BUYING guide

PHOTOGRAPHY LIGHTING



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Introduction

When it comes to image making, light is everything

The earliest efforts in photography were based on the fact that certain materials harden when exposed to light. Images had to be made in bright daylight; without enough light, no images could be made.

At the most basic level, light illuminates your subject. Conceptually, it conveys moods, sets scenes, and amplifies atmosphere. Light lets you tell a story with a single frame. Natural light, at least outdoors during the daytime, is intense enough to provide visual form, volume, and shadows that "sculpt" objects. But in situations where the available natural light isn't intense enough to illuminate your subject fully, you need to augment the natural light with light produced by artificial sources. With the right lighting gear, you'll be able to tell any story, anytime.

From the hobbyist photographer to the seasoned pro, lighting equipment is the key to successful image making. Some basic gear can make your shots more dynamic, powerful, and intriguing, unleashing limitless creativity.



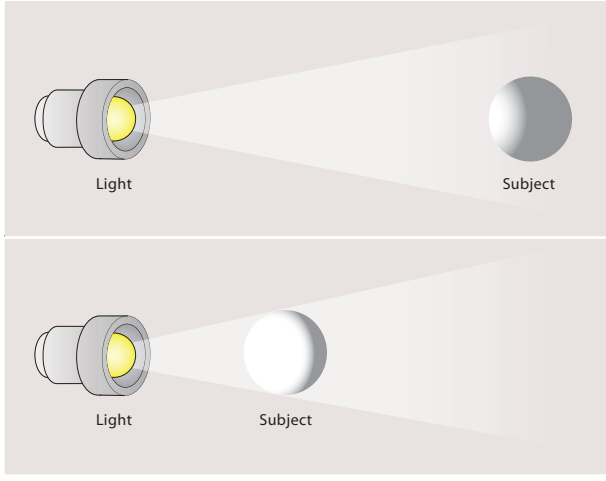
Light Quality

Not all light is created equal

Some light bathes your scene and some blasts it. Recognizing and working with different qualities of light can make the difference between mediocre and startling images.

Understanding light is without question the most difficult aspect of photography. One of the first techniques every photographer should learn is the difference between hard and soft light. Hard light produces stark shadows and bright highlights. A cloudless, midday sun produces hard light, as would a bright flash or spotlight without modification. It can also deepen shadows and create hot highlights. To emulate the hard quality of sunlight, use a flash or continuous light source at a distance from your subject.

Soft light smoothes hard lines and edges, reveals more shadow details, and produces softer highlights. It is very flattering to the human form. Soft light minimizes shadows and lowers the contrast ratio—the range of luminance from the brightest white to the darkest black—in an image. Move your light source closer to your subject for a softer look.



Light Coverage

Distance matters when it comes to light coverage. If you move the subject farther away, the light source becomes proportionally smaller, casting a harder light. If you move the subject closer, the light source becomes proportionally larger, casting a softer light.



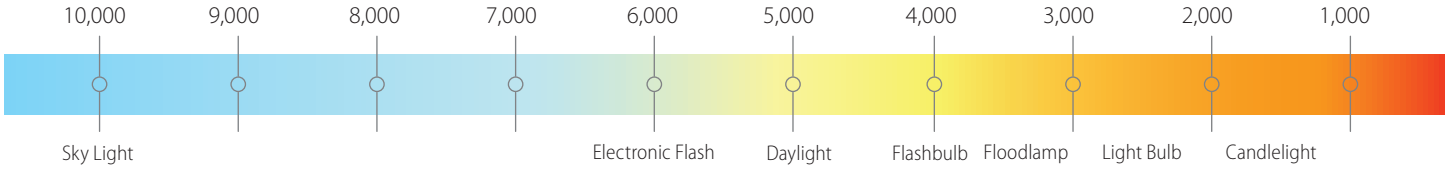


Hard Light

Here you can see the effects that hard lighting has on a mannequin. Notice the bright highlights on the bridge of the nose and cheekbone, as well as on the top of the head. Also notice the hard shadows under the chin and in the right eye socket.

Soft Light

The effects of soft lighting on the mannequin are obvious. Notice the loss of contrast, and more even light, that appears to wrap itself around the subject. Shadows here are more subtle, and the subject has less of a range of tone between highlight and shadow.



Light Temperature

All light sources emit a color cast, or different color of light, whether the sun or a light bulb

The Kelvin scale, named after physicist William Thomson, 1st Baron Kelvin, is used to measure the color of light. Every light source emits a certain Kelvin temperature, and objects absorb or reflect those light rays to give us color.

The light produced by a candle has a yellowish cast, while sunlight filtered through a cloudy sky is bluish. These differences are measured along a color temperature scale in increments of degrees Kelvin. As an object *(such as a filament)* is heated, it radiates heat and light. A filament heated to 3000°K will emit a yellow-orange light. As its temperature increases, the light it emits becomes whiter, and ultimately bluer *(see chart above)*. Colors at higher temperatures are referred to as cool *(blue)*, while lower temperatures are characterized as warm *(orange)*.

Not all tungsten bulbs emit a consistent 2700°K, and garden variety ceiling fixture fluorescent bulbs are notoriously inconsistent. However, dedicated fluorescent lights for photography are strictly balanced either for tungsten or daylight, and flash units are balanced to match daylight's color temperature *(about 5500°K)*.

Our brains are good at compensating for differences in color temperature; we see a white page under candlelight as nearly white. But digital cameras "see" white differently depending on the illumination, with candlelight giving the white page a yellow or orange tint.

To adjust for variances in color temperature, digital cameras have white balance control. This feature allows you to tell the camera what sort of light it is receiving, which then allows the camera to compensate for color cast. It measures light bouncing off a pure white object and adjusts the picture accordingly. Most digital cameras have various white balance settings to compensate for sunlight, overcast sky, tungsten light, and fluorescent lighting, as well as custom white balancing for ultimate control.

Mixed Temperatures

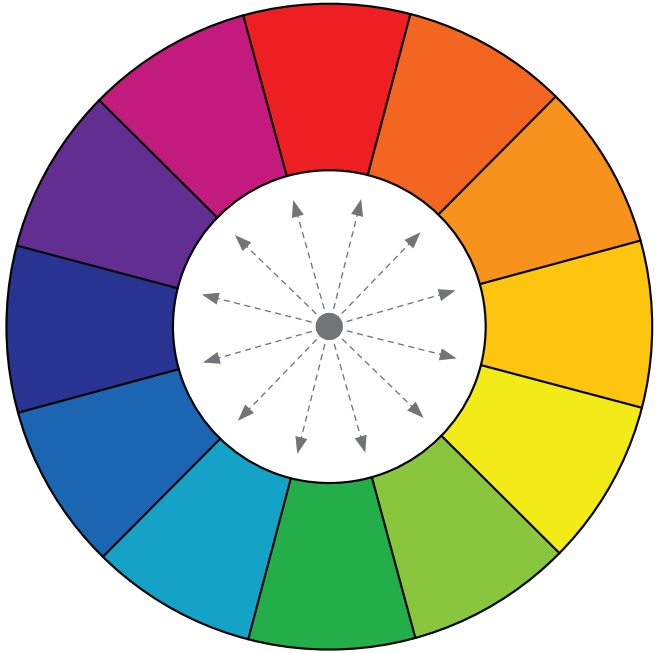
If you're forced to shoot in mixed-temperature light, block out one of the sources, or increase your main light to overpower the other lights. If all else fails, you should place correction gels over the individual lights and/or windows to adjust color temperature.

White Balance

If you plan to use multiple lights or flash units at once, make sure that their color temperatures match. You can also open the aperture to increase shutter speed. With a faster shutter speed, less ambient light will fall on the sensor, which lets you determine the proper white balance settings regardless of the ambient lighting conditions.

