

USER'S MANUAL

Compact Omnidirectional Microphones Ø16 mm

Type 4051

Type 4052

Type 4053

Included in kit solutions

Type 3552

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TECHNICAL DESCRIPTION

The cartridge

Types 4051, 4052 and 4053 are Omnidirectional (pressure) microphones that use the same microphone capsule as the standard microphones Types 4003 and 4006 - a 16 mm (0.63 in) 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 cartridge has low self noise (typical 15 dB(A) re 20 mPa) and high sensitivity (30 mV/Pa). For optimum stability the microphone cartridge has undergone a special pre-aging process which releases all tensions in the materials and stabilizes the polarization voltage.

The preamplifier

The Compact Omnidirectional Microphones use built-in ultra-small, thick-film preamplifiers with unity-gain, low noise FET-amplifier technology. The thick-film technology enables the microphone cartridge to be mounted on an exceptionally compact microphone housing with the preamplifier mounted directly behind the microphone cartridge. A circuit of passive components in the standard 3-pin XLR connector adapts the P48 phantom powering, separates the supply voltage from the audio signal and acts as an impedance balancing circuit for optimum noise immunity. The preamplifier has a cable drive capability of up to 100 m (3.94 in) after the XLR-connector (See Fig. 1 for pin designation).

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

The mechanical design

Types 4051, 4052 and 4053 are acoustically identical, but differ in their mechanical design. All Compact Omnidirectional Microphones are delivered with 5 m (16.4 ft) of extremely flexible, high quality microphone cable as standard. The 4051 cable is side-mounted on the microphone and the 4052 cable is rear-mounted. The 4053 feature a co-axial Lemo-connector, for simple and safe attachment mounting of the microphones to DPA Compact Active Poles.

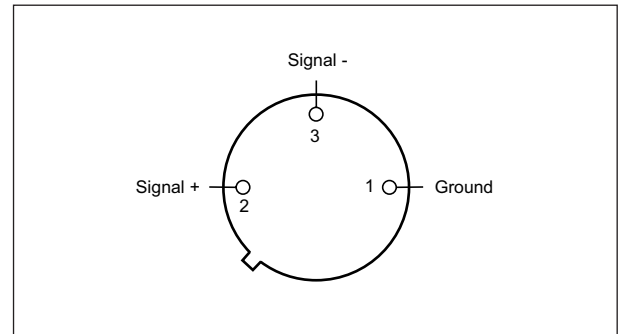


Fig. 1. External view of the output socket of the standard 3-pin XLR-connector used in the Types 4051, 4052 and 4053.

Important: The microphones will only operate within their specifications if powered correctly.

The Near-field Grid

The Near-field Grid DD0251 on the microphone cartridge is designed to have a linear on-axis frequency response for near-field applications (see Fig. 2 for frequency responses measured with the Near-field Grid). The grid is factory mounted but can be exchanged with the DD0297 Diffuse-field Grid or the UA0777 Nose Cone. Please be extremely careful not to touch the exposed diaphragm when changing the grids.

The Diffuse-field Grid

The Diffuse-field Grid DD0297 is supplied as standard. It is designed for diffuse-field recordings, or recordings in the far field. The grid gives a high-frequency boost on-axis of 6 dB around 15 kHz (see Fig. 3) without adding noise to the recording. This boost gives a linear diffuse-field (far field) response up to 15 kHz.

The Nose Cone

The Nose Cone UA0777 is included in the 3552 kit and is available as an optional accessory for 4051, 4052 and 4053. As with the Diffuse-field Grid DD0297, the Nose Cone is simply screwed onto the microphone cartridge in place of the Near-field Grid DD0251. When fitted, the Nose Cone gives the microphone a true omnidirectional response even at high frequencies (see Fig. 6) and a linear diffuse-field response (see Fig. 4). These qualities are useful at any distance for an even tonal balance of sound arriving at all angles of incidence, e.g. room reverberation or several sound sources placed around the microphone. The diaphragm is placed in a slot behind the solid cone and sound waves only have access to the diaphragm through the side of the Nose Cone. This way the Nose Cone prevents an on-axis, high frequency sound pressure build-up on the microphone, which is the reason for normal flat fronted omnidirectional microphones becoming more and more directional for higher frequencies. There is however, a slight high frequency boost on axis.

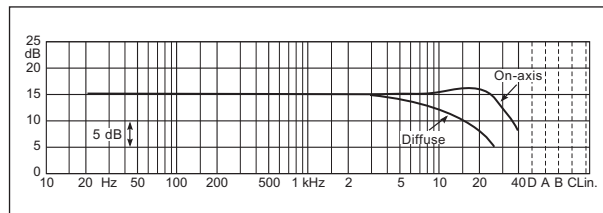


Fig. 2. On-axis and diffuse-field responses of Types 4051, 4052 and 4053 with the Near-field Grid DD0251 fitted.

