INTRODUCTION

When AKG introduced the C-450 System some years ago, it was both a pioneering development and a landmark event in professional audio. For the very first time, the sound engineer was offered a choice of interchangeable condenser-microphone modules – standardized preamplifiers, capsules and special inserts that could be mixed and mated in various combinations to create custom studio-quality microphones for any conceivable application. (Not coincidentally, the approach was similar to that of a professional photographic system with its complement of interchangeable camera bodies, lenses, filters and accessories.) What’s more, the system was designed to be inherently obsolescence-proof – new modules could be easily developed and added to keep pace with the ever-changing needs of the recording, broadcast, sound-reinforcement and film industries.

Today – greatly expanded and having undergone almost constant refinement – the C-450 System still stands at the very forefront of microphone technology. There are literally thousands of C-450 System microphone combinations in daily use throughout the world, and the list of award-winning recordings, broadcasts, films and theatrical productions (as well as world-class sporting events) that have employed these microphones is still growing – professional tribute to the system’s unrivalled combination of quality, reliability and versatility.
C 451E
CONDENSER MICROPHONE PREAMPLIFIER

Field effect transistor (FET)
Extended long-time stability
Minimum noise
High operating reliability
Functions up to 99% relative humidity
Low power consumption
For standard phantom circuit with any operating voltage from 9 to 52 v
C451EB
CONDENSER MICROPHONE PREAMPLIFIER

2-position bass attenuator: 0 db, -7 db at 50 Hz (roll off starts at 75 Hz), -20 db at 50 Hz (roll off starts at 150 Hz)
Field effect transistor (FET)
Minimum noise
Functions up to 99% relative humidity
Extended long-time stability
High operating reliability
Low power consumption

For standard phantom circuit with any operating voltage from 9 to 52 v (d.c.)

Available in two versions:
standard matte-nickel finish
and satin-black-chrome finish.

Technical Data:

Type: FET preamplifier
Frequency Range: 5 to 30,000 Hz
No-load Amplification: 0.47 ± 0.5 db
Source Impedance (20 to 20,000 Hz): 50 ohms
Supply Voltage: 9 to 52 v (d.c.)
Current Consumption: ≤ 5.5 ma (DIN 45596)

Frequency response curve:

Dimensions [mm]:

- Frequency response curve:
- Technical Data:
- Available in two versions:
- standard matte-nickel finish
- and satin-black-chrome finish.

- Minimum noise
- Functions up to 99% relative humidity
- Extended long-time stability
- High operating reliability
- Low power consumption

For standard phantom circuit with any operating voltage from 9 to 52 v (d.c.)
C 452EB
CONDENSER MICROPHONE PREAMPLIFIER

2-position bass attenuator 0 db, -7 db at 50 Hz
(roll off starts at 75 Hz), -20 db at 50 Hz (roll off starts at 150 Hz)

Field effect transistor (FET)

Minimum noise

Functions up to 99% relative humidity

Extended long-time stability

High operating reliability

Low power consumption

For phantom circuit with an operating voltage of 48 v only (DIN 45596)

Available in two versions:
standard matte-nickel finish
and satin-black-chrome finish.

Technical Data:
Type: FET preamplifier
Frequency Range: 3 ... 20,000 Hz
Non-linearity: ± 0.1% of F.S.
Source Impedance: 200 ohms
Supply Voltage: 48 ± 6 v, + 8 v

Frequency Response Curve:

Frequency Range: 5 Hz ... 30,000 Hz
No-load Amplification: 0.47 ± 0.5 db
Source Impedance: ± 200 ohms
Current Consumption: approx. 4 ma (DIN 45596)

Unweighted Noise Level (µV): 3.5
Weighted Noise Level (µV): 2.2 (max. 3.5)
Equivalent Noise Level (µV): 21 dB

Sensitivity to Magnetic Stray Field: at 50 Hz: 5 µA/mgauss
at 100 Hz: 8 µA/mgauss
at 1000 Hz: 80 µA/mgauss

Load Impedance: > 500 ohms

Weight: 86 g; gross weight: 360 g.
Temperature Range: -30°C to +60°C
Humidity: at 20°C, 95% RH, at 60°C, 95%

Dimensions [mm]:

Frequency response curve:
CK1
CARDIOID CONDENSER CAPSULE

Integrated ceramic electrode, highly stable, aging-resistant diaphragm
Smooth frequency response within the entire transmission range between 20...20000 Hz
Directional characteristic: frequency-independent cardioid, with uniform front-to-back discrimination
180° cancelling > 20 db
Functions up to 99% relative humidity

Available in two versions: standard matte-nickel finish and satin-black-chrome finish.

