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1 Safety and Environment

1. Do not spill any liquids on the equipment and do not drop any objects through the ventilation slots in the equipment.
2. Do not place the equipment near heat sources such as radiators, heating ducts, or amplifiers, etc. and do not expose it to direct sunlight, excessive dust, moisture, rain, mechanical vibrations, or shock.
3. The packaging of the equipment is recyclable. To dispose of the packaging, make sure to use a collection/recycling system provided for that purpose and observe local legislation relating to waste disposal and recycling.
4. Electrostatic charges may damage electronic circuits. Therefore, be sure to touch a bare, grounded metal part to discharge any static charge that may have built up on your body, before touching any electronic circuit board.

2 Description

2.1 Introduction

Thank you for purchasing a Discreet Acoustics module! The Discreet Acoustics Modular Series comprises five Capsule Modules and eighteen Installation Modules. All modules are interchangeable so you can put together the ideal Discreet Acoustics Modular microphone for every application at any location.

2.2 Capsule Modules

CK 31 (Order no. 2765Z0020): Screw-on cardioid Capsule Module.
With W 30 foam windscreen.

CK 32 (Order no. 2765Z0021): Screw-on omnidirectional Capsule Module.
With W 30 foam windscreen.

CK 33 (Order no. 2765Z0022): Screw-on hypercardioid Capsule Module.
With W 30 foam windscreen.

CK 47 (Order no. 2765Z0023): Screw-on hypercardioid Capsule Module. Acoustically equivalent to the proven AKG C 747.
With W 70 foam windscreen.

CK 80 (Order no. 2765Z0024): Screw-on hypercardioid Capsule Module with speech-optimized frequency response. With W 80 foam windscreen.

2 Description

2.3 W 30 Windscreen

The W 30 is a newly designed, two-layer windscreen. A special combination of two different materials provides optimum rejection of wind noise.

2.4 Installation Modules

GN 15 (Order no. 2765Z0001): 160-mm (6.3-in.) gooseneck with DPA external in-line XLR phantom power adapter for permanent screw-on installation.

GN 15 E (Order no. 2765Z0002): 235-mm (9.25-in.) gooseneck with integrated XLR phantom power adapter for temporary installation and PS 3 F-Lock panel mount socket.

GN 15 E 5PIN (Order no. 2765Z0039): 235-mm (9.25-in.) gooseneck with integrated phantom power adapter and 5-pin XLR connector, for external LED ring powering.

GN 15 ESP (Order no. 2765Z0045): 258-mm (10.2-in.) gooseneck module for temporary installation. With integrated DPA-P XLR phantom power adapter, programmable ON/OFF switch, switchable bass cut, defeatable LED ring, and PS 3 F-Lock panel mount socket.

GN 15 HT (Order no. 2765Z0017): The GN 15 HT Installation Module allows you to connect any Discreet Acoustics Capsule Module to the HT 4000 handheld transmitter from AKG. With 60-mm (2.4-in.) gooseneck for precise positioning of the Capsule Module and status indicator LED ring.

GN 30 (Order no. 2765Z0003): Identical to GN 15. 305 mm (12 in.) long.

GN 30 OC (Order no. 2765Z0005): 305-mm (12-in.) gooseneck with unterminated leads for permanent screw-on installation

GN 30 E (Order no. 2765Z0004): Identical to GN 15 E. 380 mm (15 in.) long.

GN 30 E 5PIN (Order no. 2765Z0040): Identical to GN 15 E 5PIN, 380 mm (15 in.) long.

GN 30 ESP (Order no. 2765Z0046): Identical to GN 15 ESP. 403 mm (15.9 in.) long.

GN 30 Minijack (Order no. 2765Z0036): 305-mm (12-in.) gooseneck with mini jack plug, HCS mounting flange, and permanently connected DPA phantom power adapter with 3-pin XLR connector.

GN 50 (Order no. 2765Z0008): Identical to GN 15. 500 mm (20 in.) long.

