



# MKH 416

P48 U3



Instruction manual

**SENNHEISER**

# Important safety instructions

1. Read these safety instructions and the instruction manual of the product.
2. Keep these safety instructions and the instruction manual of the product. Always include all instructions when passing the product on to third parties.
3. Only use attachments, accessories and spare parts specified by the manufacturer.
4. Caution: The protective basket and pop shield must be completely dry when you mount them on the microphone. Moisture can cause malfunctions or damage to the capsule.
5. Connect the microphone only to microphone inputs and supply units that provide 48V phantom powering in accordance with IEC 61938.
6. Do not attempt to open the product housing on your own. The warranty is voided for products opened by the customer.
7. Refer all servicing to qualified service personnel. Servicing is required when the product has been damaged in any way, liquid has been spilled or objects have fallen into the product, when the product has been exposed to rain or moisture, does not operate normally, or has been dropped.
8. Use the product only under the conditions of use listed in the specifications.
9. Let the product come to ambient temperature before switching it on.
10. Do not operate the product if it was damaged during transportation.
11. Always run cables so that no one can trip over them.
12. Keep the product and its connections away from liquids and electrically conductive objects that are not necessary for operating the product.
13. Do not use any solvents or aggressive cleaning agents to clean the product.
14. Caution: Very high signal levels can damage your hearing and your loudspeakers. Reduce the volume on the connected audio devices before switching on the product; this will also help prevent acoustic feedback.

## Intended use

The product is designed for indoor and outdoor use. The product can be used for commercial purposes.

It is considered improper use when the product is used for any application not named in the corresponding instruction manual.

Sennheiser does not accept liability for damage arising from improper use or misuse of this product and its attachments/accessories.

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

## Package contents

- 1 MKH 416-P48 U3 directional studio microphone
- 1 MZW 415 foam windshield
- 1 MZQ 100 microphone clamp
- 1 Instruction manual
- 1 Carry bag

# The MKH 416-P48 U3 directional studio microphone

## Brief description

The MKH 416 is a directional studio microphone which is also especially suited to outdoor applications. Its high degree of directivity makes the MKH 416 a superb microphone for film and television, including outside broadcast applications. The microphone operates on the proven RF principle and is designed for 48 V phantom powering.

The MKH 416 is a combination of a pressure gradient transducer and an interference tube microphone. It has a super-cardioid pick-up pattern at low and medium frequencies, whereas at higher frequencies there is a transition to a lobar characteristic. Due to its operating principle, the MKH 416 is relatively insensitive to wind and pop noise and can therefore often be used as a soloist and broadcast microphone, without the need for an additional wind- or popshield. However, for outdoor recordings the use of an additional windshield is recommended.

The frequency response intentionally has a slightly rising characteristic at high frequencies. The microphone has a low proximity effect and therefore provides a well balanced sound even when used close to the sound source.

## Principle of the RF circuit

In contrast to the high impedance of the capsules in conventional “DC biased” condenser microphones, the capsule of an RF condenser microphone has a low impedance. The high polarization voltages normally required in condenser microphones are not necessary in the RF condenser microphone. RF condenser microphones use a comparatively low RF bias voltage of less than 10 V, generated by a built-in low-noise oscillator (8 MHz). The RF principle ensures increased operational reliability, particularly for outdoor recordings under extreme climatic conditions.

## Features

- Increased directivity due to interference tube principle
- Very low inherent self-noise
- High sensitivity
- Transformerless and fully floating balanced output
- Rugged, suitable for adverse climatic conditions
- Matt black all-metal body

# Cleaning and maintaining the MKH 416-P48 U3

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## CAUTION

### DAMAGE TO THE PRODUCT DUE TO LIQUIDS!

Liquids entering the product can short-circuit the electronics or damage the mechanics. Solvents or cleansing agents can damage the surface of the product.

