

# DPA 4099

## Instrument microphones

Carrying on their reputation for producing world-class microphones, DPA have introduced the 4099, their new supercardioid electret condenser with ingenious mounting system.



for my own work, as superior to a DPA 4006 omnidirectional microphone.

That's not to decry any other microphone in the world — I love the sounds I get from vintage, large-diaphragm condensers, for instance — but if I had to choose two microphones to use for the rest of my career, it'd be a pair of DPA 4006s. Mind you, if budget permitted I might be persuaded into the 130V, valve-driven, larger-diaphragm version that is the DPA 4041-T2. Luckily for you and me, DPA also produce the 4090 omni, a much more wallet-friendly version of the 4006, which puts the essence of its abilities into the range of mere mortals.

One of DPA's miniature microphones, the 4060, is a common sight on violins and fiddles these days. If you watch outdoor classical concerts or programmes like BBC's *Transatlantic Sessions*, you'll have seen these tiny black mics sitting on an ingenious mount just behind the bridges of violins and violas, or stuck onto guitars and the like. The 4060 is a wonderful

### Bob Thomas

**F**ounded in 1992, DPA leapt straight into the top echelons of microphone manufacturers simply because they actually weren't a new company. Originally part of Brüel & Kjær (who had begun manufacturing measurement microphones in the 1950s), DPA actually have some 50-odd years of experience in designing world-class microphones. DPA microphones (or B&K as they used to be known) have a reputation for ultimate sound quality with prices to match, and personally I've never come across a microphone that I would regard,

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**DPA 4099 £442**

The DPA 4099 is a brilliantly designed, innovatively engineered solution to the problem of mounting microphones on brasswind and acoustic stringed instruments. Capable of giving an extremely attractive and usable sound in both live and recording environments, it puts DPA in pole position in this specialist segment of the musical instrument microphone market.

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little microphone and gives great results, and the price isn't too painful. However, it hasn't really ever caught on, mostly, I think, because it's an omni, which doesn't always make you popular with monitor engineers.

As a result, musicians looking to fit a microphone on their violins and the like have naturally gravitated towards the more directional cardioid-patterned solutions, with

microphones from Britain's very own Accusound and the Audio-Technica ATM-350 and Pro-70 being especially common on

violins. Guitarists have

often resorted to putting microphones inside their guitars, and my own guitars and mandolins contain a fairly eclectic and representative selection of available (and even obsolete) low-voltage, electret condenser mics. Brasswind

players have almost certainly shared much the same frustrations when trying to find suitable microphones for their instruments, with trumpeters having a particularly hard time of it due to the high SPLs that their chosen weapon can generate.

We all know that, in an ideal live situation, nothing sounds better than a really good microphone sitting a couple of feet away from our chosen acoustic instrument. But as that is rarely a practical option, we're left with the sonic compromises inherent in our preferred and practical solution.

## Enter the DPA

Although their previous instrument microphone efforts (the 4021 and 4060) have been directed at violinists, DPA have obviously spent time also thinking about a microphone solution for other acoustic instruments. And the new DPA 4099 supercardioid electret condenser, with its uniquely ingenious mounting system, is the result.

The well-engineered, rubberised plastic box that carries the 4099 and its accessories impresses immediately, and opening the box reveals a miniature version of a professional film recordist's shotgun microphone-loaded Rycote windsock, sitting in a tiny shockmount atop a miniature gooseneck. Also included is the instrument-specific gooseneck mount, a 48V phantom-powered XLR preamp, and a neat little cloth wallet to keep them all in.

Disassembling the little windsock reveals



The 4099 comes with a Rycote windsock, and is mounted in a small shockmount that sits atop a miniature gooseneck.

that indeed there is a miniature shotgun microphone inside. In appearance it looks like a 4060-style capsule stuck onto the end of an interference tube (the shotgun part). Invented by the late Professor Günther Kurtze, interference tubes are designed to reject sounds arriving from the sides by routing them through slots in the sides of the tube in such a way that interference patterns are set up inside the tube that cancel out these off-axis sounds as they reach the microphone capsule, thus reducing their apparent level. Sounds arriving at the front of the tube travel straight up to the capsule without cancellation and are therefore much louder than anything coming in from the side.

In the 4099, the effect of the shotgun is to give the microphone a hypercardioid response where there is significant rejection of sound

prevent damage to an instrument's finish. All share the same method of attaching the gooseneck, which slips into a holder on the clip, allowing you to have just the amount of free length that you need, and that is then locked in place by a gooseneck-mounted slide.

In concept, the clips are triangles where the apex grips the instrument from the top (or inside the bell on brasswind). And the base, which has two rubber-covered spheres and finger grips on a flexible, sprung arm, grips the instrument from below. On the brasswind, the apex is a simple flat clip so that the bell is held between it and the base.

