Professional Microphone Solutions

At DPA we consider the manufacture of microphones for professional audio use to be a serious responsibility. Audio professionals around the world, regardless of whether their business is the faithful reproduction of sound in a live environment, the recording of a unique performance or the capture of crystal clear sound for broadcast, depend on superior sonic quality, and they often get just one chance to succeed.

However, we do not settle for just making great microphones. Our mission is to manufacture microphone solutions for specific applications, and this lies at the heart of our entire design, development and production efforts.

Our design philosophy is to provide microphones without colouration. This transparency ensures the original sound is retained without compromise. There is simply nothing in the output that does not belong to the original source. The high sonic quality of our microphones offers more versatile and flexible solutions across a wide range of applications.

DPA's pedigree, both in terms of pro audio and Danish industry, is second to none, and we continue to work closely with musicians and audio professionals in developing microphones and accessories that go hand in hand to perfectly match the desired requirements.

For use in the studio, on stage, in the field and on location we are constantly developing a variety of stands, mounts, clips, holders, windshields, acoustic modification devices, power supplies and amplifiers to complement our mics. These accessories are ingeniously bundled with microphones across the entire DPA range to provide practical, neat solutions in kit form.

Microphone manufacturing at DPA is a precision craft, with work carried out to incredibly fine tolerances. As a result, our products are reliable, stable, predictable in operation and superbly specified. The highest quality of raw materials and production methods ensure total reliability. The impressively wide dynamic range also means that even at high sound pressure levels, there is no need to worry about clipping or distortion from the microphones. Capsules are rigorously tested to ensure extreme stability in all kinds of environments. Every studio microphone is supplied with an individual calibration chart, an electronic copy of which is retained by DPA for future reprints, computer aided matching and microphone service.

We are proud of our reputation for producing high quality products and for the audio integrity they achieve in crucial situations. Above all, we are committed to providing our customers with professional microphone solutions.

DPA MICROPHONES

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Large Diaphragm Microphones

Large Diaphragm Microphones

4041-SP 4041-S 4041-T2

Large Diaphragm Kits

3532-SP 3532-S 3532-T2 3541

DPA Large Diaphragm Microphones are our top-flight one-inch capsule omni microphones. When choosing the right microphone for a particular application, one thing to consider is the diaphragm size. If low self-noise and high sensitivity are important, such as in the miking of vocals, strings or other acoustic instruments with large dynamics, our large diaphragm microphones offer you this as well as many additional benefits. The 4041 is the highest resolution, most accurate microphone in the world.

Large Diaphragm Microphones

4041-SP Large Diaphragm Microphone, P48
4041-S Large Diaphragm Microphone, Solid State, 130 V
4041-T2 Large Diaphragm Microphone, Tube, 130 V

Large diaphragm for capturing small details

The DPA 4041 has a unique modular design, which allows three microphone variations. The preamplifier can be unscrewed from the capsule and interchanged, offering the choice of a 48 V Phantom powered solid-state preamplifier or a 130 V solid-state or tube preamplifier. The solid state versions will produce the most transparent and faithful reproductions, whereas the tube version adds a slight musical colouration to the recording.

The capsule is housed in a 1-inch diameter stainless-steel shell for environmental protection. The 2-micron-thick diaphragm is also stainless steel. The mic's 190-volt capsule polarisation results in higher capsule sensitivity and a higher SPL rating due to the greater diaphragm-to-back plate distance, which allows larger diaphragm excursions before "bottoming out." The 4041 is an omni with all the advantages that follow. The lack of proximity effect offers consistency in the bass response regardless of distance to sound sources. Low handling, pop or wind noise allow the freedom to perform.

4041-SP Large Diaphragm Microphone, P48

The DPA 4041-SP is designed to work in a standard 48 V Phantom power environment providing great flexibility in terms of amplification options. Although there are very slight changes in the specifications compared to the high-voltage versions, use of the same capsule ensures the 4041-SP shares the same superior sound quality. Being part of a modular system, it is possible to upgrade to the high-voltage solution by choosing a solid-state or tube preamplifier and the High-Voltage Microphone Amplifier, HMA5000.

4041-S Large Diaphragm Microphone, Solid State, 130 V

The greatest strength of the DPA 4041-S is its extremely revealing nature. Though the mic is an omni, the high frequency boost lobe between 8 kHz and 16 kHz is not completely omnidirectional, so positioning the lobe towards the desired area allows instruments or voices to be highlighted without losing the rest of the ensemble or acoustic environment.

4041-T2 Large Diaphragm Microphone, Tube, 130 V

The DPA 4041-T2 has great dynamic range. The bass is tight and well-defined while its high end is silky and musical. No other tube microphone can compare with the air, transparency, richness of details and dynamics demonstrated by the 4041-T2. Powered by the HMA5000 High-Voltage Microphone Amplifier, this combination makes for an exceptional recording outfit.

Read more about HMA5000 High-Voltage Microphone Amplifier on page 14.

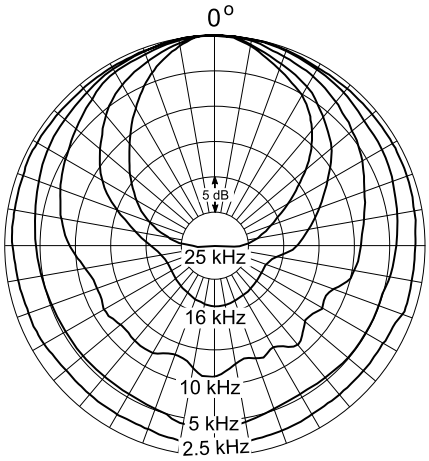
Open and crisp the 4041 creates a breathtakingly true fingerprint of any instrument's character.
4041 Large Diaphragm Omni in UA0897 Shock Mount with HMA5000 High-Voltage Microphone Amplifier.

Specifications

4041-SP
4041-S
4041-T2

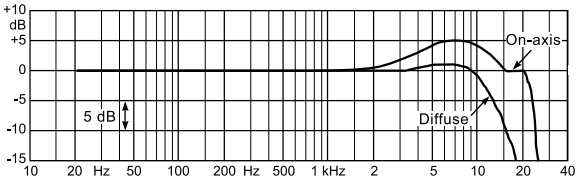
Directional characteristics:
Omnidirectional
Principle of operation:
Pressure
Cartridge type:
24 mm (1 in) condenser with stainless steel diaphragm
Power supply:
4041-SP: 48 V Phantom power
4041-S/4041-T2: 130 V via HMA5000
Frequency range, ±2 dB:
4041-SP: 20 Hz–20 kHz with 4 – 6 dB soft boost at 8 kHz
4041-S/4041-T2: 10 Hz–20 kHz with 4 – 6 dB soft boost at 8 kHz
Sensitivity, nominal, ±2 dB:
4041-SP: 70 mV/Pa; -26 dB re. 1 V/Pa
4041-S: 90 mV/Pa; -21 dB re. 1 V/Pa
4041-T2: 85 mV/Pa; -22 dB re. 1 V/Pa
Equivalent noise level, A-weighted:
4041-SP: Typ. 8 dB(A) re. 20 µPa
4041-S: Typ. 7 dB(A) re. 20 µPa
4041-T2: Typ. 9 dB(A) re. 20 µPa
Total Harmonic Distortion:
<0.5% up to 120 dB SPL peak
<1% up to 126 dB SPL peak
S/N ratio, re. 1 kHz at 1 Pa (94 dB SPL)
4041-SP: 86 dB 4041-S: 87 dB 4041-T2: 85 dB
Dynamic range:
4041-SP: Typ. 118 dB
4041-S: Typ. 119 dB
4041-T2: Typ. 117 dB
Max. SPL, peak before clipping:
4041-SP: 134 dB
4041-S/4041-T2: 144 dB
Output impedance:
4041-SP: <200 Ohm
4041-S/4041-T2: Matches HMA5000 input
Cable drive capability:
4041-SP: Up to 100 m (328 ft)
4041-S/4041-T2: From microphone to HMA5000: Up to 20 m (66 ft). From HMA5000: Up to 300 m (984 ft)
Connector:
4041-S/T2: 7-pin modified XLR-M (High Voltage)
4041-SP: 3-pin XLR-M (Standard P48)
Dimensions:
Length: 170 mm (6.7 in)
Diameter: Capsule: 24 mm (1 in), housing: 19 mm (0.8 in)
Weight: 190 g (6.7 oz)

Polar Pattern



Directional characteristics of the 4041 (normalised).

Frequency Response



On-axis and diffuse-field frequency response of the 4041.

Large Diaphragm Kits

3532-SP 4041-SP Large Diaphragm Stereo Kit, P48
3532-S 4041-S Large Diaphragm Stereo Kit, Solid State, 130 V
3532-T2 4041-T2 Large Diaphragm Stereo Kit, Tube, 130 V
3541 Large Diaphragm Microphone Kit, 130 V

A fantastic tool for any recording task

The DPA 3532 is a complete state-of-the-art A-B stereo kit featuring two matched 4041 microphones. It is designed for a broad range of uses including stereo-miking for classical, jazz and folk music, grand pianos and guitars, for overhead-miking or for close-miking drums, choirs, strings and wind instruments. The 3532 is the ultimate choice for the demanding engineer and audio purist for whom clarity, openness, precision, low self-noise and high sensitivity are vital. The kit produces a bright and transparent sound quality with lots of headroom. The mic's on-axis soft boost is a useful tool, while changing the angle of the mic can be used as a natural equaliser.

Transparency and brightness for recording studios

The DPA 3541 is a complete kit for all kinds of high quality soloist recordings including vocals, strings and wind instruments. It is designed for everyday use in recording studios where clarity, transparency and brightness are paramount. This large diaphragm kit offers extremely high sensitivity with the lowest self-noise available.

DPA Matched Pair
A matched pair from DPA Microphones guarantees and substantiates, that the two microphones are identical with a maximum deviation of ± 0.5 dB on both frequency response (20 Hz – 20 kHz), self-noise and sensitivity. The phase responses are within 5°.

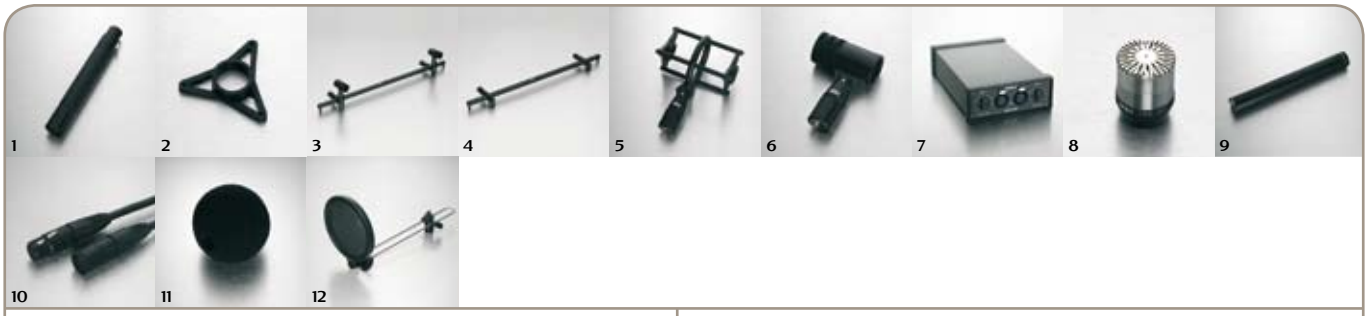
3532-SP 3532-S 3532-T2 Kits include

2 x 4041-SP	Large Diaphragm Microphone, P48, (3532-SP) or
2 x 4041-S	Large Diaphragm Microphone, Solid State, 130 V, (3532-S) or
2 x 4041-T2	Large Diaphragm Microphone, Tube, 130 V, (3532-T2)
UA0836	Stereo Boom with Holders
2 x DUA0040	Windscreen for 4041
2 x DAO4110	Microphone Cable for 4041-S/-T2, 10 m (32.8 ft) (3532-S/-T2)
HMA5000	High-Voltage Microphone Amplifier, 2-channel (3532-S/-T2)

3541 Kit includes

MMP4000-S	Solid State Preamplifier for MMC4041, 130 V
MMP4000-T2	Tube Preamplifier for MMC4041, 130 V
MMC4041	Large Diaphragm Capsule
UA0897	Shock Mount
DUA0040	Windscreen for 4041
DUA0090	Pop-filter
DAO4110	Microphone Cable for 4041-S/-T2, 10 m (32.8 ft)
HMA5000	High-Voltage Microphone Amplifier, 2-channel

Accessories Available for Large Diaphragm Microphones



Converter

1 HTP4000 Converter: 130 V to P48

Shock Mount Rubber

2 DDS0731 Rubber Mount 19 mm (0.75 in), Medium Soft

Holders

3 UA0836 Stereo Boom with Holders
4 UA0837 Stereo Boom excluding Holders
UA0639 Microphone Clip
5 UA0897 Shock Mount
6 UA0961 Microphone Holder

Microphone Amplifier and Power Supply

7 HMA5000 High-Voltage Microphone Amplifier, 2-channel

Preamplifiers & Capsule

8 MMC4041 Large Diaphragm Capsule
9 MMP4000-S Solid State Preamplifier for MMC4041, 130 V
MMP4000-SP Solid State Preamplifier for MMC4041, P48
MMP4000-T2 Tube Preamplifier for MMC4041, 130 V

Windscreens & Cables

10 DAO4110 Microphone Cable for 4041-S/-T2, 10 m (32.8 ft)
11 DUA0040 Windscreen for 4041
12 DUA0090 Pop-filter

Superbly quiet, clean and neutral the 4041 allows you to capture the nuances of the recording space beautifully.
3532-SP Large Diaphragm Kit on the UA0836 Stereo Boom.

