

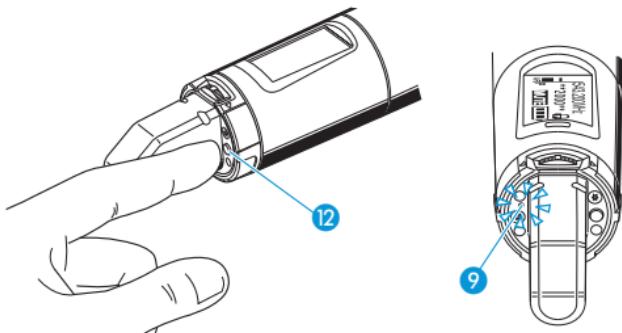
# Using the radio microphone

To establish a transmission link, proceed as follows:

1. Switch the receiver on (see the instruction manual of the receiver).
2. Switch the radio microphone on (see below).

The transmission link is established and the display backlighting of the receiver changes from red to orange.

## Switching the radio microphone on/off



To switch the radio microphone **on** (online operation):

**ON/OFF** ▶ Briefly press the **ON/OFF** button 12.

The radio microphone transmits an RF signal. The standard display “Frequency/Name” appears on the display panel. The red **ON** LED 9 lights up and the transmission icon 4 is displayed.

To switch the radio microphone **off**:

▶ If necessary, deactivate the lock mode (see page 13).

**ON/OFF** ▶ Keep the **ON/OFF** button 12 pressed until “OFF” appears on the display panel. The red **ON** LED 9 goes off and the display panel turns off.



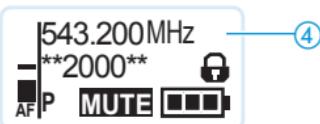
When in the operating menu, pressing the **ON/OFF** button 12 will cancel your entry (ESC function) and return you to the current standard display.

To switch the radio microphone **on** and to **deactivate the RF signal on switch-on** (offline operation):

**ON/OFF** ▶ Keep the **ON/OFF** button 12 pressed until “RF Mute On?” appears on the display panel.

► Press the multi-function switch.

The transmission frequency is displayed but the radio microphone does not transmit an RF signal. The transmission icon ④ is not displayed.



**i** Use this function to save battery power or to prepare a radio microphone for use during live operation without causing interference to existing transmission links.

#### To activate the RF signal:

ON/OFF

► Briefly press the ON/OFF button.



“RF Mute Off” appears on the display panel.



► Press the multi-function switch.

The transmission icon ④ is displayed again.

## Deactivating the lock mode temporarily

You can activate or deactivate the automatic lock mode via the “Auto Lock” menu item. If the lock mode is activated, you have to temporarily deactivate it in order to be able to operate the radio microphone:



► Press the multi-function switch or the ON/OFF button.

“Locked” appears on the display panel.



► Move the multi-function switch upwards/downwards.

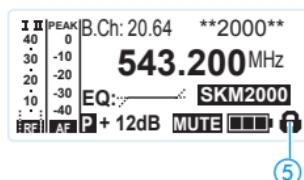
“Unlock?” appears on the display panel.



► Press the multi-function switch.

- When you are in the operating menu, the lock mode remains deactivated until you exit the operating menu.
- When one of the standard displays is shown, the lock mode is automatically activated after 10 seconds.

The lock mode icon ⑤ flashes prior to the lock mode being activated again.



## Deactivating the RF signal

### Deactivating the RF signal on switch-on

For information on deactivating the RF signal on switch-on, refer to the chapter "Switching the radio microphone on/off" on page 12.

### Deactivating the RF signal during operation

 ▶ When one of the standard displays is shown on the display panel, briefly press the **ON/OFF** button.  
"RX Mute On?" appears on the display panel.

 ▶ Press the multi-function switch to confirm your selection.

### Activating the RF signal

 ▶ When one of the standard displays is shown on the display panel, briefly press the **ON/OFF** button.  
"RX Mute Off?" appears on the display panel.

 ▶ Press the multi-function switch to confirm your selection.

