SENNHEISER

EK 3241

Instructions for use

Contents

Thank you for choosing Sennheiser!

We have designed this product to give you reliable operation over many years. Over 60 years of accumulated expertise in the design and manufacture of high-quality electro-acoustic equipment have made Sennheiser a world-leading company in this field.

Please take a few moments to read these instructions carefully, as we want you to enjoy your new Sennheiser products quickly and to the fullest.

Safety instructions

- Please read these instructions carefully and completely before using the receiver.
- Make these instructions easily accessible to all users at all times. Always include these instructions when passing the receiver on to third parties.
- Never open electronic units! If units are opened by customers in breach of this instruction, the warranty becomes null and void.
- Water entering the housing of the receiver can cause a short-circuit and damage the electronics. Protect the receiver from damp and wet. Only use a slightly damp cloth to clean the receiver.

Intended use of the receiver

''Intended use'' means that the receiver should be used within the operating conditions and limitations described in these instructions.

Improper use

''Improper use'' means using the receiver other than as described in these instructions, or under operating conditions which differ from those described herein.

Delivery includes

Delivery of the EK 3241 receiver includes:

- 1 EK 3241 true diversity receiver
- 2 antennas
- 1 instructions for use

For accessories, please refer to page 23.

The EK 3241 true diversity receiver

The EK 3241 is a miniature true diversity receiver designed for use with digital ENG camcorders. It can be inserted into the slot-in facility of e.g. Ikegami, Panasonic, Sony or Thomson camcorders without any additional connecting cables being required. The GA 3041-C slot-in housing is used for externally attaching the receiver to camcorders without a slot-in facility. Together with a suitable Sennheiser bodypack or hand-held transmitter, a highly reliable radio link can be set up.

The EK 3241 receiver has the following features:

- Extremely compact and robust all-metal housing
- Special protection against the ingress of moisture and therefore suitable for outdoor applications
- Mounting kits available for all current professional camcorders
- Power supply via camcorder or GA 3041-B battery adapter
- User-friendly, menu-assisted operation via LC display
- High operational reliability due to true diversity reception
- HiDyn *plus*™ noise reduction system
- Up to 32 preset receiving frequencies
- 36 MHz switching bandwidth
- Frequencies tunable in steps of 5 kHz
- Signal-to-noise ratio >110 dB$_{S/N}$.

Suitable transmitters

Bodypack transmitters:	SK 50, SK 250, SK 3063, SK 5012, SK 5212
Hand-held transmitters:	SKM 3072, SKM 5000, SKM 5200
Plug-on transmitters:	SKP 3000

Operating controls
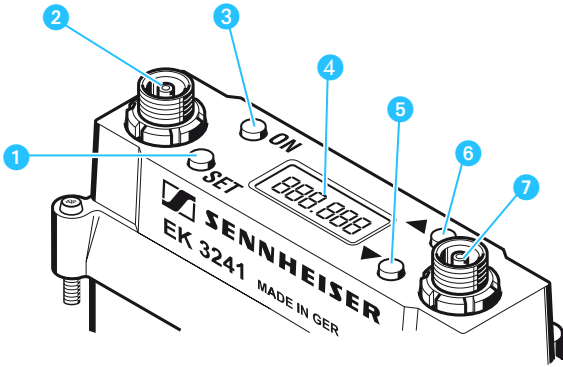
1 SET button
2 Antenna socket, diversity section A
3 ON/OFF button
4 LC display panel
5 ▼ button (Down)
6 ▲ button (UP)
7 Antenna socket, diversity section B

LC display panel
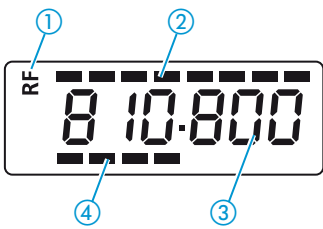
① ''RF'' – appears when an RF signal is being received
② 8-step level display for received RF signal
③ Numeric display
④ 8-step level display for received audio signal

Putting the receiver into operation

Connecting the antennas

The receiver is supplied with two antennas which are necessary for true diversity operation (see ''Diversity reception'' on page 22).
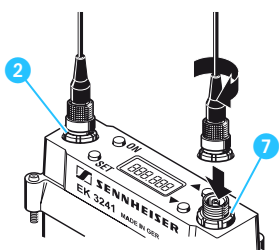
▶ Connect the antennas to the antenna sockets ② and ⑦.