In the case of the guitar and violin clips, a toothed arm runs down from the apex. The base carries a ratchet lock that allows you to fit the 4099 perfectly to your chosen instrument.

**“...the whole package just reeks of quality, right down to the protective case and soft wallet.”**

from the rear and sides of the microphone. The suspension mount is there to avoid transmission of vibrations to the capsule — pick noise, key noise, bow noise and so on — and the little windsock cuts down any extraneous noise resulting from brasswind air flow and violinists' and guitarists' heavy breathing at moments of heightened musical passion.

From the capsule, 1.8m of DPA's renowned lightweight armoured cable runs down through the centre of the 15cm gooseneck and terminates in a Microdot connector, which mates to the supplied DAD 4099 phantom-powered XLR preamp. DPA can also provide a range of adaptors that allow you to mate the 4099 to virtually any preamp or wireless transmitter capable of delivering the 5V to 50V DC needed to power the 4099.

## Mounting matters

Impressive though the shotgun, windsock, shockmount and gooseneck are, it is the instrument mounting clip that really intrigues. There are three clip types available that cover three of the major acoustic instrument families: brasswind, violin and guitar. The clips are metal and are covered in a rubber-like material to

The sprung base arm allows you to get just the right amount of pressure to hold the whole thing in place. The mounting assembly can be removed easily by squeezing the two finger grips, which pull the balls back and away from the instrument, freeing the clamp.

Not owning a trumpet or saxophone, it was off to my local charity store, and I can report that the clips work exceedingly well, although the two little old ladies behind the counter were a bit bemused by it. I tried the violin and guitar clips on everything that I have in the house with strings — even a nyckelharpa — and there wasn't an instrument that I couldn't fit them to. This is definitely an impressive piece of innovative engineering.

## Testing the mics out

The DPA 4099 microphones for guitar, violin and saxophone are identical, while the trumpet variant has a pad, which, from the specifications, looks to be 5dB. Thankfully, the trumpet one has a white microdot assembly, so you'll know it when you see it.

First up, I tried recording with the 4099s and can happily report that they work exceedingly well. There is a luxury in having a microphone >>

## Tech Spec

### 4099 for guitar/violin/sax

- **Directional characteristics:** supercardioid.
- **Frequency response:** 80Hz - 15kHz ( $\pm 3$ dB) with 2dB soft boost at 10kHz - 12kHz, first-order low-cut filter at 80Hz with DAD 4099.
- **Sensitivity ( $\pm 3$ dB):** 6mV/Pa; -44.5dB ref 1V/Pa.
- **Equivalent noise level (A-weighted):** typical 23dB(A) ref 20 $\mu$ Pa (max. 26 dB(A)).
- **SNR ref 1kHz at 1Pa (94dB SPL):** 71dB.
- **Total harmonic distortion (THD):** <1 percent up to 123dB SPL peak, <1 percent up to 120dB SPL RMS sine.
- **Dynamic range:** 100dB.
- **Maximum SPL (peak):** 142dB.
- **Output impedance:** 30 $\Omega$  - 40 $\Omega$  (from Microdot), 50 $\Omega$  (from DAD4099).
- **Power supply:** 5V - 50V through DPA adaptor (for wireless systems), 48V phantom power (with DAD 4099).
- **Power consumption:** 1.5mA, 3.5mA with DAD 4099.
- **Microdot connector.**
- **Mic length:** 45mm.
- **Weight:** 36g.

» mounted directly on your instrument so that you can actually move while playing instead of having to be constantly conscious of where the microphone is. Being cardioids, you do get a bass boost on close miking due to the proximity effect, and where you point it on the instrument also has a huge influence on the sound character. Of course, you can (and should) use these effects creatively in order to get the sound that you want with minimal EQ.

Although they work extremely well, subjectively the 4099 doesn't have the air and ambience of a larger-diaphragm, studio microphone, but for tracking rhythm parts as a band or recording in an environment with an unwanted level of ambient noise — such as on a gig — they're a brilliant solution.

Just as the 4099s arrived for review, I got a call to run the PA on a gig for legendary English folk fiddler Dave Swarbrick. So what better test of the violin version? Swarb travels on solo gigs with a Neumann KM184, which is used to give him some gentle reinforcement rather than anything else, so we soundchecked that first and then spent an enjoyable 20 minutes or so with the 4099. The DPA had noticeably better feedback rejection than the Neumann — in other words I could run the PA a lot louder. Also, it gave, with careful positioning, a much more instantly attractive sound than the Neumann because of the bass boost from the proximity effect due to the close miking position.