GN 50 E (Order no. 2765Z0004): Identical to GN 15 E. 572 mm (22.5 in.) long.
GN 50 E 5PIN (Order no. 2765Z0041): Identical to GN 15 E 5PIN, 572 mm (22.5 in.) long.
GN 50 ESP (Order no. 2765Z0047): Identical to GN 15 ESP. 598 mm (23.5 in.) long.
GN 50 Minijack (Order no. 2765Z0037): Identical to GN 30 Minijack. 500 mm (20 in.) long.
GN 155 SET (Order no. 2765Z0018): The GN 155 SET Installation Module comprises a 149-cm (61-in.) gooseneck with an LED ring, 10-m (33-ft.) cable, and DPA phantom power adapter, an ST 305 floor stand, and a 10-cm (4-in.) extension stub with protective sheath.
HM 1000 (Order no. 2765Z0010): Hanging module with 10-m (33-ft.) cable and DPA in-line XLR phantom power adapter.

2.4.1 LED Ring

All Installation Modules feature an LED ring that is lit to indicate the microphone is ready to operate.

2.5 Optional Accessories

B 18 battery power supply for all Installation Modules except GN 30 OC.
PS 3 F-Lock panel mount socket for GN 15 E, GN 30 E, and GN 50 E Installation Modules (see figs. 17 and 18).
MF-DA panel mount socket for GN 15, GN 30, and GN 50 Installation Modules (see fig. 13).
H 500 shock mount for GN 15 E, GN 30 E, and GN 50 E Installation Modules (see fig. 14).
H 600 + A608 shock mount for all Installation Modules except HM 1000 (see figs. 15 and 16).
SA 60 stand adapter for all Installation Modules except HM 1000 (see figs. 20, 21, and 22).
SA 80 clamp for GN 15/30/50 E/ESP Installation Modules (see figs. 23 and 24).
ST 1, ST 45, ST 46 table stands for all Installation Modules except HM 1000 (see figs. 19, 20, 21, and 22).

3 Microphone Applications

Note that both the maximum working distance and the area covered by the microphone depend on the pickup angle. The smaller the pickup angle (hypercardioid), the longer the maximum distance between the talker and the microphone and the smaller the area covered by the microphone.
Whether an omnidirectional, cardioid, or hypercardioid capsule will give the best results therefore depends on the specific application situation (see Table 1).

Note: Omnidirectional capsules are primarily suited for recording use.

Capsule	Polar Pattern	Loudspeaker Position	Working Distance with Gooseneck Module	Working Distance with Hanging Module
CK 31	Cardioid	Behind the microphone only	30 to 60 cm (1 to 2 ft)	1 to 3 m (3.5 to 10 ft.)
	Application: Sound systems			
CK 32	Omni	Not relevant	30 to 200 cm (1 to 7 ft.)	1 to 7 m (3.5 to 23 ft.)
	Application: Recording only			
CK 33	Hypercardioid	90° to 135° off microphone axis	30 to 90 cm (1 to 3 ft.)	2 to 4 m (7 to 14 ft.)
	Application: Sound systems			
CK 47	Hypercardioid	90° to 135° off microphone axis	30 to 90 cm (1 to 3 ft.)	2 to 4 m (7 to 14 ft.)
	Application: High quality sound reinforcement even in acoustically difficult locations			
CK 80	Hypercardioid	90° to 135° off microphone axis	30 to 90 cm (1 to 3 ft.)	2 to 4 m (7 to 14 ft.)
	Application: Speech reinforcement			

Table 1: Microphone applications

4.1 Capsule Modules

All Discreet Acoustics Modular Capsule Modules are condenser microphones and therefore require a power supply (phantom power). The Installation Modules have been designed for connection to microphone inputs with 9 to 52 V phantom power.

1. Screw the Capsule Module onto the Installation Module.
   The screw thread is relatively fine and therefore very smooth-running. Make sure not to tilt the capsule when placing it on the Installation Module thread because this would damage the thread.
2. To lock the capsule, use commercial minimum-tack screw locking adhesive that allows you to unscrew the capsule later if need be.

Important:

- **Before replacing a Capsule Module, be sure to switch your sound system OFF in order to prevent unwanted noise.**

4.2 GN 15/30/50 ESP Installation Modules

Prior to using the GN 15/30/50 ESP, you may choose to program the functions of the ON/OFF key, LED ring, and bass cut filter as detailed in Tables 2/2a on pages 28/29.