▶ Screw the antennas tight.

Mounting the receiver into a camcorder

The receiver can be inserted into the slot-in facility of most professional camcorders. Suitable mounting kits are available as accessories from your Sennheiser partner.

Mounting kits are available for the following camcorder types (see ''Accessories'' on page 23):

Camcorder	Mounting kit
Sony	GA 3041-15 (15-pin)
Ikegami, Panasonic	GA 3041-25 (25-pin)
Thomson	GA 3041-44 (44-pin)

A mounting kit consists of:

• 1 sub-D adapter
• 1 mounting frame
• Screws

By way of example of an Ikegami or Panasonic camcorder, the following describes how to insert the receiver into the camcorder's integrated receiver slot:
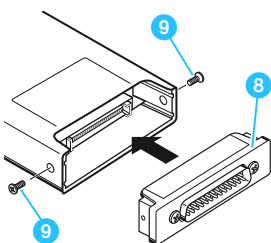
▶ Secure the sub-D adapter ⑧ to the bottom of the receiver using two screws ⑨.

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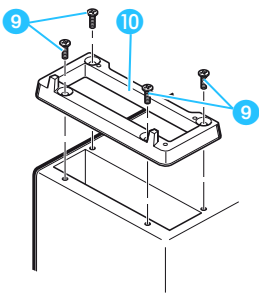
▶ Secure the mounting frame ⑩ to the camcorder housing using four screws ⑨.
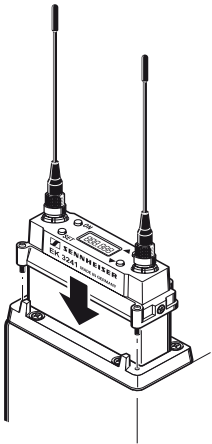
▶ Insert the receiver into the slot-in facility until the 25-pin connector securely connects.

▶ Screw the receiver (from above) to the mounting frame.

Powering the receiver

The receiver can be powered from three different power sources:

Power source	Notes on operation
Camcorder with mounting kit	See page 6
Camcorder with GA 3041-C slot-in housing ⑫	See instructions for use of the GA 3041-C
GA 3041-C slot-in housing ⑫ with GA 3041-B battery adapter ⑬ and BA 50/BA 250 accupack ⑪ or B 50/B 250 battery box	See "Accessories" on page 23 and instructions for use of the GA 3041-C
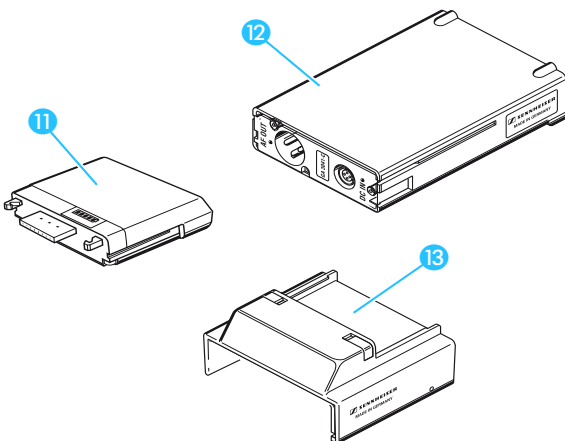
Using the receiver

Switching the receiver on/off
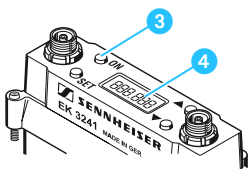
▶ To switch the receiver on, briefly press the ON/OFF button ❸.
The standard display is shown on the LC display panel ❹.

Note:

The receiver can only be switched off when the lock mode is deactivated (see ''Activating/deactivating the lock mode – Loc'' on page 18).
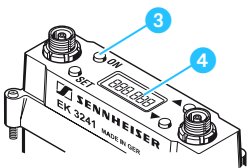
▶ To switch the receiver off, press the ON/OFF button ❸ until ''OFF'' appears on the LC display panel ❹.
The LC display panel goes off.

Note:

When in the setting mode of the operating menu, the ON/OFF button ❸ will cancel your entry (ESC function).