### Selecting a standard display

 ▶ Move the multi-function switch to select a standard display:

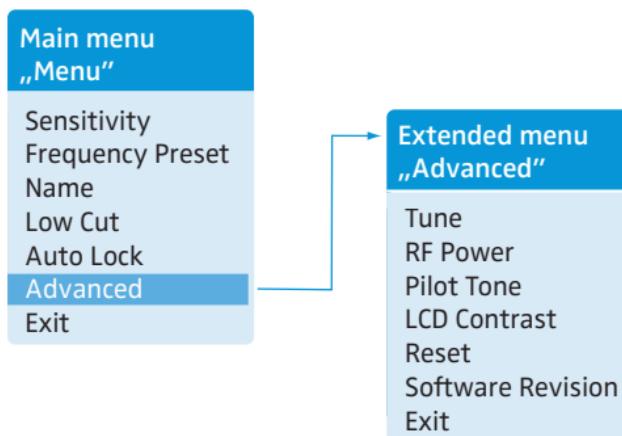
Contents of the display	Selectable standard display
	"Frequency/Name"
	"Channel/Frequency"
	"Name/Channel"

# Using the operating menu

## The buttons

Button	Function of the button
Press the ON/OFF button 	<ul style="list-style-type: none"> <li>Switches the radio microphone on and off</li> <li>Cancels the entry and returns to the current standard display (ESC function)</li> <li>Activates/deactivates the RF signal (special function, see page 14)</li> </ul>
Press the multi-function switch 	<ul style="list-style-type: none"> <li>Changes from the current standard display to the operating menu</li> <li>Calls up a menu item</li> <li>Enters a submenu</li> <li>Stores the settings and returns to the operating menu</li> </ul>
Move the multi-function switch 	<ul style="list-style-type: none"> <li>Selects a standard display</li> <li>Changes to the next/previous menu item</li> <li>Changes the setting of a menu item</li> </ul>

## Overview of the operating menu



Display	Function of the menu item
<b>Main menu "Menu"</b>	
Sensitivity	Adjusts the sensitivity "AF"
Frequency Preset	Changes the frequency bank and the channel
Name	Enters the transmitter name
Low Cut	Activates/deactivates the low-cut filter
Auto Lock	Activates/deactivates the automatic lock mode
Advanced	Calls up the extended menu "Advanced Menu"
Exit	Exits the operating menu and returns to the current standard display

### Extended menu "Advanced Menu"

Tune	Sets the transmission frequencies for the frequency banks "U1" to "U6" Special function: Sets a channel and a transmission frequency for the frequency banks "U1" to "U6"
RF Power	Adjusts the transmission power
Pilot Tone	Activates/deactivates the pilot tone transmission
LCD Contrast	Adjusts the contrast of the display panel
Reset	Resets the radio microphone
Software Revision	Displays the current software revision
Exit	Exits the extended menu "Advanced Menu" and returns to the main menu

## Working with the operating menu



If the lock mode is activated, you have to deactivate it in order to be able to work with the operating menu (see page 13).

By way of example of the “**Sensitivity**” menu, this section describes how to use the operating menu.

### Changing from the current standard display to the operating menu



- ▶ Press the multi-function switch.  
The current standard display is replaced by the main menu.  
The last selected menu item is displayed.

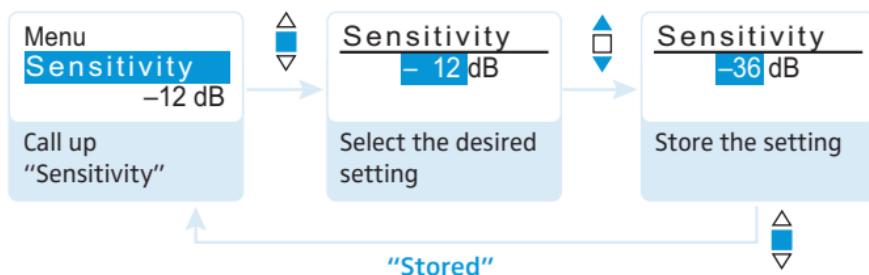
### Selecting a menu item



- ▶ Move the multi-function switch to change to the “**Sensitivity**” menu item.  
The current setting of the selected menu item is displayed:



### Changing and storing settings



- ▶ Press the multi-function switch to call up the menu item.
- ▶ Move the multi-function switch to adjust the input sensitivity.
- ▶ Press the multi-function switch to store the setting.

