
HM85BCS/WCS OWNER'S MANUAL



The Avlex HM85 Series Hanging Microphones deliver exceptional value and performance in the professional recording and installed sound environments. These miniature “shotgun”-style hanging mics are designed to be suspended from ceilings, making them ideal for choirs and theatrical productions as well as choral and other musical ensembles. Whether it is on a professional theatrical stage, above a stage or in an orchestra pit at a school, hanging above a choir or over the baptistry in a



church, or simply used for audience response, remote monitoring or ambience recording, the HM85 hanging microphones are the perfect solution for numerous overhead miking applications. Both models feature a wide-range miniature electret condenser microphone and hypercardioid polar pattern to give maximum pick-up while rejecting unwanted ambient sounds from the sides and minimizing feedback problems.

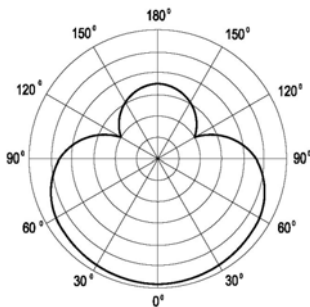
FEATURES

- Hypercardioid polar pattern gives excellent audio pickup while minimizing unwanted spurious off-axis noises.
- Slender design makes it unobtrusive when suspended from ceilings.
- Your choice of white or black finish to match your surroundings.
- Wide dynamic range, tailored frequency response and excellent polar uniformity for natural and accurate sound reproduction.
- Your choice of balanced preamplifier ~ inline barrel or optional ceiling plate mounted preamp.

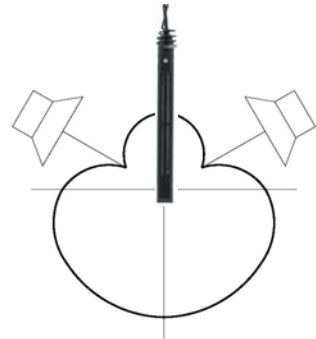
- Supplied with color-coordinated attached 30' (9.2m) microphone cable, vinyl-coated wire mic cable hanger and foam windscreen.

HYPERCARDIOID POLAR PATTERN

This pick-up pattern is ideal for many sound reinforcement applications where a narrower coverage angle or more distant pick-up is desired. The coverage angle is approximately 120 degrees. Having a tighter pick-up angle provides better rejection of unwanted sounds from the sides than a cardioid, but at the expense of the 180 degrees off-axis rear rejection. When a polar pattern is narrowed, the side coverage tightens up and the rear lobe of the pattern pushes out. This increases the rear sensitivity, but also increases the potential for feedback directly behind the microphone. Hypercardioids also provide a tighter, less reverberant sound pick-up than omnidirectionals.



TIP: When using stage foldback monitors, always position them on either side of this supercardioid microphone at approximately 120 degrees off-axis for maximum gain before feedback.



INSTALLATION BASICS

There are no “absolute rules” for overhead miking. Common sense and a basic understanding of polar patterns will enable you to position your microphones correctly. Following are some basic techniques that are used for common hanging microphone applications. Most techniques for overhead miking are simply variations of those that apply to choral applications.

TIP: For all applications, wherever possible, avoid positioning your microphones where they may also be picking up extraneous noises or other sound sources. This might be an organ or other musical instruments, loudspeakers or foldback monitors, or any other unwanted ambient sounds. Also do not place any other sound sources behind a choir within the same coverage area of your choir microphones as they will obviously be heard as well. You will be unable to control and balance their specific sound pick-up apart from your pickup of the choir.

CHOIR MIKING

1. For choral applications, simply hang the microphone down from the ceiling to a point approximately 2~3 feet in front of the first row of singers.