The operating menu

The functions of the buttons

Button	Mode	Function
ON/OFF	Switched off	Switches the receiver on
	Display mode	• Briefly pressing the button (with activated lock mode): Calls up the lock mode for deactivation • Pressing the button for 3 sec. (with deactivated lock mode): Switches the receiver off
	Selection mode	Cancels the entry and returns to the display mode
	Setting mode	Cancels the entry and returns with the last setting stored to the last parameter displayed in the display mode
SET	Display mode	• With deactivated lock mode: Changes to the selection mode • With activated lock mode: Calls up the lock mode for deactivation
	Selection mode	Changes to the setting mode of the selected menu
	Setting mode	Stores the setting and returns to the selection mode ("StorEd" is displayed)
▲/▼	Display mode	Changes to the previous parameter (▲) or changes to the next parameter (▼)
	Selection mode	Changes to the previous menu (▲) or changes to the next menu (▼)
	Setting mode	Increases (▲) or reduces (▼) the setting of the selected menu

Working with the operating menu

By way of example of the ''dISP'' menu, this section describes how to use the receiver's operating menu.

The operating menu has three modes:

- Display mode
  In display mode, you can display the current menu settings one after the other – even when the lock mode is activated.
- Selection mode
  In selection mode, you can select the menu whose setting you want to change. To change to the selection mode, the lock mode must be deactivated.
- Setting mode
  In setting mode, you can change the setting of the selected menu.
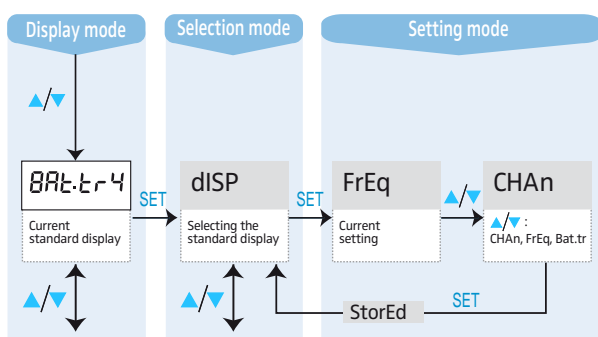
After switch-on

After switch-on, the standard display is shown on the LC display panel. Depending on the setting, the receiving frequency, the channel number or the battery status of the corresponding transmitter is displayed.

> **Note:**
>
> In order that the transmitter battery status can be displayed on the ''BAt.tr'' standard display, this functionality must be supported by the transmitter used (see ''Suitable transmitters'' on page 4).

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Displaying the menu settings in display mode

In display mode, and with the lock mode activated, you can display the current menu settings one after the other (see "Overview of the operating menu" on page 14).
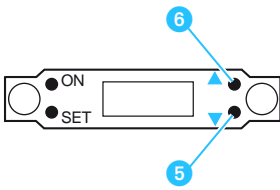
▶ Press the ▼ button **5** or the ▲ button **6** to display the menu settings. If you press the button repeatedly, all menu settings are displayed one after the other.
After approx. 15 seconds, the display returns to the standard display.

Changing to the selection mode

To change from display mode to selection mode, you have to deactivate the lock mode.
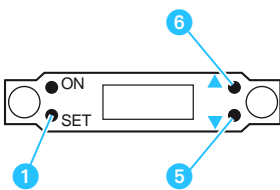
▶ Deactivate the lock mode as described in the chapter "Activating/deactivating the lock mode – Loc" on page 18.

▶ Press the ▼ button **5** or the ▲ button **6** to select the menu whose settings you want to adjust.

▶ Press the SET button **1** to change to the menu that was displayed in display mode.

Selecting a menu
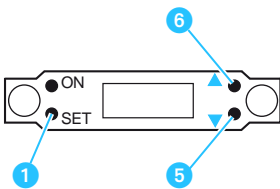
▶ Press the ▼ button **5** or the ▲ button **6**.

▶ Press the SET button **1**.
The name of the selected menu starts flashing.

The following menus are available:

Menu	Function of the menu
PHonE	Adjusting the headphone volume*
CHAn	Selecting a channel
tunE	Setting receiving frequencies for the channel bank ''U'' (variable bank)
SquELH	Adjusting the squelch threshold
Auto	Activating/deactivating the automatic receiver switch-on/off via the camcorder
dISP	Selecting the standard display
rESEt	Loading the factory-preset default settings
Loc	Activating/deactivating the lock mode
ESc	Exiting the selection mode and returning to the standard display

*) If the receiver is inserted into the slot-in facility of a camcorder, the ''PHonE'' menu is deactivated (see page 23).

Changing to the setting mode of a selected menu

▶ Press the SET button ❶ to change to change to the setting mode of the selected menu.
The current setting that can be adjusted flashes on the LC display panel ④.

