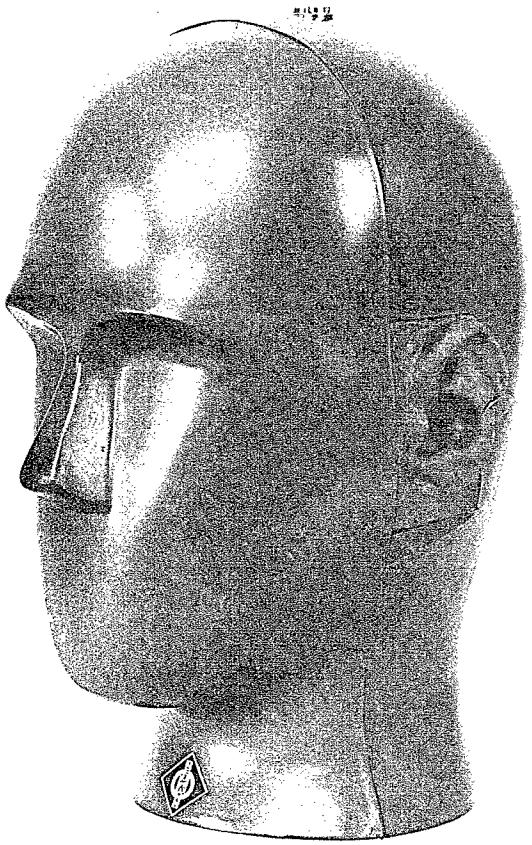
KU 81 i



KU 81 i Dummy Head

The dummy head is a replica of the human head, into which microphones have been positioned where the "ears" are normally located.

Listening to the dummy head signal using high-quality headphones gives an impression very similar to that which the listener would have if he were located at the same place at which the dummy head is set up. The result is an illusion of the very presence at the place of the performance.

When monitored through loudspeakers the sound impression is almost identical to the one produced by a conventional stereo microphone at the dummy head position. A more detailed reproduction of the room's depth is obtained in addition.

This loudspeaker monitoring compatibility is one of the most important differences between the KU 81 i Dummy Head and its predecessor, the KU 80 i. While acoustic frequency response tests are usually of the free field type, tests for improving the dummy head required instead consideration of its behavior in a diffuse sound field.

In most cases the dummy head is to be positioned at a considerable distance from the sound source and in surroundings, that acoustically differ strongly from each other.

It is to be equilized in such a way, that its frequency response in the diffuse sound field is flat, matching the curve of a "normal" (stereo-) microphone used in studio recording. This equilization of the KU 81 i Dummy Head results from a completely new way of coupling the microphones to the outer ears. The auditory canal is reproduced at a length of only 4 mm. This is the section which is influenced by the outer acoustic field in dependance of the location of the acoustic source.

Behind this is a transition from the diameter of the capsule (KK 83: 21 mm ∅) to the diameter of the auditory canal which also contains the acoustic elements producing the desired equalization in the diffuse sound field.

Since the required equalization takes place entirely in the head itself, the dummy head provides the desired output signal without the need for any outboard devices.

The directional selectivity is the result of acoustic delays and diffractions of the sound at the dummy head and above all from the complicated shape of the outer ears which are castings of typical human ears.

By comparison to the previous model KU 80 i, the new KU 81 i provides a very accurate reproduction of the recording room's acoustics and offers a 10 dB higher maximum sound pressure level.

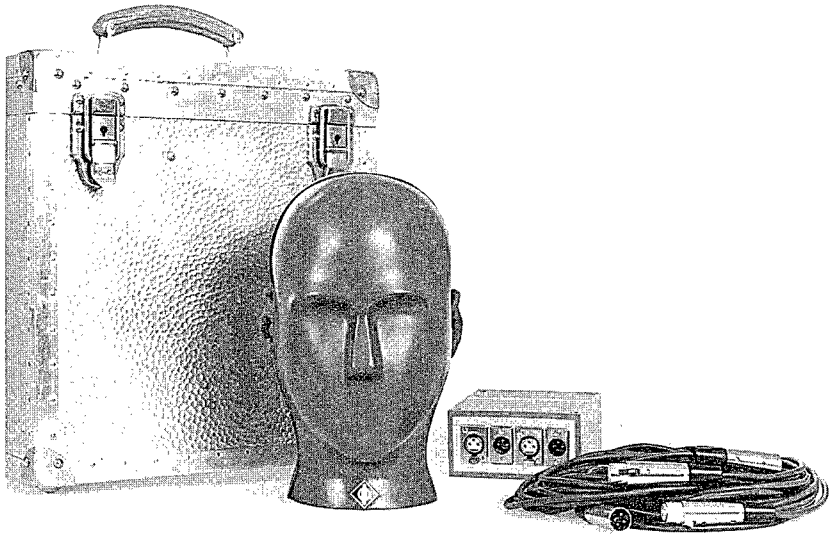
Female threaded sockets (1/2"-, 3/8"-, and 5/8"-27) at the top and bottom of the dummy head provide microphone stand mounting. In addition screw-in eyes may be installed above the ears on both sides and at the bottom of the dummy head to simplify hanging and orienting.

KU 81 i Specifications

Acoustical operating principle	(2) pressure microphones
Polar pattern	Analogous to the human outer ears
Diffuse field frequency range	40 ... 16,000 Hz
Sensitivity at 1 kHz for frontal impinging acoustic source	10 mV/Pa ± 1 dB
Source impedance	150 ohms
Nominal load impedance	≧ 750 ohms
S/N ratio (weighted) (related to 1 Pa, DIN 45 590)	71 dB
A-weighted equivalent loudness level due to inherent noise (IEC 179)	16 dB
Max. SPL for 0.5 % THD at 1 kHz	130 dB ≙ 63 Pa
Power supply (P 48, DIN 45 596)	48 V ± 4 V Phantom-powering
Current consumption	2 x 0.7 mA
Minimum operating time with (2) battery power supplies	10 hrs.
Weight	2700 g
Dimensions	180 mm in diam., 280 mm high

Dummy Head application-options:

1. Radio drama: to reproduce distance, direction and perspective.
2. Music recording: to reproduce the acoustic properties of both the room and the particular "listener's" position.
3. Stereophonic recordings (for reproduction through loudspeakers), providing excellent sound transparency even in complex, acoustically difficult enclosures, such as churches, which can otherwise be realised only through the use of a multiple microphone set-up.
4. Evaluating concert hall and theater acoustics at different points without distraction due to optical impressions and other influences.
5. Monitoring the effect of P.A. systems and other electro-acoustical performances in big congress halls, theaters etc. by simulating aural receptions in the auditorium.
6. True 3-dimensional recordings yielding high speech intelligibility for preparing conference minutes, court verbatim reports, etc.
7. Determination of acoustic pollution by means of direct comparision among various noise recordings or a reference noise.
8. Measurement of speech intelligibility at different listening positions.



Delivery of the KU 81 i Dummy Head includes:

1. Dummy Head containing two condenser microphone systems,
2. a twin power supply N 452 i or two battery supplies BS 945 i,
3. two connecting cables IC 3 for the connection of the microphones to the supply unit,
4. two cable transformer AT 8/1 i for the connection to unbalanced amplifier inputs (optional),
5. a carrying case for the dummy head and accessories.