

Mic Memo



Crown's Quarterly Microphone Newsletter

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Bruce Bartlett, Editor

CM-700 Chosen for "Dream" Studios



CM-700

In the July, 2002 issue of *Electronic Musician*, in the article "Build a Personal Studio on Any Budget," the Crown CM-700 cardioid condenser microphone was chosen to be part of three proposed "dream" studios.

Those studios were the \$6000 portable digital studio, the \$15,000 Windows studio, and the \$30,000 studio without computer.

Ceiling-Mounted Conference Mics

Mics are commonly used in conference rooms for recording, teleconferencing, and sound reinforcement. Many customers do not want to see the microphones, so they specify ceiling-mounted mics. In this case, appearance is a higher value than sonic performance.

Ceiling-mounted mics are feasible for audio recording, but only

if the room acoustics are very dead. Otherwise the mics pick up a lot of room reverb which muddies the sound. Also, ceiling mics work poorly for sound reinforcement. The distance from mic to source is just too great to allow much gain-before-feedback. If at all possible, use table-mounted mics for best gain and clearest sound.

If you want to use an omni ceiling-mounted mic, try a Crown PZM-11 in an electrical box. It costs little, and its high frequencies are boosted for extra clarity.

For less reverb pickup, try four Crown MB-4 mics on the ceiling angled 90 degrees from each other. Feed the four XLR outputs to an automatic mixer. Recommended settings on the mixer are: release time very long, and automatic gain control on. Again, this setup is not recommended for sound reinforcement.



Crown MB-4 boundary mic

CM-700 for Stage Vocals

Although the CM-700 was not designed to be a stage-vocal mic, it can be made to work quite well in that application. Singer/guitarist Bob Lichty used the CM-700 for vocal pickup at a recent concert. He had this to say about its use:

"I used the double low-cut filter on the CM-700 for vocals. For guitar, I left the low-cut switch flat and rolled out a bit of the lows at the board. I learned how to "mask" my p's and t's with singing technique, so they are rarely an issue for me. I love the sound of the 700, and even my wife can't believe how different I sound 'all miked up' versus just singing at home in the bedroom."

What's Inside

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- CM-700 for Stage Vocals
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For more information, call 800-342-6939



Harp Miking

Here's an unusual miking application for sound reinforcement. How do you mike a folk harp? It is a small instrument about 4 feet tall.

Try a Crown GLM-200, a mini mic with a hypercardioid polar pattern.



GLM-200 hypercardioid mic

Mount the mic inside the harp near one of the sound holes. You can attach the mic by taping its cable to the harp, or by using the supplied GLM-UM Universal Mount.

Ask the harpist to play as you monitor the sound. Adjust the angle and position of the GLM-200 until you hear a tonal balance you like.

Lavalier Mic EQ

Many theater sound systems employ handheld mics for singers and lavalier (clip-on) mics for actors. Sometimes the sound operator is asked to make the lavalier mics sound the same as

the handheld mics. What sort of equalization is needed to do this?

First, note that nearly all handheld vocal mics are directional, so they have proximity effect (bass boost when used close to the mouth). Omnidirectional lavalier mics have no proximity effect. To simulate that, you might boost 4 to 6 dB around 100 Hz. (Be careful with feedback whenever you apply an EQ boost.)

Lavalier mics have a built-in high end rise to compensate for being off axis to the mouth. You might need to do more high-frequency tweaking by ear. Also, most lavs exhibit a peak around 630 Hz (about 3 or 4 dB, less than 1 octave wide) due to body diffraction and chest resonance. Cutting that frequency by the same amount can remove the "puffy" sounding midrange peak, making the lav sound more like the handheld mic.