### Canceling an entry

 ▶ Press the **ON/OFF** button to cancel the entry.  
The current standard display appears on the display panel.

To subsequently return to the last edited menu item:

 ▶ Press the multi-function switch so many times until the last edited menu item appears.

### Exiting a menu item

 ▶ Change to the “**Exit**” menu item.



 ▶ Confirm your selection.  
You return to the next higher menu level.

To directly return to the current standard display:

 ▶ Press the **ON/OFF** button.



# Synchronizing the radio microphone with a receiver

When synchronizing the radio microphone with a receiver, please observe the following:

- ▶ Only use a radio microphone and a receiver from the same frequency range (see the type plate on the radio microphone and the receiver).
- ▶ Make sure that the desired frequencies are listed in the enclosed frequency information sheet.
- ▶ Make sure that the desired frequencies are approved and legal in your country and, if necessary, apply for an operating license.

## Synchronizing the radio microphone with the receiver – individual operation

Upon delivery, the radio microphone and the receiver are synchronized with each other. However, if you cannot establish a transmission link between radio microphone and receiver, you have to synchronize the channels of the devices.

For information on automatic synchronization of the radio microphone with the receiver (individual operation), refer to the instruction manual of the receiver. This information is marked with the  icon.

Alternatively, you can set the channel on the radio microphone manually:

- ▶ Make sure that you set the radio microphone to the same frequency bank and the same channel as the receiver.

If you still cannot establish a transmission link, refer to the chapter "If a problem occurs ..." on page 21.

## Synchronizing radio microphones with receivers – multi-channel operation

Combined with 2000 series receivers, 2000 series radio microphones can form transmission links that can be used in multi-channel systems. In order to ensure an intermodulation-free transmission, use the same frequency bank for all transmission links.

For information on automatic synchronization of radio microphones with receivers (multi-channel operation), refer to the instruction manual of your receiver. For more information on multi-channel operation, visit the corresponding product page at [www.sennheiser.com](http://www.sennheiser.com).

## Cleaning the radio microphone

**CAUTION!** Liquids can damage the electronics of the radio microphone!

Liquids entering the housing of the device can cause a short-circuit and damage the electronics.

► Keep all liquids away from the radio microphone.

- Use a slightly damp cloth to clean the radio microphone from time to time. Do not use any solvents or cleansing agents.

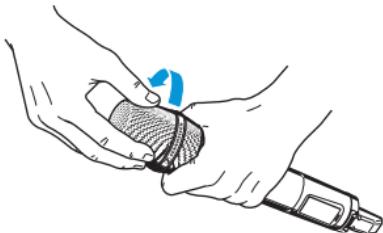
To clean the sound inlet basket of the microphone head:

**CAUTION!** Liquids will damage the microphone head!

Liquids will damage the microphone head.

► Only clean the upper sound inlet basket.

- Unscrew the upper sound inlet basket from the microphone head by turning it counterclockwise (see diagram).



- Remove the foam insert.
- To clean the sound inlet basket:
  - Use a slightly damp cloth to clean the upper sound inlet basket from the inside and outside.  
OR
  - Scrub with a brush and rinse with clear water.
- If necessary, clean the foam insert with a mild detergent or replace the foam insert.
- Dry the upper sound inlet basket.
- Dry the foam insert.
- Reinsert the foam insert.
- Replace the sound inlet basket on the microphone head and screw it tight.

You should also clean the contact rings of the microphone head from time to time:

- Wipe the contact rings of the microphone head with a dry cloth.

## If a problem occurs ...

Problem	Possible cause	Possible solution
Radio microphone cannot be operated, “Locked” appears on the display panel	Lock mode is activated	Deactivate the lock mode (see page 13).
No operation indication	Batteries are flat or accupack is flat	Replace the batteries or recharge the accupack (see page 9).
No RF signal at the receiver	Radio microphone and receiver are not on the same channel	<p>Synchronize the radio microphone with the receiver (see page 19).</p> <p>Set the radio microphone to the same channel as the receiver.</p>
	Radio microphone is out of range	<p>Check the squelch threshold setting on the receiver.</p> <p>Reduce the distance between radio microphone and receiving antenna.</p> <p>Increase the transmission power.</p>
	RF signal is deactivated (“RF Mute”)	Activate the RF signal (see page 14).
RF signal available, no audio signal, “MUTE” appears on the display panel	Receiver’s squelch threshold is adjusted too high	Reduce the squelch threshold setting on the receiver.
	Radio microphone doesn’t transmit a pilot tone	Activate or deactivate the pilot tone transmission.
Audio signal has a high level of background noise / audio signal is distorted	Radio microphone’s sensitivity is adjusted too low/ too high	Adjust the input sensitivity.

