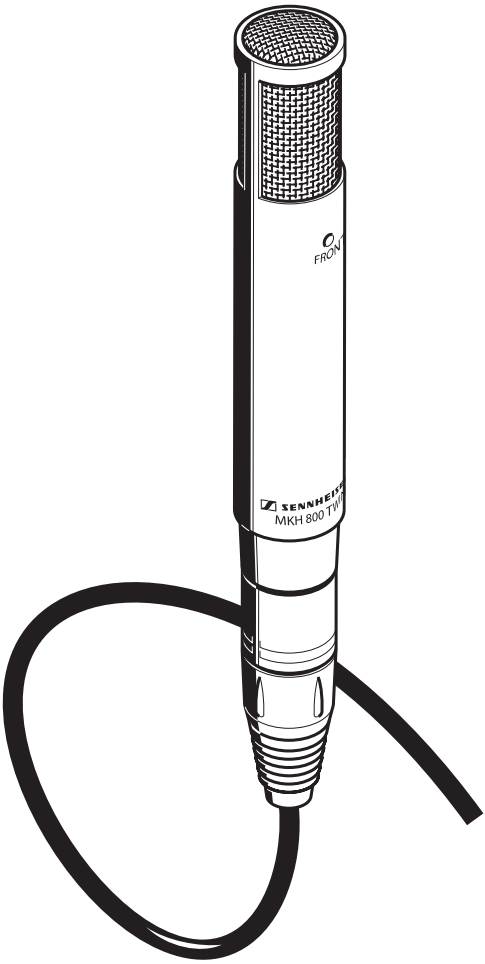
SENNHEISER

MKH 800 TWIN

Instructions for use



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MKH 800 TWIN

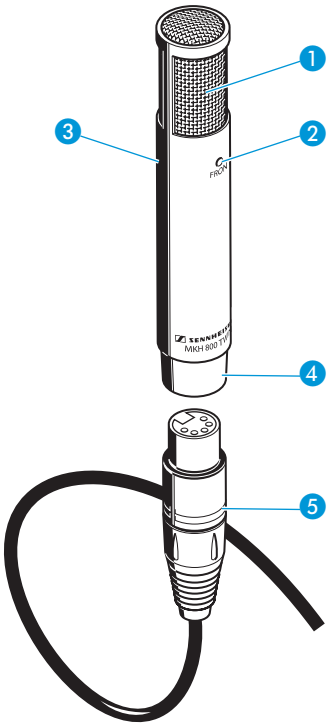
The MKH 800 TWIN is a universal studio condenser microphone of exceptional quality. It includes a dual capsule consisting of two symmetrical push-pull transducers with high linearity. This is a ''side fire'' microphone with the two cardioid pick-up patterns of the transducer aligned back-to-back across the axis of the microphone.

The MKH 800 TWIN is based on the MKH 800. However, the signals of both transducers are not combined in the microphone in order to generate differing pick-up patterns but are available separately as two channels at the microphone output. This allows the pick-up patterns of the MKH 800 TWIN to be remotely adjusted. The signals can be combined in any desired way in the mixing console in order to create all pick-up patterns from omni-directional to figure-8 with an infinite number of intermediate stages.

- The remote adjustability and the variable pick-up patterns make the MKH 800 TWIN a universal main microphone, soloist microphone or supporting microphone.
- The pick-up patterns can be set and optimised under monitoring conditions. In other words, it is not necessary to fix the pick-up patterns definitively before recording.
- A wide range of mixes for stereo and surround are possible (including in parallel).
- The saving of the microphone signals in two channels also allows an unlimited range of mixes to be realised at a later date.
- The high sensitivity ensures interference-free signal paths as a result of high signal levels. The inherent noise of downstream microphone amplifiers is thus of minor importance.
- The very low inherent noise prevents the masking of filigree sound structures. The depth of the acoustic can be heard more clearly too.
- The high linearity of the transducers minimises the signal distortions and ensures the transparency of the sound even at high sound levels.
- The frequency response extends to 50 kHz, thus improving the resolution for complex acoustic details.
- Stable pick-up patterns minimise sound distortion in the direct and diffuse field.
- Negative acoustic effects caused by the housing and the sound inlet basket are minimised.
- The small, slim design and the optionally dark housing design (Nextel) make it visually unobtrusive.