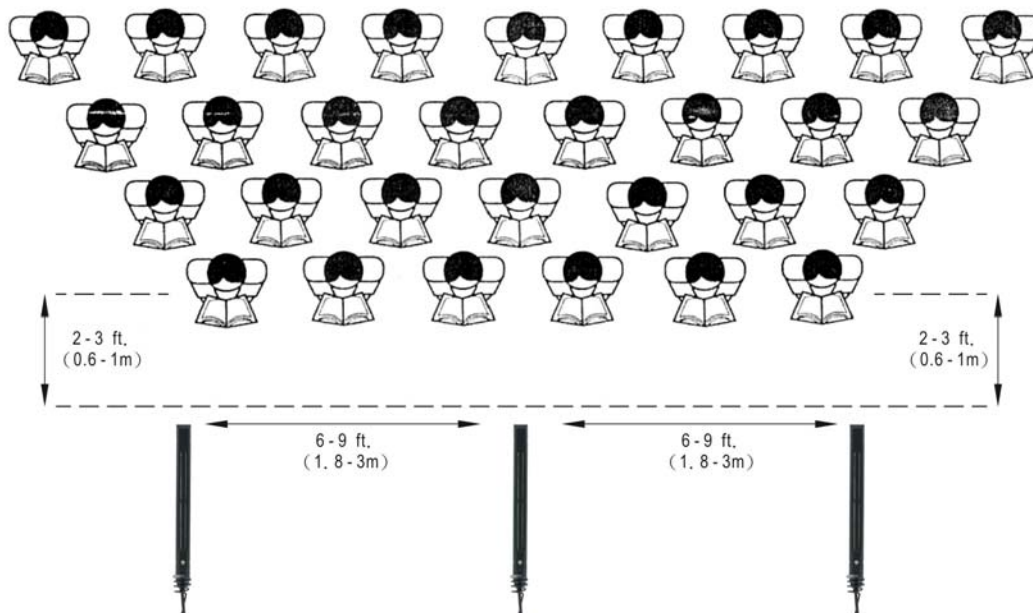
NOTE: If it is a larger choir, position your mics slightly further away to approximately 3 ~ 5 feet in front of the first row. However, do not do this if your acoustic environment is overly reverberant or “echoey” as this is likely to add too much background noise and reverberation which can decrease the clarity and intelligibility of your choral pick-up.

- Aim your microphone toward a point midway between the front and back row of singers. The supplied wire microphone cable hanger should help you in obtaining the optimum angle. It can be carefully bent to a different angle if you require, or it can be removed altogether for some suspended microphone applications where the microphone needs to drop straight down over a “zoned” pick-up area. Experiment with the exact microphone placement. You want to position your microphones’ pick-up angles to uniformly cover your entire choral group.

TIP: You will always obtain better results if your choir is not stretched out across a stage in only 2 or 3 long rows of many singers. It is preferable to arrange smaller rows of fewer singers arranged 4 to 6 rows deep. This will ensure a much better “sense of ensemble” which will help them to hear each other better and thus sing better. It is very important that a choir is arranged to naturally “mix” itself by how each member hears one another. This in turn will give you a stronger, more balanced group pickup ~ more so than just selectively hearing only a few specific people under an individual microphone. This is especially beneficial in choral ensembles where the singers are divided into their respective soprano, tenor, alto and bass vocal sections.

3 TO 1 RULE

Generally, a cardioid choir microphone can be positioned to optimally cover a choral group of up to 15 ~ 20 voices. For larger groups, or if they are spread out laterally over a broader stage area, you will need to use more than one microphone. With overhead microphones it is of utmost importance to obey the 3 to 1 rule which states: “Always remember to keep each microphone at least three times the distance from each other as they are to their respective sound source”. This will ensure that you do not have multiple pickup patterns from multiple microphones overlapping in their coverage and thereby deteriorating your direct natural sound pickup by creating phase cancellation. Fewer microphones are generally better than more. This is equally important in theater and stage applications. See

