

User's Manual

High SPL
Omnidirectional
Microphones
Type 4004
Type 4007



DPA 
MICROPHONES

High SPL Omnidirectional Microphones
Type 4004, Type 4007

Technical Description	Page 2
Full Specifications	Page 4
Care of Microphones	Page 10
Service and Repair	Page 11
Warranty	Page 11
CE Standard	Page 11

The cartridge

Types 4004 and 4007 are omnidirectional (pressure) microphones which use a 12mm diameter prepolarized 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 24dB(A) re. 20 μ Pa and the nominal sensitivity of the Types 4004 and 4007 are 10mV/Pa and 2.5mV/Pa respectively. Due to the size of the cartridge it can handle extremely high SPLs, has an extended linear frequency response up to 40kHz and a high degree of omnidirectionality, even for higher frequencies. For optimum stability the microphone cartridges have undergone a special pre-aging process which releases all tensions in the materials and stabilizes the polarization voltage.

The preamplifier

Types 4004 and 4007 are acoustically identical, but differ in their preamplifier powering system. The 4004 is powered with 130V via the HMA4000 Two-Channel High-Voltage Microphone Amplifier and has a modified 3-pin XLR-connector (see Fig. 1 for pin designation). This special powering system enables the microphone preamplifier to handle approximately 10dB higher SPL than similar microphone types powered through conventional P48 systems (4004: 168dB SPL peak and 4007: 155dB SPL peak). Furthermore, the 4004 together with the HMA4000 is a totally transformerless system and therefore has an extended low-frequency handling capability (10Hz to 40kHz \pm 2dB). 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.

Important: The microphones will only live up to their specifications if powered correctly.

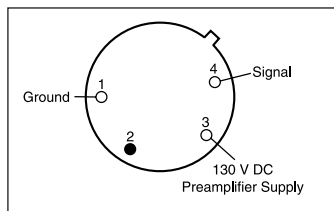
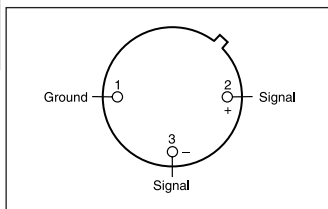


Fig. 2.
External view of the output socket of the Type 4007.

Fig. 1.
External view of the output socket of the Type 4004.



The Passive Connection Converter

The PCC4000 Passive Connection Converter is an optional accessory that makes it possible to run High-Voltage Microphones on standard 48V phantom power with reduced microphone specifications. The maximum reduction of the microphone SPL handling capability will be 13dB and it is possible to drive up to 100m 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.

Cartridge type: Pre-polarized condenser B&K Type MM0043

Principle of operation: Pressure

Power Supply: 4004: HMA4000 Two-channel High-Voltage Microphone Amplifier - 130V or PCC4000 Passive Connection Converter for P48
4007: Phantom P48

Frequency range: 4004: On-axis: 10Hz - 40kHz ± 2 dB up to 152dB SPL peak
4007: On-axis: 20Hz - 40kHz ± 2 dB up to 135dB SPL peak

Phase response: Phase matching between any two microphones: $\pm 5^\circ$
(50 Hz to 20kHz)

Directional characteristics: Omnidirectional

Sensitivity: 4004: Nominally 10mV/Pa; -40dB re. 1V/Pa unloaded (at 250Hz)
4007: Nominally 2.5mV/Pa; -52dB re. 1V/Pa unloaded (at 250Hz)

Equivalent noise level A-weighted: Typ. 24dB(A) re. 20 μ Pa (max. 26dB(A))

Equivalent noise level CCIR 468-1: Typ. 36dB (max. 38dB)

Max SPL: 4004: 168dB SPL peak (f < 4kHz)
4004: 165dB SPL peak (f < 15kHz) with PCC4000: 155dB SPL Peak
4007: 155dB SPL peak (f > 200Hz)

Total Harmonic Distortion: 142 dB SPL peak (<0.5% THD),
148 dB SPL peak (<1% THD)

Preamplifier:

Frequency range: 4004: 20Hz to 50kHz $\pm 0,2$ dB, 5Hz to 150kHz -3dB
4007: 20Hz to 40kHz ± 1 dB

Output impedance: <75 Ohm

Cable drive capability: 4004: With HMA4000: Up to 300m
4004: With PCC4000: <100m
4007: Up to 300m

Polarity: 4004: Positively increasing 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: Positively increasing 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 = 80Hz) <1% at 153dB SPL peak

Temperature coefficient: -0,025dB/°C at 25°C, 1013 hPa, 250Hz

Static pressure coefficient: -0,002dB/hPa at 25°C, 1013 hPa, 250Hz

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

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

Operating temperature range: -10 to +70°C (+14 to 158°F)

Dimensions:

Microphone length: 165mm

Microphone diameter: 19mm

Capsule diameter: 12mm

Weight: 150g

For use with Microphone Amplifier:

HMA4000 Hi-Voltage Microphone Amplifier, 2 ch.