High-Voltage Microphone Amplifier & Power Supply

HMA5000

Product Focus

For extra headroom

Every musician and engineer expects clarity, transparency, very low distortion, and above all, an extremely wide dynamic range. The answer is the DPA HMA5000 and DPA high-voltage microphones!

A regular 48 V Phantom power system sets a limit when it comes to handling high sound pressure levels. The higher a voltage supplied to the microphone's built-in preamplifier, the higher an output it can handle from the capsule without clipping. If you increase the supply voltage of the preamplifier to about three times the voltage of the Phantom power, you will increase the headroom of the preamplifier with approx. 10 dB.

Furthermore, as DPA has developed a technology using pre-polarised microphone capsules with a high polarisation voltage (more than 190 V), the microphones are not dependent on the Phantom power for polarising the condenser back-plate. With this big capacitor it is possible to have a large distance between the diaphragm and the back-plate to handle extremely high sound pressure levels and preserving a high sensitivity at the same time.

HMA5000, High Quality Mic Amp

With the HMA5000 and one of our high-voltage microphones (DPA 4003, 4004, 4012, 4016 or 4041-S/T2), you have the most serious signal path from sound source directly to track. With an impressive frequency range from 10 Hz to 100 kHz (+0 dB/-1 dB) and an extremely wide dynamic range of up to 140 dB, the HMA5000 carries the clean and undistorted microphone pickup through the amplification link without any disturbance - the finest challenge for a mic amp.

The HMA5000 is designed for use close to the microphone(s) to keep microphone cables as short as possible. It therefore has an extremely compact, simple and rugged chassis design.

Apart from being a 2-channel microphone amplifier with unsurpassed specs, the HMA5000 is an extremely comprehensive microphone power supply unit with 130 V for the high-voltage microphone preamplifiers, 190 V for polarising the 4041 capsule and 6 V for heater voltage in the 4041-T2 tube microphone. The gain range is from -20 dB to +30 dB by individual switches per channel. Also the phase can be reversed on both channels individually.

With the DPA HTP4000 converter, the HMA5000 can also be used with ordinary 48 V Phantom powered microphones.

With endless dynamics and subtle resolution, the HMA5000 is the mic amp your DPA microphones deserve!

Difference between high and conventional powering methods for the Standard Microphones 4003, 4006, and 4006-TL which use the same microphone capsule:

	DPA 4003	DPA 4006	DPA 4006-TL
Powering method	130 V via HMA5000	48 V Phantom power	48 V Phantom power
Output stage design	Balanced from HMA5000	Transformer balanced	Transformerless impedance balanced
Output level	Line level from HMA5000	Microphone level	Microphone level
Sensitivity	40 mV/Pa	10 mV/Pa	40 mV/Pa
Frequency Range	10 Hz - 20 kHz (±2 dB)	20 Hz - 20 kHz (±2 dB)	10 Hz - 20 kHz (±2 dB)
Dynamic Range (from equivalent self-noise to 1% THD)	120 dB	120 dB	120 dB
Headroom before clipping	19 dB	8 dB	8 dB
Maximum SPL handling	154 dB SPL peak	143 dB SPL peak	143 dB SPL peak

Specifications

HMA5000

Dimensions (l x w x h): 200 x 133 x 52 mm (7.9 x 5.2 x 2.1 in)
Weight: 1.9 kg/4.1 lb
Frequency Range: 10 Hz to 100 kHz (+0 dB/-1 dB) (Resistive Load)
Dynamic Range: > 120 dB
No. of channels: 2
Crosstalk attenuation: >90 dB (20 Hz to 20 kHz) (No Load) (Vo = 10 V)
Gain: +30 dB, +20 dB, +10 dB, 0 dB, -10 dB, -20 dB (±0.5 dB)
Equivalent input noise level A-weighted Pin 1-2 and pin 1-3

Gain setting	-20 dB	-10 dB	0 dB	10 dB	20 dB	30 dB
Eqv. inp. noise	-92 dBu	-99 dBu	-115 dBu	-123 dBu	-128 dBu	-129 dBu

Cable drive capability: Up to 300 m (984 ft) (Cable 100 pF/m)
Max input peak voltage: 0.5 V (+30 dB); 1.6 V (+20 dB); 5 V (+10 dB); 16 V (0 dB); 50 V (-10 dB); 160 V (-20 dB)
Max output peak voltage: 32 V peak (15 V for single ended operation)
Input impedance: 30 kOhm (with HTP4000: 5 kOhm)
Output impedance: 40 Ohm each output (80 Ohm balanced)
Total Harmonic Distortion (THD) in %: <0.01 from 30 Hz to 30 kHz
Max output current: 2 x 55 mA
Max output DC offset: ±20 mV
Min load impedance: 600 Ohm
Input connector: Modified 7-pin female XLR-connector
Output connector: Standard 3-pin male XLR-connector
Operating temperature range: -10° C to +55° C (+14 to 131° F)
Mains voltage: 100 VAC – 127 VAC and 200 VAC – 240 VAC, 50 Hz and 60 Hz
Power consumption: Maximum 15 W

The HMA5000 sounds clean and vivid and has a rich, full-bodied timbre.

Standard Microphones

Omnidirectional Microphones

4006 4006-TL 4003

Cardioid Microphones

4011-TL 4012

Wide Cardioid Microphones

4015-TL 4016

Standard Stereo Kits

3506 3503 3511

DPA Standard Microphones are high quality studio microphones comprised of omnis, cardioids and wide cardioids. Our finest microphones with their pedigree slim housing and distinctive grid are designed for sonic integrity in any venue. No colouration is the insignia sound philosophy of DPA in providing exceptional tools intended to capture the truth. There is no comparison to the complete and honest accuracy of these microphones.

Omnidirectional Microphones

4006 Omnidirectional Microphone, P48
4006-TL Omnidirectional Microphone, P48, Transformerless
4003 Omnidirectional Microphone, 130 V

Timeless transparency

The DPA 4006 Omni is without doubt the most popular mic in our standard range and has rightly earned the status of being a worldwide studio standard. This all-round omni has gained its reputation through its total transparency in any recording situation, picking up incredible detail and depth of sound. The definition of its high-frequency characteristics across a wide range of instruments is impressive for the vast majority of miking applications.

With the 4006, you can achieve clean, natural and precise reproductions in a multitude of uses from close-miking of instruments such as grand piano, guitar, bass and percussion through vocals to A-B stereo pairs for concert hall installations.

A wide selection of acoustic modification accessories - pressure equalisers, nose cone and interchangeable protection grids - allows the 4006 to be acoustically transformed into seven different microphone versions, making it the most multifaceted mic in your collection (see Product Focus, page 30).

Crème de la crème

The DPA 4006-TL microphone is a transformerless version of the classic 4006. The transformerless design increases the sensitivity and provides an extended low-frequency handling capability (10 Hz to 20 kHz). All components are carefully selected to provide optimal neutrality, accuracy and extremely low distortion even at very high sound pressure levels and at complex passages in the music. The 4006-TL microphone is an extremely discerning audio alternative. The total transparency and natural-sounding clarity of this microphone will provide you with a lifetime of satisfying listening.

Invest in purity and versatility

The DPA 4003 microphone is acoustically identical to the 4006, but is a high voltage transformerless alternative, powered by DPA's own 130 V 2-channel HMA5000 High-Voltage Microphone Amplifier. The high voltage system enables the 4003 to handle approximately 10 dB higher SPL than the 4006, capturing the purest of sounds and details in faithful reproduction. This additional headroom, together with the excellent phase, transient and distortion performance offered by the 130 V powering system represents a true investment in versatility and puts the 4003 omni in the top league of studio-quality microphones.

Read more about HMA5000 High-Voltage Microphone Amplifier on page 14.

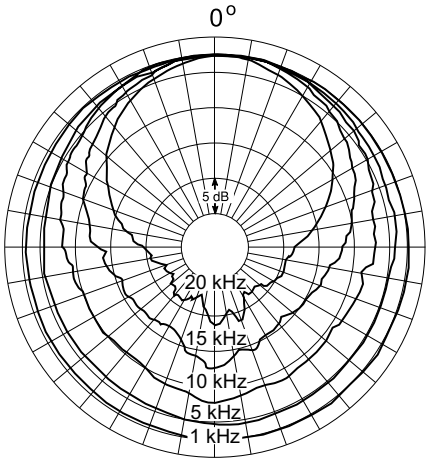
The 4003 stereo pair is the ultimate recording kit and superior choice for classical recording.
4003s on UA0836 Stereo Boom

Specifications

4006
4006-TL
4003

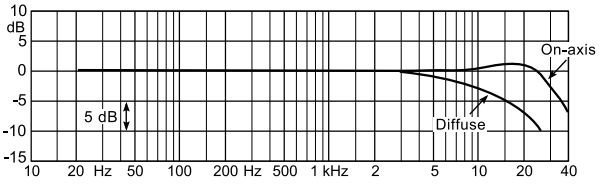
Directional characteristics:
Omnidirectional
Principle of operation:
Pressure
Cartridge type:
16 mm (0.63 in) pre-polarised condenser
Power supply:
4006/4006-TL: 48 V Phantom power
4003: 130 V via HMA5000
Frequency range, ±2 dB:
4006: 20 Hz – 20 kHz
4003/4006-TL: 10 Hz – 20 kHz
Sensitivity, nominal, ±2 dB:
4006: 10 mV/Pa; -40 dB re. 1 V/Pa
4003/4006-TL: 40 mV/Pa; -27 dB re. 1 V/Pa
Equivalent noise level, A-weighted:
Typ. 15 dB(A) re. 20 µPa
S/N ratio, re. 1 kHz at 1 Pa (94 dB SPL):
79 dB
Total Harmonic Distortion:
<0.5% up to 129 dB SPL peak
<1% up to 135 dB SPL peak
Dynamic range:
Typ. 120 dB
Max. SPL, peak before clipping:
4006/4006-TL: 143 dB
4003: 154 dB
Switchable attenuator:
4006-TL: 0 dB, -20 dB
Output impedance:
4006: <75 Ohm
4006-TL: <200 Ohm
4003: Matches HMA5000 input
Cable drive capability:
4006: Up to 300 m (984 ft)
4006-TL: Up to 100 m (328 ft)
4003: From microphone to HMA5000: Up to 20 m (66 ft)
From HMA5000: Up to 300 m (984 ft)
Connector:
4003: 4-pin modified XLR-M (High Voltage)
4006-TL/4006: 3-pin XLR-M (Standard P48)
Dimensions:
Length: 165 mm (6.5 in)
Diameter: Capsule: 16 mm (0.63 in), housing: 19 mm (0.75 in)
Weight: 150 g (5.29 oz)150 g (5.29 oz)

Polar Pattern

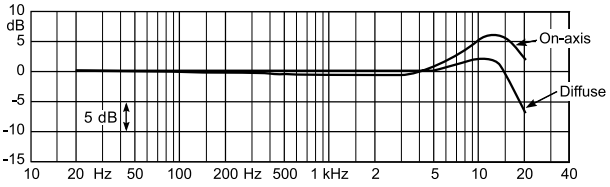


Directional characteristics of the 4006, 4006-TL & 4003 with Free-field Grid DD0251 fitted (normalised).

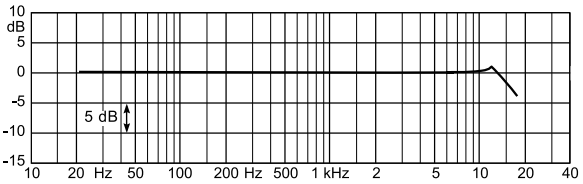
Frequency Responses



On-axis and diffuse-field responses of 4006, 4006-TL & 4003 with Free-field Grid DD0251 fitted.



On-axis and diffuse-field responses of 4006, 4006-TL & 4003 with Diffuse-field Grid DD0297 fitted.



On-axis response of 4006, 4006-TL & 4003 with Close-miking Grid DD0254 fitted.