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 partner for assistance. To find a Sennheiser partner in your country, search at [www.sennheiser.com](http://www.sennheiser.com) under “Service & Support”.

# Specifications

## RF characteristics

Modulation	wideband FM
Frequency ranges	516–558, 558–626, 626–698, 718–790, 790–865 MHz (Aw to Dw, Gw, see page 4)
Transmission frequencies	up to 3,000 frequencies, tuneable in steps of 25 kHz
	20 frequency banks, each with up to 64 factory-preset channels
	6 frequency banks, each with up to 64 user programmable channels
Switching bandwidth	up to 75 MHz
Nominal/peak deviation	±24 kHz/±48 kHz
Frequency stability	≤ ±15 ppm
RF output power at 50 Ω	switchable: typ. 10 mW (Low) typ. 30 mW (Standard) typ. 50 mW (High)
Pilot tone squelch	can be switched off

## AF characteristics

Comander system	Sennheiser HDX
AF frequency response	80–18,000 Hz
Signal-to-noise ratio (1 mV, peak deviation)	≥ 120 dBA
THD	≤ 0.9%
Adjustment range of input sensitivity	48 dB, adjustable in 6-dB steps

## Overall device

Temperature range	–10°C to +55°C
Power supply	2 AA size batteries, 1.5 V or BA 2015 accupack
Nominal voltage	2.4 V ===

## Power consumption:

- at nominal voltage
- with switched-off radio microphone

typ. 180 mA (30 mW)

≤ 25 µA

## Operating time

typ. 8 hrs

## Dimensions

approx. Ø 50 x 265 mm

## Weight (incl. batteries)

approx. 450 g

## In compliance with

Europe



EMC EN 301489-1/-9

Radio EN 300422-1/-2

Safety EN 60065

EN 62311 (SAR)

## Approved by

Canada:

Industry Canada RSS 210

IC: 2099A-SKM2000

limited to 806 MHz

USA:

FCC-Part 74

FCC-ID: DMOSKM2000/

limited to 698 MHz

## Microphone heads

Microphone head	Type	Sensitivity	Pick-up pattern	Max. SPL
MMD 835-1	dynamic	2.1 mV/Pa	cardioid	154 dB SPL
MMD 845-1	dynamic	1.6 mV/Pa	super-cardioid	154 dB SPL
MME 865-1	condenser	1.6 mV/Pa	super-cardioid	152 dB SPL
MMD 935-1	dynamic	2.5 mV/Pa	cardioid	154 dB SPL
MMD 945-1	dynamic	1.8 mV/Pa	super-cardioid	154 dB SPL
MMK 965-1	externally polarized dual diaphragm condenser microphone	5.7 mV/Pa 1.8 mV/Pa	cardioid/ super-cardioid, switchable	144 dB SPL 154 dB SPL

# Manufacturer Declarations

## Warranty

Sennheiser electronic GmbH & Co. KG gives a warranty of 24 months on this product.

For the current warranty conditions, please visit our web site at [www.sennheiser.com](http://www.sennheiser.com) or contact your Sennheiser partner.

## In compliance with the following requirements

- RoHS Directive (2002/95/EU)
- WEEE Directive (2002/96/EU)



Please dispose of the radio microphone at the end of its operational lifetime by taking it to your local collection point or recycling center for such equipment.

- Battery Directive (2006/66/EU)



The supplied batteries or rechargeable batteries of the radio microphone 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.

## CE Declaration of Conformity

- CE 0682 ①
- R&TTE Directive (1999/5/EU)

The declarations are available at [www.sennheiser.com](http://www.sennheiser.com).

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

## Statements regarding FCC and Industry Canada

This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This class B digital device complies with the Canadian ICES-003.

Changes or modifications made to this equipment not expressly approved by Sennheiser electronic Corp. may void the FCC authorization to operate this equipment.

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