4.2.1 ON/OFF Key, LED Ring, Bass Cut

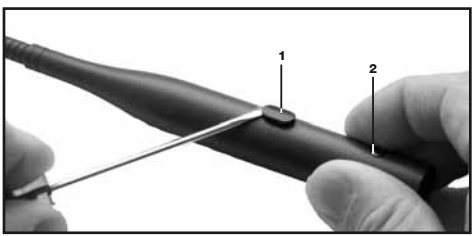


Fig. 1: Opening the DPA-P.

Refer to fig. 1.

1. Use a screwdriver to lever the ON/OFF button (1) out of the shell.
2. Unscrew the fixing screw (2) CCW.
3. Touch a bare, grounded metal part to discharge any static charge that may have built up on your body. (Electrostatic charges may damage electronic circuits.)
4. Pull the circuit board out of the shell WITH EXTRA CARE.

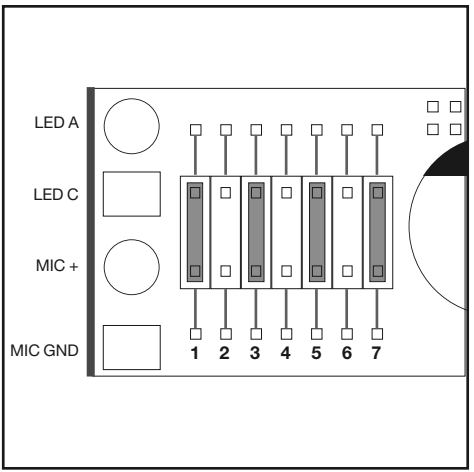


Fig. 2: DPA-P jumpers and pinout (factory setting shown).

Refer to fig. 2.

- At the factory, jumpers have been placed in positions 1, 3, 5, and 7:
  - On powering up, the microphone will be muted and the LED ring will be dark.
  - To open the microphone, press the ON/OFF key. The LED ring will be lit to indicate the microphone is open.
  - To mute the microphone, press the ON/OFF key again. The LED ring will go out.

Positions 1 and 7 set the following functions:

Table 2: LED Ring and Bass Cut.

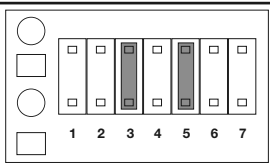
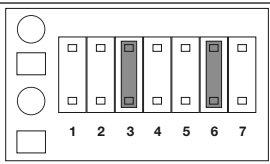
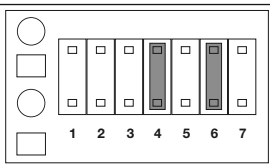
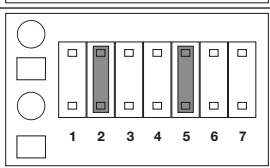
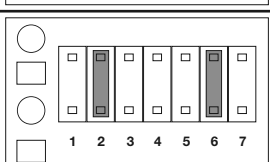
Position	Jumper in place	No jumper
1	**Flat frequency response**	Bass rolloff: -6 dB below 200 Hz
7	Mic on/off -> LED on/off	LED off

Note:

- Positions 1 and 7 will not affect the function of the ON/OFF key.

Positions 2 through 6 set the following functions:

Table 2a: ON/OFF Key

ON/OFF Key Functions		Jumper Configurations
Microphone ON/OFF	Microphone OFF on system power-up	
	Microphone ON on system power-up	
Push-to-mute		
Push-to-talk		
Microphone permanently ON. Key disabled.		

4 Installation and Connection

Important:

- **Positions, 2, 3, 4: Be sure to place a jumper at one (but no more than one) of these three positions. If you place no jumper at any of these positions, pushing the ON/OFF button will have no effect.**
- **Positions 5, 6: Make sure there is a jumper placed at one of these positions at all times. With jumpers at both or none of these positions, the microphone status on power-up will be undefined.**
- **Never place two jumpers at positions 6 and 2 or 5 and 4 at the same time. This would effectively de-activate the ON/OFF button.**
- **Do not use any jumper configurations other than those given in Table 2a. Other configurations may cause malfunction.**

5. Push the circuit board into the shell. To make the circuit board slide more easily into the shell, turn the circuit board two or three times completely about its longitudinal axis as you push the circuit board in.
6. Push the ON/OFF button into the opening in the shell to the point that the button clicks into place and tighten the fixing screw.

