cable
- M-87/AIC dynamic microphone and low impedance headphones
- Connection of headphones and microphone via U-174/U jack plug to a low impedance interface in the helicopter

Delivery includes

HMEC 350, HMEC 355-C, HMEC 372, HMEC 450 and HMDC 372 headsets

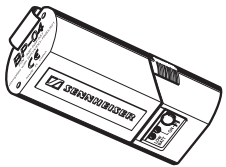
- Headset
- 3-pin XLR socket for aircraft panel mounting (power supply via the on-board system)
- Padded carry and storage bag with shoulder strap for headset and accessories
- Wind screen for microphone (except HMDC 372)
- MZQ 2002-1 cable clip (Cat. No. 044740)

HMEC 352, HMEC 355 and HMEC 356 headsets

- Headset
- Padded carry and storage bag with shoulder strap for headset and accessories
- Wind screen for microphone
- MZQ 2002-1 cable clip (Cat. No. 044740)

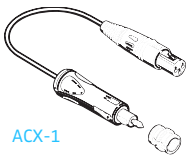
Recommended accessories

Replaceable gel ear cushions (Cat. No. 092807)

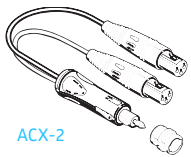


BP-04 battery pack (Cat. No. 500357) (except for HMEC 352, HMEC 355 and HMEC 356)

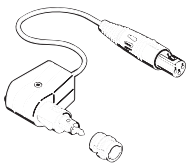
Battery pack with XLR-3 socket for powering the NoiseGard™ electronics of the HMEC 350, HMEC 355-C, HMEC 372, HMEC 450 and HMDC 372 headsets. Four 1.5 V AA size alkaline manganese batteries (IEC LR 6) ensure approx. 15 hours of reliable operation (batteries are not included in the delivery). Length of connecting cable: 0.9 m.



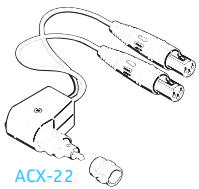
ACX-1



ACX-2



ACX-11



ACX-22

Adapter cables (except for HMEC 352, HMEC 355 and HMEC 356)

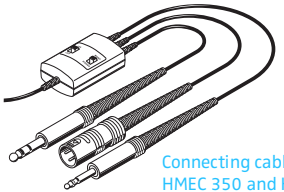
Sennheiser offers special adapter cables for connecting the NoiseGard™ electronics of the HMEC 350, HMEC 355-C, HMEC 372, HMEC 450 and HMDC 372 headsets to the on-board power supply via the cigarette lighter socket:

- **ACX-1** adapter cable for powering one headset via the cigarette lighter socket
- **ACX-2** adapter cable for powering two headsets via the cigarette lighter socket

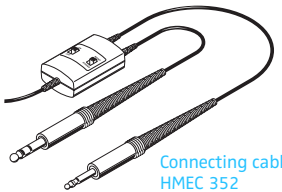
The adapter cables are also available with a right-angled jack plug featuring a 7.5 A fuse and a green LED operation indicator:

- **ACX-11** adapter cable for powering one headset via the cigarette lighter socket
- **ACX-22** adapter cable for powering two headsets via the cigarette lighter socket

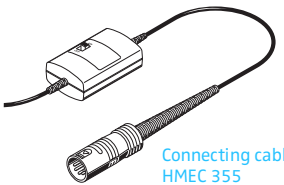
Connecting the headsets



Connecting cable for HMEC 350 and HMEC 450



Connecting cable for HMEC 352



Connecting cable for HMEC 355

Connecting cables for headsets

HMEC 350 and HMEC 450 headsets:

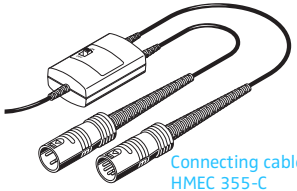
1 ¼" (6.35 mm) stereo jack plug for connecting the headphones
1 PJ-068 jack plug for connecting the microphone
1 XLR-3 plug for connecting the power supply for the NoiseGard™ electronics

HMEC 352 headset:

1 ¼" (6.35 mm) stereo jack plug for connecting the headphones
1 PJ-068 jack plug for connecting the microphone and the power supply for the NoiseGard™ electronics

HMEC 355 headset:

1 XLR-5 plug for connecting the headphones, the microphone and the power supply for the NoiseGard™ electronics

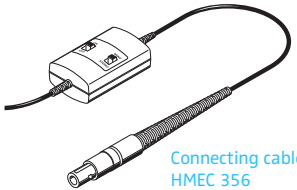


Connecting cable for HMEC 355-C

HMEC 355-C headset:

1 XLR-5 plug for connecting the headphones and the microphone

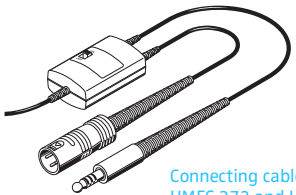
1 XLR-3 plug for connecting the power supply for the NoiseGard™ electronics



Connecting cable for HMEC 356

HMEC 356 headset:

1 6-pin Redel plug for connecting the headphones, the microphone and the power supply for the NoiseGard™ electronics



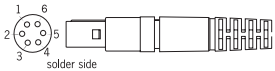
Connecting cable for HMEC 372 and HMDC 372

HMEC 372 and HMDC 372 headsets:

1 U-174/U jack plug for connecting the headphones and the microphone

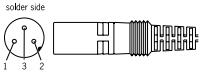
1 XLR-3 plug for connecting the power supply for the NoiseGard™ electronics

Connector assignment



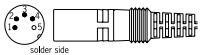
Redel connector (NoiseGard™)

1 Power supply NoiseGard™ (DC+)
2 Audio Lo / DC –
3 Audio Hi left
4 Audio Hi right
5 Microphone Hi
6 Microphone Lo



XLR-3 connector (NoiseGard™)

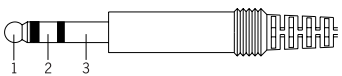
1 Power supply NoiseGard™ (DC+)
2 Ground
3 – *



XLR-5 connector

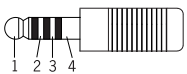
HMEC 355
1 Audio Hi
2 Audio Lo / DC –
3 Microphone Hi
4 Microphone Lo
5 Power supply NoiseGard™ (DC+)

HMEC 355-C
1 Audio Hi
2 Audio Lo
3 Microphone Hi
4 Microphone Lo
5 Not assigned!



¼" (6.35 mm) stereo jack plug

1 Audio Hi left
2 Audio Hi right
3 Audio Lo



U174/U jack plug

1 Microphone Lo
2 Audio Hi
3 Microphone Hi
4 Audio Lo

PJ-068 jack plug

HMEC 352
1 Power supply NoiseGard™ (DC+)
2 Microphone Hi
3 Microphone Lo / DC –

HMEC 350
1 Not assigned!
2 Microphone Hi
3 Microphone Lo

* Note: Battery powering for the NoiseGard™ system of HMEC 350, HMEC 355-C, HMEC 372, HMEC 450 and HMDC 372 only via BP-04 battery pack

Powering options

There are three options for powering the NoiseGard™ active noise compensation:

1. Connection to the on-board system (12–35 V DC)
2. Connection to the BP-04 battery pack
   (accessory, except for HMEC 352, HMEC 355 and HMEC 356)
3. Connection to the cigarette ligther socket (12–35 V DC) via adapter cable
   (accessory, except for HMEC 352, HMEC 355 and HMEC 356)

The supply voltage for the NoiseGard™ system is processed by the in-line electronics in the connecting cable.

Danger of short circuit!

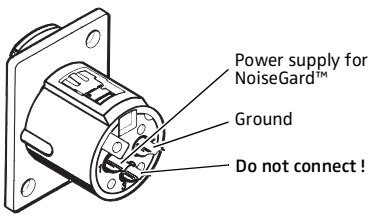
Before turning on NoiseGard™, ensure that the on-board power supply system is protected by a 1 A fuse.

1. Connecting the headset to the on-board system

The NoiseGard™ electronics can be connected to on-board power supply systems with operating voltages between 12–35 V DC.

Danger of short circuit!

Before turning on NoiseGard™, ensure that the on-board power supply system is protected by a 1 A fuse.



XLR-3 socket

The HMEC 350, HMEC 355-C, HMEC 372, HMEC 450 and HMDC 372 headsets are supplied with an XLR-3 socket for panel mounting in the aircraft. The XLR-3 socket must be mounted by a technician qualified to perform this type of installation.