Omnidirectional Stereo Kits

3506 4006-TL Stereo Kit, P48
3503 4003 Stereo Kit, 130 V

Your portable solution for lifelike ambience

These A-B stereo kits are the ultimate portable solution for making sharply focused and realistically ambient stereo recordings, from an acoustic soloist to a full orchestra. Each kit consists of a pair of carefully-matched microphones, with a complete selection of acoustic modification accessories, windscreens and a compact stereo boom for floor or ceiling mounting. The 3503 kit uses the DPA preamp included. This provides a completely transformerless signal path and high voltage powering. Both sets are delivered in an attractive Samsonite® carrying case customised to house the mics and accessories.

Meticulously matched microphone twins

To provide accurate stereo cues it is essential that the mics are accurately matched with respect to their overall sensitivity, individual frequency response and phase response. The low-noise, omnidirectional microphone pairs in our A-B stereo kits are hand-selected and meticulously matched to provide the best possible results. Each pair is guaranteed to match within 0.5 dB on sensitivity, self-noise, frequency response (20 Hz to 20 kHz) and phase responses within 5°.

Time-saving and convenient positioning

The precision-crafted stereo boom is specially designed for making precise stereo recordings. It can be mounted on a stand or suspended from wires for more permanent setups. It has centimetre graduations on the boom and angle graduations on the microphone holders for accurate and repeatable positioning. To learn more about stereo recording techniques using the DPA stereo boom, please visit Microphone University on the DPA website.

DPA Matched Pair

A matched pair from DPA Microphones guarantees and substantiates, that the two microphones are identical within ± 0.5 dB on both frequency response (20 Hz – 20 kHz), self-noise and sensitivity. The phase reponses are within 5°.

3506 3503 Kit includes

2 x 4006-TL	Omnidirectional Microphone, P48 (3506) or
2 x 4003	Omnidirectional Microphone, 130 V (3503)
UA0836	Stereo Boom with Holders
2 x DD0251	Free-field Grid, Silver
2 x DD0297	Diffuse-field Grid, Black
2 x DD0254	Close-miking Grid, Trapezoid, Silver
2 x UA0777	Nose Cone
2 x L30B	Acoustic Pressure Equaliser, 30 mm (1.18 in) Ball
2 x L40B	Acoustic Pressure Equaliser, 40 mm (1.57 in) Ball
2 x L50B	Acoustic Pressure Equaliser, 50 mm (1.97 in) Ball
1 x HMA5000	High-Voltage Microphone Amplifier, 2-channel (3503)
2 x DA00130	Microphone Cable for 4003/04/12/16, 5 m (16.4 ft) (3503)
2 x UA0638	Windscreen for 4003/06

Recognize your well-known sound stage with the purity from the 4006-TL.
4006-TLs on UA0836 Stereo Boom (3506 kit).

Cardioid Microphones

4011-TL Cardioid Microphone, P48
4012 Cardioid Microphone, 130 V

Pure linear cardioid

The DPA 4011-TL Cardioid Microphone is a new upgraded version of our classic 4011, renowned in recording studios and rental companies all over the world as an exceptional mic. State-of-the-art components have been carefully selected to provide optimal neutrality, accuracy and extremely low distortion.

The principal appeal of the 4011-TL is its directional quality and attention to detail: everything sounds like the original. The first-order cardioid pick-up pattern gives superb separation between sound sources while spot-miking on every kind of live music; from rock'n'roll to opera. The mic is equally suitable for close-up work on acoustic guitar, grand piano, overheads, percussion, wind instruments and vocals as it is for spot-miking for symphony music. It can handle incredibly high sound levels and even includes a 20 dB pad switch in the centre of the XLR connector to attenuate the output of the microphone.

A flat on-axis frequency response and excellent phase response deliver a totally faithful reproduction of the original sound. The off-axis response is similarly smooth so that any leakage is an accurate reflection of the original, though attenuated according to the true first-order cardioid pickup pattern. The feeling of "being there" will always be more intense with DPA 4011-TL than with any other cardioid. Chosen for its qualities as an all-round performer, the 4011-TL is a great, clean-sounding colourless mic. The variety of applications is as wide as the imagination of the user.

130 V for extra headroom

The 4012 cardioid is the high voltage (130 V) version of 4011-TL and is acoustically identical. The 4012 is powered by DPA's 2-channel HMA5000 High-Voltage Microphone Amplifier. This high level powering method allows an incredible SPL handling capability of 168 dB peak before clipping occurs and offers improved transient response characteristics. The clarity and end results achieved with this microphone are truly astounding.

Read more about the HMA5000 High-Voltage Microphone Amplifier on page 14.

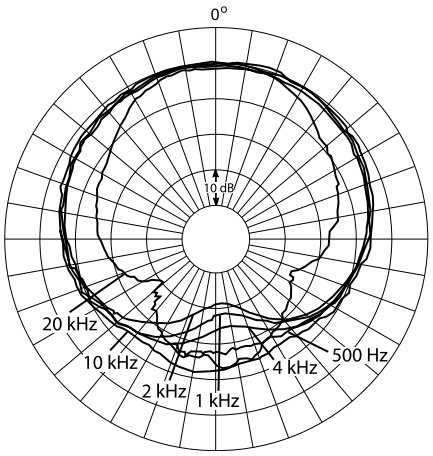
Radio broadcast setups with the DPA 4011-TL provide a rich and natural sound without adding colour to the voice.
4011-TLs in UA0897 Shock Mount and DUA0090 Pop-filter.

Specifications

4011-TL
4012

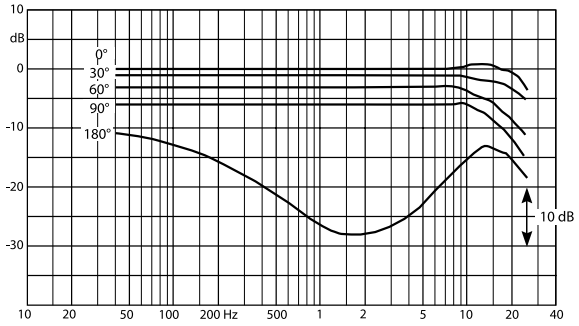
Directional characteristics:
Cardioid
Principle of operation:
Pressure gradient
Cartridge type:
19 mm (0.75 in) pre-polarised condenser
Power supply:
4011-TL: 48 V Phantom power
4012: 130 V via HMA5000
Frequency range, ±2 dB:
40 Hz – 20 kHz
Sensitivity, nominal, ±2 dB:
4011-TL: 10 mV/Pa; -40 dB re. 1 V/Pa
4012: 9 mV/Pa; -41 dB re. 1 V/Pa
Equivalent noise level, A-weighted:
Typ. 19 dB(A) re. 20 µPa
S/N ratio, re. 1 kHz at 1 Pa (94 dB SPL):
75 dB(A)
Total Harmonic Distortion:
<0.5% up to 110 dB SPL peak
<1% up to 116 dB SPL peak
Dynamic range:
Typ. 97 dB
Max. SPL, peak before clipping:
4011-TL: 158 dB
4012: 168 dB
Switchable attenuator:
4011-TL: 0 dB, -20 dB
Output impedance:
4011-TL: <200 Ohm
4012: Matches HMA5000 input
Cable drive capability:
4011-TL: Up to 100 m (328 ft)
4012: From microphone to HMA5000: Up to 20 m (66 ft) From HMA5000: Up to 300 m (984 ft)
Connector:
4011-TL: 3-pin XLR-M (Standard P48)
4012: 4-pin modified XLR-M (High Voltage)
Dimensions:
Length: 175 mm (6.89 in)
Diameter: 19 mm (0.75 in)
Weight: 165 g (5.82 oz)

Polar Pattern

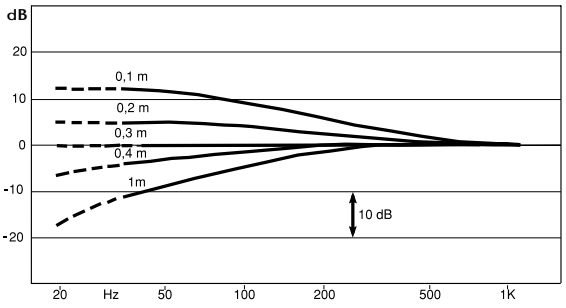


Directional characteristics of 4011-TL & 4012 (normalised). Distance between circles indicates 10 dB steps.

Frequency Responses



On and off-axis responses of 4011-TL & 4012 measured at 30 cm (11.8 in).



The proximity effect exhibited by 4011-TL & 4012.

Cardioid Stereo Kits

3511 4011-TL Stereo Kit, P48

Reality microphone solution

The DPA 3511 is a complete stereo kit for a broad range of recording applications, consisting of two carefully matched 4011-TL Cardioid Microphones. These cardioids are exceptionally linear in their on- and off-axis frequency responses resulting in a very natural experience. Several standard setups such as ORTF or XY are possible. This kit handles high SPLs and is therefore ideal for close placement as well as more distant setups. The kit is often used for jazz and pop piano recordings with a placement close to the strings or as overhead. To learn more about stereo recording techniques using the DPA stereo boom, please visit Microphone University on the DPA website.

The kit includes two shock mounts, a precision-crafted stereo boom for secure mounting of microphone pairs for A-B stereo recordings and a spacer to allow XY or ORTF stereo setups on the boom.

DPA Matched Pair

A matched pair from DPA Microphones guarantees and substantiates, that the two microphones are identical within ± 1 dB on both frequency response (40 Hz – 20 kHz), self-noise and sensitivity. The phase reponses are within 10°.

3511 Kit includes

2 x 4011-TL	Cardioid Microphone, P48
2 x UA0897	Shock Mount
UA0836	Stereo Boom with Holders
DUA0019	Spacer for Stereo Boom, 19 mm (0.75 in)
2 x UA0896	Windscreen for 4011/12/15/16

The feeling of "being there" is intense and superior with the 4011-TLs.
4011-TLs on UA0836 Stereo Boom. (3511 kit)

Wide Cardioid Microphones

4015-TL Wide Cardioid Microphone, P48
4016 Wide Cardioid Microphone, 130 V

Expand your horizon with a wider pattern

If you are already a 4011 devotee, you will discover an exciting alternative in our wide cardioid microphones. The DPA 4015-TL Wide Cardioid differs in its polar pattern and is the perfect fill-in between an omni and a more directional microphone. This is a new upgraded version of the original 4015, with state-of-the-art components carefully selected to provide optimal neutrality, accuracy and extremely low distortion. The wide cardioid covers a greater sound angle and is an excellent choice for grand piano, guitar, marimba, and percussion or as a spot mic for groups in a symphony orchestra. Likewise, it is an excellent speech, dubbing or vocal mic as its enhanced richness on the bass end nicely compliments many voices.

Recording orchestras or other ensembles sometimes requires a compromise between blending in the room reverberation and a more precise localisation. These wide cardioids are the perfect solution for this exacting task and will become an essential component of your audio toolbox for many years to come.

The 4015-TL has a linear frequency response from 40 Hz to 20 kHz and is intentionally designed with a soft high frequency boost to offer a more brilliant sound in close-miking applications and a linear response in the diffuse field. Both the 4015-TL and 4016 are transformerless, providing shorter signal paths and cleaner bass response at high SPLs.

Specialists in extreme sound levels

They are capable of handling extremely high sound pressure levels before clipping occurs. The 4015-TL even includes a 20 dB pad switch in the centre of the XLR connector to prevent overloading of the mic amp. Even though the 4015-TL can handle an impressive 158 dB, an additional 10 dB headroom can be added by combining the 4016 with the HMA5000 High-Voltage Microphone Amplifier. Imagine your possibilities with such a condenser microphone.

Read more about the HMA5000 High-Voltage Microphone Amplifier on page 14.