If we'd needed more volume, I'd have been much happier with the DPA on his fiddle than the Neumann, and I'm not sure that the audience wouldn't also have preferred its

tonality — but then we probably wouldn't have heard Swarb's little whoops of excitement when he played something so far off the wall as to collapse you in fits of musical giggles. Swarb also really liked the sound of the 4099, although for the gig itself he stuck with the Neumann he knew.

I also tried the 4099 out at the soundcheck of another of my PA gigs, which featured legendary American guitarist Peter Walker. Again, it acquitted itself really well, sounding great with plenty of available level, good feedback rejection and a very attractive presentation of the sounds of his vintage Conde Hermanos classical guitar. In fact, it sounded so good that Peter insisted on using it for the gig, describing the sound from the DPA as "playing in a cathedral." Since I didn't have two 4099 guitar mounts and we didn't need a lot of monitor or FOH level, I stuck with my usual large-diaphragm condenser mics (an AKG 414 and an old TKL valve) on his vintage Gibson J45 for the gig, but again I'd have been perfectly happy to use the 4099s on that guitar also.

Sadly, I wasn't able to test the trumpet and saxophone mics, as the next time I'm working with a brass section is well after copy date for this review, but given what I've heard from the 4099s on fiddles and guitars, I'm certain that they'll work exceedingly well.

If I have any caveat on the 4099 it is that, in order to get a flat response with no proximity effect, the 4099 needs to be 20cm away from the source. This is clearly impossible with a 15cm gooseneck, so you're always going to have a little bit of bass boost. It's not an issue — in fact, the proximity effect is a big part of the instant attraction of the 4099's sound — but it is there.



▲ The 4099 preamp features a belt clip and low-cut filter.

My other minor reservation is that, although the mounts for saxophone and trumpet are pretty much inconspicuous, the same can't be said for the violin and guitar versions. The violin mount can be pretty easily set to a comfortable position for the player, although individuals' ideas of what is unobtrusive do vary a lot. The guitar mount is more of a problem in that its brochure-illustrated positioning makes it difficult to avoid if you're a rhythm player who moves along the string length for tonal variety. It is also quite a bit of a visual distraction on the guitar, and some players that I showed it to (including Peter Walker) had reservations along these lines. In Peter's case, I mounted it on the lower treble bout of his Conde Hermanos and

## Tech Spec

### 4099 for trumpet

As for guitar/violin/sax, except:

- **Sensitivity ( $\pm 3$ dB):** 2mV/Pa; -54dB ref 1V/Pa.
- **Equivalent noise level (A-weighted):** typical 28dB(A) ref 20 $\mu$ Pa (max. 31 dB(A)).
- **SNR ref 1kHz at 1Pa (94dB SPL):** 66dB.
- **Total harmonic distortion (THD):** <1 percent up to 123dB SPL peak, <1 percent up to 120dB SPL RMS sine.
- **Dynamic range:** 95dB maximum SPL, 152dB peak before clipping.

pointed it at a spot just behind the treble end of the bridge, where it sounded really good.

I've experimented a fair bit with positioning the 4099 on various guitars, and I've found that essentially you can probably mount it wherever is most convenient for you and your style, as long as you spend a bit of time working on where you actually point it.

I've lived with a 4099 on a Guild D40 and on a Stefan Sobell cittern for a couple of weeks now and I've gotten pretty used to it being there. As I mostly play fingerstyle, it doesn't often physically get in my way and I just have to take a bit more care when reaching for false harmonics on these instruments. Mind you, I am pretty circumspect nowadays when strumming the D40/4099 combination heavily at home, due to an unfortunate occurrence that involved a 4099, an Autoharp and a glass of Scotland's finest export.

## Conclusion

The DPA 4099 supercardioid instrument microphones are wonderful additions to any appropriate acoustic instrumentalist or live sound engineer's arsenal of microphones. They are simple and easy to mount and demount, sound really good, are supremely fit for purpose, and set a new benchmark for high-quality, clip-on instrument microphones in live and recording environments. The shotgun microphone interference tube design is ingenious, the shockmount and windsock work extremely well, the mounting clips are pieces of superb engineering and the whole package just reeks of quality, right down to the protective case and soft wallet.

I can't think of any reason why a saxophonist, trumpeter, violinist, violist, fiddler, mandolinist, guitarist, banjoist, bouzouki or cittern player shouldn't have one of these in their gig bag — so I guess that there are a couple of 4099 microphones from this review that won't be going back to their distributor. If you're looking for a microphone to fit to a brasswind or acoustic stringed instrument, then you need to try a DPA 4099 at your local stockist. It's a superb answer to an age-old need. ■ PM

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+LIVE SOUND WORLD

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