Gels & Light Metering

Gels are sold in various hues to fine-tune color temperature. If you have access to a color meter, you can use it to determine the right gel for the job. It'll give you precise color readings to compensate for any light source.



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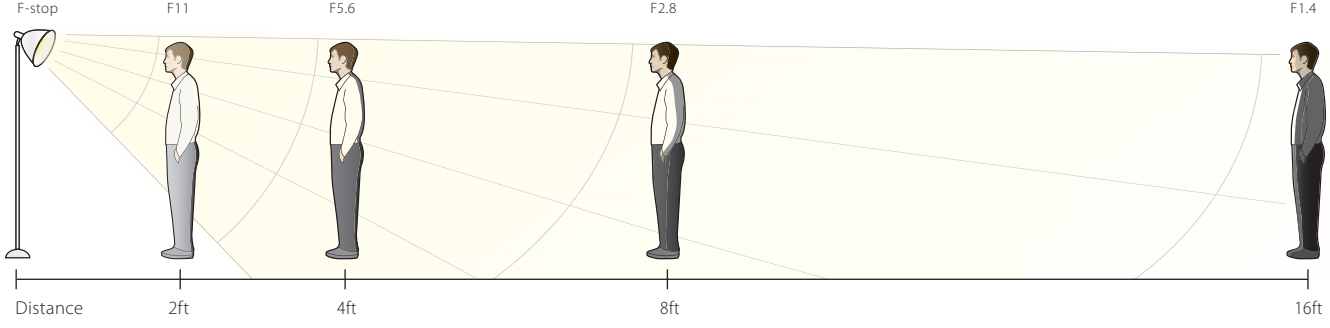
If you don't have a color meter, you can use a color wheel to estimate lighting compensation. For example: Household fluorescent light appears greenish. To neutralize the greenish tint, use a gel of the opposite color on the wheel *(magenta)*. This basic technique will work in many situations; just make sure you have a complete set of gels or filters.

The Inverse Square Law

The Inverse Square Law states that the amount of light is inversely proportional to the square of the distance between the light source and subject

Simply put, if you double the distance between a subject and a light source, only a quarter of the light will reach the subject. In other words, a subject that is four feet from a light source will need four times as much light as the subject would need only two feet away.

There are three ways to compensate for an increase in distance between a subject and a light source. You can brighten the light source; open up the camera's aperture *(f-stop)* so that more light reaches the film or image sensor; or slow down the shutter speed, which also lets more light reach the film or image sensor. Keep in mind that the smaller the f number, the larger the pupil diameter, and the more light will pass through it.



Lighting F-Stops

Most studio flash units have adjustable power settings which match a camera's f-stops. As mentioned before, if you double the distance between your subject and the light source, you need four times as much light to maintain the same f-stop.

Lens F-Stops

In situations where you can't adjust the intensity of the lighting, which is the case with most continuous lights, one alternative is to adjust the lens's aperture. If you were to double the distance between your subject and light source, you would have to open up the aperture by two f-stops. You could continue opening up the lens by two f-stops as you double the distance until you reach the lens's maximum aperture. For example, a proper exposure made at f11 at 2 feet will require f5.6 at 4 feet under the same lighting conditions. If you increase the distance to 8 feet, you have to set the aperture to f2.8, and at 16 feet you have to set it to f1.4. Keep in mind that you lose depth of field each time you increase the aperture.

Shutter Speed

Once you reach the lens's maximum aperture, the only alternative *(when using continuous lighting)* is to slow down the shutter speed; this also lets in more light. Keeping the shutter open twice as long *(cutting its speed in half)* lets twice as much light reach the film or image sensor.

Say your lens is set to its maximum aperture, your shutter speed is set to 1/250th of a second, and you're getting a proper exposure with your subject two feet away from the light source. If you were to double the distance between subject and light source, you would need to drop the shutter speed down to 1/60th of a second in order to have four times as much light reach the film or image sensor *(1/60th of a second is roughly four times as long as 1/250th of a second)*. You should use a tripod when shooting slower than 1/60th of a second.

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A simple rule of thumb is if your lighting is just powerful enough for taking close-up portraits, you'll need lights that are four times as powerful to shoot at twice the distance. That's why it's always a good idea when buying lighting equipment to get something that is more powerful than you think you might need.

Power and Brightness

Determining how bright a lamp or flash will be, based on its specifications, is no easy task

With most light sources come multiple specifications. Wattage and watt/seconds refer to the amount of power that a light source consumes, while lumens and Guide Numbers refer to the amount of light that is produced. Some light sources, such as incandescent bulbs *(which contain a hot, glowing filament)*, waste a lot of energy generating heat, which doesn't produce any visible light. Other light sources, such as fluorescent bulbs, are much more efficient, converting more of the energy they consume into visible light; they waste very little energy producing heat. LED's are even more efficient, converting most of the energy they consume into visible light. This is why two different light sources can produce the same amount of light while consuming different amounts of power.

Wattage

Wattage refers to the power consumption of a particular light. Because of our general familiarity with household tungsten bulbs, we tend to gauge brightness by wattage. But many light sources emit more light per watt than tungsten does. A 100-watt LED panel would be blinding, while a 100-watt tungsten would barely be adequate.

Watt/Second

A watt/second is to a flash unit's output what wattage is to continuous lighting: it's a measurement of a flash's power consumption.





Lumen

A lumen is a unit of perceived light, or how much light is falling on an object from a certain distance away. Judging by lumens is a more accurate evaluation of a light's brightness than judging by wattage. A 100-watt incandescent bulb and a 23-watt compact fluorescent both emit about 1740 lumens.

Guide Numbers

A Guide Number *(GN),* which indicates flash brightness, is equal to the distance to a subject multiplied by the f-number that will produce a proper exposure. The mathematical formula looks like this:

GN = Distance x f-number

Guide numbers are based on a light sensitivity of ISO 100. For example, a guide number of 80 means that a subject at 20 feet can be photographed with an aperture of f/4 at ISO 100 *(80 = 20 x 4)*. On-camera hot shoe flashes typically have guide numbers from 70 to 200, while pack-and-head kits and monolights typically reach 200 to 500.

Flash Brightness

You don't need a lot of power for tight head shots, but you will want ample power for large group portraits. If you're shooting in a small room with a white walls and a white ceiling, your light sources will be more effective than if you're shooting in an airplane hangar with nothing to bounce light from. Be sure to check for available power on location instead of just assuming it's there.

Flash Units

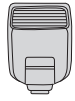
The flash is the most basic piece of lighting gear

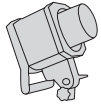
The earliest flash photography was done by igniting a small amount of magnesium flash powder by hand. Later, flash bulbs containing magnesium filaments were ignited electrically; these could be used only once. Today's electronic flashes contain a xenon gas-filled tube in which a high-voltage discharge creates a brief flash of light; these can be used countless times.

Flash units are great for beginners and pros alike. They're brighter than continuous lights, they don't get as hot, they use little power, and their output is easy to modify. Most modern cameras are equipped with a built-in flash, but they are typically underpowered, too close to the lens, and inflexible. The images made with these small flashes frequently display washed-out highlights and red eye.

Fortunately there are many different kinds of flashes available today. The smallest units mount right on your camera, but these can also be underpowered and cause red eye. That's where monolights and pack-and-head kits come into play. Used mostly by professionals, these are generally more powerful, can be positioned exactly where you need them, can be triggered remotely, and come in all shapes and sizes. Flash kits are also expandable, so they can grow along with your needs.

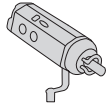
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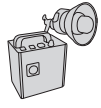




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On-Camera Flashes

Add a burst of light wherever and whenever it's needed

Hot-shoe flashes are great for shooting weddings, parties, or any dynamic indoor event, or for adding fill light for shooting outdoors.