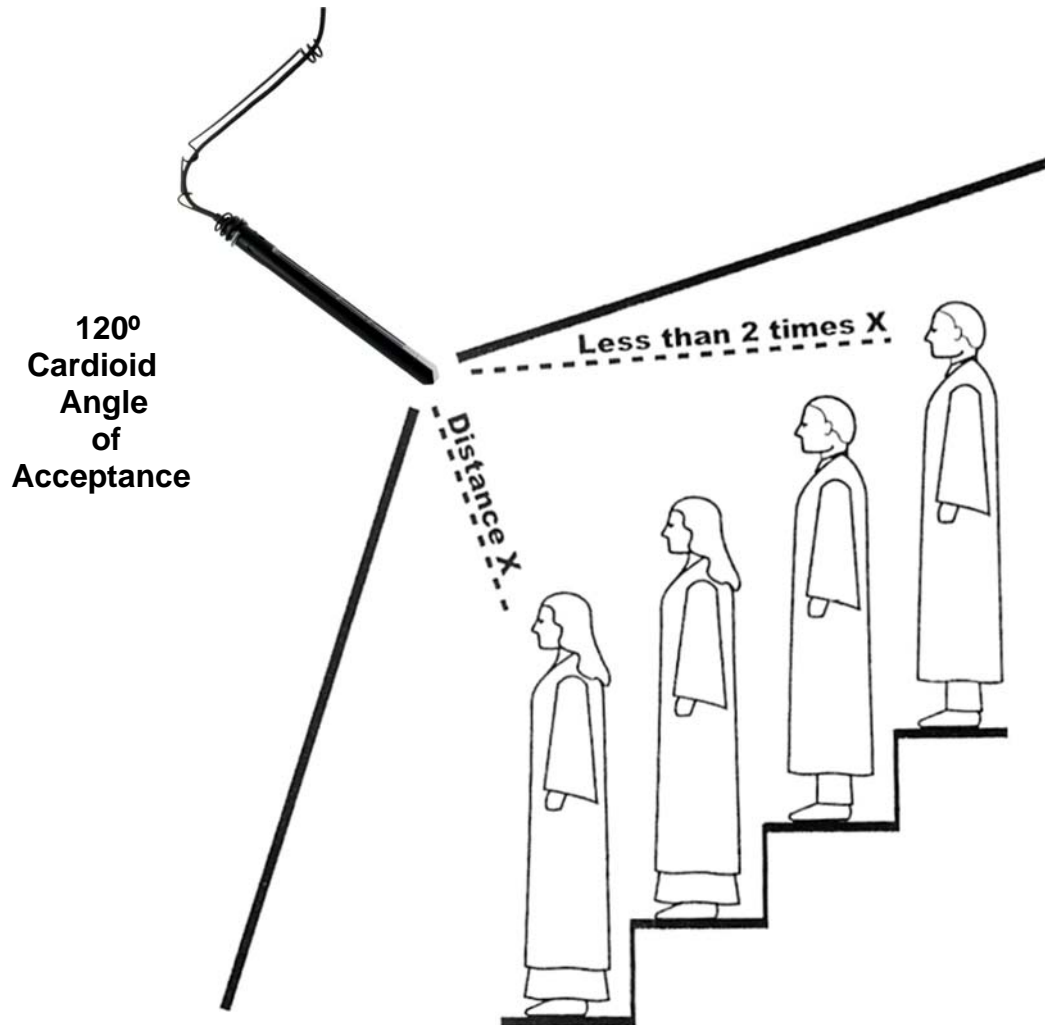


below:

Overhead View – Typical Choir Mic Placement

FRONT TO REAR RULE

As a general guideline, wherever possible, position your HM-85 microphones so that the distance from the microphone to the rear-most pickup will be no more than twice the distance to the front-most source. This will give you the optimum front-to-rear ratio for balanced pickup. See below:



MIKING FOR THE STAGE

Many of the principles for choral miking DO apply to miking for stage and theatre. However, many variables can affect and determine the best way to mic for stage. These include the type of theatrical production, the stage itself, positioning of props, your acoustics, etc. Whatever creative microphone placement your application calls for, the following basic tips will help you obtain the best quality sound pickup:

TIP: “Block” or position your stage actors in such a way as to ensure they are positioned where microphones are poised for proper coverage or, vice versa, suspend your microphones directly over the areas where your actors will be. Be sure to heed the 3 to 1 rule.

TIP: It is often times beneficial to “zone” your stage and hang your microphones accordingly. This can be particularly effective in conjunction with an adaptive automatic microphone mixer where the minimum number of mics required to most effectively cover your production can be kept on at any given time.

TIP: If your stage production allows it, and it is not “a cast of thousands” that you are trying to cover, simple is best. Fewer mics are often times better than more. Be sure that when actors speak there is a nearby microphone that will pick them up directly. The closer the microphone can be positioned to your source, the better for intelligibility, presence and clarity. If your microphone is farther away, you will likely have to turn up more microphone gain and risk gaining unwanted room ambience and potential ringing or feedback from the theatre sound reinforcement system speakers. You will lose speech presence as well.

TIP: The combination of Avlex HM-85 Hanging Mics placed strategically overhead and Avlex BM Series Boundary Mics appropriately positioned across the front of the stage is an alternate means of obtaining the best possible stage coverage. You might also consider the use of Mipro Wireless Microphones in combination with and/or instead of overhead or boundary microphones.

WINDSCREEN INSTALLATION

If desired, the provided foam windscreen can be easily slipped over the microphone to effectively reduce noise from wind or ventilation system air currents. To remove the windscreen, simply pull off gently, taking care not to pull on the microphone cable itself.