HMEC 350 and HMEC 450 headsets:

- Connect the ¼" (6.35 mm) stereo jack plug for the headphones and the PJ-068 jack plug for the microphone to the corresponding jack sockets of your intercom.
- Connect the XLR-3 plug to the XLR-3 socket.

HMEC 352 headset:

- Connect the ¼" (6.35 mm) stereo jack plug for the headphones and the PJ-068 jack plug for the microphone to the corresponding jack sockets of your intercom.

HMEC 355 headset:

- Connect the XLR-5 plug to the aircraft's XLR-5 socket.

HMEC 355-C headset:

- Connect the XLR-5 plug for the headphones and the microphone to the aircraft's XLR-5 socket.
- Connect the XLR-3 plug to the XLR-3 socket.

HMEC 356 headset:

- Connect the 6-pin Redel plug to the corresponding socket in the aircraft.

HMEC 372 and HMDC 372 headsets:

- Connect the U-174/U jack plug for the headphones and the microphone to the U-174/U socket of your intercom.
- Connect the XLR-3 plug to the XLR-3 socket.

2. Connecting the headset to the battery pack (except HMEC 352, HMEC 355 and HMEC 356)

The NoiseGard™ electronics of the HMEC 350, HMEC 355-C, HMEC 372, HMEC 450 and HMDC 372 headsets can also be powered via the BP-04 battery pack (see "Recommended accessories" on page 9). The battery pack can be operated either on standard or rechargeable batteries (not included in the delivery). However, to ensure a longer operating time, we would recommend using standard AA size alkaline manganese batteries (IEC LR 6) or NiMH rechargeable batteries.

Inserting / replacing the the batteries

- Open the cover of the battery compartment.
- Insert four AA size alkaline-manganese batteries (IEC LR 6). Observe correct polarity when inserting the batteries.
- Close the cover of the battery compartment.

LED operation and battery status indication

The battery pack has two control LEDs.

Yellow LED: The battery pack is turned on and the battery capacity is sufficient.
Red LED: The batteries are low. Replace the batteries.

Connecting the headset, turning on the battery pack

- Connect the XLR-3 plug of the headset connecting cable to the XLR-3 socket on the connecting cable of the battery pack.
- **HMEC 350 and HMEC 450 headsets:** Connect the ¼'' (6.35 mm) stereo jack plug for the headphones and the PJ-068 jack plug for the microphone to the corresponding jack sockets of your intercom.

  HMEC 355-C headset: Connect the XLR-5 plug for the headphones and the microphone to the aircraft's XLR-5 socket.

  HMEC 372 and HMDC 372 headsets: Connect the U-174/U jack plug for the headphones and the microphone to the U-174/U socket of your intercom.
- Turn on the battery pack by setting the ON/OFF switch to ON. The yello LED power indicator lights up.

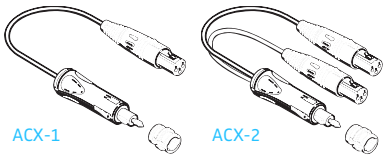
  Note:

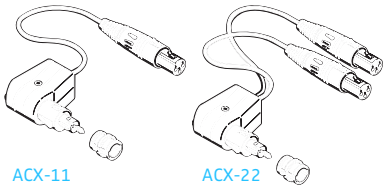
  When using the battery pack, the ON/OFF switch integrated into the headset connecting cable is out of operation.

Attaching the battery pack to clothing

The battery pack can be attached to clothing by means of the supplied attachment clip, Velcro tape is also supplied.

3. Connecting the headset via a cigarette lighter adapter cable (except HMEC 352, HMEC 355 and HMEC 356)





Sennheiser offers special adapter cables with XLR-3 socket for connecting the NoiseGard™ electronics of the HMEC 350, HMEC 355-C, HMEC 372, HMEC 450 and HMDC 372 headsets to the on-board power supply via the cigarette lighter socket:

- **ACX-1** adapter cable for powering one headset via the cigarette lighter socket
- **ACX-2** adapter cable for powering two headsets via the cigarette lighter socket

The adapter cables are also available with a right-angled jack plug featuring a 7.5 A fuse and a green LED operation indicator:

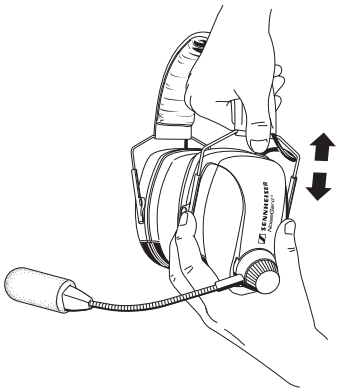
- **ACX-11** adapter cable for powering one headset via the cigarette lighter socket
- **ACX-22** adapter cable for powering two headsets via the cigarette lighter socket

Connecting the headset

▶ Connect the XLR-3 plug of the headset connecting cable to the XLR-3 socket of the adapter cable.

