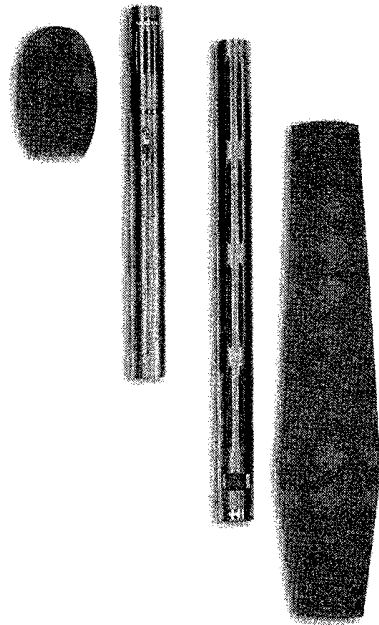


**UEM-81  
OWNER'S  
MANUAL**



**AUDIX**  
PERFORMANCE BY DESIGN

## AUDIX LIMITED WARRANTY

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To make a request or claim under this limited warranty, the product must be returned prepaid in the original shipping container (or equivalent) to Audix or to an authorized Audix repair center and you must assume the risk of loss or damage.

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## AUDIX UEM 81 MICROPHONE OWNER'S MANUAL

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# AUDIX

## UEM-81 MICROPHONE

### OWNER'S MANUAL

#### INTRODUCTION

The Audix UEM-81 s/c pre-polarized condenser is a combination shotgun-cardioid microphone providing a tremendous number of solutions to many of the applications that are encountered in the world of live sound, recording and broadcast.

Presented in a durable carry case, the UEM-81 s/c comes fully supplied and ready to use with a pre-amp section, choice of either shotgun or cardioid capsule, wind socks for each capsule, mic clip and balanced XLR cable. The Audix UEM-81s/c uses a standard AA battery.

For added control, a selectable "M" (music) or "V" (voice) is supplied along with an "on-off" switch to preserve the battery. The rugged aluminum construction and convenient design makes the UEM-81 s/c ideal for all applications requiring high sensitivity and extended frequency.

Getting the most out of your UEM-81 s/c - read this manual and keep it around as a reference. For your convenience, a short-cut and fully detailed explanation of features and applications are provided. Should you have a specific requirement not covered in this manual, contact Audix at:

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Wilsonville, OR 97070  
[www.audixusa.com](http://www.audixusa.com)

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Sales: 800-966-8261

#### PHANTOM POWER

For many condenser microphones to perform at their best, they require a 48 volt DC power supply. These are found on most professional consoles and known as 'phantom' supplies since they are essentially invisible. The power is usually supplied using the 'ground' and the 'lo' of a balanced line and since it is DC (+/- direct current), it does not interfere with the AC (alternating current) generated by the microphone signal. Phantom power supplies range from 9 volts to 52 volts.

#### PROXIMITY EFFECT

When listening to a mic, one will notice that as you get closer to the diaphragm, the sound will contain increasingly more bottom end (bass). This is caused by greater pressure on the capsule which is termed proximity build-up. This 'effect' is often desired with vocal microphones as it adds 'size' and 'power' to the voice.

#### SUPERCARDIOID OR SHOTGUN

The supercardioid is similar to a figure 8 except that it uses the same diaphragm to allow signals to be picked-up from both sides. This creates a long pick-up zone in front of the mic, a 'dead zone' at the side of the mic and another rear pick-up zone or lobe at the back of the mic.

#### UNBALANCED LINES

Guitar or hi-Z signals are commonly known as unbalanced lines. Because of their high impedance they are more susceptible to noise and should be connected using a high quality coaxial cable. Unbalanced lines should only be used to a maximum of 25 feet (6 metres).

#### UNITY GAIN

The term 'unity gain' is used to describe the maximum output one can achieve on a stage when all microphones, amplifiers, speakers and monitors are on.

#### X/Y PLACEMENT

The term X/Y is based around the concept of the X- horizontal and Y-vertical planes whereby two mics are used in a 'X' configuration to capture left and right source information from the same location. The idea behind the concept is to have the sound waves arrive at both capsules 'in-phase' or at the same time.

