

USER'S MANUAL

Omnidirectional Miniature Microphones

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| Type 4060 |
| Type 4061 |
| Type 4062 |
| Type 4063 |
| Type 4065 |
| Type 4066 |
| Type 4067 |

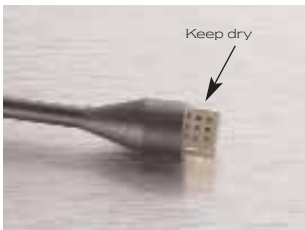
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INTRODUCTION

To ensure optimal performance of your DPA Miniature Microphone, please follow the simple care and maintenance instructions below.

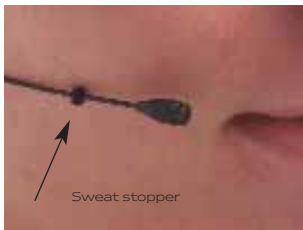
Miniature Microphones from DPA are designed to be very resistant to humidity, moisture and sweat. Highly resistant materials like gold plated stainless steel, and features like the double-vent protection system are used in construction of the microphones, to avoid damage by hostile fluids. In any case, it is still a good idea to keep the Miniature Microphones away from any kind of unnecessary exposure to water and cleaning fluids and to keep the microphone element dry at all times.



CLEANING GUIDE

The cable and protection grid are the only parts that may be cleaned if necessary. Do not use any kind of cleaning fluid other than distilled water. Use of ultra-sonic baths must be avoided. Avoid all kinds of spray or fluids, which contain chemical components to remove static electricity or or close to the microphone as this could cause damage to the electret layer.

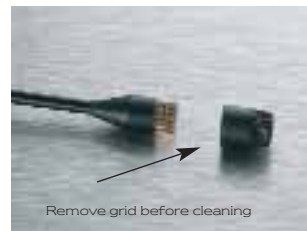
When mounting the Miniature Microphone directly on the skin of a performer, care should be taken to avoid sweat from running directly into the microphone. If the microphone gets filled up with water it will not be damaged, but possibly turn deaf while the water is captured inside the microphone, behind the protection grid. Remove the water by shaking the microphone or drying it with a piece of lint free cloth.



Note: If the microphone has been exposed to sweat it must be rinsed out in distilled water and left to dry out to recover its original specifications. Drying out the Miniature Microphone between exposures to humidity will also help to extend its lifetime.

Cleaning the microphone grid

During use in environments where the microphone is exposed to make-up or dusty materials, the grid may get clogged up. Remove the microphone grid from the microphone element and clean the grid using a soft cloth and distilled water only. Make sure the grid is dry before remounting it on the microphone element.



Cleaning the microphone cable

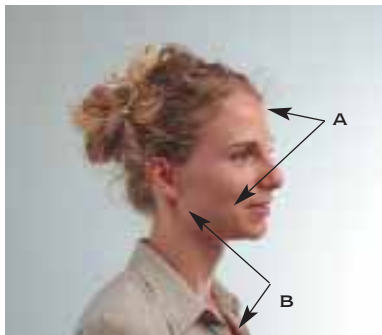
Residue from tape, glue or make-up on the cable must be removed after use. Leaving these substances on the cable over longer periods of time may etch into the cable jacket and will make the cable more susceptible to breaks. The cable can easily be cleaned using organic oil (e.g. olive oil) or lukewarm, distilled water.

Do not bend the cable or rub it harshly since this may stress the inner cores of the cable and cause them to break over time.

Cleaning the microphone element

The microphone diaphragm is protected inside the microphone element housing and access to the diaphragm is via a perforated grid only. It is therefore well protected from dust build-up and no attempt to clean the element should be made.

In case any make-up, paint or other materials have reached the element through the grid, the only recommended method to clean the microphone element is to use a dry cotton bud. Clean (or wipe) the sides of the element facing away from the perforated protection grid only.

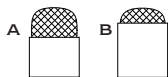


CORRECT USE OF THE MINIATURE MICROPHONE

It is important to observe the following guidelines concerning the daily use of the microphone.

Correct use of microphone grids

The two different protection grids that are supplied with the Miniature Microphones Type 4060, 4061, 4062, 4063 and Adjustable Miniature Microphone Headbands Type 4066 and 4067 are for acoustical equalization, according to the placement on the body of the performer. When mounted on the head of the performer, the microphone normally needs a 3 dB soft boost at 8-20 kHz,



A Soft boost grid

B High boost grid

provided by the soft boost grid (position A). Type 4065 Miniature Microphone Headband is only supplied with the soft boost grid, as the microphone will always be placed near the mouth.