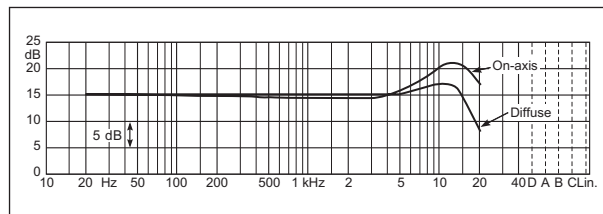


Fig. 3. On-axis and diffuse-field responses of Types 4051, 4052 and 4053 with the Diffuse-field Grid DD0297 fitted.

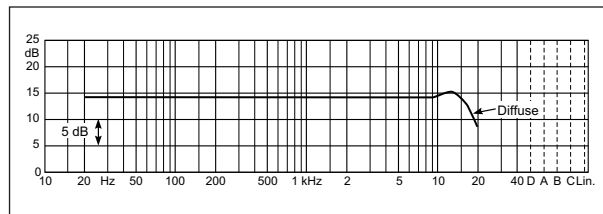


Fig. 4. Diffuse-field response of Types 4051, 4052 and 4053 with Nose Cones UA0777 fitted.

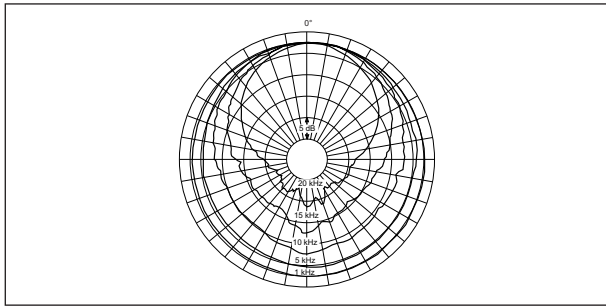


Fig. 5. Directional characteristics of Types 4051, 4052 and 4053 with the Near-field Grid DD0251 fitted.

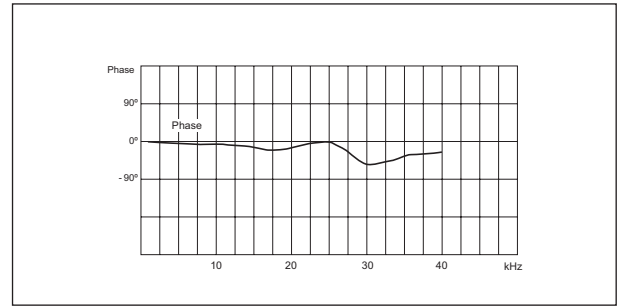


Fig. 7. On-axis phase response of Types 4051, 4052 and 4053 plotted using a linear frequency axis for evaluation of the phase response.

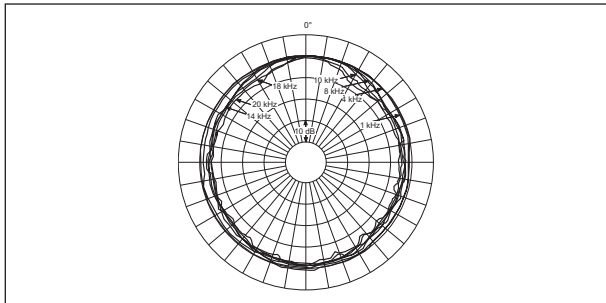


Fig. 6. Normalized directional characteristics of Types 4051, 4052 and 4053 with Nose Cone UA0777 fitted.

SPECIFICATIONS

Directional characteristic:

Omnidirectional

Sensitivity:

Nominally 30 mV/Pa (at 250 Hz)

Cartridge type:

Pre-polarized condenser Type MM0042

Principle of operation:

Pressure

Power supply:

Phantom P48

Frequency range:

On-axis: 20 Hz - 20 kHz ± 2 dB

Phase response:

Phase matching between any two microphones: $\pm 10^\circ$
(50 Hz to 20 kHz)

Equivalent noise level A-weighted:

Typ. 15 dB(A) re 20 μ Pa (max. 17 dB(A))

Equivalent noise level ITU-R BS.468-4:

Typ. 27 dB (max. 29 dB)

Max SPL before clipping occurs:

135 dB SPL peak

Total Harmonic Distortion:

125 dB SPL peak (<0.5% THD)

Polarity:

Positive going sound pressure produces positive going voltage on pin 2

Preamplifier output impedance:

<300 Ohm

Cable drive capability:

Up to 100 m (328 ft)

Difference frequency distortion:

(DF2, DF3, DF = 80 Hz) <1% at 130 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:

64 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)

DIMENSIONS:

Microphone length:

4051: 25 mm (0.98 in)

4052: 20 mm; 37 mm incl. cable relief (0.79/1.46 in)

4053: 28 mm; 69 mm incl. cable relief (1.10/2.72 in)

Microphone diameter:

16 mm (0.63 in)

Capsule diameter:

16 mm (0.63 in)

Weight:

4051: 22 g (0.78 oz) (without cable)

