

USER'S MANUAL

Reference Microphones

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| Type 4004 |
| Type 4007 |

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TECHNICAL DESCRIPTION

The cartridge

Omnidirectional (pressure) microphones DPA 4004 and 4007 use a 12 mm (0.47 in) diameter prepolarised condenser cartridge. The diaphragm is a nickel foil which has been coated with an ultra-thin polymer layer for optimum corrosion resistance. The microphone housing is of German silver, an alloy with a high content of nickel to match the stable thermal qualities of the diaphragm. The self noise of the cartridge is typical 24 dB(A) re 20 µPa and the nominal sensitivity of 4004 and 4007 are 10 mV/Pa and 2.5 mV/Pa respectively. Due to the size of the cartridge it can handle extremely high SPLs, has an extended linear frequency response up to 40 kHz and a high degree of omnidirectionality, even for higher frequencies. For optimum stability the microphone cartridge has undergone a special pre-aging process which releases all tensions in the materials and stabilizes the polarisation voltage.

The preamplifiers

Types 4004 and 4007 are acoustically identical, but differ in their preamplifier powering system. The 4004 is powered with 130 V via the HMA5000 High-Voltage Microphone Amplifier and has a modified 4-pin XLR-connector (see Fig. 1 for pin designation). This special powering system enables the microphone preamplifier to handle approximately 10 dB higher SPL than similar microphone types powered through conventional P48 systems (4004: 168 dB SPL peak and 4007: 155 dB SPL peak).

Furthermore, the 4004 together with the HMA5000 is a totally transformerless system and therefore has an extended low-frequency handling capability (10 Hz to 40 kHz \pm 2 dB). The 4007 is powered via a standard P48 system and is equipped with a high quality audio transformer and a standard 3-pin XLR-connector (see Fig. 2 for pin designation). Types 4004 and 4007 use state of the art low-noise preamplifier technology and are driven with unity gain.

All microphones come with an individual calibration chart with the specifications of self noise, sensitivity and the frequency response.

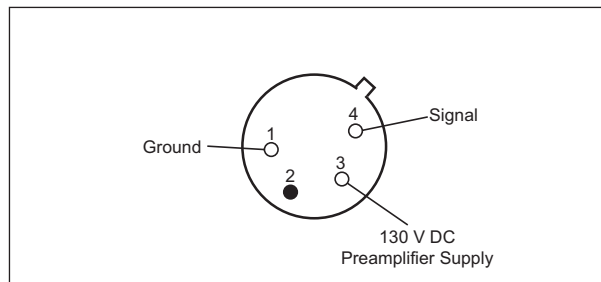


Fig. 1. External view of the output connector of the DPA 4004.

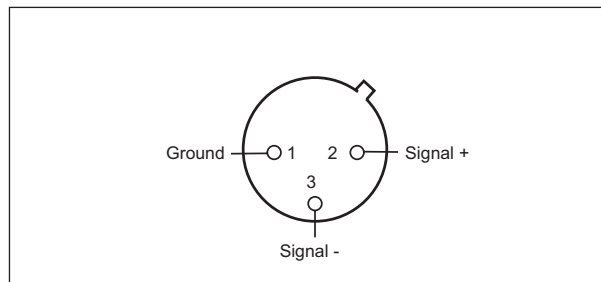


Fig. 2. External view of the output connector of the DPA 4007.

Important:
The microphone will only operate within its specifications if powered correctly.

The Passive Connection Converter

The PCC4000 Passive Connection Converter is an optional accessory that makes it possible to run High-Voltage Microphones on standard 48 V phantom power with reduced microphone specifications. The maximum reduction of the microphone SPL handling capability will be 13 dB and it is possible to drive up to 100 m (328.1 ft) of cable with the PCC4000 with the same specifications. Like the High-Voltage Microphones the PCC4000 is transformerless. The input connector is a modified 4-pin female XLR for connection directly to the microphone. The output is a standard 3-pin male XLR-connector for connection to standard cables.