▶ Connect the plug or right-angled jack plug of the adapter cable to the cigarette lighter socket.

Preparing the headsets for use



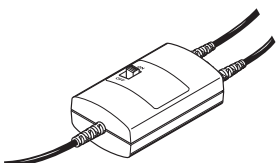
Adjusting the headband

For good noise attenuation and best possible comfort, the headband has to be adjusted to properly fit your head:

- Wear the headset so that the headband runs over the top of your head.
- Adjust the length of the headband so that
  - your ears are completely inside the ear cushions,
  - you feel even, gentle pressure around your ears,
  - a snug fit is ensured.

Note:

Make sure not to squeeze any connecting cable when adjusting the headband. Squeezing can damage the connecting cables.



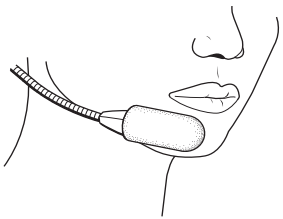
- Turn on the NoiseGard™ active noise compensation by setting the ON/OFF switch to "ON" (see "Turning NoiseGard™ on/off" on page 22).
- Final adjustment is best made in a noisy environment.

Positioning the microphone

Relocating the microphone boom

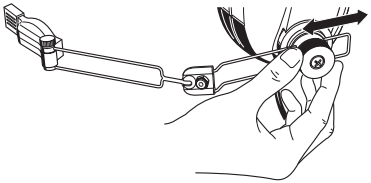
The microphone boom can be worn on either side of the mouth.

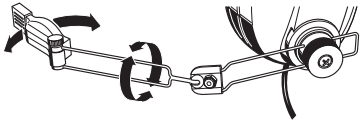
- Loosen the quick-fixing device.
- Rotate the microphone boom by 180°.
- Tighten the quick-fixing device.



Positioning the microphone towards the corner of the mouth

The HMEC 350, HMEC 352, HMEC 355, HMEC 355-C, HMEC 356, HMEC 372 and HMEC 450 headsets feature a flexible microphone boom. Bend the microphone boom so that the microphone is placed at the corner of the mouth. Maintain a distance of approx. 2 cm between microphone and mouth.

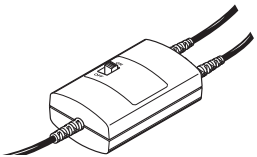




For positioning the microphone of the HMDC 372 headset, proceed as follows:

- Adjust the length of the microphone boom so that the microphone is placed at the corner of the mouth. To do so, loosen the quick-fixing device and adjust the microphone boom in length.
- Pull the middle part of the microphone boom towards the mouth so that the distance between microphone and mouth is approx. 2 cm.
- Tilt the microphone for final positioning.

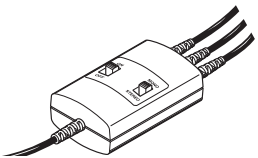
Using the headsets



Turning NoiseGard™ on/off

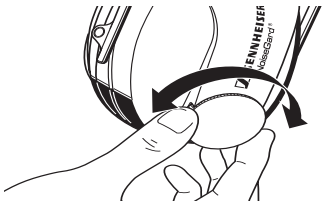
With the NoiseGard™ active noise compensation turned off, the headset can be used as a conventional headset.

Turn on the NoiseGard™ active noise compensation by setting the ON/OFF switch to ''ON''. When using the BP-04 battery pack, set the NoiseGard™ ON/OFF switch to ''ON'' and use the ON/OFF switch on the battery pack.



Mono/Stereo selection (except HMEC 355, HMEC 355-C, HMEC 372 and HMDC 372)

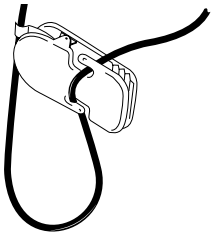
In general, you'll receive a mono sound source so that the Mono/Stereo switch can remain set to ''Mono''. When using a stereo intercom system, set the Mono/Stereo switch to ''Stereo''.