### HIGH PASS FILTER

A 'high pass filter' does exactly that; it allows high frequencies to pass, filtering out low frequencies that may be unwanted. High pass filters are often employed when miking a voice with a condenser microphone as it helps to reduce wind and pop noise.

### HYPERCARDIOID MICROPHONES

Designed to reject noise, hypercardioids are similar to cardioids except that they have a much more targeted pick-up pattern. A well designed hypercardioid will reject unwanted noise for more gain before feedback.

### LIMITERS AND COMPRESSORS

The devices are generally employed to even out the dynamic range of a signal. Take for example a musical passage that goes from being too soft to being too loud. A compressor or limiter would be employed to 'average' out the level. Limiters differ from compressors where limiters only limit the extreme high levels while a compressor can both limit a level and also increase low volume levels to bring them up.

### LOW PASS FILTER

A 'low pass filter' does exactly that; it allows low frequencies to pass, filtering out high frequencies that may be unwanted. Low pass filters are employed in crossover networks in speakers systems to separate the frequencies and direct them to the appropriate driver.

### NOMINAL LEVEL

Most equipment is market in some way to identify its 'normal' or 'nominal' operating level. This is usually done with '0dB' or a 'highlighted' marking. The nominal level is typically the optimum performance level for best gain with least distortion.

### OMNIDIRECTIONAL MICROPHONES

An 'omni' mic is designed to pick-up sound from all sides and is usually the most faithful as it not only picks-up the source, but also the ambiance. Omnidirectional mics are used in critical recordings and measurement because of their accuracy. They are rarely used in sound reinforcement due to their inability to reject noise and feedback.

### FOREWORD

The Audix UEM-81 is available in two formats and is available as a cardioid or as a combination shotgun and cardioid set. The information herein is applicable to either model.

Your Audix UEM-81 includes:

- pre-amplifier section
- cardioid capsule
- shotgun capsule (S/C version)
- matching wind screens
- XLR cable
- mic clip
- carry case

### SPECIFICATIONS

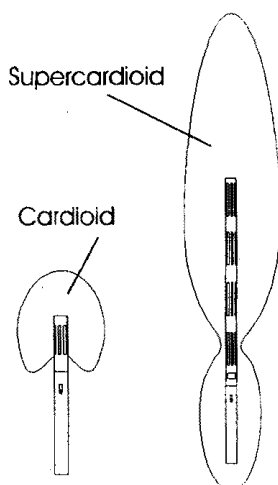
Models	UEM-81	UEM-81c
Type	Pre-polarized condenser	Pre-polarized condenser
Pattern	Super-cardioid	Cardioid
Response	20Hz~20kHz	40Hz~18kHz
Sensitivity	-64dB	-64dB
Impedance	600 ohms	600 ohms
Max- SPL	128dB	128dB
Construction	Aluminium	Aluminium
Color	Black	Black
Features	<ul style="list-style-type: none"> <li>•Super Directional</li> <li>•Bass attenuation</li> <li>•on/off switches</li> <li>•interchangeable capsules</li> <li>•One year warranty*</li> </ul>	<ul style="list-style-type: none"> <li>•Directional</li> <li>•Bass attenuation</li> <li>•on/of switches</li> <li>•Usesbattery</li> <li>•One Year warranty*</li> </ul>
Applications	Video, film, stage miking for choirs, plays	Record and amplify acoustic instruments

## USING THE UEM-81 S/C (SHORT CUT)

Right out-of-the-box, the UEM 81 s/c is ready to go! Simply insert the battery into the pre-amp section and screw on the capsule you have selected, plug in the mic and you are ready.

**Note:** Because this is a condenser microphone with a charged capsule, when turning the mic on or plugging it in, ensure that the volume or input channel is turned off to avoid a loud "pop" in your system.

Adjust the selector switch from M-music to V-voice depending on your application. (See High Pass Filter for more information.)