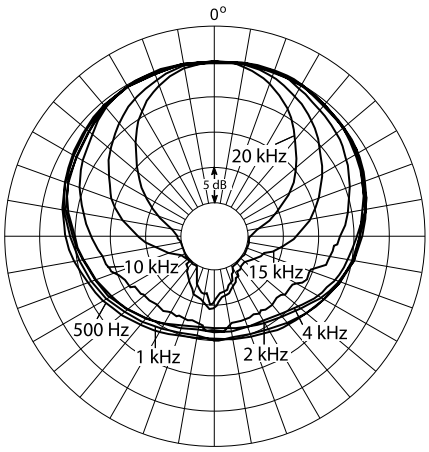
Rich bass and a silky high frequency lift offer a multiplicity of miking options with the 4015-TL.
4015-TL in UA0897 Shock Mount and DUA0090 Pop-filter

Specifications

4015-TL
4016

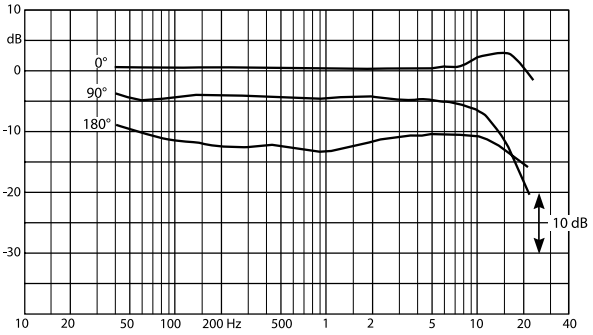
Directional characteristics:
Wide cardioid
Principle of operation:
Pressure gradient
Cartridge type:
19 mm (0.75 in) pre-polarised condenser
Power supply:
4015-TL: 48 V Phantom power
4016: 130 V via HMA5000
Frequency range, ±2 dB:
40 Hz – 20 kHz
Sensitivity, nominal, ±2 dB:
4015-TL: 10 mV/Pa; -40 dB re. 1 V/Pa
4016: 9 mV/Pa; -41 dB re. 1 V/Pa
Equivalent noise level, A-weighted:
Typ. 19 dB(A) re. 20 µPa
S/N ratio, re. 1 kHz at 1 Pa (94 dB SPL)
75 dB(A)
Total Harmonic Distortion:
<0.5% up to 110 dB SPL peak
<1% up to 116 dB SPL peak
Dynamic range:
Typ. 97 dB
Max. SPL, peak before clipping:
4015-TL: 158 dB
4016: 168 dB
Switchable attenuator:
4015-TL: 0 dB, -20 dB
Output impedance:
4015-TL: <200 Ohm
4016: Matches HMA5000 input
Cable drive capability:
4015-TL: Up to 100 m (328 ft)
4016: From microphone to HMA5000: Up to 20 m (66 ft) From HMA5000: Up to 300 m (984 ft)
Connector:
4015-TL: 3-pin XLR-M (Standard P48)
4016: 4-pin modified XLR-M (High Voltage)
Dimensions:
Length: 175 mm (6.89 in)
Diameter: 19 mm (0.75 in)
Weight: 165 g (5.82 oz)

Polar Pattern

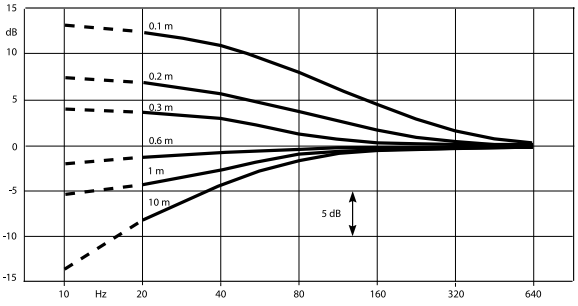


Directional characteristics of 4015-TL & 4016 (normalised). Distance between circles indicates 5 dB steps.

Frequency Responses



On and off-axis responses of Type 4015-TL & 4016. Measured at 60 cm (23.6 in).



The proximity effect exhibited by the 4015-TL & 4016.

Accessories Available for Standard Microphones

Acoustic Modification Accessories

	APE L6	Acoustic Modification Kit, 2 x 3 pcs
1	DD0251	Free-field Grid, Silver
2	DD0254	Close-miking Grid, Trapezoid, Silver
3	DD0297	Diffuse-field Grid, Black
	L30B	Acoustic Pressure Equaliser, 30 mm (1.18 in) Ball
	L40B	Acoustic Pressure Equaliser, 40 mm (1.57 in) Ball
4	L50B	Acoustic Pressure Equaliser, 50 mm (1.97 in) Ball
5	UA0777	Nose Cone

Cables

6	DA00130	Microphone Cable for 4003/04/12/16, 5 m (16.4 ft)
	DA00131	Microphone Cable for 4003/04/12/16, 10 m (32.8 ft)

Converters

7	HTP4000	Converter: 130 V to P48
	PCC4000	Converter: P48 to 130 V Microphones

Holders

8	DUA0019	Spacer for Stereo Boom, 19 mm (0.75 in)
9	TB4000	Table Base
10	UA0639	Microphone Clip
11	UA0836	Stereo Boom with Holders
	UA0837	Stereo Boom excluding Holders
12	UA0897	Shock Mount
13	UA0961	Microphone Holder

Microphone Amplifier and Power Supply

14	HMA5000	High-Voltage Microphone Amplifier, 2-channel

Shock Mount Rubbers

15	DDS0030	Rubber Mount 27-32 mm (1.18 in), Medium Soft
	DDS0031	Rubber Mount 27-32 mm (1.18 in), Extra Soft
16	DDS0413	Rubber Mount 24 mm (1 in), Medium Soft
	DDS0731	Rubber Mount 19 mm (0.75 in), Medium

Windscreens

17	DUA0090	Pop-filter
	UA0638	Windscreen for 4003/06
	UA0896	Windscreen for 4011/12/15/16

A pair of 4011-TL microphones is a serious overhead miking solution to capture the sound, width and dynamics of the drum kit as it is.

Acoustic Modification Accessories

Product Focus

Changing Characteristics

By using DPA Acoustic Modification Accessories you can acoustically alter the behaviour of your microphone. From one single 4003 or 4006, for instance, you can achieve 7 different frequency responses and directional characteristics without compromising noise, phase-shift or distortion! Every console or outboard EQ - no matter the quality - will to some degree add these affectations to the sound colour.

The Acoustic Pressure Equalisers - APEs – are passive acoustic processors functioning as both spatial and spectral equalisers. They use diffractions on the surface to modify the sound field near the microphone diaphragm. This technique is only possible on omnidirectional, pressure microphones.

Two primary changes occur:

1. An upper-midrange/high frequency boost (without changing the low end) due to the pressure build-up at certain frequencies depending on the element's size.
2. More directionality at higher frequencies (focus).

A presence (upper-midrange) lift is often desirable in rhythmical genres, to make a voice or an instrument cut through a mix or simply to make it more intelligible or well-defined. For symphonic music, the frequency response of certain legendary vintage types of microphones can be obtained using one of the APEs from the APE L6 kit. However, you will achieve a much higher degree of naturalness and detail, when using a precision handcrafted 4003 or 4006.

The interchangeable grids are not only for protecting the microphone diaphragm, but are as much an important part of the microphone's acoustical design. They are used to obtain a final adjustment of the frequency response and to control the behaviour of sound waves on the diaphragm. A relevant use of grids is adaptation of the microphone's frequency response to the sound field. In the diffuse sound field a high frequency loss will occur. This can be compensated for by using the DD0297 Diffuse-field Grid which – as with the Acoustic Pressure Equalisers - will work as an acoustical object over the capsule. The DD0254 Close-miking Grid will gently roll-off the highest audible frequencies to make the microphone's response softer for the often intense high frequency character from sound sources recorded at very short distances. The UA0777 Nose Cone makes the microphone perfectly omnidirectional in the audible frequency range and can for instance be used in optimal acoustic environments where every direction should be reproduced uncoloured.

It's like using an equaliser – but then again not...

Whenever you switch in a filter or an EQ electronically it will influence the total sound field picked up by the omni microphone. You actually do a "360 degree equalisation" of the microphone signal. Alternatively, by using acoustic modification accessories, you can choose to make the desired frequency alteration in the direction you actually need it. The change is made acoustically - right at the diaphragm.

Every craftsman will bring along his toolbox to optimize his work with the ability to always choose the right tool for the specific job. For the ambitious and discerning sound engineer, the DPA Acoustic Modification Accessories are serious tools to claim.

Read more about acoustic modification accessories at the Microphone University on the DPA website.

Acoustic Pressure Equalisers

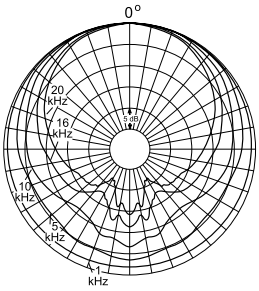
For use with DPA 4006, 4006-TL, and 4003

L30B L40B L50B

L30B
Acoustic Pressure Equaliser, 30 mm

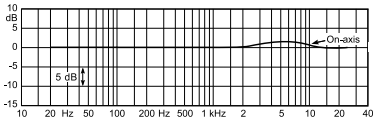
Provides on-axis boost between 2 and 8 kHz, making your recordings more present and crisp.

Directional Characteristics



Directional characteristics of L30B (normalised).

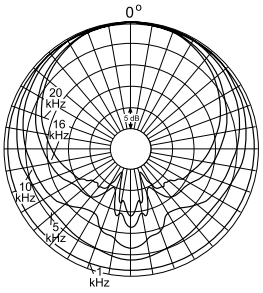
Frequency Responses



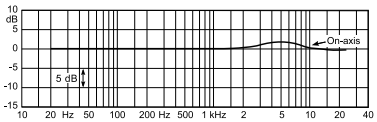
On-axis frequency response with L30B.

L40B
Acoustic Pressure Equaliser, 40 mm

Provides on- axis boost between 2 and 8 kHz and increases the directivity of your recordings.



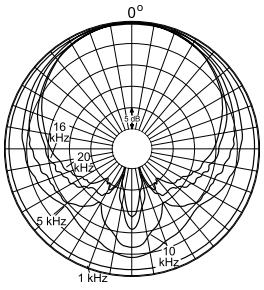
Directional characteristics of L40B (normalised).



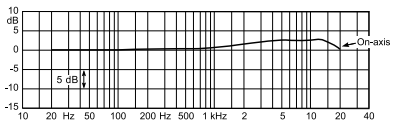
On-axis frequency response with L40B.

L50B
Acoustic Pressure Equaliser, 50 mm

Provides broad on-axis boost between 1 and 16 kHz and a more intense sensation of source clarity.



Directional characteristics of L50B (normalised).



On-axis frequency response with L50B.

Interchangeable Grids

For use with DPA 4006, 4006-TL, 4003, 4051, 4052, and 4053


DD0251

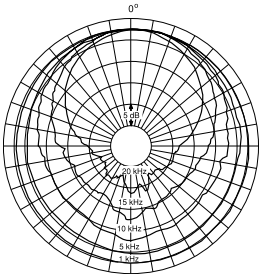

DD0254


DD0297

DD0251
Free-field Grid, Silver

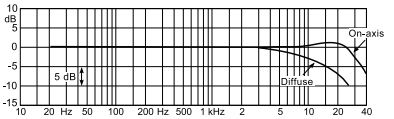
Provides linear response in the free sound field.

Directional Characteristics



Directional characteristics of DD0251 (normalised).

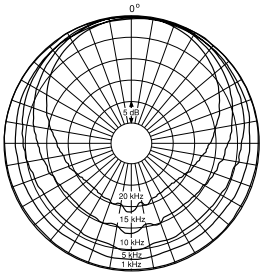
Frequency Responses



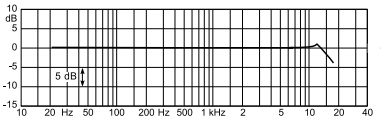
On-axis and diffuse-field response with DD0251.

DD0254
Close-miking Grid, Silver, Trapezoid

Provides a soft response in the high frequencies.



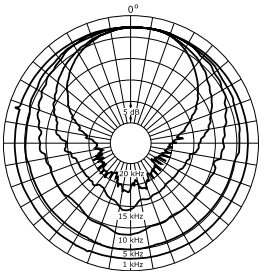
Directional characteristics of DD0254 (normalised).



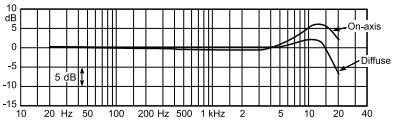
On-axis frequency response with DD0254.

DD0297
Diffuse-field Grid, Black

Provides linear response in the diffuse sound field.



Directional characteristics of DD0297 (normalised).



On-axis and diffuse-field response with DD0297.

Interchangeable Grids

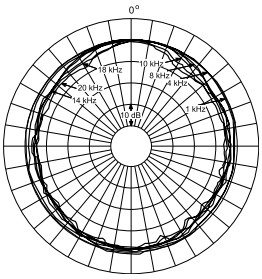
For use with DPA 4006, 4006-TL, 4003, 4051, 4052, and 4053

UA0777

UA0777
Nose Cone

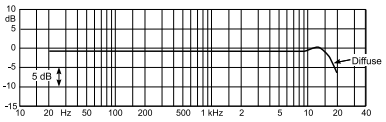
Provides a perfectly omnidirectional microphone at all audible frequencies.

Directional Characteristics



Directional characteristics of UA0777 (normalised).

Frequency Responses



Diffuse-field response with UA0777.

