

HMEC 46-1

Instructions for use



Safety instructions

- Please read this instruction manual carefully and completely before using the headset.
- Make this instruction manual easily accessible to all users at all times.
- Always include this instruction manual when passing the headset on to third parties.
- During flight operation, do not use the headset for telephone calls.
- With the NoiseGard™ active noise compensation switched 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™ switched 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.
- The headset is capable of producing sound pressure levels exceeding 85 dB(A). In many countries 85 dB(A) is the maximum legally permissible level for continuous noise exposure during the working day. Exposure to sounds of higher volume levels or for longer durations can permanently damage your hearing!
- Never repair or attempt to repair a defective headset yourself. Contact your Sennheiser agent or the Sennheiser Service Department.

- Only replace those parts of the headset whose replacement is described in this instruction manual. All other parts of the headset must be replaced by your Sennheiser agent.
- Protect the headset from humidity. Use only a slightly damp cloth to clean the headset. For information on how to clean the headset, contact your Sennheiser agent.

Intended use of the headset

Intended use includes:

- having read this instruction manual especially the chapter "Safety instructions".
- using the headset in aircraft cockpits and within the operating conditions as described in this instruction manual.

Improper use

Improper use means using the headset other than as described in this instruction manual, or under operating conditions which differ from those described herein.

The HMEC 46-1 headset

The HMEC 46-1 headset with NoiseGard™ active noise compensation features dynamic, open headphones. The noise-compensating condenser microphone ensures excellent speech transmission even in noisy environments. Designed for use in aircraft cockpits.

Features

- NoiseGard™ active noise compensation reduces ambient noise by at least 15 dB – consequently the radio volume can be decreased
- Extremely lightweight
- Extremely comfortable to wear due to the patented two-piece automatic headband and soft ear pads
- Peak level protection safeguards you from volume peaks above 110 dB
- “Flip-away” headphone allows single-sided listening
- Flexible microphone boom, can be worn on either left or right-hand side
- Noise-compensating condenser microphone ensures excellent speech transmission
- Single-sided cable, easy to replace
- With NoiseGard™ switched off, the headset can be used as a conventional headset
- Power supply for NoiseGard™ from aircraft DC power supply system (on suitably equipped aircraft) or batteries/rechargeable batteries
- “Auto shut-off” extends battery life
- ETSO (C57a/C58a)/TSO (C139) approval

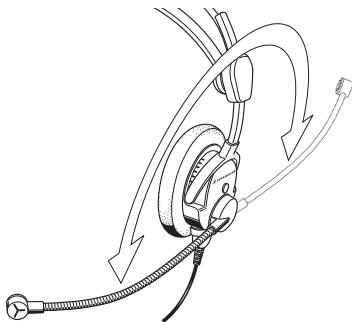
Delivery includes

- HMEC 46-1 headset
- Cable clip
- Wind and pop screen
- Instruction manual
- Carry bag
- EASA Form 1

Operation

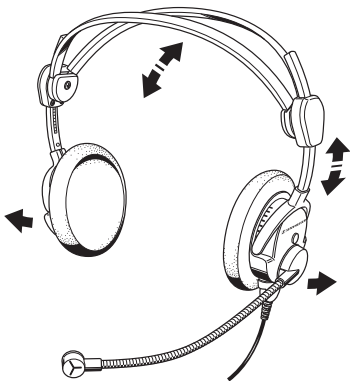
Turning the microphone boom

The microphone boom can be rotated. This allows the headset to be worn with the microphone boom positioned on either the left or right-hand side of the head.



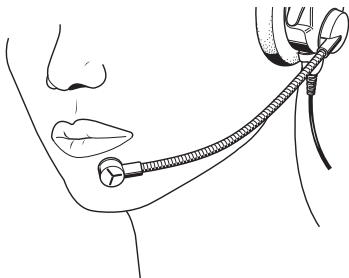
Putting on the headset

When putting on the headset, the patented two-piece headband adjusts automatically.



Positioning the microphone

Bend the flexible 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.



Flipping away one earcup

The headset features a “flip-away” earcup for single-sided listening.