Adjusting a setting

Use the ▼ button ❺ or the ▲ button ❻ to adjust the setting of the selected menu.
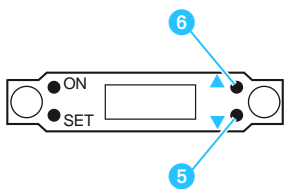
• By pressing the ▼ button ❺ or the ▲ button ❻, the display jumps either forwards or backwards to the next setting.
• In the ''CHAn'', ''tunE'', ''PHonE'' or ''SquELH'' menu, the buttons ❺ and ❻ feature a ''fast search'' function, i.e. the display cycles continuously. In the ''tunE'' menu, the cycling of the display is continuously accelerated. The ''fast search'' function allows you to get fast and easily to your desired setting.

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Storing a setting
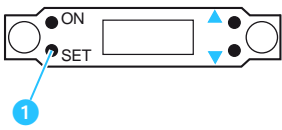
▶ Press the SET button ❶ to permanently store a setting. "StorEd" appears on the display panel, indicating that the setting has been stored. The display then returns to selection mode.

Cancelling an entry
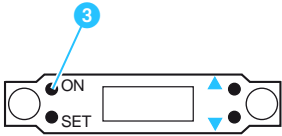
▶ Select the "ESc" menu to exit the selection mode and to return to the standard display. When in the selection or setting mode, briefly pressing the ON/OFF button ❸ will cancel your entry (ESC function) and return you to the standard display with the last stored settings.

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Overview of the operating menu

Deactivate the lock mode before adjusting the settings (see ''Activating/deactivating the lock mode – Loc'' on page 18). Pressing the ON/OFF button ❸ will cancel your entry (ESC function) and return you to the display mode.

Display mode	Selection mode	Setting mode

550.385
▲/▼

PH . 95 — SET → **PHonE**
Current headphone volume / Adjusting the headphone volume

SET → **PH . 95** ▲/▼ **PH . 15**
Current setting / ▲/▼: PH . 0...PH . 126, in steps of 1
StorEd — SET

▲/▼

U . 20 — SET → **CHAn**
Current channel bank / Changing the channel bank and the channel

SET → **U . 20** ▲/▼ **F . 01**
▲ ▼: Channel U .01...U .20 F .01...F .32 / ▲ ▼: Channel F .01...F .32 U .01...U .20

550.385
Receiving frequency
▲/▼
1 sec. / 1 sec.
StorEd — SET

▲/▼

550.385 — SET → **tunE**
Current frequency / Setting the frequencies for the channels of channel bank "U"

SET → **550.385** ▲/▼ **516.205**
Current frequency / ▲ ▼: Adjusting the frequency
StorEd — SET

▲/▼

SQL . 35 — SET → **SquELH**
Current squelch threshold / Adjusting the squelch threshold

SET → **SqL. 35** ▲/▼ **SqL. 25**
Current setting / ▲ ▼: 05...40 in steps of 5
StorEd — SET

▲/▼

Aut. on — SET → **Auto**
Current setting of switch-on function / Automatic switch-on via camcorder or manual switch-on

SET → **Aut. on** ▲/▼ **Aut. oFF**
Current setting / ▲ ▼: on, oFF
StorEd — SET

▲/▼

Display mode	Selection mode	Setting mode

Display mode

▲/▼

`BAt.tr4`

Current
standard display

▲/▼

`550.385`

Selection mode

SET →

dISP

Selecting the
standard display

▲/▼

rESEt

Loading the
factory-preset
default settings

▲/▼

Loc

Setting the
autolock function

▲/▼

ESc

Exiting the
operating menu

Setting mode

SET →

BAt.tr

Current setting

▲/▼ →

CHAn

▲/▼:
CHAn, FrEq,
BAt.tr

StorEd — SET

SET →

rSt. no

Security check

▲/▼ →

rSt. YES

▲ ▼: YES, no
"reset" = YES,
Receiver loads
factory-preset default
settings, standard
display appears

"reset" = no,
reset is cancelled

SET

SET →

Loc. on

Current setting

▲/▼ →

Loc. oFF

▲ ▼: Loc. on
Loc. oFF

StorEd — SET

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Adjustment tips for the operating menu

Adjusting the headphone volume – PHonE

If you operate the receiver with a modified version of the GA 3041-C slot-in housing (see page 23), you can adjust the headphone volume via the "PHonE" menu. The volume can be adjusted between 0 and 126.