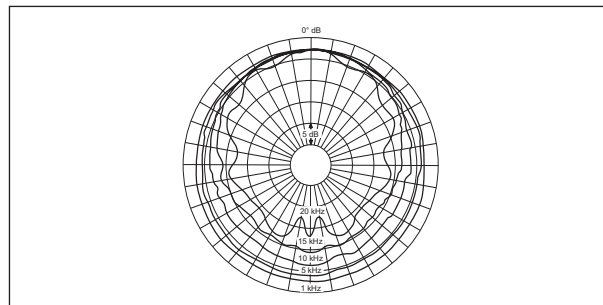


Fig. 4. Directional characteristics of DPA 4004 and 4007 (normalised)

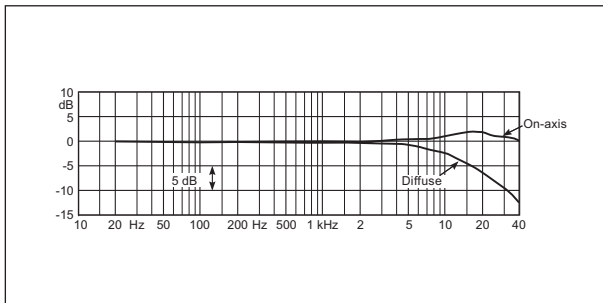


Fig. 3. On-axis and diffuse-field responses of DPA 4004 and 4007.

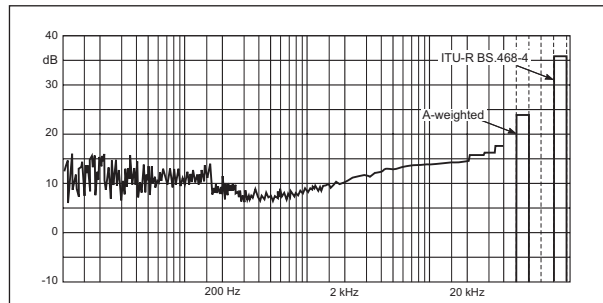


Fig. 5. Typical third-octave inherent-noise spectrum of DPA 4004 and 4007.

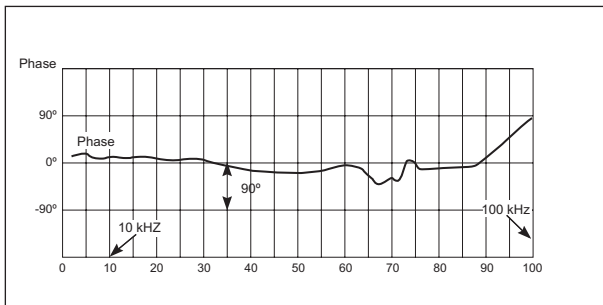


Fig. 6. On-axis phase response of DPA 4004 and 4007 plotted using a linear frequency axis for evaluation of the phase response.

FULL SPECIFICATIONS:

Cartridge type:

12 mm (0.47 in) pre-polarised condenser

Principle of operation:

Pressure

Power supply:

4004: HMA5000 for 130 V or PCC4000 for P48

4007: 48 V Phantom power

Frequency range, ± 2 dB:

4004: On-axis: 10 Hz - 40 kHz

4007: On-axis: 20 Hz - 40 kHz

Phase compatibility:

Max deviation between any two microphones: $\pm 5^\circ$ (50 Hz to 20 kHz)

Directional characteristics:

Omnidirectional

Sensitivity nominal, ± 2 dB:

4004: 10 mV/Pa; -40 dB re 1V/Pa

4007: 2.5 mV/Pa; -52 dB re 1V/Pa

Equivalent noise level A-weighted:

Typ. 24 dB(A) re 20 μ Pa (max. 26 dB(A))

Equivalent noise level ITU-R BS. 468-4

Typ. 36 dB (max. 38 dB)

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

70 dB

Max SPL, peak before clipping:

4004: 168 dB

4007: 155 dB

Total Harmonic Distortion:

<0.5% THD up to 142 dB SPL peak, <1% THD up to 148 dB SPL peak

Dynamic Range:

Typ. 124 dB

PREAMPLIFIER:

Frequency range:

4004: 20 Hz to 50 kHz ± 0.2 dB 5 Hz to 150 kHz -3 dB

4007: 20 Hz to 40 kHz ± 1 dB

Output impedance:

<75 Ohm

Cable drive capability:

- 4004: HMA 5000: Up to 300 m (984.3 ft)
- 4004: With PCC4000: Up to 100 m (328.1 ft)
- 4007: Up to 300 m (984.3 ft)

Polarity:

- 4004: Positive going sound pressure produces positive going voltage at pin 4.
Pin 1: Ground, Pin 2: Not used, Pin 3: 130 V DC preamplifier supply, Pin 4: Signal. (See Fig. 1).
- 4007: Positive going sound pressure produces positive going voltage at pin 2.
Pin 1: Ground, Pin 2: Signal +, Pin 3: Signal return. (See Fig. 2)

Difference frequency distortion:

(DF2, DF3, Df = 80 Hz) <1% at 153 dB SPL peak

Temperature coefficient:

- 0.025 dB/° C at 25° C, 1013 hPa, 250 Hz
- Static pressure coefficient:
-0.002 dB/hPa at 25° C, 1013 hPa, 250 Hz

Influence of vibration:

69 dB equivalent SPL for 1 m/s² in direction of greatest sensitivity

Influence of magnetic field:

45 dB equivalent SPL for 80 A/m, 50 Hz in direction of greatest sensitivity

Operating temperature range:

-10 to +70° C (+14 to 158° F)

Connector:

- 4004: 4-pin modified XLR-M (High Voltage)
- 4007: 3-pin XLR-M (Standard P48)

DIMENSIONS:

- Microphone length:** 165 mm (6.5 in)
- Microphone diameter:** 19 mm (0.75 in)
- Capsule diameter:** 12 mm (0.47 in)
- Weight:** 150 g (5.29 oz)

FOR USE WITH MICROPHONE AMPLIFIER

- HMA5000 High Voltage Microphone Amplifier, 2 ch.

ACCESSORIES INCLUDED**Microphone Holders & Suspension Mounts**

- UA0639 Microphone Clip

Windscreens

- UA0658 Windscreen for 4004/07

ACCESSORIES AVAILABLE**Shock Mounts**

- WSM4000 Shock Mount WINDPAC
- UA0897 Shock Mount

Shock Mount Rubbers

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

Microphone Holders & Suspension Mounts

- UA0961 Microphone Holder

Stereo Accessories

- UA0836 Stereo Boom with Holders
- UA0837 Stereo Boom excluding Holders

Floor & Table Stands

- MB4000 Magnet Base
- TB4000 Table Base

Connection Adapters

- HTP4000 Converter: 130 V to P48
- PCC4000 Passive Connection Converter: P48 to 130 V

Cables

- DAO0130 Microphone Cable for 4003/04/12/16, 5 m (16.4 ft)
- DAO0131 30 V Microphone Cable 4003/04/12/16, 10 m (32.81 ft)

Windscreens

- DUA0090 Pop-filter
- WINDPAC-M Microphone Windshield System, Medium

CARE OF MICROPHONE

It is important to bear in mind the following points with regard to mounting, microphone care and the use of accessories:

The microphone cartridge is tightly secured to the main body housing, and no attempt should be made to remove it. If a replacement cartridge is required, contact your local DPA Microphones representative.

Use of windscreen is recommended when microphones are used in dirty or dusty environments.

When not in use, the microphone should be disconnected and kept in the case supplied.

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. DPA Microphones has a maximum seven working days in-house service policy, usually ensuring that no more than seven working days will elapse from the day we receive the item for service to the day we are ready to return it to you. Please contact DPA Microphones for your nearest representative on

TEL: + 45 48 14 28 28

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You can also get in touch with DPA Microphones at:

info@dpamicrophones.com

or visit our website at:

www.dpamicrophones.com

ENVIRONMENTAL POLICY

This product is comprised by the Waste (WEEE) directive and should not be thrown in the garbage bin when obsolete. Instead, return it to your local DPA representative (or DPA Microphones A/S directly) who will dispose of the product in accordance with the current environmental standards.



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.

CE-MARKING

The CE-mark guarantees that the product conforms with relevant Directives approved by the European Commission.
EMC Directive: 89/336/EC, amended by 92/31/EC and 93/68/EC
Low voltage Directive: 73/23/EC, amended by 93/68/EC

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