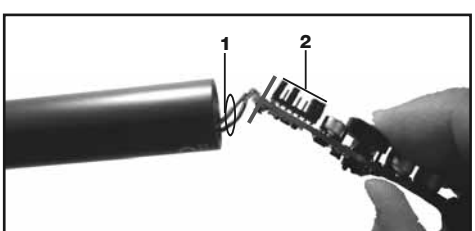


Fig. 3: Inserting the circuit board into the barrel.

Important:
Refer to fig. 3.

- **To prevent the circuit board from getting caught inside the barrel, make absolutely sure that the connecting wires (1) will not lie on top of the jumpers (2). You can double-check on that through the opening for the ON/OFF key as you push the circuit board home.**

4.2.2 Installation and Connection

1. Use the supplied PS 3 F-Lock panel mount socket to install the Installation Module in a tabletop or an optional SA 60 stand adapter to mount the Installation Module on a floor or table stand.

Note:

- For even better vibrational noise rejection, you can fix the Installation Module to the tabletop with an optional H 500 (see fig. 14) or H 600 + A 608 shock mount (see figs. 15 and 16).

2. Use a shielded cable to connect the Installation Module to a microphone input with phantom power.
3. If the phantom power on your mixing console is switchable, switch the phantom power on. (Refer to the instruction manual for your mixing console.)
   The Capsule Module and the LED ring will be powered from the phantom supply.

4.3 GN 15/30/50 E Installation Modules

4.3.1 LED Ring

The LED rings on the GN 15/30/50 E operate off phantom power.
If you connected the microphone correctly, the LED will be lit at moderate intensity as soon as you switch the system and phantom power on. **This indicates that the system is correctly wired and ready to operate but NOT that the microphone channel is open.**

4.3.2 Bass Cut, Installation, Connection

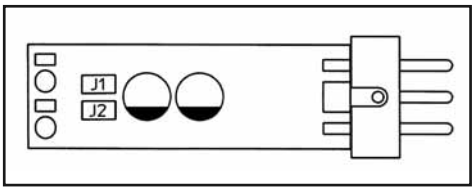


Fig. 4: DPA circuit board

The DPA phantom power adapter provides a 6-dB/octave bass cut filter below 200 Hz to reduce low-frequency noise.

• Activating the Bass Cut
Refer to fig. 4.

1. Before grasping the circuit board, touch a bare, grounded metal part to discharge any static charge that may have built up on your body. (Electrostatic charges may damage electronic circuits.)
2. Remove jumper J1 from the circuit board of the phantom power adapter.

• Installation and Connection

- Refer to Section 4.2.2.

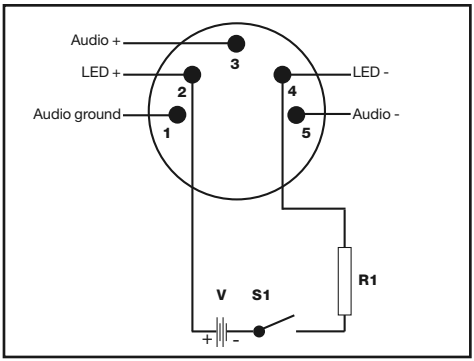


Fig. 5: LED ring external powering.

4.4 GN 15/30/50 E 5PIN Installation Modules

4.4.1 LED Ring

Pins 2 and 4 on the 5-pin XLR connector are available for powering the LED ring from an external source.
The specifications of resistor R1 depend on the available powering voltage V:

Refer to fig. 5.

V	R1	Max. Power
6 V	390 Ω	0.1 W
12 V	1000 Ω	0.25 W
24 V	2200 Ω	0.25 W
48 V	4700 Ω	0.5 W

Table 3: Electrical values for external powering of LED ring

Refer to Sections 4.2.2 and 4.3.2.

4.4.2 Bass Cut, Installation, Connection

The LED rings on the GN 15/30/50 Installation Modules will be powered from the phantom supply. (See also Section 4.3.1.)

4.5 GN 15/30/50 Installation Modules

4.5.1 MIC OPEN Indication

To obtain an open channel indication, the installation technician may connect the LED ring to an external power source. In this mode, the LED ring will light much more brightly to draw the required attention to the open microphone.