The most basic flashes mount to your camera's hot shoe *(the metal bracket on top of the prism housing)*. Flashes like these vary in size, quality, and features, but they're all portable and battery powered.

A good flash will feature a swivel-and-tilt head that will enable you to bounce its light from walls or ceilings. Angling the flash will produce soft, bounced light and help avoid blown-out highlights and red eye. Some flashes also zoom to adjust their beam spread from wide to narrow, useful for a variety of lenses as well as interior and exterior spaces.

Essentials

- **Who:** Event shooters, traveling pros
- **Effect:** Bright, specular light, diffused light with accessories
- **Use It:** Indoors or outdoors
- **Options:** Varying power, tilt-and-swivel heads, many accessories available



Guide Number
A higher guide number indicates a more powerful flash

Enhancements
A slide-out wide-angle lens spreads out the light while a reflector is used to bounce light

Tilt Head
A tilt-swivel head lets you bounce light off ceilings and walls for softer, more natural lighting

AF Assist Beam
Enhances camera's autofocus capabilities

Sync Cord Connector
Controls flash when not connected to a hot-shoe

Hot-Shoe Mount
Links flash unit physically and electrically to camera

Flash Transmitters

Dedicated radio transmitters that can control an unlimited number of flashes in a lighting configuration, wirelessly.



Options

- **Radio *(RF)*:** Transmits around corners and walls; unaffected by ambient light
- **Optical/Infrared:** Triggers the slave sensor of a flash the instant it "sees" light from another flash

Flash Brackets

Increases the distance between the flash head and lens to minimize the red-eye effect and also to reduce flash-shadows behind the subject.



Options

- **Simple:** Some flash brackets are simple, with few adjustments
- **Fully Adjustable:** Professional brackets offer multiple adjustments, and some can hold more than one flash

Diffusers

Available in all shapes and sizes, flash diffusers spread out and soften the light from a flash, eliminating harsh light and hard shadows.



Options

- **Universal:** Simple cover for diffusing flashes; fits any hot-shoe flash
- **Dome:** Made to fit specific models, domes can illuminate an entire room with soft light

Flash Gel Systems

Flash gel systems let you correct or modify the light color output of a flash unit.



Options

- **Flash Mounted:** Alter the color of light coming from the flash
- **Light Mounted:** Alter the color of light coming from continuous-lighting equipment

Monolights

Variable light output in a portable unit

These self-contained units are extremely versatile, and can be positioned exactly where the extra light is needed.

Unlike flash units and pack-and-head kits, monolights are self powered. Most require AC power. Like many pack-and-head kits, monolights include a "modeling" light for composing and focusing before the flash is fired to make the exposure. Both the light and flash are contained within one unit. They're brighter than battery-operated flashes and can recycle faster, which means you can take more photographs in a given time. Since they have no auto-exposure controls, you'll need a flash meter to determine proper exposure settings.

Most monolights are equipped with sensors and can fire automatically when other flashes in the area fire. Not limited by the length of cables from a central power pack, they can be placed farther from the camera than pack-and-head units—anywhere there's a power outlet. Monolights are perfect for big spaces.

Essentials

- **Who:** Studio pros looking for more light, amateurs looking to expand home studios
- **Effect:** Powerful, variable output lighting for any situation
- **Use It:** To supplement your studio setup, for illuminating large spaces; used the same way as a pack and head according to your working preferences
- **Options:** Range of brightness for different applications, varying power of modeling lights



Pack-and-Head Kits

Packing extra flash power

With just a single power pack and multiple heads, pack-and-head kits are more versatile than monolights, and you can adjust the output from all the heads right at the power pack. Pack-and-head kits typically feature two to four flash heads connected by cables to a single power pack. You can place the heads anywhere around your subject, but you are limited by cable length. Because the heads don't contain power supplies, they are lighter than monolights and don't need heavy-duty stands or sandbags. Power adjustments for all of the heads are made at the pack itself, so the operator doesn't have to go to each head, which are often up on stands, to make adjustments.

Pack-and-head kits are powered either by rechargeable batteries or an A/C outlet. The rechargeable units can be used in locations where A/C power is unavailable, while the A/C powered units can work continuously without ever needing a recharge. It's more cost effective to buy kits that include stands and reflectors, but you can always add them later on.

Essentials

- **Who:** All photographers not limited by weight restrictions
- **Effect:** Flexible flash lighting, multiple lighting angles
- **Use It:** To create a studio setup virtually anywhere
- **Options:** A/C or battery-powered D/C; extra flash heads





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To pick the right ring flash, determine what you'll use it for. The larger units are often used in portrait and fashion photography where they are very good at softening shadows and hiding wrinkles. Smaller ring flashes are perfect for shooting well-lit macros.

Ring Flashes

A circle of light that eliminates shadows

Originally used in dental photography, ring flashes are ideal for providing proper lighting in any close-up shooting of objects, both small and large, where eliminating shadows and showing as much detail as possible is highly desirable.

It can be very difficult to properly illuminate small items such as jewelry, flowers, and insects without getting shadows. Ring flashes eliminate that problem. Ring flashes mount around the lens of a camera and project an even, flat light with virtually no shadows. There are two basic types of ring flashes available: smaller models made for macro photography and larger models made for studio and outdoor work. The latter, high-powered pro units offer creative freedom and convenience.

Small, portable ring flashes are powered by batteries, while larger models use power packs. Some ring flashes incorporate modeling lamps to help the photographer focus on subjects situated in poorly lit environments.

Essentials

- **Who:** Anyone seeking unique lighting effects; macro photographers
- **Effect:** Bright, even light; dramatic 3D halo effect
- **Use It:** To capture unique shots and well-lit macros
- **Options:** Various sizes and power, color filters, A/C or D/C units

Slave Systems

Fire flashes without cables

Slave systems allow multiple flashes to be triggered wirelessly when a single master flash goes off. Infrared *(IR)* slave systems can't trigger flash units unless they're in line of sight and within a close distance. Radio Frequency *(RF)* slave systems work regardless of position.

If you have multiple flashes in your studio, you'll probably want to sync them to your camera. Slave systems link multiple monolights, flash heads, and pack-and-head kits via radio, infrared, or cable. With radio and IR slave units, you can fire flashes without fiddling around with cumbersome cords.

Some slave systems consist of a transmitter and one or more receivers, while other systems consist of two or more transceivers. A transceiver can be set to operate as a transmitter or receiver simply by flipping a switch. Most systems feature multiple channels, which is convenient if you are experiencing interference on one or more channels. The range of Radio Frequency slave systems is typically 100 to 1,500 feet, which lets you position your strobes wherever needed.

Essentials

- **Who:** Anyone with flashes or pack-and-head kits
- **Effect:** Trigger one or more flashes at once
- **Use It:** In home studios, portable studio kits, pro studios
- **Options:** Infrared or radio frequency transmission



Continuous Lights

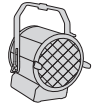
Flash is liberating, but if you need constant, high-quality light, invest in continuous lighting

Continuous lights are used for all film and video applications, but they also give you a better idea of what your results will look like before you take a still picture. This way your models can relax while you adjust the lighting and only have to strike a pose when you're ready to shoot.

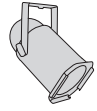
With continuous lights, you'll be able to gauge exposure settings with a simple ambient light meter *(you don't need a flash meter)*, and accurately position your lights to control shadows and eliminate reflections and glare. Continuous lighting is used for portraiture, fashion photography, still life scenes, product shots, and artistic photos.