Note: The microphone is supplied with the soft boost grid fitted. This grid must be removed before being replaced by the high boost grid. Avoid excessive force or tampering when removing or mounting the grid as it may cause damage to the grid and the net on top of the grid may become detached.

A tip would be to use the connector tightening tool mentioned on page 7.

Correct use of the microphone element

The diaphragm in the microphone element is the most sensitive part of the unit and as emphasized earlier, it must be left untouched to preserve its original characteristics. Do not spray any substances such as hair spray directly into the microphone and avoid getting make-up or paint on the microphone element and housing. The protection grids are available in three standard colours: Black, beige and white. Check if a different coloured protection grid will be less visible before painting or colouring a microphone grid.



DMM0008 Miniature Clip, Double Lock

Correct treatment of the microphone cable

The cable is usually longer than required for its actual purpose. Ensure that superfluous cable is wound up in soft loops (preferably 6-8 cm in diameter). Avoid 'kinks' in the cable. Exposing the cable to stretching beyond its specifications or stressing it by winding it tightly over sharp edges will reduce the microphone's operational life.

Tip: Handling noise from the cable can be decreased by up to 30dB by making a loose loop in the cable, as close to the microphone element as possible. The DMM0008 Miniature Clip, double lock, is designed for this mounting technique. See picture on page 5.

Tip: The place where the cable enters the MicroDot connector will sometimes be exposed to excessive stress and after long term heavy-duty use, the cable might show signs of wear at this point. As a preventive maintenance procedure, it may be advisable to replace the connector in this instance. Contact the nearest DPA Microphones representative for maintenance advice or assistance.



Correct way to wind up the cable of the Miniature Microphone. Please note the slack after the connector.

Correct use of adapters and MicroDot connectors

To provide users with safe and compact mounting of connectors, all Miniature Microphones from DPA are fitted with the MicroDot connector as standard. A broad range of connection adapters is offered as optional accessories for most VHF and UHF systems for professional use. The adapters are ultra-compact and will in most cases take up no more space than the original connectors.

A connector-tightening tool is supplied with each adapter and should be employed whenever the MicroDot connector needs to be tightened safely onto the adapter for

loosen or tighten the connector by the cable or its strain relief! Despite the use of Kevlar®, the cable might be damaged if twisted with excessive force. Tighten the MicroDot using finger torque or the recommended tightening tool only. Do not use glue.



A connector tightening tool is supplied with each adapter.

Do not mount any other connector onto the cable than the standard MicroDot connector from DPA Microphones. The DPA MicroDot connector is specially designed for use with the Kevlar® reinforced cable, ensuring the maximum possible tensile strength in the design. In case of failure, MicroDot spare parts, assembly tool and assembly guide can be acquired. Various wireless systems require the use of electronic components inside the adapter

to optimise the signal level, the DC-offset filtering and powering of the built-in microphone preamplifier. Using the adapters from DPA Microphones ensures the correct electronic circuit with the listed types of wireless systems at all times. Do not attempt to employ non-standard adapters or connectors as you might damage the microphone preamplifier.



MicroDot connector

MINIATURE MICROPHONE HEADBANDS

Adjusting the Type 4065 Headband

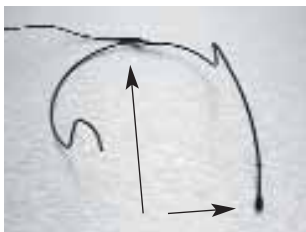
The Miniature Headband 4065 is pre-formed for your convenience. However, it requires minor adjustment in order to get a tight, fixed position to the back of the neck. Carefully bend the steel tube at the areas shown on the illustration.



Note: Do not bend the steel tube near the microphone element or near the cable exit as you may risk breaking the tube. The microphone element is perfectly omnidirectional and does not need to point directly towards the mouth of the performer. Avoid positioning the microphone in the air stream from nose or mouth.



When bending the steel tube please treat with care. The steel tube must be bent around a curved object (min. diameter of 20mm) or a thumb in order not to break the headband.



Do not bend near these parts of the headband.

Adjusting the Type 4066 and 4067 Headbands

The size of the headband mount may easily be adjusted. Change the standard bend by carefully expanding the distance between the earhooks.

The 4066 and 4067 Adjustable Miniature Microphone Headbands are supplied with the boom mounted. To change sides simply click the boom out of the clips and follow the instructions below.

- Hold the boom in your right hand when mounting on the right side and vice versa. Hold the boom by the cable relief.
- Position your hand with the boom between the ear hooks and turn the boom around in the loop. Take your hand with the boom under the headband and draw it towards you.