Kits including APEs & Grids

APE L6 Acoustic Modification Kit, 2 x 3 pcs

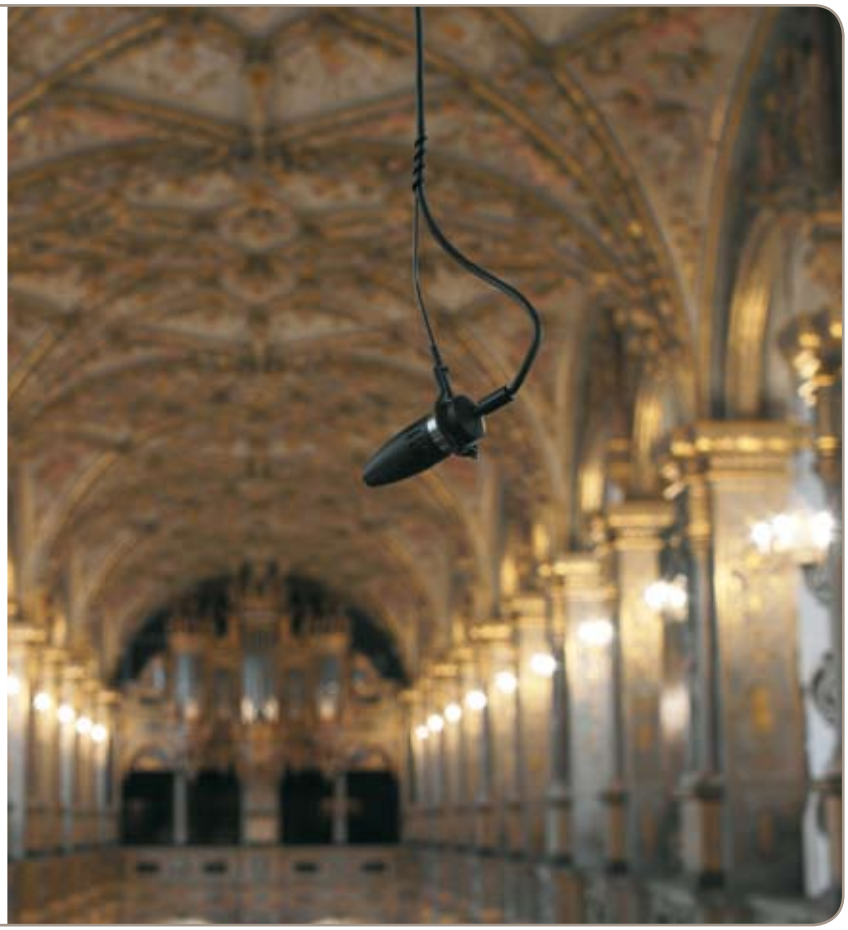
A pair of all three Acoustic Pressure Equalisers for 4006, 4006-TL, and 4003.

3503 4003 Stereo Kit, 130 V

A complete A-B Stereo Kit with two factory-matched 4003s, mic amp and accessories.

3506 4006-TL Stereo Kit, P48

A complete A-B Stereo Kit with two factory-matched 4006-TLs and accessories.



4052 with UA0777 Nose Cone in SM4000 Suspension Mount.

Compact Microphones

Compact Omnidirectional Microphones

4051 4052 4053

Compact Cardioid Microphones

4021 4022 4023

Compact Wide Cardioid

4026 4027 4028

Compact Stereo Kits

3521 3552

DPA Compact Microphones are the smaller cousin to our standard microphones and are also available in omni, cardioid and wide cardioid models. They are especially valuable for low profile use together with our elegantly designed stands, mounts and holders for close-miking of instruments, as table and podium mics, as well as reinforcement mics in live performance venues. The compact microphones combine the trademark DPA sound with aesthetic and functional design solutions.

Compact Omnidirectional Microphones

4051 Compact Omnidirectional Microphone, Side Cable
4052 Compact Omnidirectional Microphone, Rear Cable
4053 Compact Omnidirectional Microphone, Connector

Impressive sound in a small body

When you need a small, lightweight and inconspicuous microphone for top-quality recording, the compact design and clean, transparent sound of our versatile Compact Omnis make them the perfect choice. They are extremely popular as A-B stereo pairs in concert halls where quality recordings can be compromised by classic architecture.

These Compact Omnis use the same type of capsule as the DPA 4006 and are characterised by an impressive sensitivity, an extremely linear frequency response and a low noise-floor. This makes them ideal for all types of subtle sound sources, while their wide dynamic range also enables recording at higher SPLs without the worry of clipping or distortion. The Compact Omnis are also insensitive to handling-noise, pop-noise and humidity and exhibit no proximity effect.

The Compact Omnis are supplied with the DD0251 Free-field Grid and a DD0297 Diffuse-field Grid, which can also be interchanged with the optional UA0777 Nose Cone or DD0254 Close-miking Grid. These various interchangeable grids act as acoustic modification devices providing you with multiple microphone characteristics and thus additional recording application options. Read more about interchangeable grids on page 30. The SM4000 Suspension Mount and DUA0050 Windscreen are also included.

The Compact Omnis can be mounted, hung or concealed to create clean, transparent recordings. They are ideal in theatres, opera and concert halls or places of worship where there is a live audience, and for film applications - both in the studio and on location. These mics are also popular with musicians for close-miking instruments such as double bass, trumpet and piano. At the same time they are wonderful for ambience-miking in soundstages, sports stadiums and other situations where audience sound needs to be recorded.

3552 4052 Compact Stereo Kit

The 3552 is a complete stereo kit with two 4052 Compact Cardioid Microphones carefully matched within ± 0.5 dB on both frequency response (20 Hz – 20 kHz), self-noise and sensitivity. The phase responses are within 5°. Together with its accessories, this kit is designed especially for low profile mounting directly inside a piano. The goosenecks can also be mounted directly on microphone stands for various A-B stereo applications such as a full orchestra in a concert hall, choirs and other ambient recordings.

3552 Kit includes

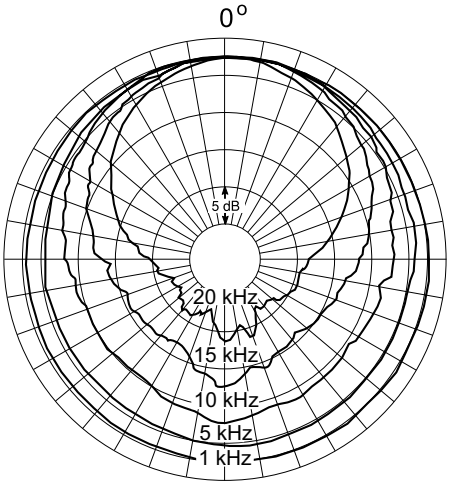
2 x 4052	Compact Omnidirectional Microphone, Rear Cable
2 x DD0251	Free-field Grid, Silver
2 x DD0297	Diffuse-field Grid, Black
2 x UA0777	Nose Cone
2 x GM4050	Gooseneck Mount for 4051/52/53
2 x MB4000	Magnet Base
2 x SM4000	Suspension Mount
2 x DUA0050	Windscreen for 4051/52/53

Specifications

4051
4052
4053

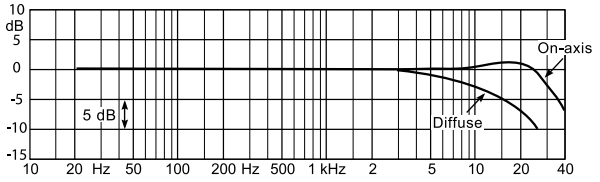
Directional characteristics:
Omnidirectional
Principle of operation:
Pressure
Cartridge type:
16 mm (0.6 in) pre-polarised condenser
Power supply:
48 V Phantom power
Frequency range, ±2 dB:
20 Hz – 20 kHz
Sensitivity, nominal, ±2 dB:
30 mV/Pa; -30 dB re. 1 V/Pa
Equivalent noise level, A-weighted:
Typ. 15 dB(A) re. 20 µPa
S/N ratio, re. 1 kHz at 1 Pa (94 dB SPL)
79 dB(A)
Total Harmonic Distortion:
<0.5% up to 125 dB SPL peak
<1% up to 131 dB SPL peak
Dynamic range:
Typ. 116 dB
Max. SPL, peak before clipping:
135 dB
Output impedance:
<300 Ohm
Cable drive capability:
Up to 100 m (328 ft)
Connector:
3-pin XLR-M (Standard P48)
Dimensions:
Length: 4051: 25 mm (1 in)
4052: 19 mm (0.8 in)
4053: 19 mm (0.8 in)
Diameter: 16 mm (0.6 in)
Weight: 4051: 22 g (0.8 oz)
4052: 20 g (0.7 oz)
4053: 22 g (0.8 oz)

Polar Pattern

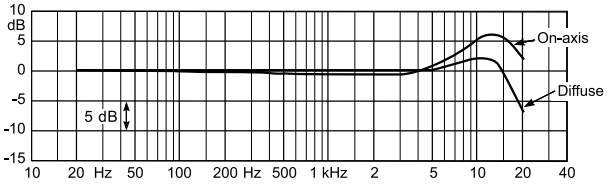


Directional Characteristics of 4051, 4052 & 4053 with Free-field Grid DD0251 fitted (normalised).

Frequency Responses



On-axis and diffuse-field responses of 4051, 4052 & 4053 with Free-field Grid DD0251 fitted.



On-axis and diffuse-field responses of 4051, 4052 & 4053 with Diffuse-field Grid DD0297 fitted.

Compact Cardioid Microphones

4021 Compact Cardioid Microphone, Side Cable
4022 Compact Cardioid Microphone, Rear Cable
4023 Compact Cardioid Microphone, Connector

The choice of musicians for maximum clarity

When microphones have to be out of sight or instrument mounted, but maximum clarity and signal quality are essential, the compact design and high performance of these cardioid microphones make them the logical choice.

Our Compact Cardioids use the same capsule as the extremely popular 4011, but are preamplified using a built-in miniaturised thick-film mounted FET-amplifier. The result is incredibly compact, high-performance microphones that are ideally suited for the unobtrusive miking of all types of television, film, theatre, live performances and studio applications.

Uniform frequency response

The microphones are capable of handling extensive SPL without distortion and the design ensures a true first-order cardioid pick-up pattern. The sound is natural and rich in detail, without adding colour to the source. Excellent off-axis characteristics enable the talent to move about without any off-axis colouration from the mic. In broadcast applications, the mics present the voice as one expects to hear it: clean and ambient, as though the broadcaster was in the same room.

Limited in size, unlimited in application

High SPL handling also means that you can mount these Compact Cardioids closer to instruments to minimise leakage from other instruments. For spot-miking larger orchestras, these mics are hard to beat. In film and TV studios, they are excellent for off-camera voice recording or Foley work. For live on-camera recordings, their matt black finish gives them a classic yet unobtrusive appearance. For sound reinforcement in concert halls, theatres and places of worship, they provide clean, natural sound while limiting the effect of lighting reflection. All the compact cardioid microphones are delivered with the SM4000 Suspension Mount and DUA0020 Windscreen as standard.

3521 4021 Compact Stereo Kit, P48

The 3521 is a complete stereo kit with two 4021 Compact Cardioid Microphones carefully matched within ± 1 dB on both frequency response (40 Hz – 20 kHz), self-noise and sensitivity. The phase responses are within 10°. Complete with accessories, this kit is designed especially for low profile mounting directly inside a piano. With the XY/ORTF holder, the kit is transformed into an exceptional compact stereo pair for applications such as overhead-miking for drums, horn or string sections, choirs, main or as an additional spot pair for small or large acoustic ensembles.

3521 Kit includes

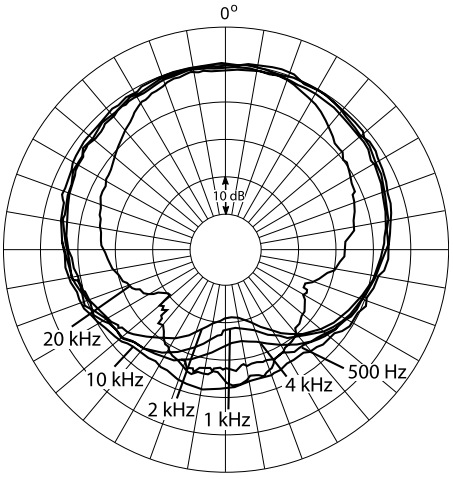
2 x 4021	Compact Cardioid Microphone
2 x GM4000	Gooseneck Mount for 4021/22/23/26/27/28
2 x MB4000	Magnet Base
1 x CXO4000	Compact XY/ ORTF Stereo Holder
2 x SM4000	Suspension Mount
2 x DUA0020	Windscreen for 4021/22/23/26/27/28
1 x UA0897	Shock Mount
1 x EXY4000	Extension for CXY/CXO4000

Specifications

4021
4022
4023

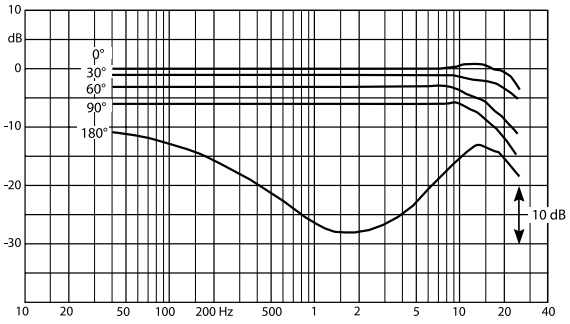
Directional characteristics:
Cardioid
Principle of operation:
Pressure gradient
Cartridge type:
19 mm (0.75 in) pre-polarised condenser
Power supply:
48 V Phantom power
Frequency range, ±2 dB:
40 Hz – 20 kHz
Sensitivity, nominal, ±2 dB:
7 mV/Pa; -43 dB re. 1 V/Pa
Equivalent noise level, A-weighted:
Typ. 20 dB(A) re. 20 µPa
S/N ratio, re. 1 kHz at 1 Pa (94 dB SPL)
74 dB(A)
Total Harmonic Distortion:
<0.5% up to 110 dB SPL peak
<1% up to 116 dB SPL peak
Dynamic range:
Typ. 96 dB
Max. SPL, peak before clipping:
145 dB
Output impedance:
<300 Ohm
Cable drive capability:
Up to 100 m (328 ft)
Connector:
3-pin XLR-M (Standard P48)
Dimensions:
Length: 4021: 31 mm (1.2 in)
4022: 35 mm (1.4 in)
4023: 30 mm (1.2 in)
Diameter: 19 mm (0.8 in)
Weight: 4021: 27.5 g (1 oz)
4022: 30 g (1.1 oz)
4023: 33 g (1.2 oz)

Polar Pattern

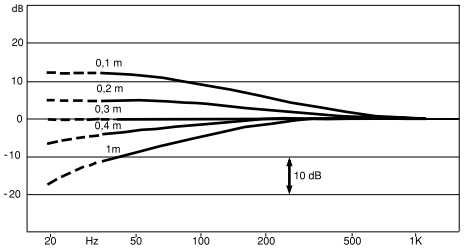


Directional characteristics of 4021, 4022 & 4023 (normalised). Distance between circles indicates 10 dB steps.