Continuous lights come in many different shapes and sizes, and with different types of bulbs as well. Some are extremely bright but run hot and use a lot of power, while others run cooler and are more efficient, but with less brightness. Cost is also a concern, as some continuous lights are quite affordable while others are expensive and used primarily by professionals. Choosing the type of continuous lighting that best suits your needs depends on what and where you are shooting, and the size of your budget. Here we look at all the various types of continuous lighting equipment you can buy, and explain the pros and cons of each.

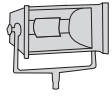
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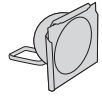
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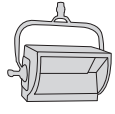
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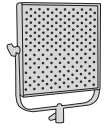
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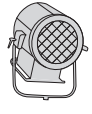
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Fresnel Lights

From pinpoint detail to broad splash of light

Fresnel lights are commonly used in movies and television. They are known for their flexibility and ability to either flood or spot a subject with light.

Fresnel lights have fixed lenses in front. The bulb and interior reflector glide along a rail, controlled by a gear, inside the housing. This lets you adjust the spread of the fresnel beam from narrow to wide. Because of their flexibility, fresnels are great for general lighting solutions, or for achieving a cinematic look.

Fresnel lighting is relatively expensive, but also very bright for its wattage. The combination of high brightness and adjustable beam spread can make fresnel lighting a wise investment, depending on the kind of work you do.

Essentials

- **Who:** Studio pros looking for artistic lighting and precise control over shadows
- **Effect:** Bright, even light with adjustable beam
- **Use It:** For still-life shots, cinematic scenes
- **Options:** Varying wattages and sizes, tungsten or HMI types

PAR Lights

High power in a lightweight aluminum fixture

Parabolic Aluminized Reflector *(PAR)* lights are commonly used in theater. They're powerful and can also be used in photography.

PAR lights consist of an aluminum "can" and a lamp. The PAR is lightweight and made to run for long periods of time without overheating. It can be used with diffusers to produce soft light, or bare for a brighter floodlight effect. PAR lights are hot. Keep this in mind when shooting anything that's sensitive to heat such as food, people, or anything that will wilt or melt.

Unlike fresnel lights, PAR lights do not have any means of adjusting the focus of the beam with the same bulb in place. But not having an intricate focusing mechanism, PAR lights weigh less than fresnel lights of similar wattage, and they cost less as well. PAR lights might therefore better fit your budget and will be easier to travel with, especially if you have to carry them yourself.

Essentials

- **Who:** Anyone looking for high-wattage general lighting
- **Effect:** Strong, even light; diffused light with accessories
- **Use It:** To light big scenes, fill backgrounds
- **Options:** Various wattages and sizes



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PAR lights do not have a focusing mechanism and therefore can't be adjusted without using accessories. Most PAR lights emit a beam of light intended to cover a specific area. The movie industry uses grids of six to 36 PAR lights to create even, abundant lighting.



Broad Lights

A wide wash with soft highlights

Broad lights provide soft even fill light in a rectangular field, with edge-to-edge and top-to-bottom uniformity. They are ideal for bringing up the lighting in a large space to illuminate multiple subjects.

Fresnels and PARS can produce focused light or wide beams. Broad lights are designed to flood a space with even light. They have large surface areas that create soft highlights and smooth shadows. When you need to fill a large area with light, broad lights are the way to go.

The most basic broad light is the wide-angle flood. It's similar to the PAR, but designed to illuminate more evenly. Broad lights are great for lighting a group portrait, large pieces of furniture, and other similar scenes.

Essentials

- **Who:** Studio shooters who need a wide spread of light for large areas
- **Effect:** Soft highlights and smooth shadows
- **Use It:** When you need broad light coverage to illuminate a space evenly
- **Options:** Available in a variety of wattages and configurations

Softlights/Scooplights

Supplement your main lighting with soft, even light

Typically smaller and less expensive than broad lights, softlights are used in theater and television where limited space is a factor. Other uses include puppet theaters, museums, and display windows. Softlights are ideal for applications where color blending and smooth, even washes of light are required. Softlights are generally not as bright as broad lights, making them well suited for use as fill lighting.

Softlights, or scooplights, are better suited for use at close range than broad lights. They bounce light off an interior parabolic reflector, or scoop, to produce soft, even lighting. Softlights are simple and effective as hair lights, fill lights, or for background illumination.

Softlights produce a wide, soft-edged beam at close range. They are available in different sizes and shapes, and typically accept standard tungsten bulbs of various wattages. Diffusers, grids, color frames, and other accessories are available for these lights.

Essentials

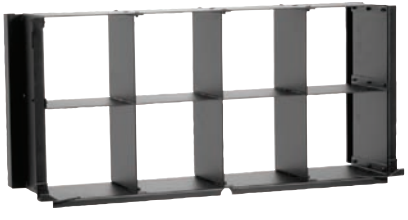
- **Who:** Photographers and videographers looking for soft light sources
- **Effect:** Soft light that can reduce the appearance of hard lines
- **Use It:** To fill a scene with soft light
- **Options:** Different power levels, sizes



Here's the Scoop
Small scoop light makes an excellent hair or fill light

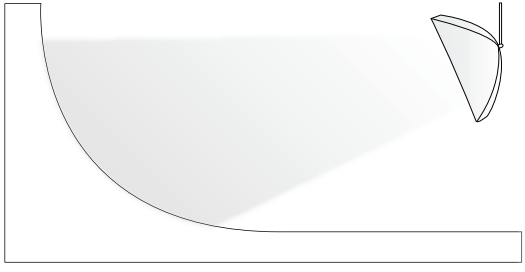


Wide Track
Throw a wider wash of light with wide scooplights



Beam Control
A grid can control the spread of light from a softlight or scooplight





Light Source

Cyclights consist of asymmetrical reflectors that are designed to distribute light evenly on the curvature of cycloramas.

Cyclights

Creating a sense of endless space

Cyclights are used to light curved backgrounds called cycloramas *("cyc" for short)*. A cyclorama is a large curved background often used in theater, but also used in photography. Positioned behind a stage, a cyclorama can be used in combination with special effects lighting equipment and other materials to create unusual backgrounds or to create the illusion of a sky.

When used as a photographic background, cycloramas give the impression of unlimited space. The effect is ideal for shooting large items such as automobiles.

Cyclights contain asymmetrical reflectors that are designed to produce an even wash of light across the curved surface of a cyclorama. Photographing large subjects within the illusion of unlimited space gives the effect of suspending the subject in that space. Cyclights are also useful for lighting green screens when you need to extract *(or "silhouette")* your subject for compositing.

Essentials

- **Who:** Anyone lighting a cyclorama
- **Effect:** Creates the sense of evenly lit, unlimited space
- **Use It:** To effectively create a sense of huge space around your subject
- **Options:** Available in various wattages in tungsten or fluorescent

Fluorescent Lights

Keeping it cool

When a photo shoot takes place in tight quarters, the temperature in the room can quickly rise when high-wattage lighting equipment is used. Fluorescent lights, however, run cool enough to touch.

Traditional tungsten lights are powerful, but they also produce a lot of heat. If you're shooting food, flowers, animals, or people, especially in a small space, too much heat can cause spoilage, wilting, and comfort issues. Fluorescent lights won't make a subject uncomfortable or heat up your studio. Fluorescent lights also use a fraction of the energy that tungsten lights use.

Unlike fluorescent bulbs used in the home or office, the bulbs used for photographic purposes are flicker-free and coated to avoid the green tint you get with common fluorescent bulbs. You can also buy fluorescent bulbs that match certain color temperatures, such as daylight and tungsten balanced. Most fluorescent fixtures let you turn banks of bulbs on or off, creating more or less light. High-end fluorescent fixtures are dimmable.