- Secure the microphone boom into the two clips next to the ear hook beneath which the boom is to be mounted. Next, secure the boom in the clip in the middle of the headband. This clip is movable and should be placed near the end of the microphone boom, before the cable relief (where the soft cable begins to be visible). The remaining two clips are not used (unless two booms are to be mounted on the same headband.)
The soft cable should not be attached into the clips.



Adjust the approximate position that the microphone boom should be placed on the cheek between the ear and the mouth. Hold the headband when pushing or pulling the microphone boom. (Please note that when placed near the ear, the high boost grid should be used in order to compensate for the high frequency loss in this position.)



Note: The capsule features an omnidirectional transducer and it is therefore not necessary to pull the capsule to the front of the mouth. It can be placed very discreetly on the cheek and still produce a highly detailed and clean sound by using the specially designed DPA grids. Please see page 4.

Now take up the 4066/4067 and adjust the size of the headband so that it fits the size of your head: Start with an oversized headband and use both hands simultaneously, holding your index fingers on the back of the headband while pushing in the ear hook parts inwards with your thumbs. If you want the position of the microphone boom to be altered at this point, adjustments are still possible, simply by drawing the boom while holding a firm grip with the other hand on the headband.



For discrete placement, you can now choose to bend the microphone boom slightly so that the capsule is as close to the cheek as possible. This will minimise

the risk of shadows on the face, when used in applications where heavy spotlights are common. Do not bend by holding on the capsule itself, but bend the wire boom, making a smooth curve with your thumb to best fit the profile of the face.

Note: When researching the effect of changes in frequency response of this microphone, tests were done with the microphone placed directly on the cheek as well as in a short distance away. No appreciable difference in sound quality is present between the two positions.

Using the boom separately

It is possible to use the MMB4066 Miniature Microphone Boom separately, in applications where the headband is not needed. No electronic components are incorporated in the headband, which serves purely as a mount for the boom.

In applications where the miniature microphone needs to be invisible e.g. when mounted in hair or wigs, it can be useful to have a hard steel tube instead of a soft cable running over the head. Also, when mounted on specific instruments, it can prove necessary to have the microphone lifted from the base. This is possible when using the MMB4066 Miniature Microphone Boom, because the microphone element is attached to a hard steel tube.

LO-SENS & DC MINIATURE MICROPHONES

4063: Miniature Microphone, Lo-Sens & DC

4067: Adjustable Miniature Headband, Lo-Sens & DC

The 4067 is a low DC and extra low sensitivity version of the 4066, which it is acoustically identical to. The sensitivity is adjusted to 1mV/Pa and the DC offset in the FET lowered, making it compatible with systems delivering down to 3V power supply. Furthermore, the 4067 features an acoustical 6dB/octave lo-cut (-3dB at 40Hz).

Type 4063 low DC Miniature Microphone is designed to match systems delivering less than 5V power supply. Type 4063 is acoustically identical to Type 4061 but the DC offset in the amplifier is lowered.

The noise floor of the Type 4063 is 26dB(A) re. 20 µPa and it is able to handle sound pressure levels up to 138dB SPL peak before clipping occurs.

SPECIFICATIONS

Directional characteristics:

Omnidirectional

Cartridge type:

Pre-polarized condenser element with vertical diaphragm

Principle of operation:

Pressure

Power supply:

4060, 4061, 4062, 4065, 4066:

Min 5V - max 50V through DPA adapter

4063, 4067:

Min 3V - max 50V through DPA adapter

Frequency response:

Soft boost grid:

4060, 4061, 4062, 4063, 4065, 4066:

20Hz-20kHz ± 2 dB, 3dB soft boost at 8-20kHz

4067:

50Hz-20kHz ± 2 dB, 3dB soft boost at 8-20 kHz, lo-cut -10dB at 20Hz

High boost grid:

4060, 4061, 4062, 4063, 4066:

20Hz-20kHz ± 2 dB, 10dB boost at 12kHz

4067:

50Hz-20kHz ± 2 dB, 10dB boost at 12kHz, lo-cut -10dB at 20Hz

Sensitivity (± 3 dB at 1kHz):

4060: Nominally 20mV/Pa; -34dB re 1V/Pa

4061: Nominally 6mV/Pa; -44.5dB re 1V/Pa

4062: Nominally 1mV/Pa; -60dB re 1V/Pa

4063: Nominally 6mV/Pa; -44.5dB re 1V/Pa

4065: Nominally 6mV/Pa; -44.5dB re 1V/Pa

4066: Nominally 6mV/Pa; -44.5dB re 1V/Pa

4067: Nominally 1mV/Pa; -60dB re 1V/Pa

Equivalent noise level A-weighted:

4060: Typ. 23dB(A) re 20 μ Pa (max. 26dB(A))

4061: Typ. 26dB(A) re 20 μ Pa (max. 28dB(A))

4062: Typ. 33dB(A) re 20 μ Pa (max. 37dB(A))

4063: Typ. 26dB(A) re 20 μ Pa (max. 28dB(A))

4065: Typ. 26dB(A) re 20 μ Pa (max. 28dB(A))

4066: Typ. 26dB(A) re 20 μ Pa (max. 28dB(A))

4067: Typ. 31dB(A) re 20 μ Pa (max. 35dB(A))

Equivalent noise level ITU-R BS 468-4:

4060: Typ. 35dB (max. 38dB)

4061: Typ. 38dB (max. 40dB)

4062: Typ. 45dB (max. 49dB)

4063: Typ. 38dB (max. 40dB)

4065: Typ. 38dB (max. 40dB)

4066: Typ. 38dB (max. 40dB)

4067: Typ. 42dB (max. 44dB)

Max SPL:

4060: 134dB SPL peak before clipping

4061: 144dB SPL peak before clipping

4062: 154dB SPL peak before clipping

4063: 138dB SPL peak before clipping

4065: 144dB SPL peak before clipping

4066: 144dB SPL peak before clipping

4067: 154dB SPL peak before clipping

Total Harmonic Distortion:

123dB SPL peak (<1% THD);

120dB SPL RMS sine (<1% THD)

Output impedance:

30-40 Ohm

Polarity

Inward movement of diaphragm produces positive going voltage on MicroDot pin

Operating temperature range

-10 to 45°C (+14 to 113°F)

Cable drive capability:

Up to 300m (984ft)

Dimensions:

Microphone length:

12.7mm (0.5in)

Microphone diameter:

5.4mm (0.21in)

Capsule diameter:

5.4mm (0.21in)

Weight:

4060, 4061, 4062, 4063:

7.5g (0.26oz) incl. cable and MicroDot connector

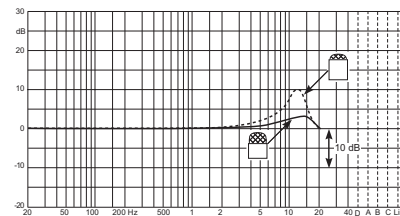
4065, 4066, 4067:

14g (0.49oz) incl. cable and MicroDot connector

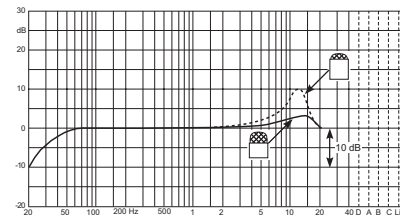
Finish:

4060, 4061, 4063: Black, beige or white

4062, 4065, 4066, 4067: Black or beige



On-axis frequency response of Miniature Microphones. Please notice that the 4065 only utilizes the soft boost frequency response



On-axis frequency response of 4067.

ACCESSORIES AVAILABLE

Miniature Holders

- DMM0001** Miniature Clip
- DMM0002-B** Miniature Double Pin, Black
- DMM0002-W** Miniature Double Pin, White
- DMM0003-B** Miniature Magnet, Black
- DMM0003-W** Miniature Magnet, White
- DMM0004** Miniature Clip, Small
- DMM0005** Miniature Holder, Single Pin, 3pcs.
- DMM0007** Universal Surface Mount
- DMM0008** Miniature Clip, Double Lock
- DMM0009** Miniature Concealer
- DMM0509** Miniature Concealer, 5 pcs.
- DMM0010** Tie Pod, 3 pcs
- DMM0011-B** Magnet Mount, Black
- DMM0011-W** Magnet Mount, White
- MHS6001** Holder for Strings, 1 pcs.
- MHS6005** Holder for Strings, 5 pcs.

Acoustic Modification Accessories

Miniature Grids

- DUA6001** Soft Boost, Black, 5pcs.
- DUA6002** High Boost, Black, 5pcs.
- DUA6003** Soft Boost, Beige, 5pcs.
- DUA6004** High Boost, Beige, 5pcs.
- DUA6005** Soft Boost, White, 5pcs.
- DUA6006** High Boost, White, 5pcs.