Caution! High volume!

Even short exposure to high volume levels can damage your hearing! Adjust the volume for the connected headphones to a medium level before putting the headphones on.

Selecting a channel – CHAn

Via the "CHAn" menu, you can switch between the channels in the channel banks "U" (variable bank) and "F" (fixed bank).

When changing to the setting mode of the "CHAn" menu, the current channel number appears on the LC diplay panel. After approx. 1 second, the currently assigned receiving frequency is displayed.
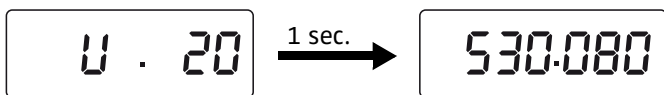
▶ To select a different channel, press the ▼ button ❺ or the ▲ button ❻. The new channel number appears on the LC display panel for approx. 1 second and then the currently assigned receiving frequency is displayed.
The receiver immediately switches to the selected channel but does not permanently store it.

▶ To store the selected channel, press the SET button ❶.

Note:

If you exit the setting mode via the "ESc" menu, the receiver switches back to the previous channel.

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Selecting the frequencies to be stored in the channel bank "U" (variable bank) – tunE

Via the "tunE" menu, you can freely select the frequencies to be stored in the channel bank "U" (variable bank).

▶ Via the "CHAn" menu, select the channel whose frequency you want to change.

Note:

The frequencies stored in the channel bank "F" (fixed bank) cannot be changed. When you have selected the channel bank "F" and then select the "tunE" menu, the receiver automatically switches to channel 01 of the channel bank "U" and "U.01" briefly appears on the LC display panel ❹.

▶ To change the frequency of the selected channel, press the ▼ button ❺ or the ▲ button ❻.
The frequencies are tunable in 5-kHz steps within a switching bandwidth of 36 MHz max.

Adjusting the squelch threshold – SquELH

Via the "SquELH" menu, you can adjust the squelch threshold. The squelch eliminates annoying noise during transmission pauses or when the received RF signal gets weaker.

Notes:

• If the squelch threshold is adjusted too high, the transmission range will be reduced. Therefore, always adjust the squelch threshold to the lowest possible setting.

• When in the setting mode of the "SquELH" menu, pressing the ▼ button (DOWN) for more than three seconds will switch the squelch off. "Sql.off" appears on the display. If no RF signal is being received, hissing noise will occur. This setting is for test purposes only.

Activating/deactivating the automatic receiver switch-on/off via the camcorder – Auto

Via the "Auto" menu, you can activate or deactivate the automatic receiver switch-on/off via the camcorder.
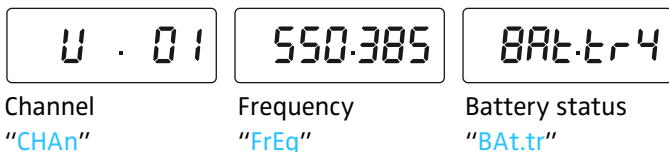
Setting	Function
Aut.on	Automatic receiver switch-on/off via the camcorder is activated
Aut.oFF	Automatic receiver switch-on/off via the camcorder is deactivated

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Selecting the standard display – dISP