Frequency Responses



On- and off-axis responses of 4021, 4022 & 4023 measured at 30 cm (11.8 in).



The proximity effect exhibited by 4021, 4022 & 4023 measured at 30 cm (11.8 in).

Compact Wide Cardioid Microphones

4026 Compact Wide Cardioid Microphone, Rear Cable
4027 Compact Wide Cardioid Microphone, Side Cable
4028 Compact Wide Cardioid Microphone, Connector



Brilliant sparkle of purity

The wide polar pattern of our Compact Wide Cardioid Microphones allows you to pick up a broader sound field than with a conventional cardioid. At the heart of the microphone is a capsule, which is in a class of its own. This capsule is unbeatable in combining purity and sound level handling. The microphone features the highest resolution and clarity available and has a rich bass response. In addition, the wide cardioid capsule design is acoustically calibrated with a pleasant and subtle high frequency lift, giving that brilliant sparkle of purity, which will take your recordings to a higher level.

The Compact Wide Cardioids use the same type of capsule as the DPA 4015, but are preamplified using a built-in miniaturised thick-film mounted FET-amplifier.

Small, yet wide

The wide cardioid pattern is very useful when recording instruments with a complex radiation pattern, and for a visually discrete microphone setup, the compact size is indispensable. In combination with our Flamingo Stand, the DPA 4028 is an ideal low profile solution for the audio engineer as well as the set designer. With unbelievable depth and precision, the Compact Wide Cardioids will exceed your expectations for choirs, percussion setups, grand pianos, wind instruments and much more.

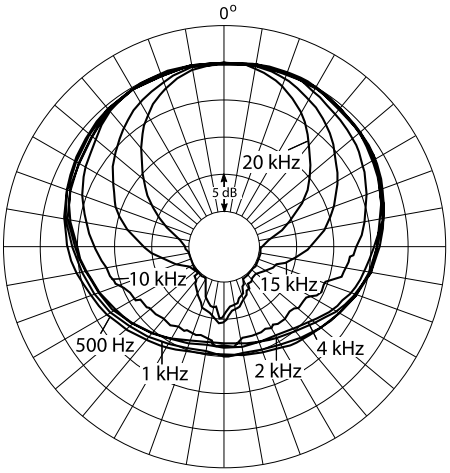
Excellent off-axis characteristics and a wide cardioid pattern cover a broad area.
4027 in CSM4000 Compact Shock Mount and TB4000 Table Base.

Specifications

4026
4027
4028

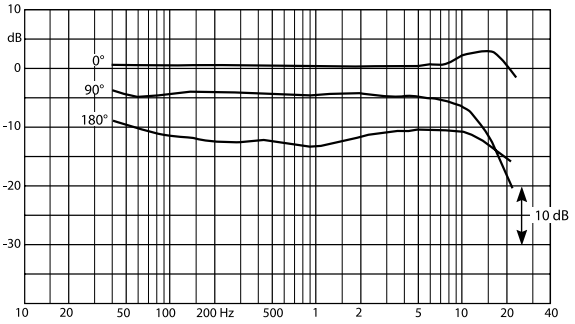
Directional characteristics:
Wide cardioid
Principle of operation:
Pressure gradient
Cartridge type:
19 mm (0.75 in) pre-polarised condenser
Power supply:
48 V Phantom power
Frequency range, ±2 dB:
40 Hz – 20 kHz
Sensitivity, nominal, ±2 dB:
7 mV/Pa; -43 dB re. 1 V/Pa
Equivalent noise level, A-weighted:
Typ. 20 dB(A) re. 20 µPa
S/N ratio, re. 1 kHz at 1 Pa (94 dB SPL)
74 dB(A)
Total Harmonic Distortion:
<0.5% up to 110 dB SPL peak
<1% up to 116 dB SPL peak
Dynamic range:
Typ. 96 dB
Max. SPL, peak before clipping:
145 dB
Output impedance:
<300 Ohm
Cable drive capability:
Up to 100 m (328 ft)
Connector:
3-pin XLR-M (Standard P48)
Dimensions:
Length: 4026: 35 mm (1.4 in)
4027: 31 mm (1.2 in)
4028: 30 mm (1.2 in)
Diameter: 19 mm (0.8 in)
Weight: 4026: 30 g (1 oz)
4027: 27.5 g (1.1 oz)
4028: 33 g (1.2 oz)

Polar Pattern

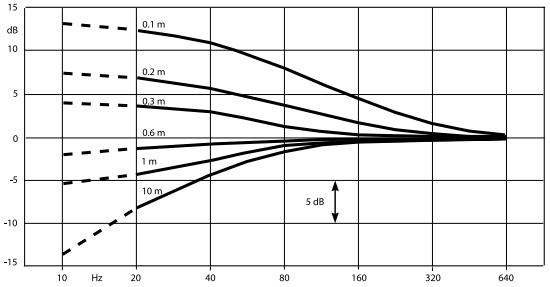


Directional characteristics of 4026, 4027, 4028 (normalised).
Distance between circles indicates 5 dB steps.

Frequency Responses



On and off-axis responses of 4026, 4027 & 4028
measured at 60 cm (23.6 in).



The proximity effect exhibited by the 4026, 4027 & 4028.

Accessories Available for Compact Microphones

Acoustic Modification Accessories

1	DD0251	Free-field Grid, Silver
2	DD0254	Close-miking Grid, Trapezoid, Silver
3	DD0297	Diffuse-field Grid, Black
4	DUA0020	Windscreen for 4021/22/23/26/27/28
	DUA0022	Twin Windscreen for 4023
	DUA0050	Windscreen for 4051/52/53
5	UA0777	Nose Cone

Holders

6	CH4000	Microphone Holder for Cello
7	CSM4000	Compact Shock Mount
8	CXO4000	Compact XY/ORTF Stereo Holder
9	CXY4000	Compact XY Stereo Holder
10	EXY4000	Extension for CXY/CXO4000
11	GM4000	Gooseneck Mount for 4021/22/23/26/27/28
	GM4050	Gooseneck Mount for 4051/52/53
12	MB4000	Magnet Base
13	SM4000	Suspension Mount
14	TB4000	Table Base
15	TSM4000	Table Shock Mount
	VH4000	Microphone Holder for Violin/bass

Shock Mount Rubber

	DDS0016	Rubber Mount 16 mm (0.63 in), Extra Soft
16	DDS0019	Rubber Mount 19 mm (0.75 in), Extra Soft

Stands

	CAP0250	Compact Active Pole, 250 mm (9.9 in)
17	CAP0400	Compact Active Pole, 400 mm (15.8 in)
	CAP0750	Compact Active Pole, 750 mm (2.5 ft)
	CAP1250	Compact Active Pole, 1250 mm (4.1 ft)
	DUA0100	Stand Extension, 100 mm (3.94 in)
	DUA0250	Floor Base, Ø250 mm (9.8 in)
	DUA0500	Stand Extension, 500 mm (19.7 in)
18	FGS4000	Flamingo Grand, Single Pole
19	FGT4000	Flamingo Grand Twin, Double Pole
	FJS4000	Flamingo Junior Short, Single Pole
	SJD4000	Swivel Joint, Double
	SJS4000	Swivel Joint, Single

Flamingo stands are slender floor stands. The connector versions of all the DPA compact microphones can be plugged straight into the top of the stand on a flexible gooseneck, with an output appearing on an XLR in the other end of the tube. Options for the flamingo stands include twin poles for double rigging and extension sections for the adjustable base.
4023 Compact Cardioid on FGS4000 Flamingo Stand.

Reference Microphones

4007 Reference Microphone, P48
4004 Reference Microphone, 130 V

When choosing a microphone for reference use, the demand for reliability and accuracy is crucial. The awareness of being able to trust the results from a reference microphone - even over many years - surpasses most other wishes for that working tool. This is the challenge that DPA Microphones takes seriously and we are honoured to fulfil these requirements by delivering microphones that are produced within extremely narrow tolerances.

The 12 mm diaphragm is ideal for linear and undistorted frequency response (10 Hz to 40 kHz for DPA 4004) and the extreme sound level handling of up to 168 dB is unbeatable. The omnidirectionality is close to optimal up to 20 kHz which, together with the linear frequency response, allows a true fingerprint of the sound field to proceed unhindered to any desired analysis programme.

Adjusting a Front of House PA setup, inspecting loudspeakers or fine tuning a frequency response test system are just a few examples of where you will find our Reference Microphones a trustworthy tool.

For extended frequency range and accurate transient response

A lot of focus has been placed on the extended frequency range of new digital formats, like DVD-A, SACD, DXD, DSD and more. Higher sampling frequencies shift the upper limiting frequency and will indeed also improve the resolution in the time domain, which is why a microphone with true transient characteristics is suddenly heard and needed. The 4007 and 4004 have a linear frequency response up to 40 kHz, which is achieved by a superior acoustical and mechanical design and an impulse precision in the audible frequency range which is top of the league.

For high SPL sound sources in music recording

Choosing a condenser microphone for its sonic qualities is obvious. Using it for extremely loud sound sources like drums, trumpets or the like is a mission, that DPA is master of - for live gigs as well as studio recordings. A 4007 on a bass drum, for instance, delivers a punchy sound with a hitting attack and a tight, focused bass with infinite dynamics.

With these high SPL specialists, you can close-mike drums, percussion and brass or other powerful sound sources with total accuracy for a clean, undistorted dynamic sound. These mics have been used to record space shuttle launches with excellent results.

The HMA5000 is a high quality power supply and mic amp, offering a solution with additional 10 dB headroom over the conventional phantom power supply. A transformerless, high-level, single-ended or electronically balanced signal path preserves the integrity of the audio signal and delivers excellent phase and low-distortion characteristics. These powerful features make the 4004 with HMA5000 High-Voltage Microphone Amplifier combination perfect for direct-to-track recordings. Read more about HMA5000 on page 14.

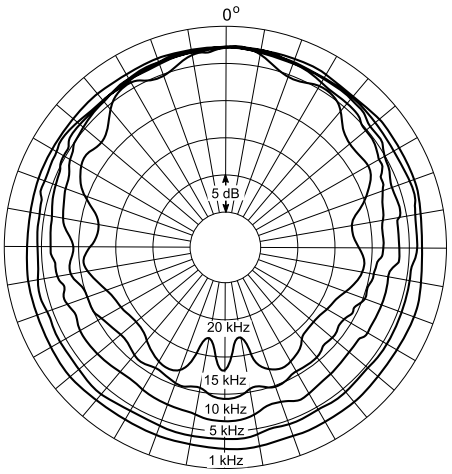
DPA Reference Microphones for high SPL recordings, inspecting loudspeakers, adjusting PA setups and other precision tasks.
4004 with HMA5000.