Essentials

- **Who:** Pro portrait photographers, anyone who needs cool, soft light
- **Effect:** Cool, diffused light that's just right for portraiture and food photography
- **Use It:** For fashion shoots, portraits, food
- **Options:** Dish-type fixtures; daylight- or tungsten-balanced bulbs; varying power



EXPERT ADVICE

If you're running a studio, you'll notice a big difference in your electricity bill if you switch to fluorescent lighting. However, fluorescent lights don't put out as much light as tungsten units, and can limit your images' depth of field or slow your camera's shutter speed.



EXPERT ADVICE

LED lights are the perfect source for lighting food, still life, portraiture, or any subject that is affected by the heat of tungsten lights. LED's burn less energy, and are twice as efficient as tungsten lights, but watch out—LED panels cost more to replace than tungsten bulbs.

LED Lights

Cool and efficient, durable and enduring

There was a time when Light Emitting Diodes, or LED's, simply weren't bright enough to light up a room. Those days are gone. Today's powerful, rugged LED panels are great substitutes for many other types of lighting.

Like fluorescent lights, LED lights are cool and efficient. In fact, they're nearly twice as efficient as fluorescent lights and generate virtually no heat. They're also extremely durable and long-lasting—an LED can burn for up to 10,000 hours or more before it goes out. LED lights are also more expensive then either tungsten or fluorescent units. Some LED lights are powered by AC power, others use battery packs for maximum portability.

Essentials

- **Who:** Pros with a higher budget
- **Effect:** Bright, cool even light; diffused light with accessories
- **Use It:** When heat and power consumption are an issue; on location
- **Options:** Daylight or tungsten balanced; various sizes and shapes of fixtures; AC or DC

HMI Lights

Create sunlight in your studio

When you want the very best lighting available, and are not on a tight budget, then HMI lighting is the way to go. But because HMI lighting is expensive and the bulbs are fragile, the equipment must be handled with care.

HMI *(Hydrargyrum Medium-Arc Iodide)* lighting is the most exclusive lighting available. Praised by cinematographers worldwide, HMI lights emit consistent near-daylight *(5600°K)* color light and are about four times as efficient as tungsten fixtures. HMI lamps create an arc of electricity between two electrodes suspended in pressurized mercury vapor. The light they produce is broad spectrum, and is as close to actual daylight as you'll ever get, artificially. They come in fresnel and PAR configurations.

Essentials

- **Who:** Big-budget pros who need bright, continuous, daylight-balanced light
- **Effect:** Bright approximation of daylight
- **Use It:** To bring the sun indoors or out at night
- **Options:** Range of lighting power, available in fresnel or open-face fixtures



EXPERT ADVICE

HMI lights are extremely expensive and usually reserved for high-budget movie or television sets. Additionally, HMI bulbs are short-lived and pricey. Still, small HMI lights are within reach for those who really need them, and can be used to recreate daylight in a photographer's studio.

Lighting Accessories

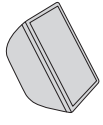
Modify light to do what you wish

Even with so many different types of lighting gear available, you still need various accessories to reflect, shape, soften, focus, and color the light exactly the way you want it.

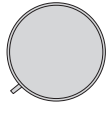
Once you've got a basic lighting rig, you'll want some accessories to fine-tune your setup. With the right accessories, you'll be able to tackle almost any situation in the studio or on location, modifying the light to achieve your artistic purpose for specific assignments, or styles. Keep this concept in mind when it comes time to purchase lighting modifiers.



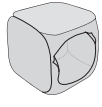
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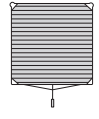
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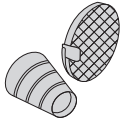
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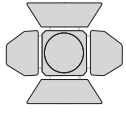
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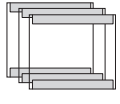
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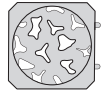
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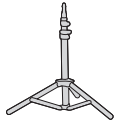
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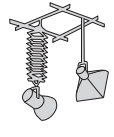
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EXPERT ADVICE

Light can "spill" out of an umbrella, effectively making your light source dimmer. Translucent umbrellas can be used to diffuse light by shooting through them. Silver-lined or black-backed umbrellas reflect a lot of light, and can even be used outdoors to throw extra light on a subject.

Umbrellas

Reflect or diffuse light—their beauty is their versatility

Lightweight and easily portable, umbrellas can be used both to direct light or to diffuse it. Umbrellas are versatile, portable light modifiers used to reflect or diffuse bright, focused light sources like flash or spots. You can use a translucent white umbrella as a shoot-through for a large, diffused light. Silver-lined or opaque white umbrellas reflect a lot of light, but don't diffuse it as well as translucent umbrellas. White umbrellas produce super-soft light, and some have removable black covers, allowing them to be used for reflective and translucent purposes.

Perfect for portable setups, umbrellas are lightweight, easy to carry, relatively inexpensive, and very effective. They can also be used to great effect in studios for portraiture and product images. If you have a few flashes or lights, it's a good idea to invest in some umbrellas.

When choosing an umbrella, it's better to buy something that's well-made, rather than the cheapest you can find. Also remember that a smaller umbrella produces a slightly harder light. A larger umbrella will give you a softer, broader wash of light.

Essentials

- **Who:** Anyone with flash units or cool lights
- **Effect:** Diffuses light
- **Use It:** To shoot portraits, indoor events, anything that requires soft light
- **Options:** Silver or white lining, black backing, translucent, various sizes

Softboxes

Like window light, only with more control

Flashes tend to produce harsh, washed out highlights and lots of background shadows. As its name implies, a softbox softens the light, creating a more natural-looking scene.

Softboxes are large diffusers that can be placed on various lights or flash units to produce soft, even light. They're commonly used in studios for portraits because they emulate window light, a classic and preferred light source in portraiture.

Softboxes come in a variety of shapes and sizes and many include removable diffusers. Softboxes are extremely effective tools for studio work. Most softboxes also attach to specific lights or flash units with "speed rings." When purchasing a softbox, make sure it will work with your equipment. Softboxes are somewhat bulkier and heavier than umbrellas. Softboxes also take longer to set up and break down than umbrellas. That's why softboxes are ideal for studio use while umbrellas are better for portable use.

Essentials

- **Who:** Portrait photographers, anyone looking to imitate window light
- **Effect:** Soft, even light with directional qualities
- **Use It:** To shoot portraits; softbox light can flatter your subject's complexion
- **Options:** Silver or white lining, different shapes and sizes for various lighting effects





EXPERT ADVICE

If you want something more professional and portable than a sheet of white board, look into collapsible reflectors. These simple white, silver, or gold surfaces *(typically circular)* fold up into their own carry pouches for convenient travel.

Reflectors

When you need to bounce that light around

Most light sources, including direct sunlight, are not perfect. A reflector can be used to direct more light into shadow areas to provide a more even, natural-looking scene. Reflectors give you more control over shadows and contrast ratios.

A reflector is technically any surface that will bounce light. Reflectors can be any shape, size, or color. A simple sheet of white board can act as a reflector, as can a piece of cardboard covered with aluminum foil.

Silver reflectors reflect more light than white models, which is good for general highlighting or shadow fills, while gold reflectors reflect warm light, which is excellent for giving your subjects a healthy look. Collapsible reflectors are easily portable, and some models include multiple reflector surfaces and a diffuser within one disc.

Essentials

- **Who:** Photographers in the studio or on location in daylight
- **Effect:** Bouncing diffused light to fill in harsh shadows
- **Use It:** To have greater control over contrast ratios and add soft extra light
- **Options:** White, silver, gold, soft gold, translucent, collapsible

Light Tents

Perfect illumination for product shots

When shooting products, both big and small, you want smooth, even lighting all around, with no shadows, reflections, or glare. A light tent is the easiest way to create this perfect light.