Technical Data:
Type: Pressure gradient receiver
Frequency Range: 20...20000 Hz
Directional Characteristic: frequency-independent cardioid
Sensitivity at 1000 Hz: 0.95 mV/Pa @ 9.5 mV/Pa
Unweighted Noise Level: 2.5 mV (at 1000 Hz)
Weight: 10 g
Capacitive Capacity: 27 pF
Weight: 20 g; gross weight: 60 g
Temperature Range: -20°C...+60°C
Humidity: at 60°C...80%, at 80°C...90%
MEASURING TECHNIQUE:
The capsule has been measured with an AKG standard measuring preamplifier with following technical data:
No-load Amplification: 0.47 

Polar diagram

Frequency response curve

Technical Data:
Type: Pressure gradient receiver
Frequency Range: 20...20000 Hz
Directional Characteristic: frequency-independent cardioid
Sensitivity at 1000 Hz: 0.95 mV/Pa @ 9.5 mV/Pa
Unweighted Noise Level: 2.5 mV (at 1000 Hz)
Weight: 10 g
Capacitive Capacity: 27 pF
Weight: 20 g; gross weight: 60 g
Temperature Range: -20°C...+60°C
Humidity: at 60°C...80%, at 80°C...90%
MEASURING TECHNIQUE:
The capsule has been measured with an AKG standard measuring preamplifier with following technical data:
No-load Amplification: 0.47
CK1S
CARDIOID CONDENSER CAPSULE
Integrated ceramic electrode, highly stable, aging-resistant diaphragm
Wide transmission range of 20...20000 Hz with presence rise for added brilliance
Directional characteristic: frequency-independent cardioid, with uniform front-to-back cancellation
180° cancelling > 20 db
Functions up to 99% relative humidity
CK 2
OMNIDIRECTIONAL CONDENSER CAPSULE

Integrated ceramic electrode, highly stable, aging-resistant diaphragm

Linear frequency response over the entire transmission range between 20 ... 20000 Hz

Omni-directional characteristic, independent of frequency

Functions up to 99% relative humidity

Available in two versions:
standard matte-nickel finish and satin-black-chrome finish.

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Technical Data:

Type: Pressure receiver
Frequency Range: 20 ... 20000 Hz
Directional Characteristic: omni-directional, independent of freq.
Sensitivity at 1000 Hz: 2.8 mV/pa (3.8 mV/Pa)
Sensitivity at 1000 Hz: 0.8 mV/Pa

Weight:

Weight: 20 g, gross weight: 60 g

Temperature Range:
-20 °C ... +60 °C

Humidity:
at 20 °C ... 95%, at 50 °C ... 35%

MEASURING TECHNIQUE:
The capsule has been measured with an AKG standard measuring microphone and the following technical data:

Nominal Amplification: 0 dB
Input Capacitance: 12 pF
Polarisation Voltage: 48 V
This symmetrically bidirectional capsule is invaluable for use in "M-S" or "Blumlein" intensity-stereo microphone arrays, as well as for non-discriminating coverage of performers who must face each other across a single microphone and for superior side rejection of noise, feedback or leakage. The CK-4 features virtually identical front and rear frequency response and sensitivity, plus exceptionally high front-to-side discrimination over a wide range of frequencies. Its two closely matched transducer elements are oriented back-to-back, connected to an R-C combining network and elastically suspended within the capsule. An integral wire-mesh windscreen with polyurethane-foam lining minimizes the effects of breath "pop" and wind noise. The capsule is finished in satin-black chrome with a white dot to indicate its "front" (in-phase axis of maximum sensitivity).
**CK 5**

**CARDIOID CONDENSER CAPSULE**

Integrated ceramic electrode, highly stable, aging-resistant diaphragm

Wide transmission range from 20 ... 20 000 Hz

Directional characteristic: frequency-independent cardioid, with uniform front-to-back cancellation