## USING THE UEM-81 S/C

The UEM-81 s/c is equipped with a power supply and a choice of two capsules. The short capsule provides a sensitive cardioid pattern that is ideal for the recording and sound reinforcement of instruments and voice. The longer shotgun capsule is more sensitive and is used where more "reach" is required.

As a rule, condenser microphones are more sensitive than dynamic microphones making them a better choice for instruments with upper frequency detail, such as: acoustic guitar, violin, flute, and the like. Exhibiting excellent transient response, condensers are generally 'the choice' for miking cymbals, Hi-Hats and percussion instruments.

signal is sent to the performers personal amplification system and the other is sent to the main mixing console.

## DYNAMIC MICROPHONE

A dynamic microphone is made up of a voice coil and a magnetic assembly whereby the air pressure waves generated by a sound, move the voice coil in and out of a magnetic field, generating electron flow or an electrical current. A dynamic microphone does not require any source of power for it to work. Dynamic microphones are the most common type employed in hand held applications.

## DYNAMIC RANGE & HEADROOM

The effective performance range from minimum to maximum is known as the dynamic range. Once the system is being used, whatever is left above the nominal level is the dynamic headroom.

## EQUALIZERS

There are basically two types of equalizers, graphic and parametric. Graphic EQ's are usually employed to shape the overall sound while parametric equalizers are used to shape a very specific character or to cut out a specific problematic frequency. Graphic EQ's come in all ranges from 10 octave band to 1/3rd octave bands for added control. Parametric EQ's allow the user to dial in a particular frequency, allow one to adjust a variable 'Q' or frequency range and then cut or boost the resulting signal.

## FEEDBACK

The squealing sounds that are often heard when microphones are employed is called feedback. This occurs when the sound that is amplified from a microphone is 'fed back' into the microphone causing a loop. This can generally be reduced by placing the offending microphones behind the speaker system or by using cardioid or hypercardioid microphones.

## FIGURE 8 MICROPHONE

A figure 8 microphone is essentially a dual omnidirectional (2 diaphragms) whereby signals are picked-up in a dual or stereo fashion. The figure 8 is commonly used for left right recording or conversations between two people.

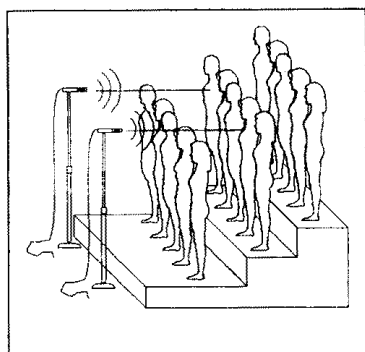
## GATES

A signal or noise gate is essentially an automatic on-off switch whereby a signal will only be able to pass if a sufficient level is present. A gate is often employed with microphones on live sound stages to automatically turn mics off unless they are being used.

**PLACEMENT**

There is not set rule for placement, but here's some suggestions:

Microphone	Application	Distance/Area
(1)UEM-81	Voice	6-12 inches
(2)UEM-81	Choir/Group	6-10 feet
(1)UEM-81	Guitar	Point mic toward sound hole
(1)UEM-81	Violin	Point mic across the 'f' hole point toward bow
(1)UEM-81	Flute	Point mic toward mouth piece
(2)UEM-81	Piano	X-Y configuration. Point toward bass/treble ends
(1)UEM-81	Drums	3-4 feet above
(1)UEM-81	Cymbal	3-4 feet



This diagram shows a choir application where two UEM-81C microphones are placed roughly 3 feet in front of the choir aimed at the mid-section.

**MIC CLIP**

Your UEM-81 is equipped with a mic clip. The mic clip is standard and fits all mic stands. Consult your dealer if you should require an adapter.

**WIND SOCK (POP FILTER)**

The wind sock (or pop filter) is employed when using the UEM-81 with voice or instruments, such as a flute, that may create noise as the breath goes over the capsule. It is also a good idea to use it when miking a voice at close range. This not only keeps 'pops' out of your system but also reduces moisture from saliva from reaching the capsule. If the capsule becomes excessively moist it may crackle or temporarily stop working. The solution - remove the pop filter and let it dry overnight.

**THE FILTERS (M & V)**

The UEM-81 is equipped with two switches, an on-off switch and a M-V switch. The on-off activates the unit and turns on the battery.

**IMPORTANT: ENSURE THE VOLUME IS TURNED OFF BEFORE USING THE ON/OFF SWITCH OR CHANGING THE M/V TO AVOID DAMAGING YOUR SPEAKERS.**

Ensure the volume is turned off before using this switch. Failing to do so may result in a 'thump' in your sound system.

The M (music) and V (voice) switch allows you to introduce a high-pass filter into the circuit which essentially cuts out unwanted low frequencies, allowing the highs to pass. The filter is a smooth roll off that is well below the voice range. It's typically switched to V for voice and activated when used for singing or interviewing purposes. The V position can also be advantageous with certain instruments, such as on a flute, where breath noise can be excessive.

You may also find it to your liking when amplifying some acoustic instruments such as violin or banjo. These instruments tend to be very 'top ended' and cause a lot of feedback because of the gain they require. By reducing the low frequency content you can often reduce feedback.

## GLOSSARY OF TERMS

### **BALANCED LINE**

A balanced line is made up of 2 conductors 'hi & lo', usually in a twisted pair configuration with an outer shield whereby the two conductors are transmitted 180° out of phase with each other. When the signal arrives at the receive end, the 'hi & lo' are converted back into phase, essentially canceling out any noise that may have been picked-up along the way. Balanced lines are recommended for signal transmissions beyond 25 feet (6 metres).

### **BAND PASS FILTER**

A band pass filter is often a broad range filter that allows mid-range frequencies to pass. Band pass filters are incorporated in crossovers and equalizers to allow control over specific frequency regions.

### **BOUNDARY MICROPHONES**

Also known as semi-hemispheric microphones, boundary mics usually encompass an omnidirectional capsule that has been mounted on a plate, which in turn is mounted on a large surface such as a wall. Boundary microphones are often used to record the ambiance of a performance or of a conversation.

### **CARDIOID MICROPHONES**

The cardioid pattern is the most common pick-up pattern found on hand held microphones. It is also known as directional or uni-directional. The concept behind the cardioid is to allow the user to direct the microphone towards a source, thus reducing unwanted sounds from being picked-up.

### **CONDENSER & ELECTRET CONDENSER MICROPHONE**

A condenser microphone employs two electrically charged plates that, when subjected to air pressure waves generated by sound, create a voltage fluctuation which in turn generates a signal flow. Condenser microphones require a power source such as a battery or a phantom power supply.

### **DIRECT BOX**

A direct box or DI is an interface unit that replaces a microphone for applications such as taking a signal from a keyboard or an acoustic guitar with a built-in pickup. The Direct Box splits the signal into two components whereby one

The UEM-81 cardioid capsule is designed with a broad 'heart shaped' polar pattern that not only picks up the source, but is wide enough to take in some of the ambiance. This is appreciated when miking an acoustic instrument such as a guitar where the sound not only emanates from the sound hole, but also from the strings, bridge, top and sides.

### **REPLACING THE BATTERY**

The battery is placed in the battery cavity by following the clearly marked polarity directions on the mic. Screw the capsule on clockwise without forcing or cross-threading the machined aluminum. The AA battery will last approximately 1,000 hours. Turn the mic "off" when not in use to prolong battery's life.

### **POWERING UP - POWERING DOWN**

Before plugging in the UEM-81, ensure the volume is turned off to avoid a "pop" in your sound system.

### **PHANTOM POWER**

The UEM-81 is not designed to be used with phantom power. If you require phantom power, please refer to the Audix ADX series of mics, including the ADX 50 cardioid condenser and ADX 40 hanging choir mic.

### **CONNECTIONS**

Your Audix UEM-81 is equipped with a balanced mic cord with XLR connectors on each end. (Most sound equipment sold today is equipped with balanced inputs reducing noise and providing better results, especially at longer distances.) If your system is equipped with an unbalanced 1/4" or you are connecting to a 1/8" camera input, use a 'lo to hi' impedance matching transformer matching the input level. (Consult your dealer for advise on what to use.)