4 Installation and Connection

1. Unsolder the black wire (LED +) and the outer shield (LED -) from the DPA phantom power adapter.
2. Connect the black wire (LED +) and the outer shield (LED -) to a voltage source with an output voltage as per Table 4:

Table 4: Electrical values for external powering of LED ring

Voltage	Req`d resistor	Max. power
6 V	390 Ω	0.1 W
12 V	1k Ω	0.25 W
24 V	2.2 kΩ	0.25 W
48 V	4.7 kΩ	0.5 W

4.5.2 Tabletop Installation, Connection

1. Drill an 11-mm (7/16") hole through the tabletop.
2. Thread the connecting cable of the Installation Module through the opening and the supplied fixing screw.
3. Screw the fixing screw into the Installation Module from below to fix the Installation Module in place.

Note:

- For even better vibrational noise rejection, you can fix the Installation Module to the tabletop with an optional H 600 + A 608 shock mount (see figs. 15 and 16).

• Audio Connection

1. Plug the cable of the DPA phantom power adapter into the female mini XLR connector on the connecting cable of the Installation Module.
2. Use a shielded cable to connect the DPA phantom power adapter to a microphone input with phantom power.
3. If the phantom power on your mixing console is switchable, switch the phantom power on. (Refer to the instruction manual for your mixing console.)
   The Capsule Module and the LED ring will be powered from the phantom supply.

• Connecting to a Bodypack Transmitter

You may also connect the GN 15, GN 30, and GN 50 installation modules to a PT 40, PT 400, or PT 4000 bodypack transmitter from AKG. All you need to do is change the wiring of the mini XLR connector as shown in fig. 6 on page 35:

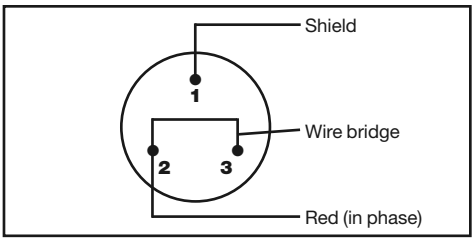


Fig. 6: Connector pinout for connecting to bodypacks

Pin 1: shield
Pin 2: red wire (in phase)
Pin 3: bridge to pin 2

Black wire: unused
Outer shield: unused

4.6 GN 30/50 Minijack

The LED rings on the GN 30/50 Minijack Installation Modules will be powered from the phantom supply. (See also Section 4.3.1.)

4.6.1 LED Ring, Bass Cut

To obtain an open channel indication, the installation technician may connect the LED ring to an external power source. In this mode, the LED ring will light much more brightly to draw the required attention to the open microphone.

1. Unsolder the black wire (LED +) and the outer shield (LED -) from the HSC mounting flange and insulate the bare ends of the two wires.
2. Solder to the two contacts on the HSC that are now unused a two-conductor cable for powering the LED ring.

Refer to fig. 25 on page 126.

- **To activate the bass cut**, refer to Section 4.3.2.

4.6.2 Installation and Connection

1. Drill a hole 40 to 42 mm (1.6 to 1.7 in.) in diameter into the tabletop.
2. Use the supplied screws to fix the mounting flange in the hole.
3. Use the supplied pipe clip to fix the phantom power adapter to the underside of the table.
4. Use a shielded cable to connect the DPA phantom power adapter to a microphone input with phantom power.

Refer to fig. 25 on page 126.

5. If the phantom power on your mixing console is switchable, switch the phantom power on. (Refer to the instruction manual for your mixing console.)
6. External powering only: Connect the feeder cable for the LED ring to a suitable voltage source.
7. Insert the jack plug on the gooseneck into the mini jack on the mounting flange and screw the gooseneck down.

4.7 GN 155 SET Installation Module

- **To activate bass cut**, refer to Section 4.3.2.
- **For external powering of LED ring**, refer to Section 4.5.1.

Refer to fig. 7 (left).

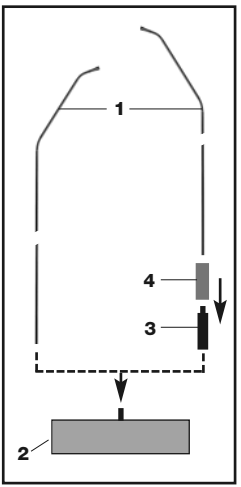


Fig. 7: GN 155 SET.