Specifications

4007
4004

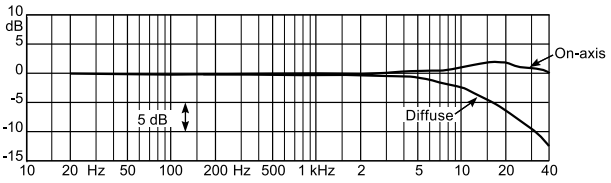
Directional characteristics:
Omnidirectional
Principle of operation:
Pressure
Cartridge type:
12 mm (0.47 in) pre-polarised condenser
Power supply:
4007: 48 V Phantom power
4004: 130 V via HMA5000
Frequency range, ±2 dB:
4007: 20 Hz – 40 kHz
4004: 10 Hz – 40 kHz
Sensitivity, nominal, ±2 dB:
4007: 2.5 mV/Pa; -52 dB re. 1 V/Pa
4004: 10 mV/Pa; -40 dB re. 1 V/Pa
Equivalent noise level, A-weighted:
Typ. 24 dB(A) re. 20 µPa
S/N ratio, re. 1 kHz at 1 Pa (94 dB SPL)
70 dB
Total Harmonic Distortion:
<0.5% up to 142 dB SPL peak
<1% up to 148 dB SPL peak
Dynamic range:
Typ.: 124 dB
Max. SPL peak before clipping:
4007: 155 dB
4004: 168 dB
Output impedance:
4007: <75 Ohm
4004: Matches HMA5000 input
Cable drive capability:
4007: Up to 300 m (984 ft)
4004: From microphone to HMA5000: Up to 20 m (66 ft) From HMA5000: Up to 300 m (984 ft)
Connector:
4004: 4 pin modified XLR-M (High Voltage)
4007: 3 pin XLR-M (Standard P48)
Dimensions:
Length: 165 mm (6.5 in)
Diameter: Capsule: 12 mm (0.47 in), housing: 19 mm (0.75 in)
Weight: 150 g (5.29 oz)

Polar Pattern



Directional characteristics of 4004 & 4007 (normalised).

Frequency Responses



On-axis and diffuse-field responses of 4004 & 4007.

Hydrophone

8011 Hydrophone, P48

Professional recording under extreme conditions

The DPA 8011 Hydrophone is the only high-quality, 48 V Phantom-powered, underwater omnidirectional microphone in the world which has been specially designed to handle high SPLs and high static ambient pressure in water and other fluids. It is the optimum choice for professional sound recordings under water, in extreme humidity, in gas-filled rooms, or under other extreme conditions.

With a full bandwidth of 100 Hz - 20 kHz, the 8011 Hydrophone uses a piezoelectric crystal sensing element, which is enclosed in a capsule so that it can withstand high pressure encountered at depths of up to 50 m without being damaged or suffering changes in its performance characteristics. The sensing element gives the 8011 a dynamic range of more than 100 dB, so that even large fluctuations in the SPL emitted from a sound source, or in the distance from the sound source to the hydrophone, will cause no distortion in the recorded audio signal.

Underwater applications

Adding live underwater sound to water sport broadcasts greatly enhances the viewer's experience and outside broadcasting teams will go to great lengths to make on-the-spot live recordings of water sports events. This often involves wrapping conventional microphones in plastic or rubber, risking the loss of both a one-off recording and an expensive microphone. The results are often disappointing, time consuming or expensive. The rugged, waterproof and easy-to-use 8011 is always ready for the toughest underwater applications. The 8011 is also ideal for clean, professional sound recordings when scuba diving with an underwater video camera.

Recording sound effects at sea

Collecting sounds for the audio post-production of a film or video can be rather tricky if the underwater location is the ocean. Even at great distances, the background-noise and reverberation from ships and other sound-sources can disturb recordings. A swimming pool or a lake is often used instead, but if there is no alternative to making authentic recordings at sea, for example recording sound from deep-sea marine animals, then the 8011 is the simple, cost-effective solution.

The 8011 uses a built-in precision preamplifier, which remains unaffected by temperature changes. The preamplifier is powered via a standard P48 system and is equipped with a standard 3-pin XLR-connector. It is supplied with a 10 m (33 ft) high-quality cable. The integrated cable has a robust and abrasion-resistant jacket, which allows the 8011 Hydrophone to be used in permanent installations immersed in water or ice over long periods of time without damaging the product or changing its specifications.

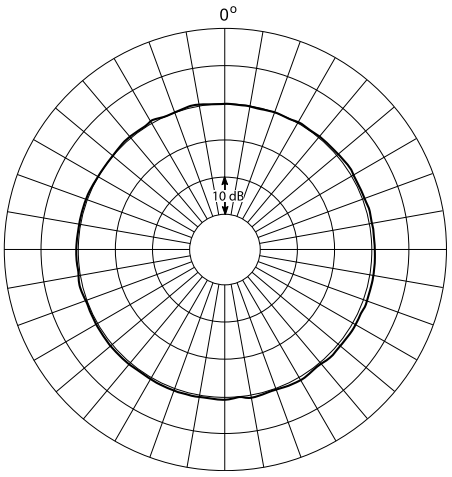
'To capture a call from a Baleen Whale passing in the distance is a pretty special moment'
Ashton Ward, sound recordist
Great Barrier Reef, Australia

Specifications

8011

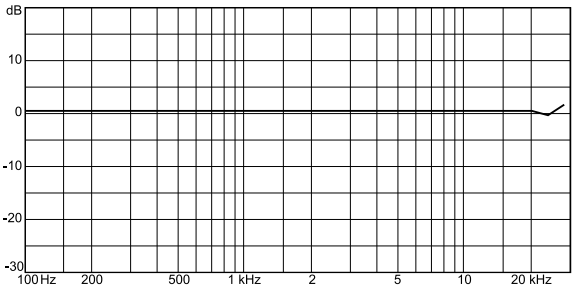
Directional characteristics:
Omnidirectional
Cartridge type:
Piezoelectric sensing element
Principle of operation:
Pressure
Power supply:
48 V Phantom
Frequency range:
100 Hz – 20 kHz ±3 dB
Sensitivity, nominal ±2 dB
0.7 mV/Pa; -63 dB re. 1 V/Pa
Equivalent noise level A-weighted:
Typ. <8 µV
Max SPL:
162 dB SPL peak
Output impedance:
<300 Ohm
Operating temperature range:
-10° to +50° C (+14° to 122° F)
Connector:
3-pin XLR-M (Standard P48)
Dimensions:
Microphone length: 150 mm (5.7 in)
Capsule diameter: 32 mm (1.2 in)
Weight: 500 g (1.1 lbs) (incl. cable)
Cable length: 10 m (33 ft)

Polar Pattern

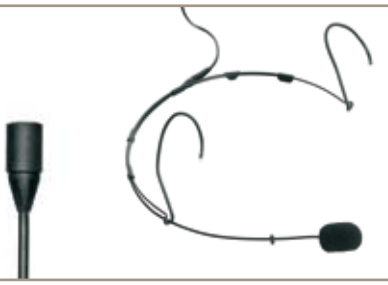


Directional characteristics of Hydrophone 8011 at 10 kHz.

Frequency Response



Typical frequency response of Hydrophone 8011.



Miniature Microphones & Headbands

Miniature Omnidirectional Microphones

DPA has no equal when it comes to the 4060, 4061, 4062 and 4063 professional omnidirectional miniature condenser microphones. Originally designed for use with wireless systems in theatre, television and close-miking instrument applications the capsule is smaller than a pencil eraser.

Because of their small size, these miniature mics show exceedingly true omnidirectionality, and therefore, do not need to be aimed directly at the sound source to achieve quality sound. They have a neutral character and a rounded present sound with a highly natural response. On stage, the miniature mics are completely undetectable, extremely rugged and reliable. Manufactured to exacting standards, the miniature range is tailored to handle heat, humidity and sweat as well as wind and popping.

4071 Miniature Omnidirectional Microphone with Presence Boost

The DPA 4071 is an omnidirectional miniature condenser microphone designed for live performance in TV broadcast and film applications. Its frequency response is customised for clarity of voice in body worn and hidden applications, with low-end roll off and presence boost, making this microphone the best choice for good sound in the field and on set.

4066 Omnidirectional Headband

The 4066 is primarily designed for head mounting on actors, public speakers, broadcast hosts, musicians and singers. The headband benefits from an outstandingly robust construction and provides a choice of left or right mounting. Small and lightweight, no other headband offers such a secure and comfortable fit. The DPA 4067 is a low DC and extra low sensitivity version of the 4066.

4088 Cardioid Headband

The DPA 4088 is a miniature cardioid headband mic designed for acoustically demanding live performance environments with high SPLs (144 dB) and when feedback is a concern. The sound is open, clear and natural. The mechanical design is based on the proven construction quality of the 4066 headband microphone. The headband mount is exactly the same, however the boom is longer, to compensate for the need for placement at the corner of the mouth.

The Miniature Microphones Catalogue features the entire range of DPA miniature microphones and accessories.

4060

4066

4088

Available in Black, Beige, White & Brown

Miniature Microphone Kits

IMK4061 Instrument Microphone Kit

The IMK4061 includes the tiny 4061 omnidirectional microphone, a phantom/XLR adapter and a variety of accessories designed to aid mounting the microphone on, and even in, a wide range of instruments.

The 4061 offers a very clean, detailed and natural sound. It can handle a robust 144 dB peak before clipping, allowing the microphone to be used even for snare drums, trumpets, guitar and bass speaker cabinets or other high SPL sources.

FMK4071 Film Microphone Kit

The FMK4071 is designed for film or TV production where the microphone needs to be hidden.

The kit includes a 4071 Miniature Omnidirectional Microphone with Presence Boost, a miniature concealer, tie pods, various pre-cut tape pieces, as well as a windjammer and miniature mesh to avoid wind- or pop noises.

EMK4071 ENG/EFP Microphone Kit

The EMK4071 kit is made for ENG/EFP applications where the microphone may be visible.

The kit includes 4071 Miniature Omnidirectional Microphone with Presence Boost, a variety of pins, clips and holders, a colour mix of windscreens as well as a windjammer and miniature mesh to avoid wind- or pop noises.

The kit also includes an XLR adapter which provides a 3 dB attenuation around 800 Hz, the final tonal adjustment needed for going directly on air or to track without equalising.

Microphone Windshield and Shock Mount

WINDPAC - M Microphone Windshield System, Medium
WINDPAC - L Microphone Windshield System, Large

The DPA WINDPAC is a revolutionary new lightweight microphone windshield system ideally suited for every type of application in film, radio, television and reporting, both indoors and outdoors. The system is comprised of a multi-mic compatible shock mount and a collapsible sound transparent windshield.

Universal mic holder and dual shock mount

The shock mount is universal and can be used with any microphone without the need for numerous extra fittings. This 'one size fits all' feature is accomplished by the use of adjustable elastic straps with different settings to accommodate any microphone. In addition, two mics can be mounted simultaneously to implement stereo miking techniques such as MS or XY, to capture the entire sound field.

Suspended on a web of rubber straps, the shock mount can be easily adjusted for optimal damping effect. With the built-in 'pistol grip', the shock mount can be handheld or it can be fixed to any boom pole with the standard 3/8" thread fitting in the base.

Finally, the lightweight, versatile shock mount can be adjusted both vertically and horizontally to provide positioning ease even in the most awkward of booming positions, while still maintaining an accurate stereo perspective.

Lightweight collapsible windshield

The microphone windshields consist of a light metal frame covered with a finely meshed filter-like material. This innovative fabric effectively shuts out the wind while allowing accurate sound reproduction and audio transparency. No extra fur is required. The medium windshield fits any microphone length up to 30 cm (11.8 in) while the large windshield fits any microphone length up to 41 cm (16 in).

Mounting a windshield onto the shock mount is just a matter of sliding and clicking it into place, a quick and easy process which results in extremely low handling noise. The windshield itself can be quickly collapsed in a simple twisting motion and stored away in its own compact carrying pack for secure and space-saving transportation.

For extended use in rainy weather a lightweight RainCover is provided. Made of a thin foam material the RainCover protects the windshield and microphone without significantly affecting the audio quality.

Both WINDPAC systems are supplied with a RainCover, mono cable and belt pouch. The specially designed lightweight, right-angle cable fits snuggly in to the base of the shock mount, efficiently reducing any handling noise. Other cable configurations are available for a variety of mics.




Visit www.windpac.com to view an animated presentation of the WINDPAC system.

WINDPAC
pat. pend.

Specifications

WINDPAC - M
WINDPAC - L

Windshield

Material: Polyester

Windshield, Large (for microphones up to 41 cm (16.1 in):
Length: 54 cm (21.3 in)
Weight: 175 g (6.2 oz)
Diameter: 21 cm (8.3 in)

Windshield, Medium (for microphones up to 30 cm (11.8 in):
Length: 39 cm (15.4 in)
Weight: 150 g (5.3 oz)
Diameter: 21 cm (8.3 in)

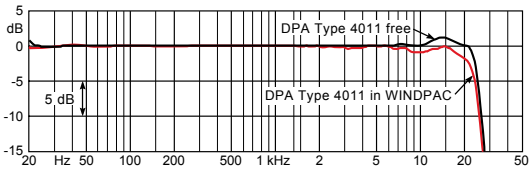
RainCover

Material: Polyester
RainCover, Large: Weight (dry): 43 g
RainCover, Medium: Weight (dry): 34 g

Shock Mount

Width: 11.5 cm (4.5 in)
Height: 20 cm (7.9 in)
Length: 11.5 cm (4.5 in)
Weight: 120 g (4.2 oz)

Frequency Response



Frequency responses of DPA 4011 in WINDPAC re. DPA 4011 without WINDPAC measured at a 30 cm (11.8 in) distance.