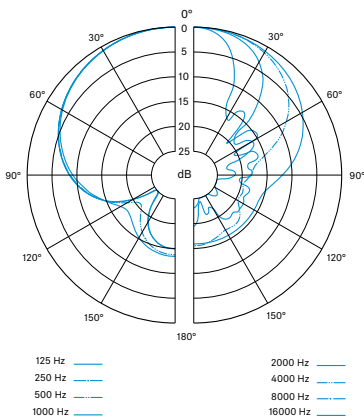
- ▷ Keep all liquids away from the product.

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- ▷ Only use a soft, dry cloth to clean the product.

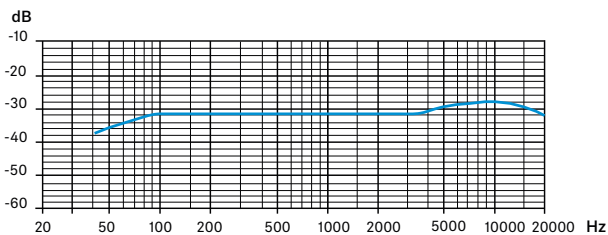
# Specifications

Frequency response	40 - 20,000 Hz
Transducer principle	RF condenser microphone
Pick-up pattern	super-cardioid/lobar
Sensitivity (free field, no load) (1 kHz)	25 mV/PA $\pm$ dB
Nominal impedance	25 $\Omega$
Min. terminating impedance	ca. 800 $\Omega$
Equivalent noise level	
CCIR-weighted (CCIR468-3)	approx. 24 dB
A-weighted	approx. 13 dB
Max. sound pressure level	130 dB SPL
Power supply	48 V $\pm$ 4 V phantom powering
Current consumption	approx. 2 mA
Temperature range	-10 $^{\circ}$ C to + 70 $^{\circ}$ C
Finish	mattschwarz
Connector	3-pol. XLR-Stecker
Pin assignment	1: Ground, housing; supply (-) 2: NF (+); supply (+) 3: NF (-); supply (-)
Dimensions	$\varnothing$ 19 x 250 mm
Weight	175 g

## Polar diagram



## Frequency response curve



# Manufacturer Declarations

## Warranty

Sennheiser electronic GmbH & Co. KG gives a warranty of 24 months on these products.

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

## In compliance with the following requirements

- WEEE Directive (2012/19/EU)



## Notes on disposal

The symbol of the crossed-out wheeled bin on the product, the battery/rechargeable battery (if applicable) and/or the packaging indicates that these products must not be disposed of with normal household waste, but must be disposed of separately at the end of their operational lifetime. For packaging disposal, please observe the legal regulations on waste segregation applicable in your country.

Further information on the recycling of these products can be obtained from your municipal administration, from the municipal collection points, or from your Sennheiser partner.

The separate collection of waste electrical and electronic equipment, batteries/rechargeable batteries (if applicable) and packagings is used to promote the reuse and recycling and to prevent negative effects caused by e.g. potentially hazardous substances contained in these products. Herewith you make an important contribution to the protection of the environment and public health.

## EU Declaration of conformity

- RoHS Directive (2011/65/EU)
- EMC Directive (2014/30/EU)



The full text of the EU declaration of conformity is available at the following internet address:

[www.sennheiser.com/download](http://www.sennheiser.com/download)

## In compliance with

Europe		EMC EN 55032 / EN 55035
USA		FCC 47 CFR 15 subpart B
Canada		Industry Canada ICES_003
Australia / New Zealand		
China		

## China RoHS

部件名称 (Parts)	有害物质						
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)	产品环保年限 EFUP
金属部件 (Metal parts)	x	o	o	o	o	o	15
电路模块 (Circuit Modules)	x	o	o	o	o	o	15
电缆及电缆组件 (Cables & Cable Assemblies)	x	o	o	o	o	o	15
电路开关 - 如果包含 (Circuit Breakers - if available)	x	o	o	o	o	o	15

本表格依据 SJ/T 11364 的规定编制。  
 o: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。  
 x: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。