Adjusting the volume

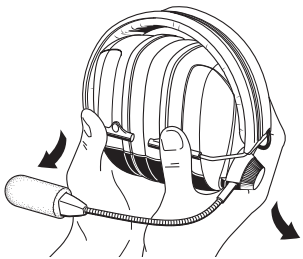
Exposure to loud sounds can cause hearing damage!

Set the volume control to a medium value. Make sure that you can hear critical sounds such as warning alarms.



Attaching the cable clip

The headphone cable can be fixed by means of the cable clip. Guide the headphone cable through the metal cable clip as shown in the illustration on the left. Attach the cable clip to your clothing and then loop the cable through the clip so that the headphone cable doesn't disturb you.



Folding up the headphones

For easy and space-saving transportation, the earcups can be folded up and tucked between the headband.

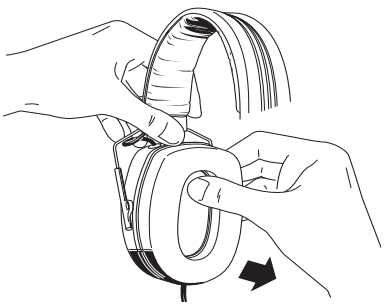
Unfold the headphones by grasping both earcups and pulling them down and away from the headband.

Spare parts

The following spare parts are available from your Sennheiser agent:

- Wind screen for MKE 45-1 Cat. No. 075823
- Ear cushions for all variants except HMEC 450 Cat. No. 077966
- Ear cushions for HMEC 450 Cat. No. 085764
- Soft ear cushions for HMEC 450 Cat. No. 089382
- Headband padding Cat. No. 086628
- MZQ 2002-1 cable clip Cat. No. 044740
- Carry and storage bag with shoulder strap Cat. No. 078366

Replacing the wind screen



If the wind screen shows signs of wear such as tears or holes, replace the wind screen. Pull the wind screen from the microphone. Gently slide-on the new wind screen and ensure that it fits securely over the microphone.

Replacing the ear cushions

Replace the ear cushions if they are damaged. Grasp behind the ear cushions and pull them up and away from the earcups. Fix the new self-adhesive ear cushions to the earcups. For best results replace the ear cushions after 100 hours of use or two years.

Replacing the headband padding

Replace the headband padding if it is damaged.

- Pull the Ziploc type fastening strips of the headband padding apart and remove the worn headband padding.
- Put the new headband padding around the headband.
- Pull the two edges of the headband padding together so that the fastening strips slightly overlap.
- Join the fastening strips.

Replacing the headband padding of the HMEC 450 headset

Replace the headband padding if it is damaged.

- Open the snaps on the headband padding and remove the worn headband padding.
- Put the new headband padding around the headband.
- Pull the two edges of the headband padding together and close the snaps.

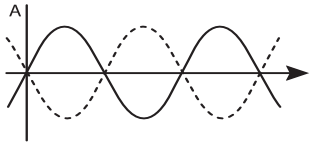
Valuable information on NoiseGard™

The NoiseGard™ principle

One of the greatest stress factors today is noise. Research has shown that noise affects the nervous system, and can cause tiredness, poor concentration, irritability and tension. Of even greater concern is the permanent damage to hearing that can result from noise at high levels.

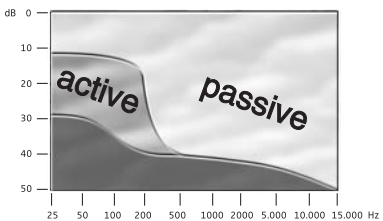
This problem concerns pilots in particular. Cockpit noise amounts to about 80 dB(A) in jets and to 90 up to 97 dB(A) in turboprops. During takeoff and landing, the noise level is even higher. To be able to understand radio traffic in spite of the noisy environment, the ATC signal level must be set to at least 95 dB(A). Permanent hearing loss caused by the continuous noise in aircrafts is the reason why many pilots became prematurely disabled or lost their pilot´s license.

Circumaural communication headsets provide noise attenuating properties and are commonly used to address this problem. However, the noise attenuation of these headsets is uneven. High frequencies are reduced considerably, but low frequency wind and engine noise, the most prominent noise in many of today's aircrafts, is attenuated very little. In response to these problems, Sennheiser has developed an active noise compensation system – NoiseGard™ – which, combined with a high-quality passive hearing protector, provides consistent noise attenuation over the entire audio range. The overall noise level is reduced so that the radio volume can be turned down but enough noise still remains for the pilot to safely monitor the aircraft engines.