Accessories Available for WINDPAC

1	WSM4000	WINDPAC Shock Mount
2	WWS4000-M	WINDPAC Windshield, Medium
3	WWS4000-L	WINDPAC Windshield, Large
4	WRC4000-M	WINDPAC RainCover, Medium
	WRC4000-L	WINDPAC RainCover, Large
5	DAO0141	WINDPAC Cable, Mono - XLR
6	DAO0142	WINDPAC Cable, Stereo - 2 x XLR
7	DAO0145	WINDPAC Cable, Stereo - 5-pin
8	DAO0147	WINDPAC Cable, Stereo - 7-pin
9	WBP4000	WINDPAC Belt Pouch
	WXP4000	WINDPAC Pouch
	DDS4000	Rubber Suspension Kit

How to read microphone specifications

When reading microphone specifications, it is extremely important to understand how to interpret them. In most cases the specifications can be measured or calculated in many different ways. This article is designed to help evaluate specifications in a meaningful way.

What you can and cannot determine from specifications

While microphone specifications provide an indication of a microphone's electro-acoustic performance, they will not give you the total appreciation of how it will sound. Specifications can detail objective information but cannot convey the subjective sonic experience. For example, a frequency response curve shows how faithfully the microphone will reproduce the incoming pure sinusoidal frequencies, but not how detailed, well dissolved or transparent the result will be.

The decibel (dB) scale

The basis for most microphone specifications is the decibel scale. The dB-scale is logarithmic and is used because of its equivalence to the way the human ear perceives changes in sound pressure. Furthermore, the changes in dB are smoother and more understandable than the very large numbers that might occur in pressure scales (Pascal, Newton or Bar). The dB scale states a given pressure in proportion to a reference pressure, mostly 20 µPa. The reference pressure 20 µPa is chosen equal to 0 dB. Please note that 0 dB does not mean, that there isn't any sound; it only states the lower limiting sound pressure level of the average human ear's ability to detect sounds.

The dB scale can be used for quantifying absolute sound pressure levels. In this case the reference is 20 µPa that is referred to as 0 dB SPL or 0 dB re 20 µPa.

The dB scale is also found on frequency response curves. Here 0 dB is a reference output (a voltage), basically the sensitivity of the microphone.

Power supply

This defines the type of power supply used for the microphone. For DPA microphones it is either P48 (48 V Phantom supply), 130 V (from the dedicated HMA5000 high-voltage supply), or 5-50 V (via DPA adapters) for the miniature microphone types.

Phase

Phase equals time and phase shifts can be explained as changes in time arrival of specific frequencies. If a microphone treats frequencies with mutual different timing, phase shifts occur. It is also important that matched microphones used for stereo or surround recordings exhibit matching phase characteristics, preferably a maximum of 10° in the frequency range the microphone type is specified within.

Sensitivity

Sensitivity expresses the microphone's ability to convert acoustic pressure to electric voltage. The sensitivity states what voltage a microphone will produce at a certain sound pressure level. A microphone with high sensitivity will give a high voltage output and will therefore not need as much amplification (gain) as a model with lower sensitivity. In applications with low sound pressure levels, a microphone with high sensitivity is required in order to keep the amplification noise low. The sensitivity is measured in the free field at 250 Hz (omnidirectional microphones) or at 1 kHz (directional microphones). A serious microphone manufacturer will also state the tolerances in sensitivity, according to production differences - such tolerances would normally be in the region of 2 dB.

Example:
4006 Omnidirectional Microphone, P48

Sensitivity, nominal: ±2 dB: 10 mV/Pa; -40 dB re. 1 V/Pa

Equivalent noise level

The equivalent noise level (also referred to as the microphone's self-noise) indicates the sound pressure level that will create the same voltage as the self-noise from the microphone produces. A low noise level is especially desirable when

working with low sound pressure levels so the sound will not “drown” in noise from the microphone itself. The self-noise also indicates the lower limitation in the microphone’s dynamic range. When expressed in “dB(A)”, a special frequency weighting - called A-weighting - has been used. This weighting corresponds roughly to the way the human may perceive the noise. The level is carried out using a so-called RMS detector. Good results (very low noise) expressed this way are usually below 15 dB(A).

Example:
4041-S Large Diaphragm Microphone, Solid State, 130 V

Equivalent noise level, A-weighted: Typ. 7 dB(A) re. 20 µPa

Signal to noise ratio, S/N

The signal to noise ratio, or S/N, expresses the relation between a reference sound pressure level and the A-weighted equivalent noise level (self-noise). The reference sound pressure level is 94 dB re. 20 µPa. Hence the signal to noise ratio is 94 dB minus the equivalent noise level.

Example:
4041-T2 Large Diaphragm Microphone, Tube, 130 V

S/N ratio, re. 1 kHz at 1 Pa (94 dB SPL): 85 dB

Dynamic Range

The range from the equivalent noise level in dB(A) to the SPL where 1%THD occurs. Beyond this value a headroom up to the clipping point will be obtained.

SPL handling capability

In many recording situations it is essential to know the maximum Sound Pressure Level (SPL) the microphone can handle. Please note that in most music recordings maximum peak SPLs easily supersede the RMS value by more than 20 dB. The RMS value indicates an average SPL and will not show the true SPL peaks.

It is important to know:

1. The SPL where a certain percentage Total Harmonic Distortion (THD) occurs.
2. The SPL where the signal from the microphone will clip, that is the waveforms will become squares. This is the term: Max. SPL and it refers to peak values in SPL.

A commonly used level of THD is 0.5% (1% is also often seen), which is the point where the distortion can be measured, but not heard. Ensure that the THD specification is measured for the complete microphone (capsule + preamplifier), as many manufacturers only specify THD measured on the preamplifier, which distorts much less than the capsule. The distortion of a circular diaphragm will double with a 6 dB increase of the input level, so you can calculate other levels of THD by using this factor.

Example:
4004 Reference Microphone, 130 V

Maximum sound pressure level: 168 dB SPL peak

Total Harmonic Distortion: <0.5% up to 142 dB SPL peak, <1% up to 148 dB SPL peak

How to read microphone specifications (continued)

Output Impedance

The Impedance is defined as the microphone's internal impedance, measured between the output terminals.

Polar pattern

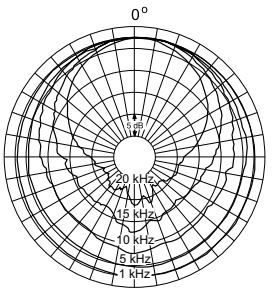
A polar pattern is used to show how certain frequencies are reproduced when they enter the microphone from different angles. The polar pattern can provide an indication of how smooth (or uneven) the off-axis colouration will be.

A reference point on the outer circle is defined, often by a 1 kHz sinusoidal tone aiming the microphone directly towards its diaphragm (0° = on top of the circle). Each shift between emphasised circles normally indicates a -5 dB step, unless otherwise indicated. In this way you will be able to determine how much weaker the signal will be around the microphone for certain frequencies.

Normalised means that every frequency pattern is set to 0 dB at 0°.

The response curves should be smooth and symmetric to show an uncoloured sound. Extreme peaks and valleys are unwanted and the response curves should not cross each other. From the polar pattern you can also see how omnidirectional microphones usually become more directional at higher frequencies.

Example:
4006 Omnidirectional Microphone, P48 with DD0251 Free-field Grid (normalised)



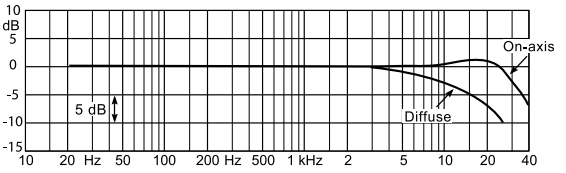
Frequency response

The frequency response curve illustrates the microphone's ability to transform acoustic energy into electric signals, and whether it will do so faithfully or will introduce colouration. Take care not to mistake frequency response for frequency range. The microphone's frequency range, will only give you a rough indication of which frequency area the microphone will be able to reproduce sound in, and within a given tolerance field. The frequency range is sometimes also referred to as "bandwidth"

Example:
4006 Omnidirectional Microphone, P48

Frequency Range:

On-axis: 20 Hz – 20 kHz ±2 dB



Multiple frequency response curves

Manufacturers of professional equipment will always provide more than one frequency response curve, as it is essential to see how the microphone will respond to sound coming from different directions and in different acoustic sound fields.

On-axis response

The on-axis response demonstrates the microphone's response to sound coming directly on-axis towards its diaphragm (0°). Be aware, that the on-axis response may be measured from different distances, which may influence the response on directional microphones because of the proximity effect.

Diffuse-field response

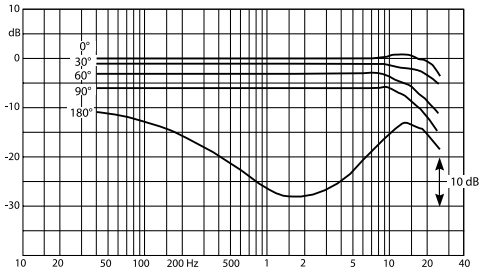
The diffuse-field response curve will illustrate how the microphone will respond in a highly reverberant sound field. This will be an acoustic environment where the sound has no specific direction but where all directions are equally probable. The reflections from walls, floor, ceiling, etc., are as loud as or louder than the direct sound and the sound pressure is more or less constant throughout the room. This is especially interesting when considering omnidirectional microphones, because they are able to register the full frequency range in the lower frequencies. The diffuse-field response will show a roll-off in the higher frequencies compared to on-axis measurements in the free-field.

Off-axis responses

The off-axis responses will reveal the microphone's response to sound coming from different angles. This is particularly interesting when you want to discover how a directional (i.e. cardioid) microphone will eliminate sound coming from angles other than directly towards the diaphragm. Even though the off-axis responses are attenuated on directional microphones, it is of extreme importance that these curves also show a straight frequency response, as it will otherwise introduce an off-axis colouration (curtain effect).

Example:
4011 Cardioid Microphone, P48

On and off-axis responses of 4011 measured in 30 cm (1 ft).



Proximity effect

Proximity effect is an inherent characteristic of pressure gradient microphones, resulting in a boost in the low-frequency response when the microphone is brought closer to a source and a roll-off when moved farther from the source.

Conclusion

Microphone specifications do not tell the whole story about a microphone's quality, and are no substitute for the sonic experience. Although microphone specifications may not be fully comparable between manufacturers, when properly evaluated they do provide useful objectivity and will help in the search for the optimal microphone.

Small and lightweight mics for high-end pickup of loud sound sources.
4053 Compact Omni on FIS4000 Flamingo Stand.

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Kaya Brüel
Kim Sjøgren
Martin Klausen
Ole Kibsgaard
Peter Rosendal
Poul Reimann
Royal Albert Hall
Thomas Fonnesbæk

Environmental Policy

DPA Microphones A/S wishes to be known as a "green" company. It is our company objective that DPA products are produced in accordance with the best ecological practices in order to preserve the environment we are all a part of. Consequently, it is our aim to cooperate with both national and international legislative bodies in order to fulfil the requirements and recommendations set forth in environmental standards and directives.

This means that through our conduct and in our design of new products, we shall pursue solutions that bear minimal impact on the ecology and are coherent with the latest legislation requirements (at present directive 9002/95/EC) at the time a new product is introduced to the market. These requirements are valid for DPA as well as for our suppliers.

With respect to waste disposal, we comply in full with the WEEE directive (9002/96/EC) and are prepared to comply to any amendments and succeeding requirements in connection hereto. Thus, starting from 1 January 2006, all DPA products that require a return for upgrading and/or reuse will be provided a "waste" label. This means that the product at the end of its usable life may be returned to the local DPA representative who is prepared to return the product to DPA for disposal under the national legislation program. Furthermore, DPA warrants that any DPA product bought after 1 January 2000 will be covered under the same program in order to ensure our end users adequate means to dispose of obsolete DPA products.

Service & Repair

Products from DPA Microphones are extremely stable, and there should not be any significant change in the specifications with time and use. If, however, you are not totally satisfied with the characteristics exhibited by these products, contact your nearest DPA Microphones representative for further details of service and the repair facilities that are available. Please contact DPA Microphones for your nearest representative on:

TEL: +45 48 14 28 28

FAX: +45 48 14 27 00

You can also get in touch with DPA Microphones at:
info@dpamicrophones.com

or visit our website at:
www.dpamicrophones.com

Warranty

All products from DPA Microphones are covered by a two-year limited warranty on both mechanical functionality and documented specifications as long as the items are not mistreated, abused or modified in any way. In case of a warranty claim your invoice is your warranty registration.

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