4052: 20 g (0.71 oz) (without cable)

4053: 22 g (0.78 oz) (without cable)

ACCESSORIES INCLUDED

Holders

SM4000 Suspension Mount

Acoustic Equalizers

DD0251 Near-field Grid, Silver

DD0297 Diffuse-field Grid, Black

Windscreens

DUA0050 Small Windscreen for Ø16 mm (0.63 in) Microphone

ACCESSORIES AVAILABLE

Stands

CAP0400 Compact Active Pole, 400 mm (15.75 in)

CAP0750 Compact Active Pole, 750 mm (29.53 in)

CAP1250 Compact Active Pole, 1250 mm (49.21 in)

DUA0100 Stand Extension, 100 mm (3.4 in)

DUA0250 Floor Base, Ø250 mm (9.84 in)

DUA0500 Stand Extension, 500 mm (19.69 in)

FGS4000 Flamingo Grand, Single Stand

FGT4000 Flamingo Grand Twin, Double Stand

FJS4000 Flamingo Junior, Short Single Stand

SJD4000 Swivel Joint, Double

SJS4000 Swivel Joint, Single

Holders

CH4000 Microphone Holder for Cello

CSM4000 Compact Shock Mount

GM4050 Gooseneck Mount, 16 mm (0.63 in)

MB4000 Magnet Base

SAX4000 Microphone Holder for Saxophone

TB4000 Table Base

TSM4000 Table Shock Mount and Horn

UA0837 Stereo Boom excluding Holders

VH4000 Microphone Holder for Violin and Bass

Acoustic Equalizers and Windscreens

UA0777 Nose Cone

UA0638 Windscreen for Ø16 mm (0.63 in) Microphone

Shock Mount Rubbers

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

3552: Compact Omni Kit, 48V

The 3552 is a complete stereo kit with two carefully matched 4052 Compact Omni Microphones. Together with the 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.

With the A-B stereo principle, time differences will act as stereo cues to enable the listener to "capture the space" in the recording, and experience a vivid stereo image of the complete sound-field with a full bass response.

The complete kit is supplied in a sturdy carrying case and includes 2 Gooseneck Mounts, 2 Magnet Bases for mounting on metal surfaces and 2 Nose Cones. The Nose Cone will give the microphone a perfect omnidirectional response across the whole audio frequency range. (See Fig. 4 and Fig. 6)

3552 KIT INCLUDES

- 2 x 4052 Omnidirectional Microphone, Ø16 mm (0.63 in),
Rear Cable (matched)
- 2 x GM4050 Gooseneck Mount, 16 mm (0.63 in)
- 2 x MB4000 Magnet Base
- 2 x UA0777 Nose Cone



3552

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 Compact Series Microphones are delivered in a rugged case together with a reel for the cable. Inside the reel there is room for both the microphone and the XLR-connector for maximum protection. When packing the microphones, first place the microphone and the XLR-connector inside the reel, then roll up the cable.



Fig. 9. First place the microphone and the XLR-connector inside the reel, then roll up the cable.

"The compact series microphones" are delivered together with the SM4000 Suspension Mount for applications where the microphones need to be suspended from their own cable. To position the microphone you can bend and rotate the SM4000.

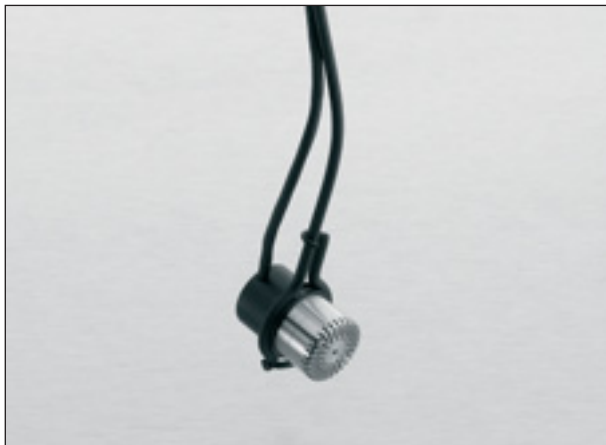


Fig. 10. Correct placement of the SM4000 on a DPA 4051.

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.

Types 4051, 4052 and 4053 are supplied with an additional Diffuse-field Grid, Black DD0297 (see "Technical Description" and "Specifications"). On delivery, the normal protection grid is screwed on to the cartridge housing and normal finger torque is required to

remove it. Do not try to unscrew or tighten the protection grids with any kind of tool as both surface and thread might be damaged.

When changing grids or changing from grid to Nose Cone, be very careful to avoid any contact with the diaphragm. Over time a visible dust layer can build up on the diaphragm. Since the mass added is extremely small and the influence on the frequency response is negligible, the dust will not change the characteristics of the microphone. Therefore, cleaning the diaphragm is not necessary and should not be attempted.



Fig. 11. Be careful to avoid any contact with the diaphragm.

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.

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

Product features and specifications are subject to change without notice.