Windscreens

- DUA0560** Black, 5pcs.
- DUA0561** Red, 5pcs.
- DUA0562** Blue, 5pcs.
- DUA0563** Yellow, 5pcs.
- DUA0564** Green, 5pcs.

- DUA0566** White, 5pcs.
- DUA0567** Beige, 5pcs.
- DUA0570** Colour Mix, 7pcs.

Adhesive Pads

- ADH0001** Double-sided Tape for Tie Pod, 25 pcs.
- ADH0002** Double-sided Tape for Miniature Concealer, 25 pcs.
- ADH0003** Miniature Mic Tape, 25 pcs.
- ADH0004** Double-sided Mic Tape, 10 pcs.
- ADH0005** Double-sided Mic Tape, 50 pcs.

Connection Adapters

- DAD3050** TOA WM360/4310 (for low DC Microphones)
- DAD3051** Ramsa WX-RP410 (for low DC Microphones)
- DAD3052** AKG PT40 (for low DC Microphones)
- DAD6001** MicroDot to 3-pin XLR (P48)
- DAD6001-BC** MicroDot to 3-pin XLR (P48) w. Belt Clip
- DAD6002** Sennheiser BF1083-U/BF1053-U
- DAD6003** Sennheiser SK50/SK250/SK3063/SK5012
- DAD6004** Audio Ltd. Tx 2000/Tx 2020
- DAD6006** Beyerdynamic TS42 TS85/TS190/TS900
- DAD6007** AKG PT 300
- DAD6008** Sony WRT820/WRT860/WRT8
- DAD6009** Samson CT-2/TX-3/ UT4/UT5/UT6
- DAD6010** Shure U1,UT1,SC1, ULX1, TOA WM4300
- DAD6011** Vega T-66/T-677, Shure U1L

- DAD6012** Lectrosonics M185
- DAD6013** Micron TX501.x/ TX502.x
- DAD6014** Pastega TMA16/ TMU20 (2 wire preset)
- DAD6015** Vega T-37, U2020
- DAD6017** AKG PT 60/80/81/4000, Samson UT1L/ VT2L
- DAD6018** Pastega TMA16/TMU20 (3 wire preset)
- DAD6019** Sony Freedom WRT 805, Sennheiser Evolution Series
- DAD6020** Telex Prostar UHF-UB12
- DAD6021** AT ATW-T101 (System U100), Lectrosonics UHF systems for low level
- DAD6022** Audio-Technica, ATW-T51 (1400 Series)
- DAD6023** Mipro MR812/822, Sabine SW16T/SW30T
- DAD6024** MicroDot to 3-pin XLR (P48) w. Mid Range Attenuation
- DAD6025** Micron TX700
- DAD6026** Beyerdynamic TS500/600, Trantec
- DAD6027** Beyerdynamic OPUS 100-200
- DAD6028** Audio-Technica ATW-T75 (7000 Series)
- DAD6030** Electro-Voice CSB-1000 (RE1), TELEX
- DAD6032** Beyerdynamic TS800, Mipro ACT707T/TE/TM/TS/MT103/303/801/808
- DAD6033** Audio-Technica AEW-T1000 D

Miniature Power Supplies

- MPS6001** 1-channel, 3-pin XLR
- MPS6010** 2-channel, 3-pin XLR
- MPS6020** 2-channel, Phono

- MPS6030** 2-channel, Mini-Jack
- MPS6040** 2-channel, 1/4 in. Jack

Miniature Microphone Amplifier

- MMA6000** Miniature Microphone Amplifier

Extension Cables

- DAO6005** Miniature Microphone Cable, 3.5m
- DAO6010** Miniature Microphone Cable, 10m
- DAO6020** Miniature Microphone Cable, 20m

Parts for 4066 and 4067 headbands

- AHM6000** Adjustable Headband Mount, Beige
- AHM6001** Adjustable Headband Mount, Black
- MMB4066-B** Miniature Microphone Boom, Black
- MMB4066-F** Miniature Microphone Boom, Beige
- MMB4067-B** Miniature Microphone Boom, Lo-Sens & DC, Black
- MMB4067-F** Miniature Microphone Boom, Lo-Sens & DC, Beige

Cases & Boxes

- DAK4060** Accessory Kit for Miniature Microphones

Miscellaneous

- DQA0035** Tool for MicroDot
- DUA6010** Drop Stopper, Beige, 10pcs.
- DUA6011** Drop Stopper, Black, 10pcs.
- DUA6015** Clips for AHM6000, 5pcs.
- DUA6016** Clips for AHM6001, 5pcs.

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