Adjusting the volume directly on the audio system

Connect the headset to the corresponding sockets of your audio system. Adjust the volume directly on the audio system.

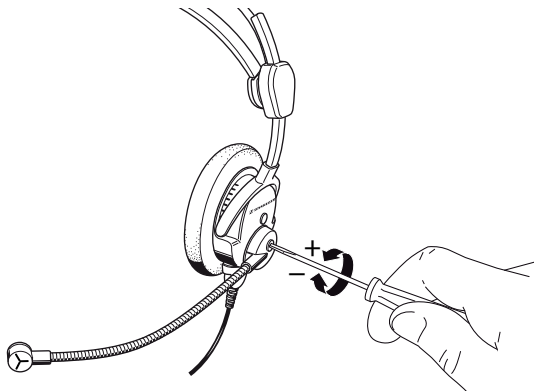
CAUTION! Hearing damage due to high volumes!

This headset is capable of producing high sound pressure levels. Higher volumes or longer durations can damage your hearing!

Set the volume to a medium level. Make sure that you can hear critical environmental sounds and warning alarms.

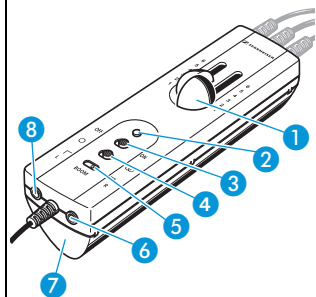
Adjusting the microphone sensitivity

The microphone sensitivity has been factory pre-set to 80 mV/Pa as per RTCA DO-214. You can change the microphone sensitivity by turning a small screwdriver in the direction of the arrow.



The operating controls of the HMEC 46-1

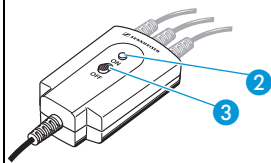
Operating control I



- 1 Volume controls
- 2 LED
- 3 NoiseGard™ ON/OFF switch
- 4 Mono/stereo switch
- 5 BOOM switch L/R
- 6 3.5 mm jack socket
- 7 Battery compartment
- 8 2.5 mm jack socket

Cable with operating control I	Operating element							
	1	2	3	4	5	6	7	8
-B-CP		x	x				x	
-B-K		x	x				x	
-B-KP		x	x				x	
-BV-CP	x	x	x		x		x	
-BV-K	x	x	x	x	x	x	x	x
-BV-KP	x	x	x	x	x	x	x	x
-V-CP	x	x	x		x			
-V-KP	x	x	x	x	x			
-V-KX	x	x	x	x	x			
-V-RP	x	x	x	x	x			

Operating control II



- 2 LED
- 3 NoiseGard™ ON/OFF switch

Cable with operating control II	Operating element							
	1	2	3	4	5	6	7	8
-CP		x	x					
-KP		x	x					
-NP		x	x					

Using the headset

Switching NoiseGard™ on/off

The NoiseGard™ ON/OFF switch ③ allows you to switch the NoiseGard™ active noise compensation on or off. With NoiseGard™ switched off, the headset can be used as a conventional headset.

- ▶ Set the NoiseGard™ ON/OFF switch ③ to the desired position:

ON: NoiseGard™ is switched on.

The LED ② lights up, indicating the battery charge status (see page 12) or power supply via the aircraft DC power supply system.

OFF: NoiseGard™ is switched off.

The LED ② is off.

Adjusting the volume

The two slide volume controls ① allow you to adjust the volume for the left and right channel separately.

CAUTION! Hearing damage due to high volumes!

This headset is capable of producing high sound pressure levels. Higher volumes or longer durations can damage your hearing!

Set the volume to a medium level. Make sure that you can hear critical environmental sounds and warning alarms.

- ▶ Use the two volume controls ① to adjust the desired volume.

Switching between mono and stereo mode

The mono/stereo switch ④ allows you to switch between mono (○) and stereo (∞) mode, depending on the audio system.