Delivery includes

- 1 MKH 800 TWIN studio condenser microphone
- 1 MZS 80 shock mount
- 1 AC 20 adaptor cable
  (1 x XLR-5 socket to 2 x XLR-3 connector)
- 1 MZQ 80 microphone clamp
- 1 Aluminium transport case
- 2 supplementary sheets with the front and rear frequency response curves
- Instructions for use:
  - MKH 800 TWIN
  - MZS 80 shock mount



1 Sound inlet basket
2 LED Front (blue)
3 LED Rear (red)
4 XLR-5 connector of the microphone
5 AC 20 adaptor cable

Putting the microphone into operation

Connecting the microphone

The MKH 800 TWIN has been designed for a 48 ± 4 V phantom powering according to IEC 61938.

To power the microphone:

- Connect the XLR-5 socket of the adaptor cable 5 to the XLR-5 connector 4 of the microphone.
- Connect the two XLR-3 connectors of the adaptor cable 5 to the corresponding sockets of your mixing console.
- Switch on the phantom powering on your mixing console.
  The LEDs 2 and 3 on the microphone light up.

Aligning the microphone

The front of the microphone is marked by the word "Front" and a blue LED 2 whereas the rear is marked by a red LED 3.
The LEDs can be used for aligning the microphone. On-axis alignment is indicated by maximum brightness.

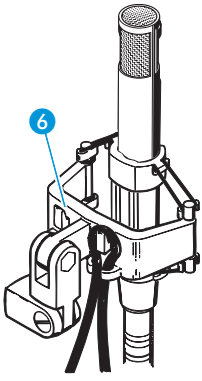
Function monitoring

The two LEDs Front 2 and Rear 3 indicate operational readiness separately for both channels. The LEDs go off if the supply voltage drops below 42 V.

Mounting the microphone to a stand

The supplied MZS 80 shock mount allows the MKH 800 TWIN to be mounted to a stand and effectively protects against structure-borne noise.

To mount the microphone to a stand:



- Select the suitable mounting thread:
  - Without thread insert: 5/8" thread
  - With thread insert: 3/8" thread
- Screw the shock mount 6 to a stand.
- Pass the cable through the cable grip as shown.
- Place the microphone into the shock mount 6 as shown.

Attaching the windshield

Pop noises resulting from close miking can be suppressed effectively using the optional MZW 80-ANT windshield or the optional MZP 40 popperstopper (see "Accessories and spare parts" on page 9).

To attach the windshield:

▶ Slide on the windshield onto the sound inlet basket ❶.

To attach the popperstopper:

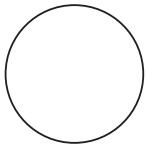
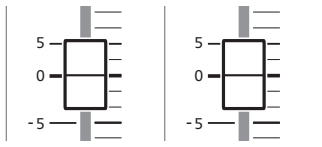
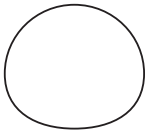
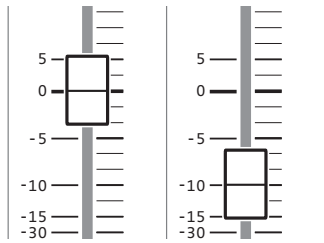
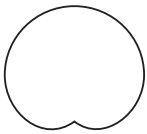
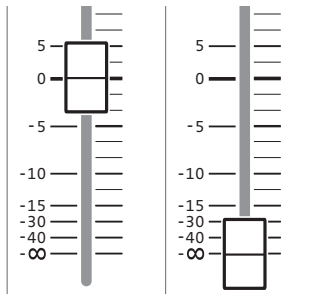
▶ Attach the gooseneck of the popperstopper to the stand. The popperstopper changes the sound only slightly.