180° cancelling > 20 db

Internally suspended system

Frequency response is compensated for proximity effect characteristics

Ideal as soloist microphone:
 insensitive to mechanical shock and handling noise

Built-in wind- and pop-screen

Functions up to 99% relative humidity

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**Technical Data:**

- **Type:** Pressure gradient receiver
- **Frequency Range:** 20 ... 20 000 Hz
- **Directional Characteristic:** Frequency-independent cardioid
- **Sensitivity at 1000 Hz:** 0.95 mV/µbar, 95 mV/Pa
- **Unweighted Noise Level:** 22 dB
- **Equivalent Noise Level:** 23 dB
- **Cohesive Capacity:** 27 dB
- **Weight:** 100 g, gross weight: 200 g
- **Temperature Range:** -20 °C ... +60 °C
- **Humidity:** at 20 °C ... 95% at 60 °C ... 80%

**MEASURING TECHNIQUE:**

- The capsule has been measured with an AKG standard measuring preamplifier, with following technical data

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**Frequency response curve**

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**Polar diagram**
The rugged wire mesh windscreen is internally lined with polyurethane foam material (6 mm.). Fig. 1 illustrates the suppression of wind-noise in comparison to the CK 1. At a wind velocity of approximately 20 miles per hour the attenuation is 17 db.

Fig. 2 illustrates the suppression of shock-born sound by the CK 5 suspension. Further suppression of shock noise may be obtained by replacing the C 451 preamplifier with the C 451.B version or by utilizing the roll-off-filter incorporated in the N 46 or the cut-off-filter of the N 46 (Fig. 3).

Wind-noise compensation

Fig. 1

Shock-noise compensation

Fig. 2

Fig. 3

CK5 with roll-off-filter [N 48 or C 451.B (position ~75 Hz)]

CK5 with cut-off-filter [N 46]
CK 8
SHORT-SHOTGUN CONDENSER CAPSULE

Integrated ceramic electrode, highly stable, aging-resistant diaphragm

Smooth frequency characteristic from 30...20 000 Hz
The combination of the gradient and the interference principle results in a frequency-independent directional characteristic

Narrow pick-up pattern and medium distance "reach" (in comparison with CK 1) account for clear emphasis of the desired sound sources. For extreme directive effects we suggest the use of the CK 9 or the extension tube VR 2 with a CK 1S capsule

Functions up to 99% relative humidity

**Technical Data:**
- Type: Combination of gradient and interference receiver
- Frequency Range: 30...20 000 Hz
- Directional Characteristic: Front only ± 45°
- Sensitivity at 1000 Hz: 15 mV/Pa
- Unweighted Noise Level: 2.8 dBF
- Weighted Noise Level: 1.6 dBF

**Standard Accessories:**
- Windscreen W 18

**Standard Accessories:**
- Technical Data:
  - Frequency Range: 30...20 000 Hz
  - Directional Characteristic: Front only ± 45°
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- Weighted Noise Level: 1.6 dBF

**Technical Data:**
- Frequency Range: 30...20 000 Hz
- Directional Characteristic: Front only ± 45°
- Sensitivity at 1000 Hz: 15 mV/Pa
- Unweighted Noise Level: 2.8 dBF
- Weighted Noise Level: 1.6 dBF
The condenser capsule CK 8 was designed to achieve a high degree of a frequency-independent sound power concentration with the smallest dimensions possible. A combination of the interference and the gradient principle was used: For higher frequencies mainly the interference effect — between the sound waves passing through the tube and the sound waves entering through the lateral coupling holes — accounts for the sound power concentration whereas for low frequencies a large pressure gradient receiver — using the pressure difference of the sound coming via the on-and off-axis entries (with phase shifter) — creates a very good sound power concentration. In combining these effects with an extremely careful dimensioning of the tube it became possible to increase the sound power concentration from about $g = 3$ in the case of the cardioid to $g = 6$ in the case of the directional tube (see graph). For practical purposes it is possible to be about two and a half times farther away from the sound source (if the ratio of direct sound to indirect sound remains constant) or at an unchanged distance the level of the diffused sound will be reduced by about 6–8 db. Due to a small pick-up angle (6 db drop at $\pm 60^\circ$ from the O-axis) the orientation and placing of the microphone should be done with care.
CK 9
SHOTGUN CONDENSER CAPSULE