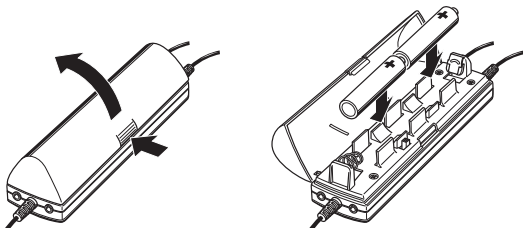
- ▶ Set the mono/stereo switch ④ to the desired position: mono (○) or stereo (∞).

Changing the left and right stereo channel

The position “R” or “L” of the BOOM switch ⑤ corresponds to the position of the microphone on the left or right side of the mouth. When the microphone boom is rotated to permit left or right side microphone orientation, the BOOM switch allows you to correctly assign the audio channels (L/R) to the appropriate headphone sides. This enables the correct orientation of the volume controls and any stereo audio signals. To move the BOOM switch, use a pointed tool.

Powering NoiseGard™ via two (rechargeable) batteries

- ▶ Insert two 1.5 V AA alkaline batteries (IEC LR 6) or two 1.2 V AA rechargeable batteries (IEC LR 6). Observe correct polarity when inserting the batteries.



The operating time with batteries/rechargeable batteries is approx. 100 hours.

With NoiseGard™ switched on (see page 10), the LED ② provides information on the remaining battery/rechargeable battery capacity.

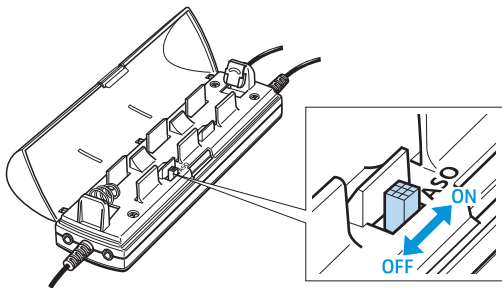
LED ② lights up yellow: The battery capacity is sufficient.

LED ② lights up red: The batteries are flat. Replace the batteries.

Activating the “auto shut-off” function

The battery-saving “auto shut-off” function automatically switches the NoiseGard™ electronics off when the headset is disconnected from the audio system or when the aircraft avionics are switched off. The headset is delivered ex-works with the “auto shut-off” function deactivated. You can activate “auto shut-off” as follows:

- ▶ Set the switch to the position **ASO**.



Connecting a mobile telephone (cable -BV-K / -BV-KP only)

The 2.5 mm 3-pole jack socket **8** allows you to connect a mobile telephone. For this purpose, the NoiseGard™ active noise compensation must be switched on and the microphone connector must be connected to the aircraft radio/audio. A suitable adapter for your mobile telephone with 2.5 mm jack socket is available from your Sennheiser agent.

CAUTION! Danger of accident due to reduced attention!

Making telephone calls or operating the mobile telephone limits your attention and may cause accidents.

During flight operation, do not use the headset for telephone calls!

- ▶ Connect the audio cable to the 2.5 mm 3-pole jack socket **8** on the operating control **I** and to the corresponding jack socket on your mobile telephone.

You can adjust the volume of the mobile telephone via the headset's operating control. However, the functions of the mobile telephone cannot be controlled via the headset's operating control.

- ▶ Operate your mobile telephone as usual and observe the manufacturer's instructions.

The latest information on cell phone compatibility is available at www.sennheiser.com in the "Aviation Headsets" category.

Connecting an additional audio player (cable -BV-K / -BV-KP only)

The 3.5 mm jack socket **6** allows you to connect and listen to an audio player (not supplied) through the headset. For this purpose, the NoiseGard™ active noise compensation must be switched on.

CAUTION! Danger of accident due to reduced attention!

Listening to music or operating an audio device limits your attention and may cause accidents.

During flight operation, do not use the headset for listening to additional audio sources!

CAUTION! Hearing damage due to high volumes!

This headset is capable of producing high sound pressure levels. Higher volumes or longer durations can damage your hearing!

Set the volume to a medium level. Make sure that you can hear critical environmental sounds and warning alarms.