Light tents simultaneously provide soft, bright light and seamless backgrounds for photographing small objects. They're essentially light-diffusing tents with one side open to the camera. Shining one or more lights on the tent creates an evenly lit space that's perfect for product or macro photography.

Light tents are either conical or rectangular. Conical tents are constructed from loose fabric and must be hung from a light stand boom. Rectangular tents typically have their own frames and can stand without extra support. Most also allow for swappable backgrounds, for greater flexibility.

Essentials

- **Who:** Macro and product photographers
- **Effect:** Bathes objects in soft, even light
- **Use It:** To get perfectly illuminated product shots
- **Options:** Available in varying sizes, with or without stands, and multiple backgrounds



EXPERT ADVICE

A light tent filters and softens all light aimed at its sides and top, which bathe the subject with an even, soft wash of light. Most light tents are meant to be placed on a tabletop and used for shooting small objects, but larger ones are ideal for shooting clothing and fashion accessories.



Scrims

Dampen light without changing its quality

If you need a quick and easy way to cut down the intensity of a flash or light fixture, a scrim might be just the answer. It's a versatile piece of equipment that you should have with you at all times.

A scrim is typically made of a material that has a rectangular weave, much like a a window screen, though you'll also come across scrims with different weave patterns. Scrims are typically used to dampen light without changing its quality, while umbrellas and softboxes do a better job of diffusing a light source. Scrims can be held in front of your light source to diminish the amount of light that reaches your subject. They can also be held in front of the camera, with the subject illuminated behind the scrim; shooting the scene through the scrim will then lend a dreamy, foggy look to the image.

Depending on its size, a single scrim can be placed in front of more than one light. Various types of lightweight frames are used to keep pliable scrim material taut. Some scrims mount directly on lights.

Essentials

- **Who:** Photographers looking for a versatile way to modify their light sources
- **Effect:** Cuts light brightness without diffusing
- **Use It:** To shoot portraits, indoor events, or anything that requires fine-tuning
- **Options:** Multitude of materials and shapes for different levels of diffusion

Grids and Snoots

Tighten your angle of illumination

Snoots and grids can focus or change the size of a spot. Both can be used to create dramatic effects in scenes. They can also be effective in lighting specific areas of a subject.

Grids and snoots attach to the business end of a flash or reflector and are used to add a directional quality or create highlights in your image. Grids generally produce tighter or wider beams of light with some vignetting and softer edges. Snoots project a set beam with sharper edges.

Snoots are made to fit specific lights, so make sure the snoot fits before you buy. Grids require an adapter to attach to your light and come in varying degrees to create a broader or narrower spot.

Essentials

- **Who:** Photographers looking for creative ways to control light
- **Effect:** Creates round spotlights with soft edges
- **Use It:** To light specific areas of a subject, create highlights
- **Options:** Different sizes, shapes to focus light





Barndoors

Illuminate a broad wall or a tight corner

Barndoors attach to lights to control their beams. They can be attached to different types of lighting fixtures. They have between two and four flaps that can be positioned independently, which allows you to illuminate specific areas of your scene while blocking light from other areas.

There are times when you don't want a scene to have even illumination; sometimes you want certain areas to be lighter or darker than others. The use of barndoors is a simple way to direct light where you want it and prevent it from reaching other areas. Barndoors let you steer the light where you want it. Often made to fit a particular light fixture, it's important to make sure the barndoor you're buying will fit your lights.

Essentials

- **Who:** Photographers looking for creative ways to control light
- **Effect:** Controls the spread of light
- **Use It:** To light specific areas of a subject
- **Options:** Specific barndoors for specific light fixtures

Gel Filters

Control the color of your light

It's easy to give the lighting in your studio a rosy glow, a frosty winter look, or even a surreal appearance with the use of gels *(filters)*. Gels change the quality or color of a light source.

The most common gels are made from translucent sheets of polycarbonate material. Gels can be used for creating eerie, warm, or strange lighting effects. Color gels are usually sold in rolls or sheets and are held in front of a light source using gel holders, clips, or gaffer tape.

By having a full set of color gels on hand at all times, you will be able to compensate for mixed color temperatures in any setting, or even provide a scene with a unique mood whenever called for. Color gels are so versatile and inexpensive that it always pays to have quick access to them.



Essentials

- **Who:** Anyone looking to color-balance light sources or create color effects
- **Effect:** Changes the color cast of a light source for precise control or for creative effects
- **Use It:** When you are shooting with multiple light sources of different color temperatures or to deliberately warm or cool the overall look of your image
- **Options:** A vast array of colors and sizes



EXPERT ADVICE

Virtually anything can be used as a cookie. Many stage lighting technicians use tree branches or other foliage as cookies, and custom cookies are easy to make with basic white board. Of course you can also buy ready-to-use cookies if you don't want to make them yourself.

Cucoloris

Shine a light through these cookies for background texture

Cucoloris, or "cookies," are thin metal or wood plates with shapes cut out of them. The plates are used to create shadow patterns on backgrounds or subjects by shining light through them. Depending on the shapes that are cut, cookies can be made to mimic everything from venetian blinds to light filtering through trees.

Ordinary looking scenes can often be enhanced by using cookies to create eye-catching background patterns of light and shadow. Your imagination is the only limiting factor in finding their creative uses.

Cookies can be used to create a "film noir" look or to simulate natural outdoor lighting conditions in a studio set. Cookies typically require a separate stand, placed in front of the light source.

Essentials

- **Who:** Anyone looking for creative ways to light a scene
- **Effect:** Light-through-trees effect, venetian blind effect, patterns of light
- **Use It:** To simulate outdoor shooting or other scenes
- **Options:** Multitude of shapes and sizes for virtually any application

Shooting Tables

Proper positioning of still life subjects

Any table will do when shooting still life subjects, but a shooting table is made specifically for the job. It allows easy positioning, provides an instant background, and assists in obtaining proper lighting.

A shooting table typically consists of fully adjustable tubular aluminum sections. The tables can be assembled and broken down without tools, making them portable. The tabletop is usually made of white translucent Plexiglas, which lets you place lights above, below, or behind the table for even lighting of all surfaces of the subject. The top half of the Plexiglas forms a seamless background when tilted upward and locked into place. Various accessories, such as lighting equipment or arms that securely hold a subject in proper position, can be attached to a light table easily.



Essentials

- **Who:** Macro and product photographers
- **Effect:** Creates a seamless background
- **Use It:** For product shots and still life images
- **Options:** Wheels, clamps, and articulated arms



EXPERT ADVICE

Virtually anything can be a background, but collapsible, portable backgrounds can come in handy if you're shooting on location or in the field. They are made in various shapes, sizes, patterns, and hues, and are easy to transport. Portable backgrounds require a stand or dedicated backdrop support, however, so keep that in mind when you're considering travel gear.

Backgrounds

Eliminate distractions in your portraits

Sometimes a clean white background, a neutral gray, or even black background is essential when you're shooting portraits and want to concentrate the focus on your subject and not on distracting objects or colors. The right background will eliminate all distractions and make your subject stand out prominently. Chroma key green or blue backgrounds can be used for extracting your subject in post production.

Thick background paper is also available by the roll, and comes in many solid colors. A paper background will need a stand or support. Paper backgrounds are often used to create makeshift cycloramas, which are backgrounds without seams. If you have to travel often with your photo gear, you'll want to invest in portable backgrounds. Available in various colors and sizes, portable fabric backgrounds are permanently mounted to built-in collapsible metal frames, which make setup and take-down a breeze.