Via the ''dISP'' menu, you can select one of the following standard displays:

```U · 01```	```550·385```	```8At·tr4```
Channel	Frequency	Battery status
''CHAn''	''FrEq''	''BAt.tr''

The selected standard display is shown

- after switch-on,
- after the parameters have been displayed for 15 seconds in display mode.

> **Note:**
>
> In order that the transmitter battery status can be displayed on the ''BAt.tr'' standard display, this functionality must be supported by the transmitter used (see ''Suitable transmitters'' on page 4).

Loading the factory-preset default settings – rESEt

Via the ''rESEt'' menu, you can load the factory-preset default settings. After the reset, the standard display is shown on the LC display panel.

> **Caution:**
>
> The frequencies in the channel bank ''U'' (variable bank) are also reset.

Headphone volume:	20
Squelch threshold:	10
Standard display:	frequency
Current receiving channel:	F.01
Automatic switch-on/off via camcorder:	activated
Lock mode:	deactivated

Activating/deactivating the lock mode – Loc

Via the ''Loc'' menu, you can activate (Loc.on) or deactivate (Loc.oFF) the lock mode of the receiver.

Exiting the selection mode and returning to the standard display – ESc

Via the ''ESc'' menu, you can exit the selection mode and return to the standard display.

When in the selection or setting mode, briefly pressing the ON/OFF button ❸ will cancel your entry (ESC function) and return you to the standard display without saving any changes.

Care and maintenance

Water can damage the electronics of the receiver!

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

▶ Only use a slightly damp cloth to clean the receiver.

▶ Do not use any solvents or cleansing agents.

If a problem occurs ...

Error checklist

Problem	Possible cause	Possible solution
No display indication	The receiver's power supply is interrupted	Check if the receiver is correctly inserted into the camcorder (see page 6) or check if the GA 3041-B battery adapter is correctly mounted (see page 7)
No RF signal indication	No RF signal: transmitter and receiver are not on the same channel	Set transmitter and receiver to the same channel
	No RF signal: the transmitter is out of range	Reduce the distance between transmitter and receiver
RF signal indication available, no audio signal	The receiver's squelch threshold is adjusted too high	See "Adjusting the squelch threshold – SquELH" on page 17
Audio signal has a high level of background noise	The transmitter sensitivity is adjusted too low	Adjust the transmitter sensitivity correctly
	The maximum effective range of the RF link has been reached	Reduce the distance between transmitter and receiver
Audio signal is distorted	The transmitter sensitivity is adjusted too high	Adjust the transmitter sensitivity correctly
	The receiver is overmodulated	Increase the distance between transmitter and receiver (see page 21)

If a problem occurs that is not listed in the above table or if the problem cannot be solved with the proposed solutions, please contact your local Sennheiser agent for assistance.

Recommendations and tips

...for optimum reception

To avoid overmodulating the receiver, maintain the recommended minimum distance of 5 m between transmitter and receiver.

...for multi-channel operation

When operating a multi-channel system, make sure to only use intermodulation-free frequencies. For rapid calculation of intermodulation-free frequencies, you can use the SIFM (Sennheiser Intermodulation and Frequency Management) software, which can be downloaded from the Internet at www.sennheiser.com under ''Wireless Systems''.

...for a long service life of the battery box or accupack

Remove the battery box or accupack from the slot-in housing when the receiver will not be used for extended periods of time. Store the battery box or accupack in a cool and dry place.
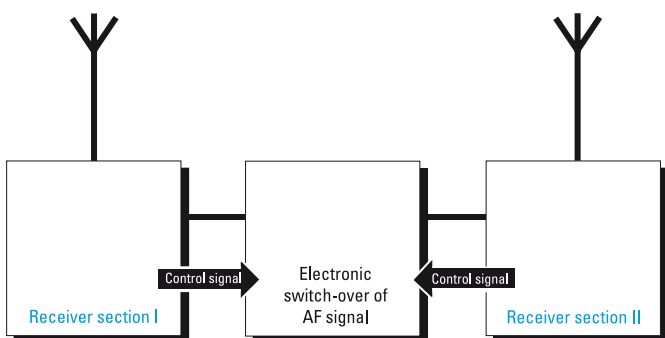
Additional information

Diversity reception

The EK 3241 operates on the ''true diversity'' principle:

A receiving antenna receives not only the electromagnetic waves which reach it by a direct path, but also the reflections of these waves which are created in the room by walls, windows, ceilings and fittings. When these waves are superimposed, destructive interference occurs, which can also be called ''field strength gaps''. Repositioning the receiving antenna can bring a solution, provided the transmitter remains in its original position. With mobile transmitters, however, the ''field strength gap'' will then occur with a different transmitter position. These ''field strength gaps'' can only be eliminated with true diversity receivers.