-
- ▶ Connect the audio cable to the 3.5 mm jack socket **6** on the operating control **I** and to the corresponding jack socket on your audio player.

Care and maintenance

Cleaning the headset

Use a soft, slightly damp cloth to clean the headset from time to time. If the headset is very dirty, use a cloth dampened with mild, soapy water.

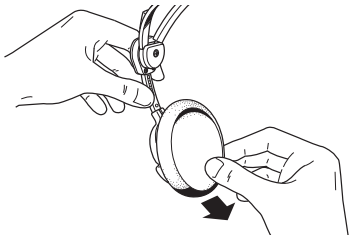
CAUTION! Danger of short-circuit due to the ingress of water!

Water entering the housing of the headset can cause a short-circuit and damage the electronics.

Use only a slightly damp cloth to clean the headset. Do not use any solvents or cleansing agents.

Replacing the ear pads

For reasons of hygiene, the ear pads should be replaced from time to time. Grasp the edge of the foam ear pad behind the ear cup as shown and peel it up and away from the ear cup. Slide the new ear pad onto the earcup. Repeat for the other ear cup.



Accessories and spare parts

By changing the cables, you can simply retrofit different operating controls (see "The operating controls of the HMEC 46-1" on page 8 and 9) or connectors (see "Product variants" on page 17).

- Cable -CP Cat. No. 500852
- Cable -V-CP Cat. No. 500846
- Cable -B-CP Cat. No. 500837
- Cable -BV-CP Cat. No. 500838
- Cable -KP Cat. No. 500842
- Cable -V-KP Cat. No. 500848
- Cable -B-K Cat. No. 502183
- Cable -BV-K Cat. No. 500839
- Cable -NP Cat. No. 500855
- Cable -V-RP Cat. No. 500853
- Cable -BV-KP Cat. No. 504030
- Cable -B-KP Cat. No. 504047
- Cable -V-KX Cat. No. 502437
- Audio cable, length 0.6 m,
2 x 3.5 mm stereo jack plug Cat. No. 520316
- Cable for mobile telephone, length 0.6 m,
2 x 2.5 mm jack plug (3 to 4-pin) Cat. No. 538200
- Cable for mobile telephone, length 0.6 m,
2 x 2.5 mm jack plug (3 to 3-pin) Cat. No. 520317
- MZQ 2002 cable clip Cat. No. 044740
- HZC 08 cable clip Cat. No. 525787
- Ear pads (1 pair) Cat. No. 515295
- Ear pads (100 pairs) Cat. No. 515296
- Wind and pop screen Cat. No. 515297
- Wind and pop screen (any quantity) Cat. No. 514127
- Headband padding (1 pair) Cat. No. 515629

Product variants

Model	Cat. No./ Part Number	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪
HMEC 46-1	500854 / 046-35											
HMEC 46-1-CP	500472 046-35-999-3211	x	x						x			x
HMEC 46-1-B-CP	500478 046-35-999-2291	x	x						x	x	x	
HMEC 46-1-BV-CP	500479 046-35-999-2281	x	x						x	x	x	
HMEC 46-1-V-KP	500476 046-35-999-3161	x			x	x			x		x	
HMEC 46-1-B-K	502180 046-35-999-1191	x			x	x				x	x	
HMEC 46-1-BV-K	500477 046-35-999-1171	x			x	x				x	x	
Cable -BV-KP	504030 999-2171	x			x	x			x	x	x	
Cable -B-KP	504047 999-2191	x			x	x			x	x	x	
Cable -V-KX	502437 999-4161	x		x	x	x			x		x	

- ① Single-sided round cable, length 1.85 m
- ② XLR-5 connector
- ③ XLR-3 connector
- ④ 1/4" (6.3 mm) jack plug (headphones)
- ⑤ PJ-068 equivalent (microphone)
- ⑥ 8-pin Neutricon connector
- ⑦ 6-pin Redel connector
- ⑧ Aircraft powered
- ⑨ Battery powered
- ⑩ Operating control I (see page 8)
- ⑪ Operating control II (see page 9)