Essentials

- **Who:** Portrait and fashion photographers
- **Effect:** Clean backgrounds for classic photos
- **Use It:** For portraits, head shots, or fashion shoots
- **Options:** Collapsible or roll-up, portable, various shades, hues, and patterns

Light/Flash Meters

When you need pinpoint-accurate exposure settings

A light/flash meter is to a photographer what a tape measure is to a carpenter. No professional photographer would ever go on a shoot without a light meter. It can save a lot of time by cutting out the guesswork, especially when using flash.

When shooting with strobe units, flash meters are indispensable. A flash meter can accurately measure the flash's light burst and calculate the required aperture, shutter speed, and ISO. Your camera's light meter only measures reflected light, which is good for ambient readings, but is useless for measuring a flash.

When choosing a light/flash meter, look for ease of use and durability. A broken flash meter can leave any photographer scrambling while on a shoot, so it's a good idea to keep a spare unit on hand.

Essentials

- **Who:** Photographers who need accurate manual exposure settings
- **Effect:** Perfectly exposed images
- **Use It:** To take light readings under complex lighting arrangements
- **Options:** Incident, reflected, spot metering for flash or continuous light sources



Spot Meter Zoom Lens
Measures reflected light from a very small area on your subject

Incident Light Lumisphere
Measures the amount of light falling directly on your subject

Main Display
Shows shutter speed, aperture, ISO settings as well as options for bracketing exposure

ISO Settings
Allows you to calibrate the meter according to your camera's ISO setting

Flash Sync Socket
When jacked into studio flash, will trigger the flash head for accurate light reading

Types of Stands

Getting the most for your money

It's hard to find an assistant who doesn't mind standing in place for hours, but a light stand will never complain or flinch. A light stand will keep your lighting properly positioned until your work is done.

You may need to purchase light stands for your lights and flash units *(unless you buy a kit that includes them)*. There is a wide variety of stands, booms, and trusses available to support your lighting gear.

Most stands telescope to adjust the height of your light or flash. Some are air-cushioned to support heavy lights, collapsing slowly if you forget to fasten a riser section. Most stands have tripod bases and some have lockable wheels.

Essentials

- **Who:** Anyone requiring convenient, stable, strategic placement of lights
- **Effect:** Greater control of the angle of light in your image; solid support
- **Use It:** To hold your light units solidly where you want them
- **Options:** Air cushioning, heavyweight, lightweight, wheeled



Portable Stands

Lightweight stands are perfect for traveling and supporting small flash heads. They are not adequate for supporting large, heavy lights.



Options

- **Height:** The right size will do what you need it to without being too heavy
- **Load capacity:** Make sure the stand can support the intended equipment

Wheeled Stands

Great for quick rearrangements of studio setups. They glide around smoothly without dragging, and the wheels can be locked.



Options

- **Wind brace:** Guy wires add stability to stand at its maximum height
- **Riser crank:** Extends the stand without having to lift the heavy load yourself

Air-cushioned Stands

Should the section lock slip, air cushioning will lower the head slowly, thereby helping to avoid injury or equipment damage.



Options

- **Casters:** Allow for easy movement of lighting around the studio
- **Boom arm:** Lets you position lighting exactly where you need it

Heavyweight Stands

Rugged metal stands that are able to support heavy lights. Heavyweight stands are required for booms or big lights.



Options

- **Weight lifter:** A heavyweight stand can support hundreds of pounds
- **Winch system:** Makes it easy to lift those heavy loads

Booms

Suspend lights above your subject but outside your viewfinder

A stand will easily support lighting equipment, but the addition of a boom will allow for much more flexibility in positioning those lights.

Booms are used to suspend lights high above a subject. These counterbalanced arms are attached to stands and can be precisely positioned. Varying counterbalance weights are available to match different lights' weight.

Essentials

- **Who:** Photographers who need to suspend a light above a subject
- **Effect:** Creates the downward-directional effect of midday sun, or for adding hair lights
- **Use It:** To place a light in a spot that would be otherwise awkward for a simple stand
- **Options:** Various lengths and counterweights available



EXPERT ADVICE

Booms are a great way to place lights where you need them without poking into your viewfinder. They are much more adjustable than simple light stands, and allow greater creative flexibility when lighting a portrait or tabletop product image.

Rail Systems

Lighting to the rafters—and clearing floor space

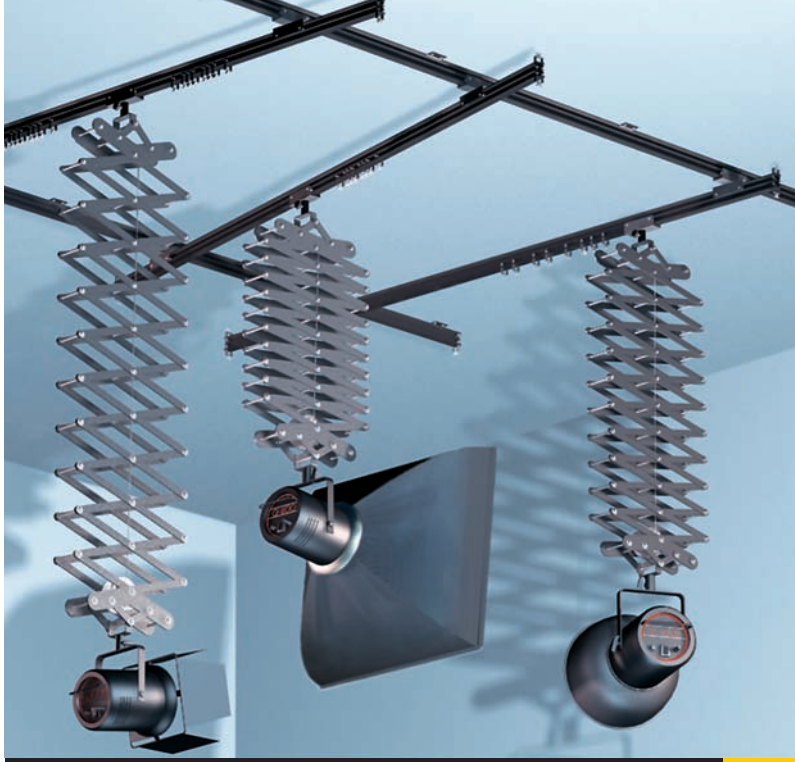
A rail system is the easiest way to install a permanent, but flexible, lighting setup that allows you to move different pieces of lighting equipment in and out of position quickly while keeping your studio floor free of clutter.

You can do a lot with light stands, but if you're setting up a dedicated studio, you may need even more options for placing your lights. Dedicated rail systems are ceiling-mounted lighting frameworks that can give photographers a high degree of creative freedom when it comes to light placement.

Rail systems allow multiple lights to be hung and positioned from the ceiling. Basic kits consist of several rails that accept sliding light mounts, telescoping arms, and accordion-like pantographs.

Essentials

- **Who:** Studio pros looking for precise lighting control
- **Effect:** Hang and position multiple lights from ceiling-mount system
- **Use It:** To declutter your studio and expand lighting possibilities
- **Options:** Various accessories, including arms, pantographs, additional rails



EXPERT ADVICE

Rail systems can be expanded to meet your needs, and they can declutter a messy studio by elevating power cords and eliminating light stands. They can be expensive, but there's truly no equal when it comes to positioning lights.

Techniques

Learn how to do it right

No one is born knowing photographic lighting techniques; they must be learned over time. There is nothing more valuable than experience, and the only way to gain experience is by trial and error.

Once you get all your gear, you'll want to know how to use it. This section will dissect some simple lighting setups and show how you can use them to create professional shots. It will also outline some basic kits to meet specific needs. There are so many techniques, tricks, and tips for scores of lighting setups it would take a major investment of time, experience, workshops, and even some trial and error to learn them all. Some photographers work a lifetime and can still learn new techniques. This guide simply intends to point you in the right direction and get you started using artificial light and various light modifiers in your work.