HM-85 HANGING MIC DIMENSIONS

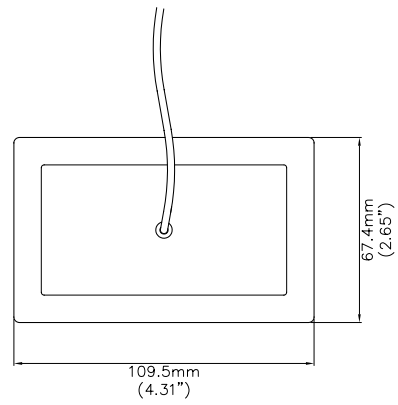
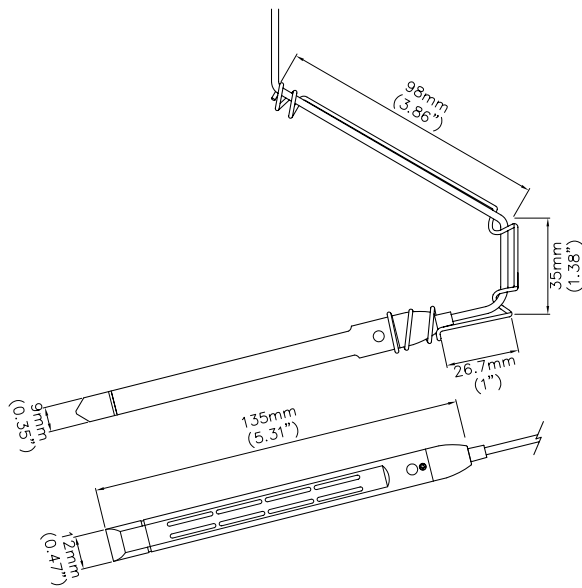
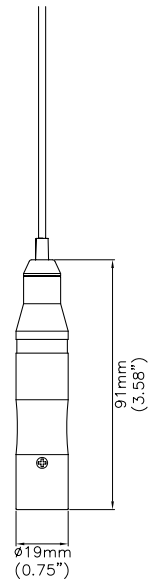
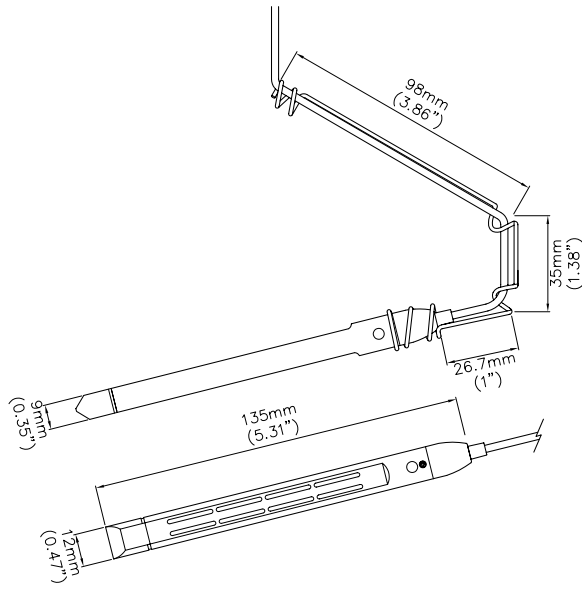
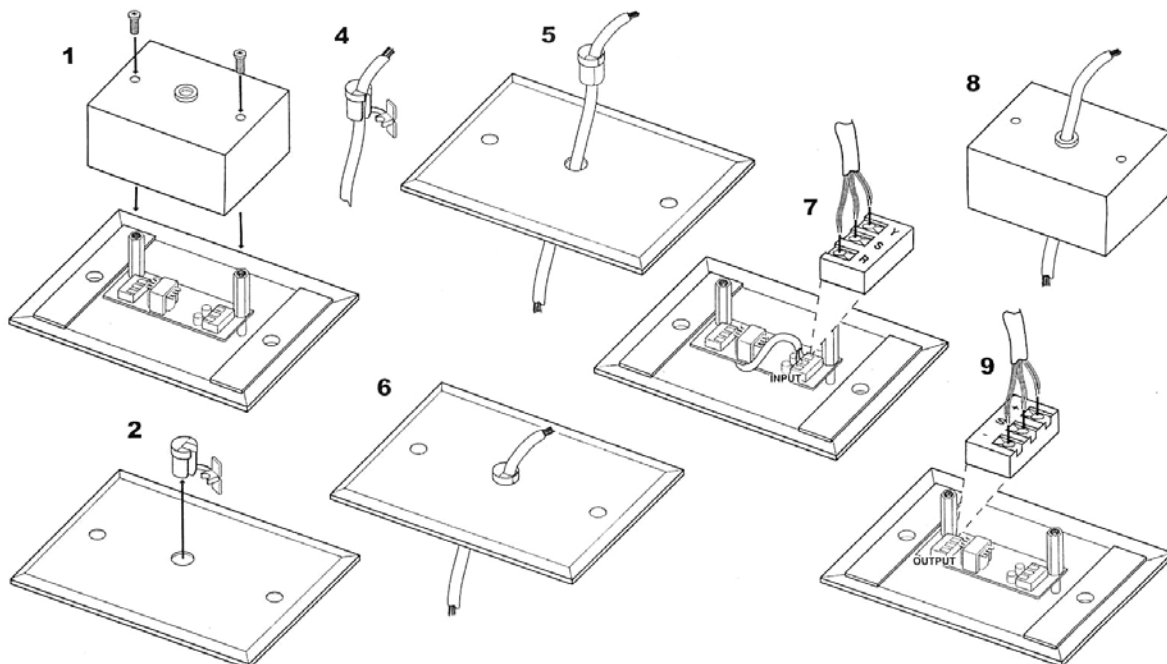