1. Screw the desired Capsule Module onto the Installation Module (1) CW.
2. Screw the Installation Module (1) onto the supplied floor stand (2) CW.
3. Connect the DPA phantom power adapter to a microphone input with phantom power.

4.7.1 Gooseneck Extension

Refer to fig. 7 (right).

1. Screw the desired Capsule Module onto the Installation Module (1) CW.
2. Screw the extension stub (3) onto the supplied floor stand (2) CW.
3. Slide the protective sheath (4) over the extension stub (3).
4. Screw the Installation Module (1) onto the extension stub (3) CW.

4.8 HM 1000 Hanging Module

1. Prior to installing the HM 1000, straighten the cable by carefully pulling it through your fingers. Make sure not to buckle or twist the cable.
2. Fasten a hook to the ceiling, use an existing hook, or stretch a line across the hall.
3. Pass the cable through the hook or over the line so that it will hang at the desired height.

4. Fix the cable in place with electrician's tape.

Important:

- **Do not tie a knot into the cable to hang it on the hook.**

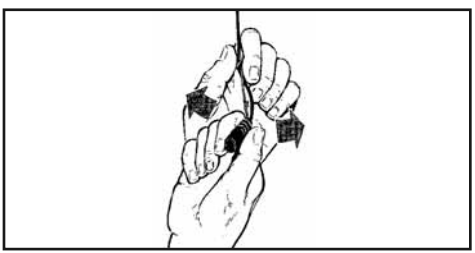


Fig. 8: Aligning the microphone.

5. Hold the cable with one hand and turn the microphone carefully into the desired position.

Refer to fig. 8.

- **To activate the bass cut**, refer to Section 4.3.2.
- **To power the LED ring from an external source**, refer to Section 4.5.1.

4.8.1 Steadying the microphone

To keep the microphone steady even in a draft,

1. Stretch a suitable length of fishing line horizontally across the room, passing the fishing line through the eye on the HM 1000.
2. Fix the fishing line to two opposite walls so as to create just enough downward pull to steady the microphone laterally.

4.8.2 Applications

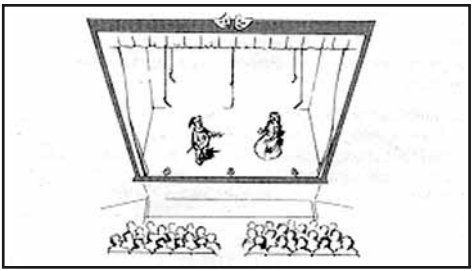


Fig. 9: Theater stage miking

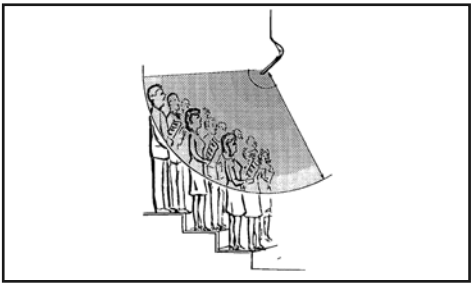


Fig. 10: Miking up a choir

4.8.3 Audio Connection

Refer to section 4.5.2, Audio Connection

4.9 GN 15 HT Installation Module

Also read the instruction manual of the HT 4000 hand-held transmitter!

LED ring:

1. Screw the desired Capsule Module onto the GN 15 HT Installation Module CW.
2. Screw the Installation Module onto the HT 4000 hand-held transmitter CW.
3. Use the SA 63 stand adapter supplied with the transmitter to mount the transmitter on an (optional) ST 45 table stand.
4. Switch the transmitter ON.
   The LED ring on the Installation Module will illuminate to indicate the transmitter is ON.

Important:

- **The LED ring will remain lit even if you press the MUTE button on the transmitter!**
  Remember that the LED ring does NOT necessarily indicate that the microphone is open and will not extinguish unless you switch the transmitter OFF.

Note:

- Of course, you may also use the microphone handheld, e.g., for questions from the audience.

4.10 GN 30 OC Installation Module

The GN 30 OC Installation Modules has been designed for 1.5 V to 10 V a-b powering. The unterminated cable provides the following connections:

Red: microphone (hot), supply voltage +
Shield: Microphone (ground), supply voltage -
Black: LED +
Outer shield: LED -

1. Connect the microphone wires to a microphone input with a-b powering.
2. Connect the black wire (LED +) and the outer screen (LED -) to a voltage source with an output voltage as per Table 4 on page 30.