NoiseGard™ active noise compensation is achieved by generating a signal identical in sound pressure level but exactly reversed in phase to the noise signal, the effect being that the out-of-phase signal cancels most of the noise signal.

Active noise compensation is accomplished in the following manner: Each earcup includes a microphone, a feedback control circuit, and a transducer to reproduce both the communication and the noise cancelling signal. The feedback control microphones sense the total sound pressure within each earcup resulting from both the desired radio signal from the receiver and the undesired noise that has come through the earcup. The microphone signal is amplified and the radio signal is subtracted from it. The remaining signal (noise) is then filtered and inverted and the radio signal is added back in. Eventually, the entire signal is amplified and fed back to the transducer in each earcup. Since the noise component of the signal is inverted, it cancels the noise signal coming through the earcup. The radio signal remains unaffected, as it was not processed through the cancellation circuits.



The diagram on the left shows noise compensation with NoiseGard™: Passive hearing protectors effectively attenuate noise from the middle and upper frequency range, the effect decreasing sharply in the lower range. However, active noise compensation with NoiseGard™ combined with passive hearing protectors results in a reduction of noise of approx. 25 dB in the 25–500 Hz frequency range. The total attenuation resulting from active and passive noise compensation is about 30 dB over the entire audio range.

A 10 dB reduction in noise is perceived subjectively as a halving in volume. A further reduction in noise of 10 dB again results in a decrease in unwanted noise by 50 %.

In case of difficulty

If problems occur that are not listed in the below table, please contact your Sennheiser agent.

Problem	Possible cause and what to do
Clear communication but no active noise compensation	The NoiseGard™ electronics are turned off. ▶ Check to see if the ON/OFF switch is set to ''ON''. The XLR-3 plug has been pulled out of the power source. ▶ Check to see if the XLR-3 plug is correctly connected to the power source. If aircraft powered: The aircraft fuse is defective. ▶ Check the aircraft fuse. If battery powered (except HMEC 352, HMEC 355 and HMEC 356): The batteries are low. ▶ Check to see if the yellow LED on the battery pack is lit. If the red LED is lit, replace the batteries.

Problem	Possible cause and what to do
Active noise compensation but very low volume communication	The volume control is set too low. ▶ Check the volume setting of the headset. The headphone connection has been pulled out (except HMEC 355, HMEC 355-C and HMEC 356). ▶ Check to see if the headphone jack plug is correctly connected.
Active noise compensation but reduced intelligibility	The microphone connection has been pulled out (except HMEC 355, HMEC 355-C and HMEC 356). ▶ Check to see if the microphone jack plug is correctly connected.
Communications in one ear only (only HMEC 350, HMEC 352, HMEC 356 and HMEC 356)	You are using a stereo intercom system but the headset is set to mono operation. ▶ Set the Mono/Stereo switch to ‘‘Stereo’’. You are receiving a mono source but the headset is set to stereo operation. ▶ Set the Mono/Stereo switch to ‘‘Mono’’.

Technical data

	HMEC 350	HMEC 352	HMEC 356	HMEC 450
Headphones				
Transducer principle	dynamic			
Ear coupling	circumaural, closed			
Frequency response	45–15,000 Hz			
Nominal impedance active/passive	300/150 Ω, mono 600/300 Ω, stereo			
Attenuation (active and passive)	> 25–40 dB			
Max. sound pressure level	120 dB (±5 %)			
Contact pressure	approx. 10 N			
Microphone incl. preamplifier				
Transducer principle	pre-polarized condenser mic capsule, noise-compensated, MKE 45-1			
Frequency response	300–5,000 Hz			
Sensitivity	–			
Max. sound pressure level	120 dB			
Min. terminating impedance	150 Ω			
Output voltage	400 mV ± 3 dB at 114 dB (as per RTCA/DO 214)			
Supply voltage	typ. 16 V DC (8–16 V DC, approx. 8–25 mA, as per RTCA/DO 214)			