Specifications

Headphones

Transducer principle	dynamic, open
Ear coupling	supra-aural
Frequency response	20–14,000 Hz
Impedance mono/stereo	600 Ω /1,200 Ω
Characteristic SPL	93 dB SPL at 1 kHz, 1 mW 95 dB SPL at 1 kHz, 1 V, mono
Active attenuation	≥ 15 dB (300–700 Hz)
THD	$< 1\%$ at 1 kHz, 90 dB SPL
Contact pressure	approx. 3 N

Microphone incl. preamplifier

Type	BKE 46
Transducer principle	pre-polarized condenser microphone, noise-compensating
Frequency response	100–6,000 Hz
Output voltage	adjustable from 17–100 mV/Pa, 80 mV/Pa -2 dB (factory pre-set) = 800 mV -2 dB at 114 dB SPL
Terminating impedance	150–2,200 Ω
Supply voltage	8–16 V DC

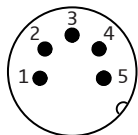
General data

Temperature range	operation: -15°C to $+55^{\circ}\text{C}$ storage: -55°C to $+70^{\circ}\text{C}$
Weight without cable	approx. 150 g
Power supply for NoiseGard	2x 1.5 V AA alkaline battery (IEC LR 6) or 2x 1.2 V AA rechargeable battery (IEC LR 6) or 12–35 V DC via the aircraft DC power supply system (on suitably equipped aircraft), max. 35 mA

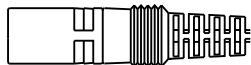
Connector assignment

Cable -B-CP, -BV-CP, -CP, -V-CP

Solder side



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



Cable -NP

Solder side

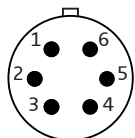


- 1 Audio Hi
- 2 Audio Lo
- 3 not assigned
- 4 Microphone Lo
- 5 Microphone Hi
- 6 not assigned
- 7 DC-
- 8 Power supply NoiseGard™ (DC+)



Cable -V-RP

Solder side

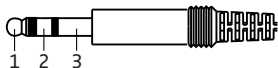


- 1 Power supply NoiseGard™ (DC+)
- 2 Audio Lo / DC-
- 3 Audio Hi left
- 4 Audio Hi right
- 5 Microphone Hi
- 6 Microphone Lo

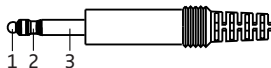


Cable -B-K, -BV-K, -KP, -V-KP, -V-KX

1/4" (6.3 mm) jack plug



PJ-068 equivalent



Cable -B-K

1 Audio Hi	1 not assigned
2 not assigned	2 Microphone Hi
3 Audio Lo	3 Microphone Lo

Cable -BV-K

1 Audio Hi left	1 not assigned
2 Audio Hi right	2 Microphone Hi
3 Audio Lo	3 Microphone Lo

Cable -KP/Cable -B-KP

1 Audio Hi left	1 NoiseGard™ (DC+)
2 not assigned	2 Microphone Hi
3 Audio Lo / DC-	3 Microphone Lo / DC-

Cable -V-KP/Cable -BV-KP

1 Audio Hi left	1 NoiseGard™ (DC+)
2 Audio Hi right	2 Microphone Hi
3 Audio Lo / DC-	3 Microphone Lo / DC-

Cable -V-KX

1 Audio Hi left	1 not assigned	1 NoiseGard™ (DC+)
2 Audio Hi right	2 Microphone Hi	2 DC-
3 Audio Lo	3 Microphone Lo/DC-	3 not assigned

Manufacturer Declarations

Warranty


Sennheiser electronic GmbH & Co. KG gives a warranty of 5 years on this product.

For the current warranty conditions, please visit our web site at www.sennheiser.com or contact your Sennheiser partner.

CE Declaration of Conformity

CE This equipment is in compliance with the essential requirements and other relevant provisions of Directive 89/336/EC. The declaration is available at www.sennheiser.com.

Before putting the device into operation, please observe the respective country-specific regulations!



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30900 Wedemark, Germany
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Printed in Germany

Publ. 08/10

515805/A01