Integrated ceramic electrode, highly stable, aging-resistant diaphragm
Smooth frequency characteristic from 30 ... 18 000 Hz
By combining the gradient and the interference principle a frequency-independent directional characteristic results in
High directional accuracy
Clear emphasis of the desired sound sources
Undesired extraneous noise is effectively suppressed
The high concentration permits a greater working distance from the microphone
Functions up to 99% relative humidity

Technical Data:
Type: Combination of gradient and interference receiver
Frequency Range: 30 ... 18 000 Hz
Directional: Ironl only ± 30°
Sensitivity at 1000 Hz: 1.1 mV/pa (11 mV/pa)
Unweighted Noise Level: 2.2 mV
Equivalent Noise Level: 22 dB
Capsule Capacity: 27 pF
Weight: 480 g, gross weight: 990 g
Temperature Range: -20°C ... +60°C
Humidity: at 20°C ... 99%, at 60°C ... 95%
The condenser capsule CK 9 was designed to achieve a high degree of a frequency-independent sound power concentration with the smallest dimensions possible. A combination of the interference and the gradient principle was used. For higher frequencies mainly the interference effect — between the sound waves passing through the tube and the sound waves entering through the lateral coupling holes — accounts for the sound power concentration whereas for low frequencies a large pressure gradient receiver — using the pressure difference of the sound coming via the on-and off-axis entries (with phase shifter) — creates a very good sound power concentration.

In combining these effects with an extremely careful dimensioning of the tube it became possible to increase the sound power concentration from $|z| = 3$ in the case of the cardioid to $|z| = 10$ in the case of the directional tube (see graph). For practical purposes it is possible to be about three times farther away from the sound source (if the ratio of direct sound to indirect sound remains constant) or at an unchanged distance the level of the diffused sound will be reduced by at about 8-10 dB. Due to a small pick-up angle (6 dB drop at ± 45° from the O-axis) the orientation and placing of the microphone should be done with care.
A50
ATTENUATION PAD

Avoids overload problems
Insert between capsule (CK 1–CK 8) and preamplifier or extension tubes VR 1, VR 2
Attenuation 10 db (A 50/10) or 20 db (A 50/20) over the entire transmission range
Frequency response is not changed
Any desired combination possible (see table below)
Color engraved, 10 db — red, 20 db — green, for indication of pre-attenuation in use

Available in two versions:
standard matte-nickel finish
and satin-black-chrome finish

Frequency response curve:

Combination attenuation
A 50/10 10 db
A 50/20 20 db
A 50/10 + A 50/20 22 db
2 x A 50/20 24 db
3 x A 50/20 26 db

Technical Data:
Type: A 50/10 attenuation 10 db red engraved
A 50/20 attenuation 20 db green engraved
Dimensions: 14.5 mm long x 18 mm diameter
Weight: 15 g
A 51
SWIVEL JOINT

Range ± 90° from the microphone axis
Insert between capsule and preamplifier or between extension tubes VR 1, VR 2 and attenuator A 50
For AB and XY stereophonic pick-up
May be positioned in any angular direction

Available in two versions:
standard matte-nickel finish
and satin-black-chrome finish.

Technical Data:
Dimensions: 36 mm. long x 18 mm. diameter
Weight: 55 g.
**A 52**  
**PHANTOM-POWERING MODULE**

In order to utilize the advantages of the phantom powering in a simpler manner, AKG has developed the electronic phantom powering circuit A 52:

- stabilizes the D. C. supply of voltages from 13 to 60 v
- already contains the dropping resistances 2 Rv
- guarantees in addition, due to its high A. C. resistance (appr. 2 megohm), a hum or unbalance damping of 100 db

This damping is sometimes required, since a potential difference may occur between the preamplifier (by way of the microphone stand) and the ground point, should the microphone not be properly set up. This could — provided the source impedance is low — on the one hand superpose on the D.C. supply voltage of the phantom and, on the other, made weaker by way of the balanced attenuation, take its effect directly at the amplifier input.

A 52 with its three connections can be connected between the a-lead and b-lead of the audio conductors and any positive potential between 7.5 and 60 v. (Stabilizing effect from 13 v.)

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**Connection to the amplifier**

Required depth: 10 mm.
Extension Tubes and Base

**VR1**  
Extension tube, appr. 30 cm. / 11.8", anti-glare black  
(Net weight: 70 g. / 2.5 oz; gross weight: 260 g. / 9.2 oz)

**VR2**  
Extension tube, appr. 130 cm. / 51.2", anti-glare black, on swivel mount with counterweight  
(Net weight: 2130 g. / 4.7 lbs; gross weight: 2700 g. / 6.0 lbs)

**ST305**  
Professional studio base, compact cast plate (16 cm. / 6.3" diameter) with special sound-absorbing rubber filter, 5/8" thread bolt  
(Net weight: 2350 g. / 5.2 lbs; gross weight: 2550 g. / 5.6 lbs)
Windscreen made of polyurethane foam for CK 1, CK 1S, CK 2
(Wet weight: 5 g. / 0.2 oz; gross weight: 30 g. / 1.1 oz)

Attractive wind screen made of wire mesh with polyurethane foam lining for CK 1, CK 1S, CK 2
(Wet weight: 10 g. / 0.3 oz; gross weight: 30 g. / 1.1 oz)
Available in two versions: standard matte-nickel finish and satin-black chrome finish.

55 cm. / 21.7" long wind screen for CK 9, made of polyurethane foam, wind-noise attenuation > 20 db (see diagram)
(Wet weight: 90 g. / 3.2 oz; gross weight: 550 g. / 11.4 lbs)

Wind-noise attenuation

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Windscreen made of polyurethane foam for CK 1, CK 1S, CK 2
(Wet weight: 5 g. / 0.2 oz; gross weight: 30 g. / 1.1 oz)

Attractive wind screen made of wire mesh with polyurethane foam lining for CK 1, CK 1S, CK 2
(Wet weight: 10 g. / 0.3 oz; gross weight: 30 g. / 1.1 oz)
Available in two versions: standard matte-nickel finish and satin-black chrome finish.

55 cm. / 21.7" long wind screen for CK 9, made of polyurethane foam, wind-noise attenuation > 20 db (see diagram)
(Wet weight: 90 g. / 3.2 oz; gross weight: 550 g. / 11.4 lbs)
Stand Adapters
and Shock Mounts

H7 Rubber grip for SA 70/3 (for use with CK 9)
(Net weight: 230 g / 8.1 oz; gross weight: 280 g / 9.9 oz)

H9 Clamping device for C 451, C 452 and H 10
(Net weight: 40 g / 1.4 oz; gross weight: 70 g / 2.5 oz)

H10 Stereo bar with two 3/8" screws
(Net weight: 246 g / 8.5 oz; gross weight: 306 g / 10.8 oz)

H15 Elastic suspension for C 451 and C 452. Particularly effective against structure-borne vibrations
(Net weight: 155 g / 5.5 oz; gross weight: 290 g / 10.2 oz)

H60 Elastic suspension for C 451, C 452
(Net weight: 30 g / 1.0 oz; gross weight: 110 g / 3.9 oz)

H70 Elastic suspension for SA 70/3 (for use with CK 9)
(Weight, net/gross: 180 g / 6.3 oz)

SA 15/1 Clear quick disconnect stand adapter for C 451, C 452 *
(Net weight: 40 g / 1.4 oz; gross weight: 70 g / 2.5 oz)

SA 18/1 Metal stand adapter with setscrew, sandblasted, nickel-plated, for C 451, C 452 *
(Net weight: 140 g / 4.9 oz; gross weight: 180 g / 6.3 oz)

SA 18/3 As SA 18/1, but for CK 9
(Net weight: 140 g / 4.9 oz; gross weight: 180 g / 6.3 oz)

SA 70/3 Rigid stand connection for combination with H 70 or H 7 for CK 9
(Net weight: 260 g / 9.2 oz; gross weight: 350 g / 12.4 oz)

*Available in two versions: standard matte-nickel finish and satin-black chrome finish.