4.11 Defeating the LED Ring

- **GN 15/30/50 ESP:** Referring to fig. 2 and Table 2 on page 28, remove the jumper from position 7.
- **GN 15/30/50, GN 15/30/50 E, GN 30/50 Minijack, GN 155 SET, HM 1000:** Referring to fig. 4 on page 32, remove jumper J2.
- **GN 30 OC:** Disconnect the LED feeder cable from the voltage source.

The unlit LED ring is nearly invisible because its color matches that of the case.

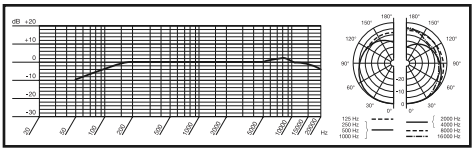
5 Specifications

Installation Module w/	CK 31	CK 32	CK 33
Type	Pre-polarized condenser microphone		
Polar pattern	Cardioid	Omni	Hypercardioid
Frequency range	50-20,000 Hz	20-20,000 Hz	50-20,000 Hz
Sensitivity	20 mV/Pa ≙ -34 dBV*	14 mV/Pa ≙ -37 dBV*	20 mV/Pa ≙ -34 dBV*
Electrical impedance	<600 Ω	<600 Ω	<600 Ω
Rated load impedance	>2000 Ω	>2000 Ω	>2000 Ω
Power requirement	9-52 V phantom power to DIN 45596 - Requires DPA-P or DPA adapter (integrated in GN** and HM 1000 Installation Modules)		
Size (dia. x length)	13 x 25 mm (0.5 x 0.95 in.)	13 x 25 mm (0.5 x 0.95 in.)	13 x 25 mm (0.5. x 0.95 in.)
Connector**	XLR-3 or XLR-5	XLR-3 or XLR-5	XLR-3 or XLR-5

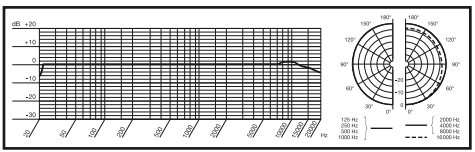
Installation Module w/	CK 47	CK 80
Type	Pre-polarized condenser microphone	
Polar pattern	Hypercardioid	Hypercardioid
Frequency range	20-20,000 Hz	60-15,000 Hz
Sensitivity	16.5 mV/Pa ≙ -35.5 dBV*	30 mV/Pa ≙ -30 dBV*
Electrical impedance	<600 Ω	<600 Ω
Rated load impedance	>2000 Ω	>2000 Ω
Power requirement	9-52 V phantom power to DIN 45596 - Requires DPA-P or DPA adapter (integrated in GN** and HM 1000 Installation Modules)	
Size (dia. x length)	13 x 154 mm (0.5 x 5.85 in.)	13 x 128 mm (0.5 x 4.86 in.)
Connector**	XLR-3 or XLR-5	XLR-3 or XLR-5

* Re 1 V/Pa
** Except GN 30 OC

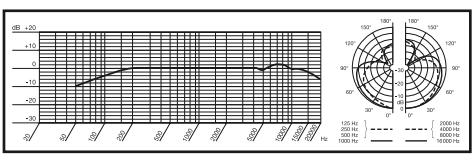
This product conforms to the standards listed in the Declaration of Conformity. To order a free copy of the Declaration of Conformity, visit http://www.akg.com or contact sales@akg.com.



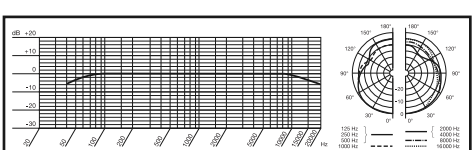
CK 31 Frequency Response and Polar Diagrams



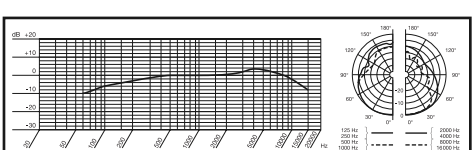
CK 32 Frequency Response and Polar Diagrams



CK 33 Frequency Response and Polar Diagrams



CK 47 Frequency Response and Polar Diagrams



CK 80 Frequency Response and Polar Diagrams