PLATE MOUNT PREAMPLIFIER INSTALLATION

INPUT CONNECTION

1. Detach the preamplifier enclosure by removing the two screws on the back of the enclosure.
2. Remove the cable strain relief grommet from the center hole in the cover plate.
3. Cut the attached microphone cable to the desired length that you want it to suspend below your ceiling or mounting surface. Allow 2 ~ 3 inches of extra length for making your attachments within the preamplifier enclosure.
4. Feed your microphone cable through the grommet. Press the attached strain relief pressure-fit piece firmly against the cable for a secure fit.
5. Feed your microphone cable through the hole in the front face of the cover plate.
6. Fit the cable relief grommet back into the cover plate hole for a snug and secure fit.
7. Connect the microphone cable leads to the input side of the preamplifier terminal block (both reds to R, both yellows to Y and black to S for Shield).



OUTPUT CONNECTION

8. Feed the leads from your microphone cable (that goes back to your mixer) through the open-hole bushing on the back of the removed preamplifier enclosure.
9. Connect your microphone cable leads to the preamplifier terminal block.
(Pin 2 = +, Pin 3 = -, Pin 1 = S)
10. Screw the back onto the preamplifier enclosure and mount your plate mount preamplifier assembly.

*TIP: The ceiling plate preamp should be mounted in a single-gang electrical box. For safety as well as best performance, use the electrical box **only** for the preamp. It is also advisable to route the mic cable as far away from any AC power cables as feasible to avoid possible electromagnetic interference.*

HM 85 SERIES GENERAL SPECIFICATIONS

TYPE: Professional Choir Microphone

MODEL: HM-85BCS / HM-85WCS

ELECTRONIC SPECIFICATIONS:

Directional Characteristics:	Hypercardioid
Element:	Back Electret Condenser
Frequency Response:	50 Hz ~ 16,000 Hz
Impedance:	250Ω ± 30% (@1,000 Hz)
Sensitivity:	-52 dB ± 3 dB (0 dB = 1 v/micro bar 1KHz indicated by open circuit)
Operating Voltage:	Phantom Power, 9V ~ 52V D.C.
Current Drain:	Less than 2.0mA
Max Input SPL:	130 dB (1KHz @ 1% THD)

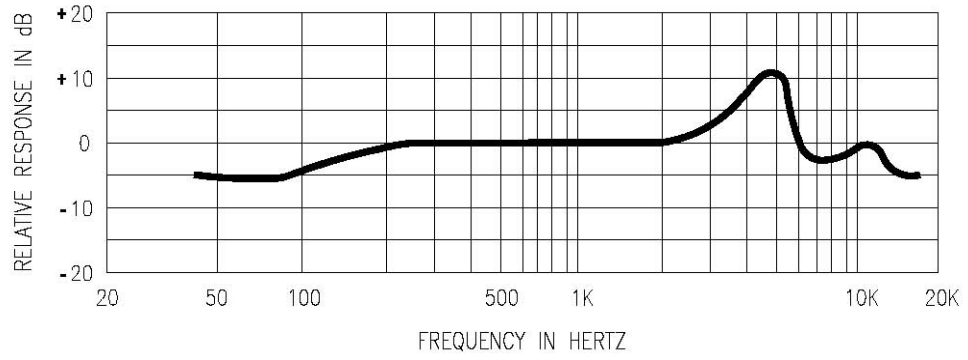
MECHANICAL SPECIFICATIONS:

Dimensions:	Ø0.5" x 6" (12 x 135.3mm)
Weight:	2.0 oz. (57g)
Connector:	3 Pin XLR Male
Cable:	Ø0.1" x 30' (2.6mm x 945cm)

METHOD & TYPE OF MEASUREMENT:

Measurements made according to JIS C-5502 with a Brüel & Kjær –type 2012 with digital turntable system.

FREQUENCY RESPONSE CURVE:



POLAR PATTERN:

