

Field Lighting and Audio

Lighting - Why Light?:

1) To Create an adequate base level of light for best reproduction of color and detail.

Video cameras, even those advertised as “low light” models, produce their best pictures with a brighter light level than is found in most locations. Simply adding more light in a living room or office will dramatically improve the quality of the image you record.

Inadequate light will result in muddy colors, and poor reproduction of detail.

2) To define the shape and texture of the subject, and create a feeling of depth.

Our eyes and brains use the highlights and shadows created by light falling on a subject to discern the shape (rounded or angular) and surface (smooth or fuzzy) of a subject.

By setting-up lights, you can control the height and angle of the light shining on the subject, and place highlights and shadows where you choose. Poorly positioned lights may make the object appear flat and featureless, or exaggerate wrinkles and blemishes.

The existing light sources in most locations (lamps, overhead lights, windows) are often harsh, and generally not well positioned to achieve the most flattering effect.

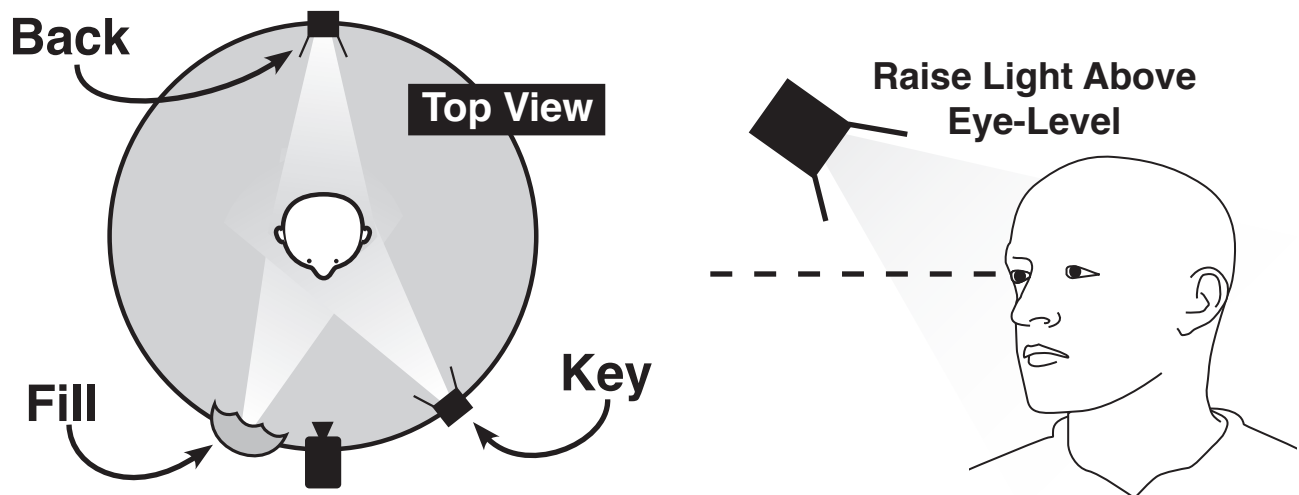
3) To add impact to the image by suggesting Environment (place, time) or Mood.

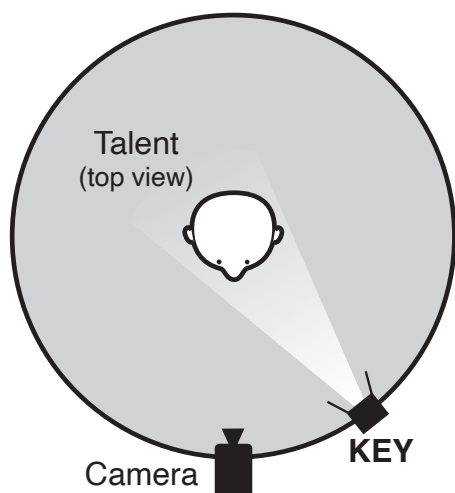
Reddish-tinted light may suggest dawn or dusk. Blue light says “night-time”. Light cast from a low-angle may imply evil or madness. Each of these simple tricks does more than just illuminate the scene; they help to tell the story.

3-Point Lighting:

One simple technique for achieving these objectives uses three lights -- the KEY, FILL, and BACK -- to illuminate and define the subject. As you experiment with the technique, remember that the final judge of good lighting is what looks good to the camera. Consider these techniques to be guidelines, and alter them to fit your particular needs.

Before you begin to light, establish where your camera and the subject to be lit will be located; the positions of the lights will be based on these positions.





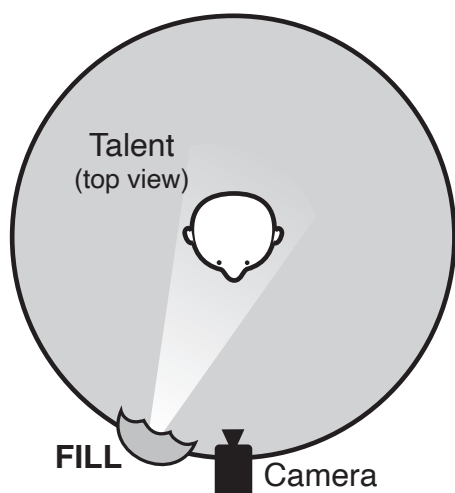
Key Light:

Provides adequate “base light”, and defines the contours and texture of the subject with highlight and shadow.

After establishing positions for the camera and subject, place a light to the side of the camera, up to about 45° from the line running from camera to subject. If the key light is too close to the camera, the lighting effect will be “flat” with little definition.

Similarly, the height of the light should place it above the eye-level of the subject, at about a 45° angle downward.

Although the initial effect of the Key light may seem harsh, the “Fill light” (below) will balance the look.



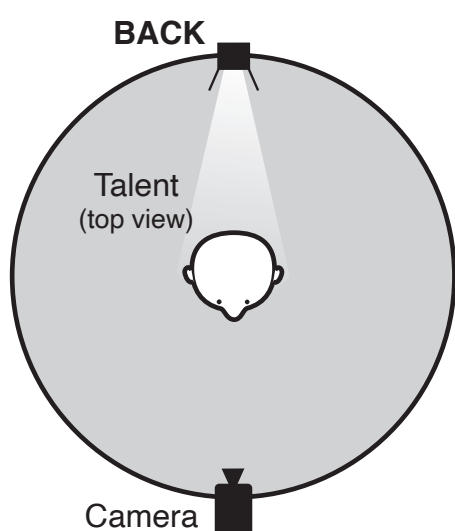
Fill Light:

Lightens the Key Light shadows, to reduce harshness and create a more balanced and soft effect.

Place this light on the opposite side of the camera from the Key Light, a little closer to the camera.

The “Fill” lights the side of the subject opposite from the Key light side. However, since the objective is to lighten the shadows created by the Key, but not “wash them out”, the fill should be only about 50% - 75% as bright.

One way to adjust the intensity of the light is to move it further away from the subject. If you double the distance from light-to-subject, you reduce its brightness to 25%.



Back Light:

Separates the subject from the background, and helps to create a sense of depth.

The third light in the 3-point lighting plan should create a halo of light on the hair and shoulder tops of the subject. To accomplish this, the backlight is placed directly behind the subject, pointed back toward the camera.

If this placement of the light makes the stand visible, you can move it a little left or right so it's just out of the shot.

Make sure the light is far enough behind the subject that it doesn't cast any light on the nose tip or cheeks of the subject from behind. Also, If the subject has light color hair (or no hair), you may want to reduce the brightness, compared to a subject with dark colored hair.

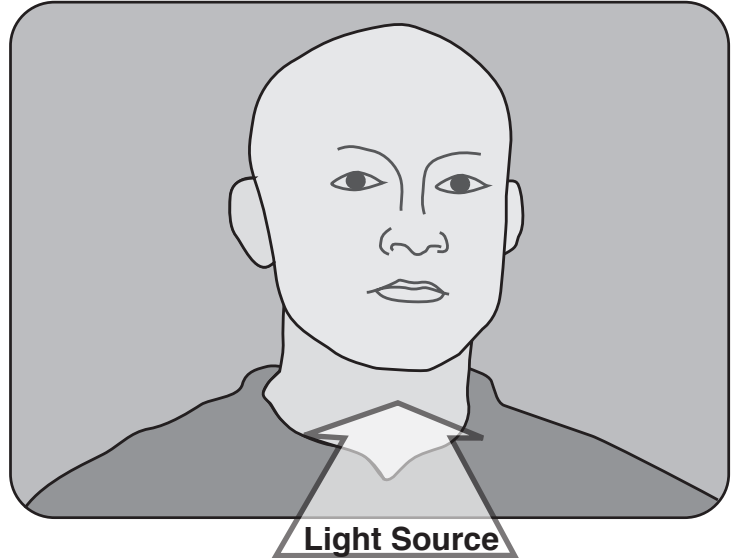
The Effect of Lighting:

Flat Lighting -

If you place your source of light too close to the camera, you'll produce almost no shadow on the subject.

While "no shadow" might sound like a good thing, it actually produces a "flat" effect in which the viewer has no means of discerning what parts of the subject stick out and which are recessed.

The resulting image is dull to look at, and has little contrast.

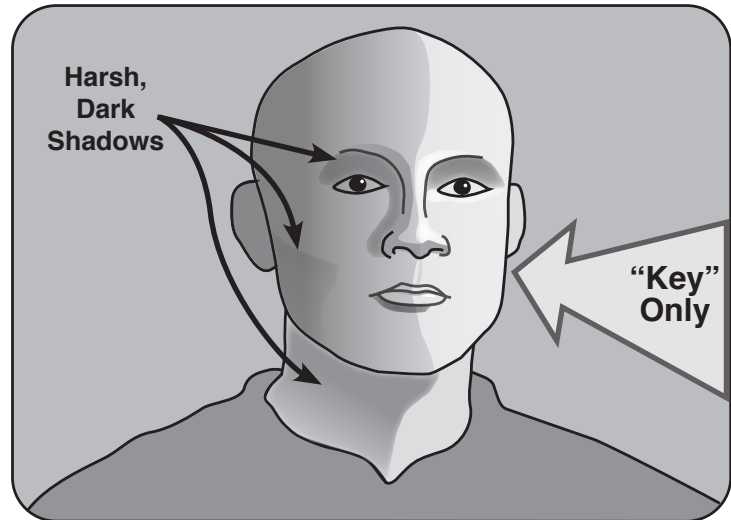


Key Light:

If you move the main source of light (KEY light) further to the side of the camera, it creates shadows along side the subjects nose, under his brows, beneath his chin, that help to define the contours of his face for the viewer.

However, the Key light alone is a little too dramatic for many uses, since the shadows are very dark, and the light is much stronger on the Key light side of the subject.

Notice also how the subjects dark shirt tends to blend into the dark background.

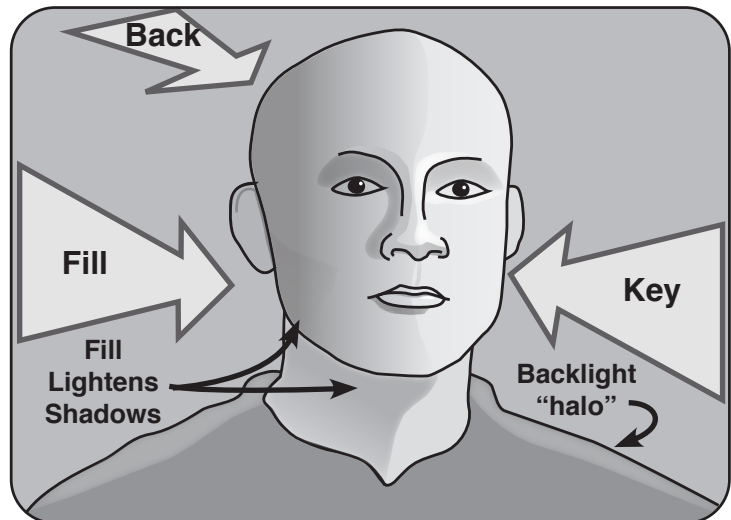


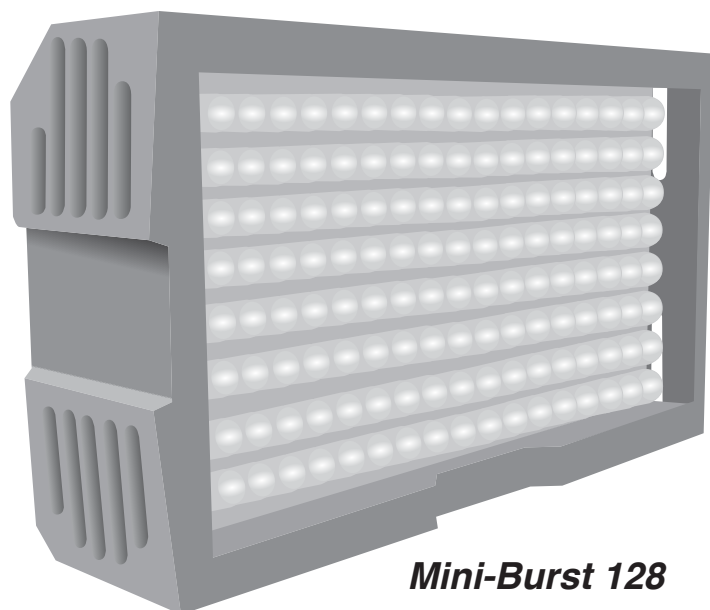
Balancing the Light:

By adding the FILL light -- which is a little less bright than the KEY -- on the opposite side of the camera, you partially "wash out" the shadows.

The objective is to balance the brightness of the two lights, so that you lighten the shadows, but don't eliminate them completely.

Notice also how the BACK light creates a "halo" of light on the shoulder tops and top of the head, to help separate the subject from the background.





Mini-Burst 128

Standard Light Kit Includes:

- **1 - Mini-Burst 128 Light**
- **2 - Mini-Burst 256 Light**

- **3 - Tripod-Style Stands (6' tall)**
- **3 - Light Stand Mounting Adaptors**

- **3 - AC Power Adaptors**
- **3 - Car Lighter Adaptors**
- **3 - Rechargeable Batteries**
- **3 - Battery Chargers**

- **Packet of light diffusion and amber gels for each size light**

NOTE: Light Kits are not included with camera packages, and so should be reserved in advance if needed!

The LED Lights:

MetroEast offers 2 models of lights in our field lighting kits. Most of the kits contain 3 lights, along with mounting stands, batteries, chargers, and more.

Both Models are LED fixtures:

- 1) Run off of Battery or Power supply
- 2) Low power use, allows several hours of use off or rechargeable Li-Ion batteries.
- 3) Include a DIMMER knob to let you adjust the brightness of the output.
- 4) Produce very little heat, so they can be safely mounted near walls and ceilings without damage, and won't burn your fingers!

Mini-Burst 128

The smaller lights in the kit are about 4 3/4" long, 2 3/4" tall, and 2" deep.

The light contains 128 LED bulbs.

Mini-Burst 256

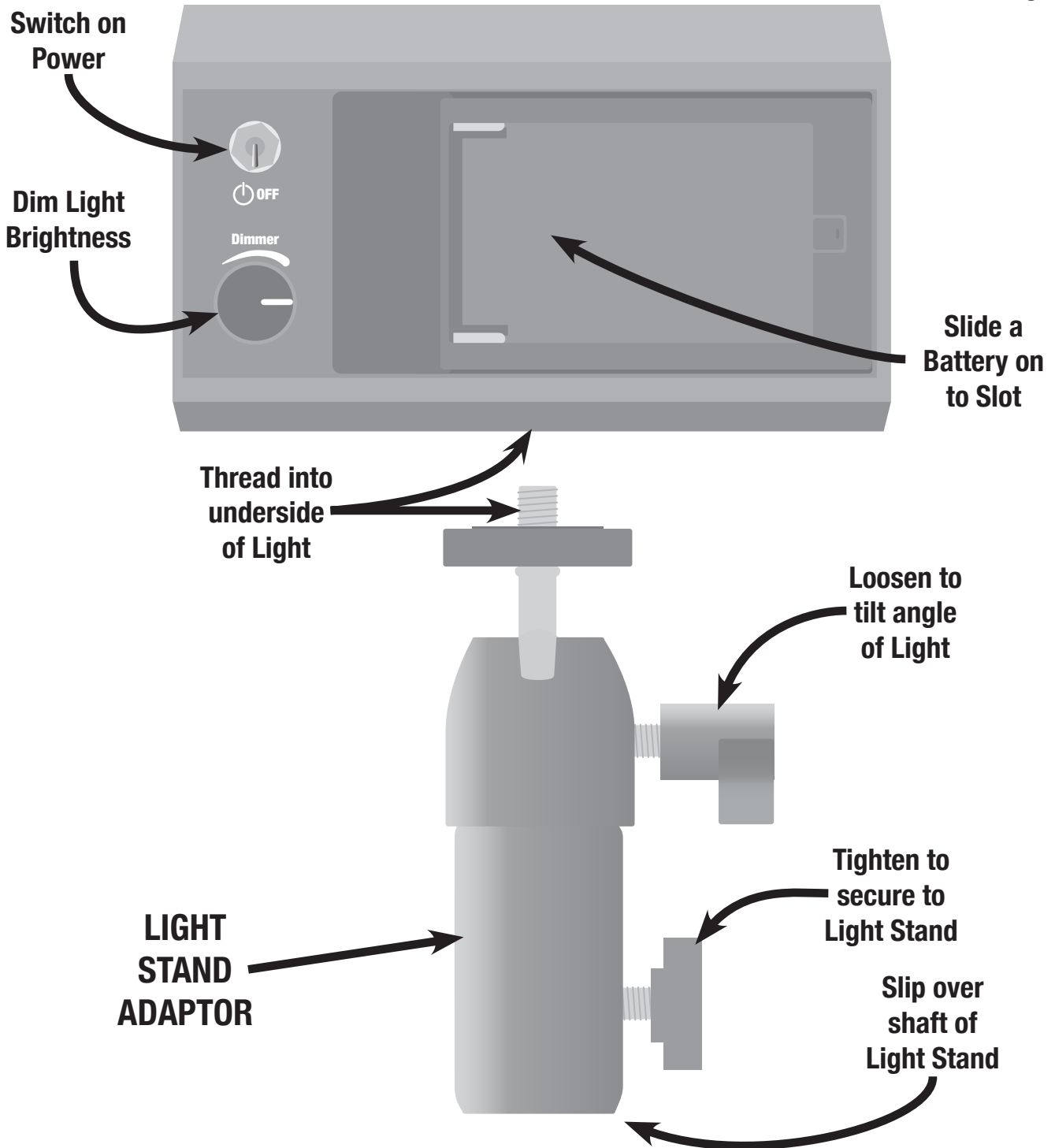
The 2 larger lights in the kit are about twice as long, but the same height and depth.

The light contains 256 LED bulbs, so is approximately twice as bright, and will use batteries about twice as fast.

About LED Lights:

While not as bright as old-school halogen video lights, LED fixtures produce a naturally soft, flattering light.

They are also considerably more user friendly, as they don't trip circuit breakers and scorch paint.



Attaching the Light to the Light Stand:

Each light kit includes a LIGHT STAND ADAPTOR for each light. The light has several threaded openings to let you attach the light in different positions. You can also adjust the angle of the light with the thumb screw on the side of the adaptor.

The light stands have 2 telescoping sections to let you raise the light to about 6' high. It also has a wide tripod-style base to provide stability.

- 1) **Choose Clothing Carefully!** Advise talent to avoid very dark or very light clothing, and large shiny jewelry. These create trick problems of controlling contrast. Also, ask subjects not to wear hats, especially those with bills or brims. Hats cast shadows on faces that are hard to overcome.
- 2) **Watch the Glasses!** If your subject wears glasses, look out for bright spots where their lenses reflect the lights. If they aren't comfortable taking off the glasses, try lifting the stems 1/8" to 1/4" above the ear. This forward tilt may hide the reflection. Don't tilt too far forward though, or you'll get that unappealing "Wacky Professor" effect.
- 3) **Safety First!** If you'll be setting-up the lights where people will be moving around, take steps to secure the light stands to avoid damage and injury: Run cables close to walls, and tape them down where they cross doorways or halls; drape sandbags over the legs of the light-stand to prevent tipping.
- 4) **Use Existing Light Sources!** In some cases, you can lessen the work required by turning on lights in the room where you're shooting, and then augmenting them with the light kit fixtures to make the effect more flattering.
- 5) **But Don't Mix Light Colors!** Sunlight, Incandescent Light, Fluorescent Light are all different "Color Temperatures" (see below). Avoid allowing sunlight to flood in through a window in the same space where man-made lights are present. The mix of lights can create poor color in your video.

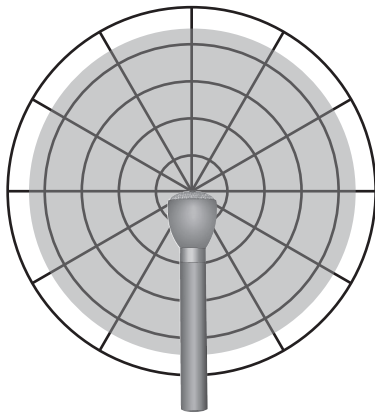
Lighting Terminology:

Diffusion	Technique or materials used to soften the shadows cast by lights for a softer, more flattering effect. Light is "diffused" when the size of the light is increased by bounding it off a reflective surface, or shining it through semi-transparent materials that scatter the light.
Gels	Thin sheets of colored plastic. Shine the light through the gel for color effects.
Kelvin Temperature	A scale used to measure the color of light. Mid-day sunshine is very blue (5600° to 10,000°) while most man-made forms of light are more reddish (around 3200°)
C-47s	Clothespins, used to quickly attach gels or diffusion sheets to lights.

Microphones can be distinguished by several characteristics, each of which may help you decide what type is most appropriate for a given use. These properties include: **Directionality**, **Transducer Type**, and **Physical Size/Shape**.

Directionality:

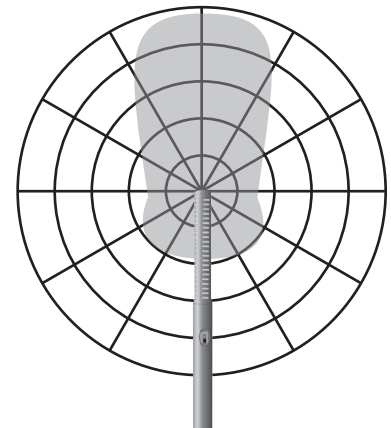
Refers to the ability of the microphone to favor sounds coming from a particular direction, and minimize sounds coming from other directions. There are 3 main types of direction patterns:



OMNI-DIRECTIONAL



UNI-DIRECTIONAL (CARDIOID)



HYPER-CARDIOID

Omni-Directional: An “Omni” picks-up sound equally well from all directions. That is, a person speaking directly into the head of the microphone won’t sound much louder than someone speaking from the side or rear (if they are speaking at the same volume and distance from the mic).

Uni-Directional: The “Cardioid” mic is more sensitive to sound directed toward the head of the mic, and less sensitive to sound arriving from the side or rear. Because of this feature, it’s more important to keep the mic pointed in the direction of the source of the sound (the person speaking) than with an Omni mic.

Because the Cardioid is more “directional” than the Omni, it may do a better job at filtering out background noise when recording in a noisy setting.

Hyper-Cardioid: Commonly called a “Shotgun” mic, this unit is highly directional. If the mic is not pointed right at the person speaking, you’ll get very little volume. This makes the shotgun better than the other types at picking-up sound from a distance, if you aren’t able to get a mic close to the sound source.

Transducer Type:

There are 2 main types of devices which convert sound waves in the air to an electrical signal: **Dynamic and Condenser**. The Dynamic mics offer good sound quality, and are rugged enough to tolerate rough handling and extremes of temperature. Condenser mics are usually smaller, provide a slightly more powerful output, and may produce a “brighter” sound due to their better ability to produce high and low frequencies. However, they also require a power source, and can be more fragile.

Physical Shape and Size:

Besides their technical specs, microphones are also designed to fit specific kinds of uses. Some are created to be held in the hand or mounted on a stand, while others are small enough to be pinned to the shirt of an interview subject.

Microphones Available for Check-out:

When you check-out a camera, you may also select from a large variety of microphones. If you have questions about which type is best for your shoot, please ask at the Equipment Room.

Electro-Voice 635A

Pick-up Pattern: Omni

Tranducer: Dynamic

Notes: Very rugged, good all-purpose mic, good for inexperienced interviewers



Shure SM-58

Pick-up Pattern: Cardioid

Tranducer: Dynamic

Notes: Enhanced bass response, built-in “Pop” screen makes it very good for interviews or vocals.

Shure SM-57

Pick-up Pattern: Cardioid

Tranducer: Dynamic

Notes: Much like the SM-58 but without the “Pop” screen.



Audio Technica AT815a “Shotgun Mic”

Pick-up Pattern: Hyper-Cardioid **Tranducer:** Condenser

Notes: Highly “directional”, must be pointed at sound source. Is better at picking up sound at a distance than cardioid or omni mics. Requires a power source (battery or cameras “phantom power” switch) and has an ON/OFF switch.