Miking an Electric Organ

Some houses of worship feature an electronic organ. Often it's necessary to feed the sound of this organ into the sound system. It seems reasonable to find a line-level signal within the electronics and connect to it, or connect to the organ's speaker terminals. Unfortunately, these connections can cause several problems:

- Ground loops can create hum.
- You might be held liable for messing with the organ electronics.
- The organ technician might remove the connection.
- Many organs don't have a composite or full-range feed, meaning that the electrical signals to the various loudspeaker drivers are bandpassed. If you tap off a loudspeaker you may not get the full spectrum of the organ. If you combine the bandpassed outputs to get a full-range feed, you might be held liable for tampering.
- A lightning strike that gets into the organ electronics might get into the audio system, or vice-versa.

Using a mic instead of a direct connection avoids all the problems mentioned above. A close-up omni mic, strategically placed, will pick up very little of the room and other sounds. We suggest the Crown GLM-100 mini omni mic. It's very small and picks up down to 20 Hz.

Note: This close mic placement is for sound reinforcement, not recording. If you want to record the electronic organ, place a pair of mics several feet away (about 12 to 20 feet) to pick up the room reverb as well as the sound of the organ.

The GLM-100 looks the same as the GLM-200 pictured on this page.

Thanks to Pat Brown of *Syn Aud Con* for this idea.

For more information, call 800-342-6939

Letters From Crown Mic Users

PZM Piano Miking

I am a pianist, but totally new to the recording process; my unique situation is that I need a very portable solution because I have to record from a piano at a local music school. I have a Minidisc recorder and I wonder if it would be possible to make a decent recording directly into the Minidisc using the kind of microphones you've described. Could I input two microphones into the Minidisc player itself, or do I need to invest in some kind of pre-amp also?

Please offer some input if you would about how I could mic a piano decently (not professional by any means) while understanding I am not in position to haul around a lot of equipment. I'd appreciate it very much.

Thank you,
Gerard Cox

Reply:

You should be able to make a very good piano recording using one or two PZM-185 microphones and a MiniDisc recorder. The PZM-185 is an inexpensive Pressure Zone Microphone that is powered by an internal battery or phantom power. Since you want a very portable system,

we'd recommend using the battery rather than phantom.

Figure 1 shows some suggested places to tape a PZM mic to the underside of the raised piano lid. For a mono recording with one mic, tape it in the middle of the lid, a few inches horizontally from the hammers. Raise the lid on the long stick. For a stereo recording with two mics, tape one over the treble strings near the hammers, and one over the bass strings near the tail, as shown.

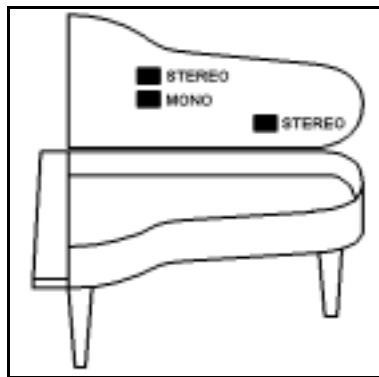


Figure 1. Some suggested mic placements for PZMs on a piano lid.

The kind of sound you will get with this miking is up-close and clear, with little or no room acoustics. It might be suitable for pop, jazz, ragtime, or folk music. If you are recording classical music and you want to include the room acoustics (such as in a recital hall), you should place the mics several feet from the piano. Either place them on the floor about 4 feet apart, or mount them back-to-back on a mic stand, aiming the edge of the plates at the piano.

The PZM-185 has a high-frequency rise for speech clarity. If you want to flatten the response to get a more natural sound, obtain a microphone foam wind-screen. Cut off a 1/4" square about 1/8" thick and insert it into the gap between the mic and the plate. The thicker the foam piece, the less high frequencies (treble) you'll hear.

How do you connect the mics to your MiniDisc recorder? Check the manual that came with your recorder. It describes the input connectors. The recorder should have a mic input, so you won't need a mic preamp. Probably the mic input is a single mini phone jack that is wired for stereo. If so, you or an electronics-savvy friend would need to make an adapter cable (Figure 2, next page). On the mic end of the adapter cable is a 3-pin female XLR connector (two for stereo). On the recorder end of the adapter cable is a mini stereo phone plug.