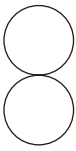
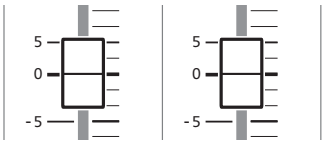
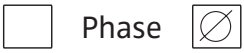
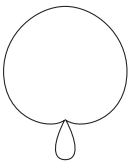
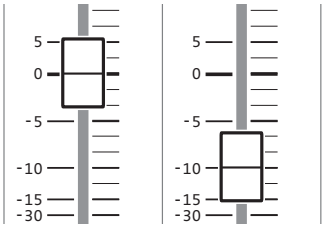
Remote adjustment of the pick-up patterns

The two signals of the MKH 800 TWIN allow the remote adjustment of the pick-up patterns at the mixing console.

The two microphone signals (front and rear) are routed to separate channels and summed together. The sum signal is then distributed over the stereo channels as usual using the pan control.

▶ The pan control of both channels has to be aligned identically for correct operation.

Pick-up pattern	Setting
Omni-directional 	▶ Set the amplification to the same value in both channels. 
Wide cardioid* 	▶ Set the amplification in the rear channel lower than in the front channel. 
Cardioid 	▶ Activate the front channel only. 

Pick-up pattern	Setting
Figure-8 	▶ Set the amplification to the same value in both channels.  ▶ Invert the phase of the rear channel. 
Super-cardioid** 	▶ Set the amplification in the rear channel lower than in the front channel.  ▶ Invert the phase of the rear channel.

*Wide cardioid:
Pattern between omni-directional and cardioid

The wide cardioid pattern of the MKH 800 is, for example, the result if the rear channel has 10 dB less amplification than the front channel. The pick-up pattern becomes more omni-directional at higher amplification and more cardioid at lower amplification.
At the same time, the rear attenuation (180° attenuation) of the microphone changes. It is the direct result of the amplification ratio between the front and the rear channel, i.e. 10 dB in the example of the wide cardioid pattern.

**Super-cardioid:
Pattern between cardioid and figure-8

The super-cardioid pattern of the MKH 800 is, for example, the result if the amplification of the rear channel is 10 dB lower than that of the front channel and if the phase of the rear channel is inverted. At higher amplification, the pick-up pattern tends towards the figure-8 pattern, otherwise the pattern becomes more cardioid.
The cancellation angle at which the microphone is especially insensitive also changes. It is 180° in the case of the cardioid pattern, 120° for the super-cardioid pattern and 90° for the figure-8 pattern. If the MKH 800 TWIN is used as a supporting microphone, the attenuation between different groups of instruments in an orchestra can for example be optimised in this way. Here, too, the rear attenuation is the result of the amplification ratio between the front and the rear channel, i.e. 10 dB in the case of the super-cardioid pattern.

Changing the pick-up pattern

There are two different ways of changing the pick-up pattern of the microphone.

If the microphone level has to be changed infrequently:

- At the mixing console, set the preamplification to the same value in both channels.
- Vary the pick-up pattern by using the level control and the phase switch of the rear channel.
  The level control of the front channel stays in the same position.

If the microphone level has to be changed frequently:

- At the mixing console, set the level controls to the same value and couple them mechanically or electrically.
- Change the pick-up pattern by using the pre-set gain control and the phase switch of the rear channel.

Surround applications

As a result of the symmetry of the microphone, it is also possible to create any desired rear pick-up pattern. For this purpose the microphone signals are additionally routed to two other channels, whereby front and rear channel exchange roles. The settings are then made in the same way as described above and the rear pick-up patterns can be freely selected. Both pick-up patterns are then available simultaneously, for example for a surround front channel and a surround rear channel. With two MKH 800 TWIN, four surround channels can be created in this way.
If only the cardioid pick-up pattern is required for the front and rear channels, the microphone signals can also be used directly. This minimises the necessary effort.

