

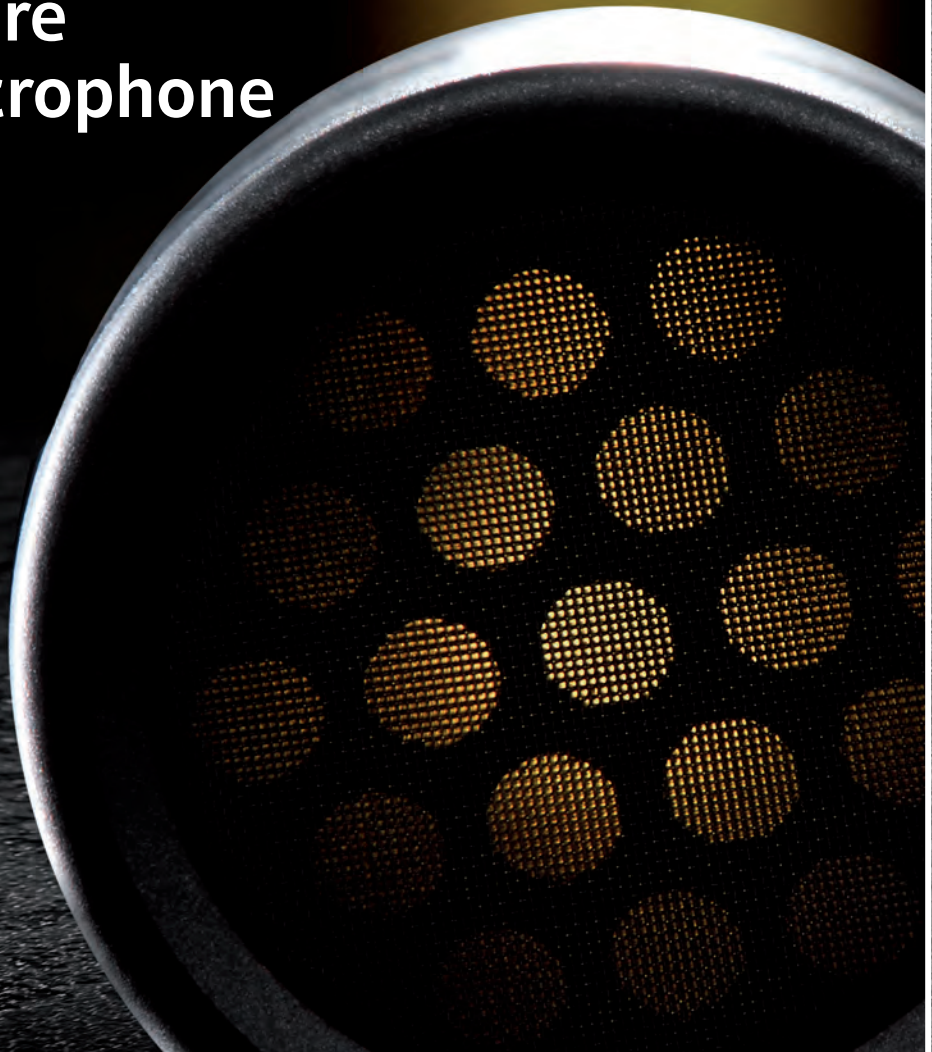
# PRODUCTION PARTNER

FACHMAGAZIN FÜR VERANSTALTUNGSTECHNIK

SPECIAL PRINT ISSUE 1 | 2022

## Neumann

Miniature  
Clip Microphone  
KK 14



# PRODUCTION PARTNER

FACHMAGAZIN FÜR VERANSTALTUNGSTECHNIK

D € 7,80 | A € 8,70 | CHF 15,-

1 | 2022  
FEBRUARY

## Neumann

Miniature  
Clip Mic KK14



Symphonic Rock | Design Fees | Epiphan Pearl | DirectOut Prodigy MP  
Elation R&D for IP65 | Business Conflicts | GDTF Fixture Library | Personnel

# Neumann Calling!

The phone rings. It's a Berlin number. It can't be my colleague Alex, and it's not the right time for editorial sensations. It's Neumann, says the voice at the other end. Aha – *the* Neumann! They have produced something new, continues the voice, and would we like to talk about it? My jaw is virtually on the floor. In the midst of this crisis turmoil, a traditional microphone manufacturer has come up with a brand-new mic? We remain in touch over a period of weeks. Their researchers and developers tell us about how a new microphone is created. It's for live use, super-compact, acoustically high end, yet compatible with wireless use and all the rough and tumble of the stage. The first sketches of it emerged on their desk in Berlin five or six years ago. Since then, they have been researching, building, rejecting, and restarting until they arrived at a concept that not only meets the demands of users, but that can also be manufactured at a high degree of constancy and deserves to carry the Neumann logo on the fine exterior of its capsule. What welcome news in winter's gray depths! The Neumann team reports enthusiastically about how it got there on page 44.

The Neumann capsule can stand a shower or two, but for other products, the inhospitable outdoors are like a



second home. Take moving lights: It isn't just the screws that have to be tightened up for outdoor compatibility. Starting on page 36, the R&D team at Elation talks to us about how to make a product compliant with IP65. And here's another hopeful sign: On page 62, Prodigy MP shows us the kind of audio innovations we can look forward to in 2022. The new Fixture Library also looks promising (p. 34).

Achievements like this are only possible in teams, and that goes for us, too.

It took me a while to count up all of the industry partners who got behind this 1/2022 edition. Looking left, you will see our own crew's MOONOVA (get your tickets!) covering everything to do with digital marketing, and the LeaT Academy team invites you to our next sound seminars on page 60. We look forward to seeing you.

When I asked Neumann's Managing Director, Ralf Oehl, how normal it was for them to spend so long developing a new mic, he replied very aptly by pointing out that many things are only possible within an enthusiastic and committed industry and market environment.

For that, I would like to thank you all.

Detlef Hoepfner



[www.production-partner.de](http://www.production-partner.de)



[www.facebook.com/ProductionPartner](https://www.facebook.com/ProductionPartner)



[redaktion@production-partner.de](mailto:redaktion@production-partner.de)



[@ProductionPartn](https://twitter.com/ProductionPartn)

COMPACT CLIP MICROPHONE

# Neumann MCM KK14

The MCM Miniature Clip Mic System isn't just Neumann's first-ever clip microphone for live stage use. It's the company's way of raising the electret principle to the Neumann level in a mechanically modular concept.

Text: Detlef Hoepfner | Photos: Neumann

**A** new Neumann microphone? This is remarkable in a number of ways. There can be few other manufacturers who combine the same level of tradition, history, and modern technology as the Berlin company, founded in 1928 and part of the Sennheiser Group of Companies since the early 1990s. While a constant stream of new, cheaper microphones passes endlessly across the virtual shop windows of mail-order firms, Neumann has held true to a very select product philosophy. So when they announce a new product, you almost get the feeling that it has been developed with a DNA that will provide the foundation for the next classic.

## Live Stage Use a Challenge for Quality

Neumann's product range has long been designed for more than just studio use. Their microphones, which feature the highest-grade condenser technology, are found not only in the mic case of every self-respecting sound engineer, but also as standard products on many jazz and classical stages, both for live use and for hybrid or streaming situations. The only thing that had been missing was a small, compact microphone which could be positioned inconspicuously and therefore nearer to the source. According to Neumann's Managing Director, Ralf Oehl, there had

always been an insurmountable obstacle to this: "Our goal at Neumann is always to achieve optimum sound quality. In our view, condenser technology is in many ways superior to other solutions such as dynamic systems. This is why it has been Neumann's foundation and main expertise for over 90 years. At the same time, our tonally superior solutions have limitations that have until now precluded or at least significantly restricted their use for certain applications." This refers above all to the wireless lines, which, whether one likes it or not, are simply indispensable in live environments. "That kind of compact capsule with a superior dynamic range and a low supply voltage cannot be achieved using conventional condenser technology. The capsule would have to be much bigger purely on account of the electronics, so that when operated using a pocket transmitter, a sufficiently high voltage can be produced to guarantee very low noise despite the small diaphragm. Electret microphones, however, are pre-polarized, which means they need no supply voltage, which gives them an advantage."

## Electret: Yes? No? Maybe ...

Nobody likes to see production inconsistencies anywhere, of course, but they are an absolute no-no in the tumult of live performances. If you have a large, densely miked en-



semble on stage and have to combine channels, you certainly cannot begin to think about microphone tolerances. Ralf Oehl explains: “Common designs and manufacturing technologies for electret capsules produce relatively large divergences in series production, and that is not something we can tolerate. We wanted to build electret microphones with constant properties, so that sound engineers wouldn’t have to waste so much time struggling with manufacturing tolerances in level and frequency response.”

On top of that, the microphone, which might not always be placed in exactly the right place amid the pragmatism of live environments, also has to be up to the job in terms of sound. “Over the years, more and more engineers and artists have come to us saying they wanted more substance and more precision in the low and mid-frequencies than the clip mic systems available on the market can deliver – and they wanted openness. A genuine Neumann reference solution, so to speak.” Despite all the microphone experience the company has gathered, delivering on such a tall order quickly is impossible, according to Ralf Oehl, who, as Managing Director, is actually more inclined towards quick processes than long, dragged-out ones.

“In the end, our team of developers worked for six years improving the capsule structure and the manufacturing process. The result is now coming onto the market.”

Users may be surprised to learn that creating the capsule itself was only just the beginning. Moving away from what is often a highly miniaturized electret capsule structure, the Neumann team aimed for a more modular, rugged, long-lasting, and, if possible, serviceable micro-

phone, explains Stephan Mauer, Portfolio Manager Live Sound & Broadcast, who oversaw the development. “The overall design of our KK 14 capsule is completely different from existing solutions on the market. We pooled all of our experience from the production of genuine condensers. That’s why the capsule looks very different and is physically very much like a miniaturization of our KM series.” It certainly is surprising to look at: Seen on a single photo without any optical reference such as an instrument, the elegantly designed KK 14 actually looks bigger.

The design of the microphone, which is based on genuine condenser models, offers enormous advantages: “The KK 14 capsule used in the MCM has a layered structure with many individual components, which is typical of Neumann, and it allows the various parts to be optimized to a high degree and independently of one another. It is very difficult to produce the components of the capsules and assemble them, but we do it manually and then check the quality very carefully, with excellent results.

“Using an electret foil also presented the research and development team with a difficult manufacturing task,” says Stephan Mauer. “When it comes to the diaphragm itself, physically cutting it with the necessary precision is the main challenge, since its whole surface is electrically

active, unlike in conventional condenser capsules. Imperfections have a direct influence on the sound and have to be avoided. Laser processes might seem suitable on the face of it, but laser cutting would destroy the charge on the electret foil, so we had to develop new processes.”

### In Tune with the Daily Stage Routine

The capsule’s name indicates the directional characteristic which Neumann opted for. The “1” in the “14” denotes Neumann’s electret microphones, while the “4” stands for “cardioid,” although it is clear that they did not hold rigidly to a dogma of “as narrow as possible by whatever means.” “The microphone has to isolate individual instruments and suppress neighboring sound sources on loud stages. That of course requires directionality. That’s why we experimented with cardioid, supercardioid and other, even more exotic directivities. After extensive practical tests, we eventually found that the cardioid characteristic delivered the best possible combination of sonic openness and the directivity we wanted. Compared with other solutions on the market, the KK 14 displays

very constant directional behavior across the whole frequency range, allowing us to achieve excellent isolation, including in the fundamental range.”

When we think of sound engineers, we think of arrays of fine microphones and the rarified process of selecting the right one together with an enthusiastic artist. The engineer then defines at the source the effect which will be audible in the mix. But all that has its

limits in live operations. Time is short, environments can be rough, budgets are tight. Large numbers of microphones are often kept at the ready, ideally to be used by everybody.

»All this is ideal for a very good return on investment. «

**A modular structure and the materials used are designed to guarantee maximum reliability in live environments.**

This has an impact on the balancing of a transducer’s sound, as Stephan Mauer elaborates: “A microphone has to deliver equally impressive results at a reference level when fitted close up on a saxophone, cello, or snare – and if possible, without additional equalizing. That’s why we aimed at tonal neutrality and took special care that there were no problematic, resonant, hard-sounding frequency ranges. We paid special attention to the fundamental range of the instruments.” This is why the

microphone has to withstand extremely high sound pressures while producing a very low inherent noise, which the developers say is on the limit of what is technically feasible.

Stephan Mauer does not say much about how they achieved these two cornerstones of the dynamic spectrum, which is all the more remarkable given that supplying power when transmitting wirelessly is full of compromises. “The performance that the system achieves is a result of an outstandingly balanced combination of acoustic and electronic design. The diaphragm diameter, which is relatively large compared with many other electret solutions,

**Magnetic piano clip** The windscreen is removable, revealing the classy design of the capsule’s surface.



delivers favorable noise behavior and also achieves high sensitivity. Our circuit design also succeeds in delivering a combination of low noise and very high modulation. This microphone benefits very much from Neumann's decades of experience in circuit design and meticulously selected components. There are various tricks of the trade involved, which of course we are not keen to divulge."

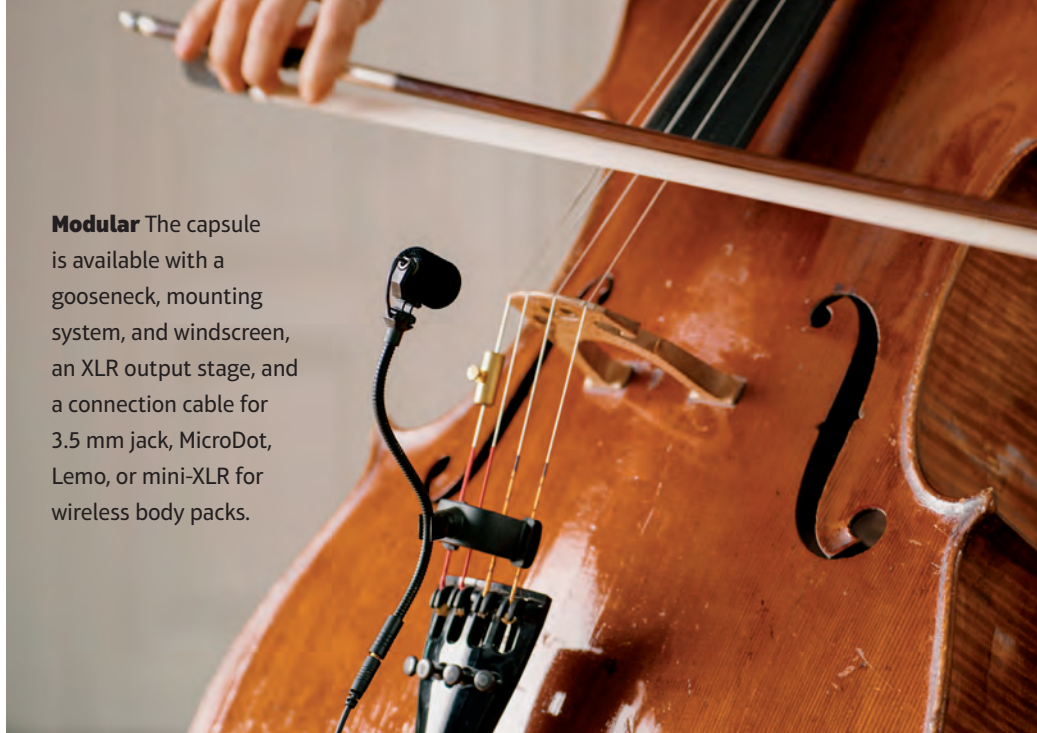
### Instrument-friendly Microphone with a Secure Grip

Just getting a microphone to stay still amid all the stands, instruments, and monitors on stage is notoriously awkward. And it's even harder if you have to attach it so that it doesn't impede playing or traumatize a musician by tugging on their precious instrument with its improvised fixtures. This is where Ralf Oehl was able to collaborate with parent company Sennheiser. "The capsule was developed from scratch by Neumann, with a very specific design and things like a diaphragm material, which doesn't exist at all in the Sennheiser portfolio. Our colleagues at Sennheiser contributed their experience especially in the development of the instrument clamps, because they have more experience than us in that department." If you look at the nine mounts for attaching the mic to wind, bowed, and stringed instruments, pianos, drums, and other percussion, you'll see numerous details that make them easier to use. They were not easy to develop, since every single element, all the way down to the little bridge that holds the capsule, has to have just the right amount of spring or rigidity, strength, and durability – from its material to its shape. The capsules (which will cost €279 each) are therefore available in various sets that include goosenecks, cables, mounting systems, XLR adapters, and windscreens and which start at €629, including the capsule. This, incidentally, means that the Miniature Clip Microphone system is the first product group from Neumann to be native to all common radio links, including Shure wireless.

### Taking the Knocks and Splashes

But even the best product with a sound to die for is of little use if it cannot withstand the hustle and bustle of

**Modular** The capsule is available with a gooseneck, mounting system, and windscreen, an XLR output stage, and a connection cable for 3.5 mm jack, MicroDot, Lemo, or mini-XLR for wireless body packs.



constant stage use and the physical and climatic conditions that involves. Neumann was aware of this during development, confirms Stephan Mauer: "The system has been mechanically optimized. Its super-tough casing/housing is made of titanium, making the capsule not only light, but also shielded against damage. Kevlar fibers woven into the cables make them resistant to tearing and cracking. The microphone even works in tropical conditions and can withstand submersion – once dried, it works exactly like it did before." This is helped by the modular design concept, because the capsule can easily be unscrewed from the gooseneck. All of the other components are also easy to replace. "All this means the system is designed to be used for many seasons, so it should deliver a good return on investment."

### The Start of a Strong New Segment

Given all of the experience built up over decades of developing high-end sound transducers, the outstanding collaboration the company enjoys with the market and users, "wasn't it actually expected for Neumann to come out with a microphone like this," I eventually ask Ralf Oehl.

"I think I can speak for the whole team when I say that the Miniature Clip Microphone is very special indeed, and a big step for Neumann. It opens up a completely new segment in our product portfolio with a new capsule technology and has been conceived as a complete system with a strong focus on its mechanism and accessories. We took a long time for it, rethought many things, learned much, and are proud to have created it. We believe it will become a new reference product, and we see it as a strong new beginning for Neumann's involvement in live performances." ■