The mini stereo phone plug has three terminals to connect to: tip, ring, and sleeve. The tip terminal is the small one that goes to the tip of the phone plug. The ring terminal is a little longer, and goes to the ring of the phone plug (the metal cylinder just behind the tip). The sleeve terminal is the longest, and it goes to the sleeve or long cylinder part of the phone plug.

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PZM Piano Miking (Continued from page 3)

Inside the female XLR connector, connect pin 1 to the cable shield, connect pin 2 to the cable center conductor, and connect pin 3 to pin 1. Inside the stereo mini phone plug, connect the cable shield to the long sleeve terminal, and connect the center conductor to the tip and ring terminals. (That's assuming you're using only one microphone).

If you're using two microphones for stereo, you need two adapter cables that connect to a single

stereo mini phone plug (Figure 3). On the mic end of both cables, wire a female XLR connector as described above. At the other end of both cables, connect both shields to the phone-jack sleeve, connect one cable's center conductor to the phone-plug tip terminal, and connect the other cable's center conductor to the phone-plug ring terminal.

If you hear distortion when recording the piano, set the MiniDisc recorder's gain switch to lower gain. If you're using a DAT recorder, switch in the input pad.

CM-311AE Fan

I just purchased the CM-311AE and I am so pleased with the headset, that I have placed a link to your site on our band's site.

I would like to spread the word to the folks that visit our site, that this is the best headset mic I've ever used! I've used two other headsets and they don't even come close to reproducing my voice the way I need it to be done, the clarity is incredible.

Sincerely,
Jay Tucker
www.HeartsonFireband.com

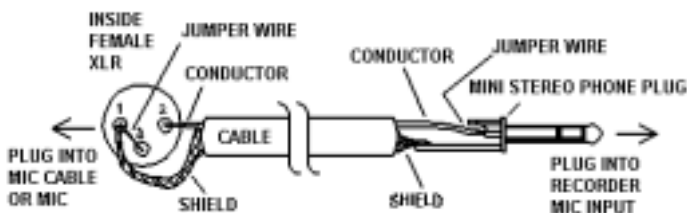


Figure 2. Female XLR to stereo mini phone adapter cable.

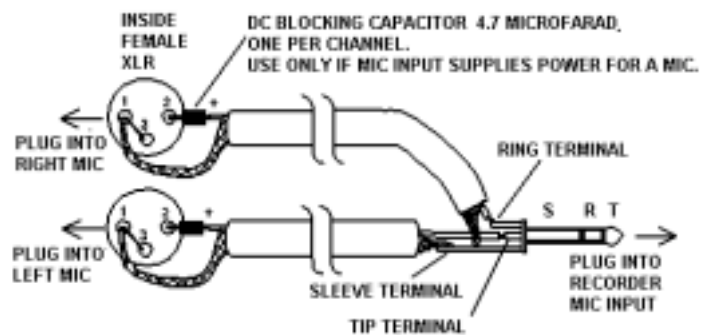


Figure 3. Dual female XLR to stereo mini phone adapter.

What's a PXT?

I came across an older PZM that doesn't work. Someone told me that it needs a PXT to operate. What is that?

Phil Burns
Seattle, WA

Reply: A PXT, which looks like a short chrome-plated tube, is a discontinued Crown product. It

is used with older PZM mics like the PZM-30GPG and PZM-31S. Those mics have an unbalanced high-Z output and are powered with a unipolar DC voltage. You connect each mic to a PXT using regular 2-conductor shielded mic cable. The PXT converts the mic output to a low-Z balanced signal, and converts phantom power to a unipolar DC voltage that powers the mic.

A PX-18 is the same but works off two internal 9V batteries and has a 1:1 internal transformer to balance the signal. A PA-18 is the same but works off two internal 9V batteries and has an active circuit to balance the signal.

Newer Crown mics have the electronics built into the mic or its connector. They have a low-impedance balanced output.

For more information, call 800-342-6939