	HMEC 350	HMEC 352	HMEC 356	HMEC 450
General data				
Connecting cable	1.5 m, unilateral			
Weight without cable	370 g			
Power supply for NoiseGard™	12–35 V DC			
Current consumption	27 mA (zero signal current), max. 80 mA			
Fuse	500 mA thermo fuse			
Connectors	6.35 mm stereo jack plug for headphones, PJ-068 jack plug for microphone, XLR-3 for NoiseGard™	6.35 mm stereo jack plug for headphones, PJ-068 jack plug for microphone and NoiseGard™	6-pin Redel plug for headphones, microphone and NoiseGard™	6.35 mm stereo jack plug for headphones, PJ-068 jack plug for microphone, XLR-3 for NoiseGard™
Controls	Mono/Stereo switch On/off switch for NoiseGard™ Volume control for headphones			
Temperature range	Operation Storage	–15 °C ... +55 °C –55 °C ... +55 °C		
Operating time of battery pack (except HMEC 352 and HMEC 356)	with batteries (four 1.5 V AA size alkaline-manganese batteries): approx. 15 hours with NiMH rechargeable batteries: approx. 15 hours			

Technical data

	HMEC 355	HMEC 355-C	HMEC 372	HMDC 372
Headphones				
Transducer principle	dynamic			
Ear coupling	circumaural, closed			
Frequency response	45–15,000 Hz			
Nominal impedance active/passive	300/150 Ω, mono			50/35 Ω, mono
Attenuation (active and passive)	> 25–40 dB			
Max. sound pressure level	120 dB (±5 %)			
Contact pressure	approx. 10 N			
Microphone incl. preamplifier				
Transducer principle	pre-polarized condenser mic capsule, noise-compensated, MKE 45-1			dynamic mic capsule, noise-compensated, M-87/AIC
Frequency response	300–5,000 Hz			500–4,000 Hz
Sensitivity	–			1.8–4 µV / 74 dB at 5 Ω
Max. sound pressure level	120 dB			–
Min. terminating impedance	150 Ω			–
Output voltage	400 mV ± 3 dB at 114 dB (as per RTCA/DO 214)			–
Supply voltage	typ. 16 V DC (8–16 V DC, approx. 8–25 mA, as per RTCA/DO 214)			–

General data

	HMEC 355	HMEC 355-C	HMEC 372	HMDC 372
Connecting cable	1.5 m, unilateral		coiled cable, unilateral	
Weight without cable	370 g			
Power supply for NoiseGard™	12–35 V DC			
Current consumption	27 mA (zero signal current), max. 80 mA			
Fuse	500 mA thermo fuse			
Connectors	XLR-5 for headphones, microphone and NoiseGard™	XLR-5 for headphones and microphone, XLR-3 for NoiseGard™	U-174/U jack plug for headphones and microphone, XLR-3 for NoiseGard™	
Controls	On/off switch for NoiseGard™ Volume control for headphones			
Temperature range	Operation Storage	–15 °C ... +55 °C –55 °C ... +55 °C		
Operating time of battery pack (except HMEC 355)	with batteries (four 1.5 V AA size alkaline-manganese batteries): approx. 15 hours with NiMH rechargeable batteries: approx. 15 hours			

Certificate of Conformity

Sennheiser electronic GmbH & Co. KG declare that these devices conform to the basic requirements of EEC Directive 89/336/EEC and 73/23/EEC.

Guarantee Certificate

The guarantee period for this Sennheiser product is 5 years from the date of purchase. Excluded are accessory items, rechargeable or disposable batteries that are delivered with the product; due to their characteristics these products have a shorter service life that is principally dependent on the individual frequency of use.

The guarantee period starts from the date of original purchase. For this reason, we recommend that the sales receipt be retained as proof of purchase. Without this proof (which is checked by the responsible Sennheiser service partner) you will not be reimbursed for any repairs that are carried out.

Depending on our choice, guarantee service comprises, free of charge, the removal of material and manufacturing defects through repair or replacement of either individual parts or the entire device. Inappropriate usage (e.g. operating faults, mechanical damages, incorrect operating voltage), wear and tear, force majeure and defects which were known at the time of purchase are excluded from guarantee claims. The guarantee is void if the product is manipulated by non-authorised persons or repair stations.

In the case of a claim under the terms of this guarantee, send the device, including accessories and sales receipt, to the responsible service partner. To minimise the risk of transport damage, we recommend that the original packaging is used. Your legal rights against the seller, resulting from the contract of sale, are not affected by this guarantee.

The guarantee can be claimed in all countries outside the U.S. provided that no national law limits our terms of guarantee.

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