Accessories Included

Microphone Holders & Suspension Mounts

UA0639 Microphone Clip

Windscreens

UA0658 Windscreen for Ø12mm Microphone

Accessories Available

Shock Mounts

RSM4000 Shock Mount for Windjammer

UA0897 Shock Mount

Shock Mount Rubbers

DDS0731 Rubber Mount 19mm, 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: 130V to P48
- PCC4000 Passive Connection Converter: P48 to 130V

Cables

- AO0182 P48 Microphone Cable, 5m
- AO0261 130V Microphone Cable, 5m (Type 2812)
- DAO0130 130V Microphone Cable, 5m (Type HMA4000)

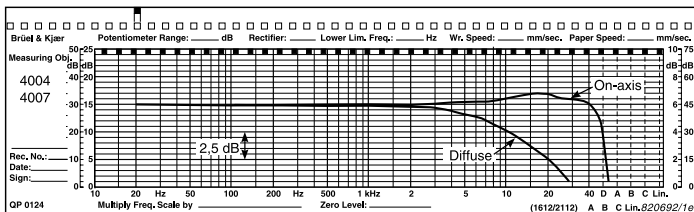


Fig. 3. On-axis and diffuse-field responses of Types 4004 and 4007.

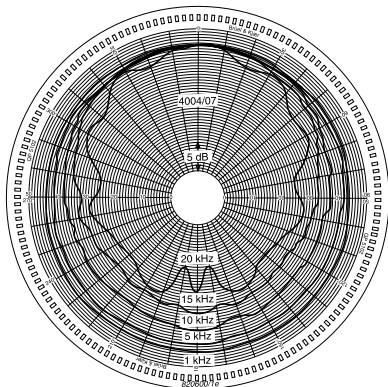


Fig. 4.
Directional characteristics
of Types 4004 and 4007.

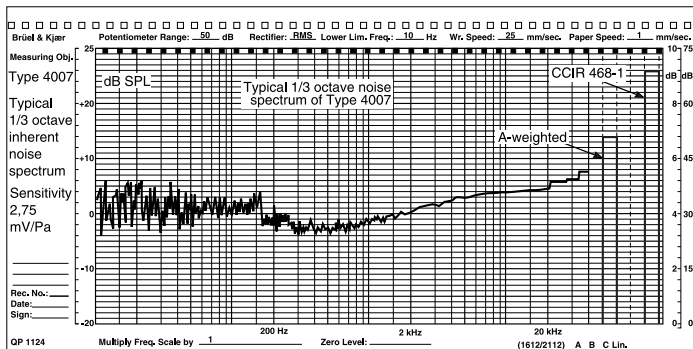


Fig. 5. Typical third-octave inherent-noise spectrum of Type 4007.

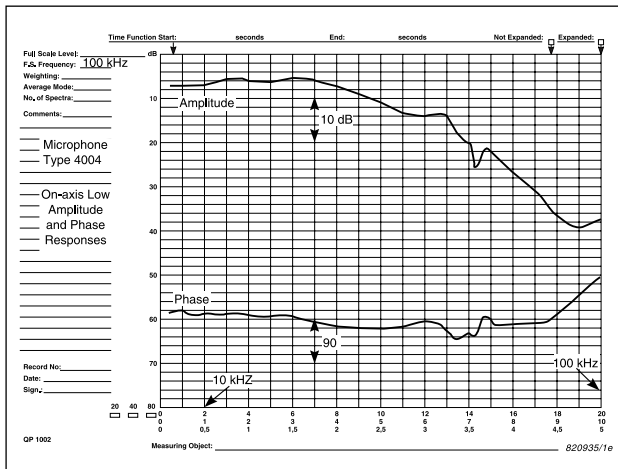


Fig. 6. On-axis amplitude and phase response of Types 4004 and 4007 plotted using a linear frequency axis for evaluation of the phase response.

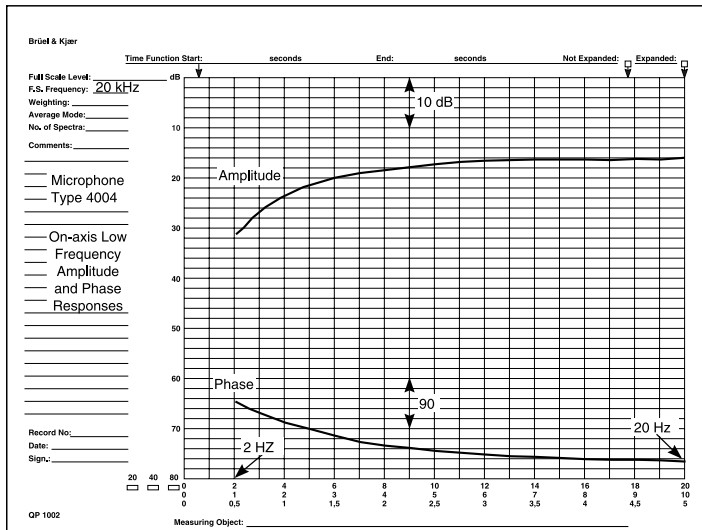


Fig. 7. On-axis low-frequency amplitude and phase and responses of Types 4004 and 4007.

It is important to bear in mind the following points with regards 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, then 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, guaranteeing 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. Your satisfaction is our satisfaction.

Please contact DPA Microphones for your nearest representative on tel. +45 48 14 28 28 or fax +45 48 14 27 00.

Warranty

All products from DPA Microphones are covered by a limited warranty on both their mechanical functionality and their documented specifications. We are so confident of the quality of these products, that this warranty is valid for one year from the date of purchase, as long as the items are not directly mistreated or abused. In case of a warranty claim, your invoice is your warranty registration.

CE Standard

The CE-mark guarantees all products conform with relevant standards approved by the European Community. The products described in this User's Manual comply with current relevant standards when used with cables from DPA Microphones.

EMC Directive: 89/336/EEC, amended by 92/31/EEC and 93/68/EEC

Low Voltage Directive: 73/23/EEC, amended by 93/68/EEC



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