In true diversity, instead of one antenna and one receiver there are now two antennas and two receiver sections. The antennas are spatially separated. By means of a comparison circuit, the receiver section with the strongest RF signal is always switched to the common AF output. The risk of the occurrence of ''field strength gaps'' in both antennas at the same time is virtually nonexistant.

Information on the compander system

This receiver is equipped with HiDyn *plus*™, the Sennheiser noise reduction system that reduces RF interference.
HiDyn *plus*™ offers extreme operational reliability and ensures highest transmission quality.

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Accessories

Product name	Product description	Cat. No.
GA 3041-B	Battery adapter	004643
GA 3041-C	Slot-in housing	004642
GA 3041-15	Mounting kit with 15-pin sub-D adapter for Sony	004639
GA 3041-25	Mounting kit with 25-pin sub-D adapter for Ikegami or Panasonic	004640
GA 3041-44	Mounting kit with 44-pin sub-D adapter for Thomson	004641
GA 3041-QP	Quadpack	005105
B 50	Battery box (2 cells)	500820
B 250	Battery box (3 cells)	500822
BA 50	Accupack (NiMH, 2 cells)	500821
BA 250	Accupack (NiMH, 3 cells)	500823
DC supply cable	DC supply cable (20 cm) with special connectors	075584

Operating the EK 3241 with headphones

In order to be able to connect headphones to the EK 3241 receiver, you require a modified version of the GA 3041-C slot-in housing (see "Accessories" above). Please contact your Sennheiser Service Partner.

Caution! High volume!

Even short exposure to high volume levels can damage your hearing! Adjust the volume for the connected headphones to a medium level before putting the headphones on.

▶ Adjust the volume as described in the section "PHonE" on page 16.

Specifications

Modulation	wideband FM
Frequency range	450 – 960 MHz
Receiving frequencies	1 channel bank ''F'' with up to 32 factory-preset frequencies
	1 channel bank ''U'' with up to 20 freely selectable frequencies (tunable in steps of 5 kHz)
Switching bandwidth	36 MHz
Nominal/peak deviation	±40 kHz / ±56 kHz
Frequency stability (−10 °C to +55 °C)	±10 ppm
De-emphasis	50 µs
Sensitivity (with HiDyn *plus*™)	typ. 10 µV for 90 $dBA_{rms\ S/N}$
Adjacent channel rejection	$\geq$ 70 dB
Intermodulation attenuation (400 kHz/800 kHz)	> 70 dB
Antenna inputs/ Impedance	2 sockets/50 Ω
Squelch threshold	0 – 100 µV, adjustable in steps of 5 dB
Compander system	Sennheiser HiDyn *plus*™
AF frequency response	50 – 20,000 Hz
Signal-to-noise ratio (1 mV, peak deviation)	$\geq$ 100 dB(A)
THD (nom. deviation, 1 kHz)	$\leq$ 1 %, typ. 0.8 % for overall system

Operation with GA 3041-C

AF output	XLR-3 socket: +9 dB (2.2 V_{rms}/1 kHz)
Terminating impedance	$\leq$ 10 kΩ
Power supply	4-pin DC socket, electronically balanced, pin 1: ground, pin 4: 10.5 – 18 V_{DC}

Operation with GA 3041-B

Power supply	1.8 – 4.8 V (internally DC/DC adjusted to max. 3.2 V)
Current consumption	approx. 150 mA at 2.4 V
Operating time	approx. 9 hrs (with BA 50) approx. 13 hrs (with BA 250) approx. 10 hrs (with B 50) approx. 18 hrs (with B 250)

Overall device

Temperature range	−10 °C to +55 °C
Dimensions [mm]	approx. 120 x 74 x 28
Weight	approx. 200g

The device complies with the following standards:

Radio: ETSI EN 300422-1/-2, Class 2
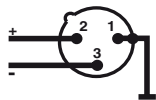EMC: ETSI EN 301489-1/-9
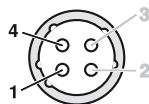FCC: Part 15, Subpart B
Canada: RSS 210, RSS 123 Issue 1 Rev. 2
            IC: 2099A-EK3241

Connector assignment (operation with GA 3041-C)

XLR-3 connector (female), balanced

4-pin DC socket

Pin 1: ground
Pin 4: 10.5 – 18 V_{DC}

Manufacturer Declarations

Warranty regulations

The guarantee period for this Sennheiser product is 24 months 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.

CE Declaration of Conformity   CE 0682

This equipment is in compliance with the essential requirements and other relevant provisions of Directives 1999/5/EC, 89/336/EC or 73/23/EC. The declaration is available on the internet site at www.sennheiser.com.

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

Batteries and rechargeable batteries

The supplied batteries or rechargeable batteries can be recycled. Please dispose of them as special waste or return them to your specialist dealer. In order to protect the environment, only dispose of exhausted batteries.

WEEE Declaration

Your Sennheiser product was developed and manufactured with high-quality materials and components which can be recycled and/or reused. This symbol indicates that electrical and electronic equipment must be disposed of separately from normal waste at the end of its operational lifetime.

Please dispose of this product by bringing it to your local collection point or recycling centre for such equipment. This will help to protect the environment in which we all live.