With an MKH 800 TWIN and a figure-8 microphone (e.g. MKH 30) full surround-sound recording using the double MS technique (MSM) can be done. As is common with the MS technique, the figure-8 microphone is positioned above the MKH 800 TWIN and directed to the left. The front and rear left and right surround channels are produced by matrixing the figure-8 signal and the front and rear signals of the MKH 800 TWIN.
By combining the front and rear signals of the MKH 800 TWIN, a centre channel with any pick-up pattern can be achieved and even a centre rear channel is possible if required. In spite of the wide range of options, post-production still only requires the original microphone signals to be saved, i.e. only three signals for five or six surround channels.

Care and maintenance

CAUTION! **Liquids can damage the microphone!**

Liquids entering the microphone can cause a short-circuit in the electronics and damage the microphone capsule.

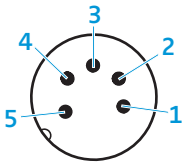
▶ Do not use any solvents or cleansing agents.

▶ Use a soft, slightly damp cloth to clean the microphone from time to time.

Accessories and spare parts

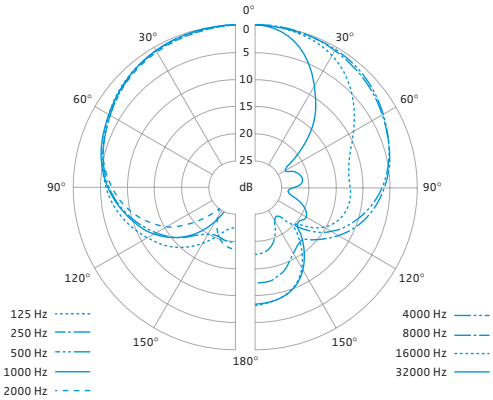
Cat. No.	Accessory/Spare part
003132	MZP 40 popperstopper
003780	MZW 80-ANT foam windshield
003685	MZS 80 shock mount
050174	MZQ 80 microphone clamp
006595	AC 20 adaptor cable

Specifications

Short description	Dual diaphragm RF condenser microphone with separate outputs for both capsules
Pick-up pattern	2 x cardioid
Frequency response	30–50,000 Hz
Sensitivity (no load) at 1000 Hz	40 mV/Pa (–28 dBV) ±1 dB
Output impedance at 1000 Hz	100 Ω
Max. SPL at 1000 Hz	134 dB (100 Pa)
Max. output voltage	4 V
Min. load impedance	2 kΩ
Equivalent noise level	12 dB (A-weighted) 20 dB (CCIR-weighted)
Noise voltage	3 µV (A-weighted) 8 µV (CCIR-weighted)
Dynamic range	122 dB (A-weighted) 114 dB (CCIR-weighted)
Power supply	P48 phantom powering
Supply voltage	48 ± 4 V
Supply current	2 x 3.1 mA
Connector	XLR-5M
Connector assignment	 1: Ground/housing 2: Front channel: (+) 3: Front channel: (–) 4: Rear channel: (+) 5: Rear channel: (–)
Dimensions	∅ 27 mm x 136 mm
Weight	172 g
Storage temperature range	–20 °C to +70 °C

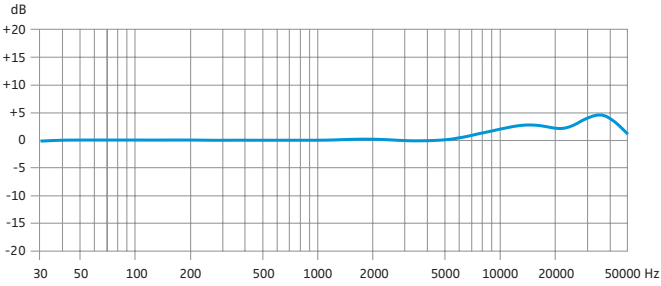
Polar diagram and frequency response curve

Polar diagram



The polar diagrams of both channels only differ in the opposite alignment 0°/180°.

Frequency response curve



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