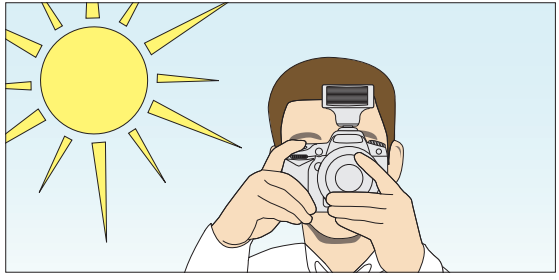
Natural-Light Photography

Techniques for working with the sun

The sun is the greatest light source, providing bright, powerful, and even light. Learn to control its light and capture dynamic images.

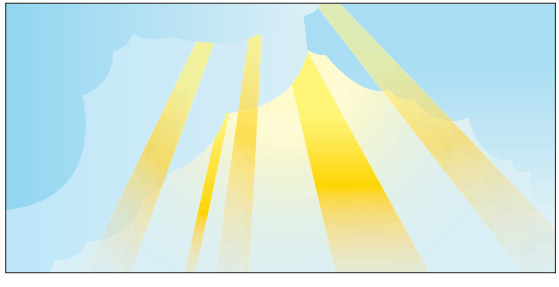
Once you're comfortable shooting in natural light, you'll be ready to experiment with reflectors, diffusers, and fill flash. Most photographers know the best times for photographing are just after sunrise and before sunset. The light is more pleasing and generally easier to work with, and those times of day have been given the name "Golden Hour." While they are the best times of day to be out shooting, what about the rest of the day, especially the times right around high noon? During those hours the light from the sun is more direct and harsh, bleeding out colors and leaving images flat or blown out with unflattering shadows.

While the Golden Hour is optimal lighting and your best bet for dramatic photographs, there are still many usable hours on a sunny day. You'll need to work at it a little more and concentrate on the difference between how the human eye perceives a scene and how a digital camera reacts. But there isn't any reason great photographs can't be made from the harshest light of midday when a few simple tips are followed.



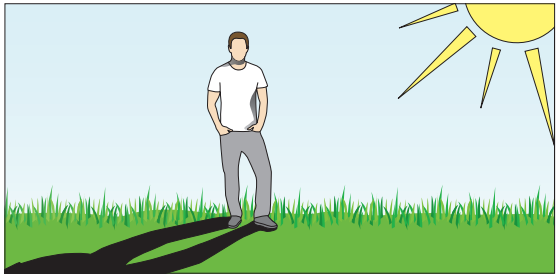
Sun Behind The Camera

Shoot with the sun at your back to avoid overblown backgrounds and shady silhouettes.



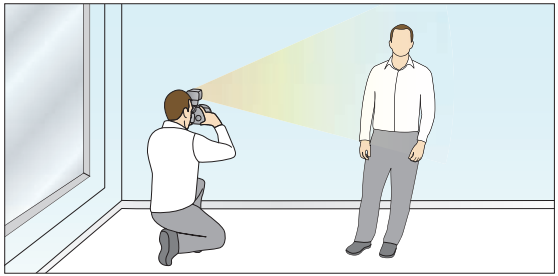
Clouds Act As Diffusers

Overcast skies provide cool, soft light, but clouds are unpredicatble and light can vary.



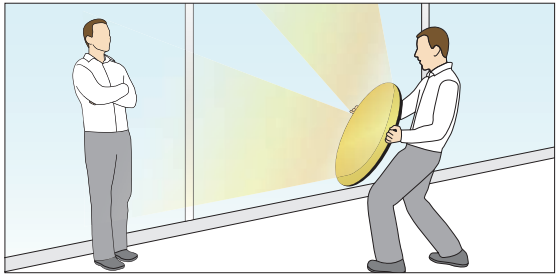
Avoid Noon

Remember that sunlight is harshest at noon, and will create stark shadows and bright highlights.



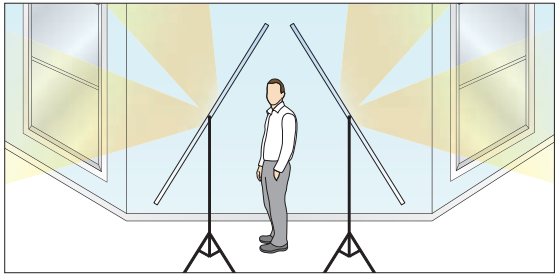
Basic Flash

A basic flash can balance a shot when your subject is in direct light. When using a flash outdoors, use daylight white balance settings.



Reflected Sunlight

Reflected sunlight *(bouncing off buildings, streets, etc.)* creates interesting effects and provides more options when shooting portraits.



Portable Diffusers

You can use large portable diffusers when shooting outdoors, to soften direct sunlight, or as passive reflectors.

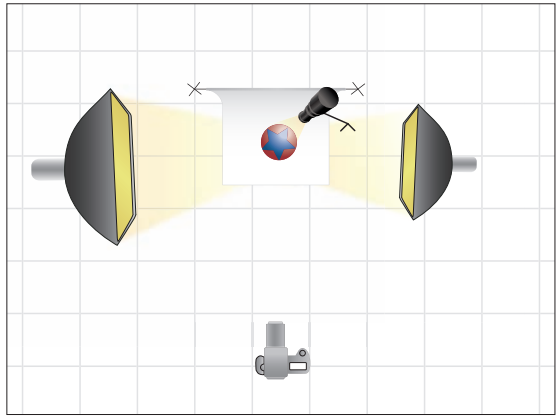
Photographing Objects

Giving still life more life

Whether you're selling an antique online, putting together a catalog, or building your own online retail outlet, a good grasp of product or tabletop photography can be extremely useful.

With a few low-power continuous lights and some basic backgrounds, you'll be able to produce professional images that are good enough for any classified ad or catalog. The trick is to capture all the detail a product has to offer without capturing any unwanted glare or reflections. It's tricky to photograph items that have naturally reflective surfaces.





Basic Tabletop Studio

A basic tabletop studio setup should include at least two diffused lights and a small background. White backgrounds are typical for product shots. Thick white paper backgrounds work best, giving the impression that your object is floating in free space. Fluorescent lamps work well for tabletop photography—they're cool and can be placed close to your subject. But flash or tungsten light will also work.

Tools: Tripod, two diffused lamps, one spot, thick white paper background

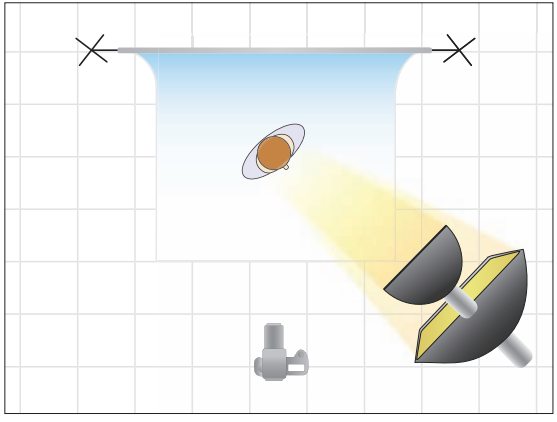
Studio Portraiture

How to get the most from the minimum

Setting up a basic portrait studio can be simple and cost effective. Once you've selected lighting, use these simple setups to create classic portraits.

A one-light setup can be very versatile. Use direct light for dramatic shots. Diffuse your light source with a softbox or umbrella for soft, even lighting. One light will allow you to position your source for dramatic effects, but two lights give you a lot more flexibility.

Subtle changes in the positioning of your lights can produce noticeable changes in the final results. It's easy enough to understand how this works simply by reading it, but knowing how to quickly get the results you're after can only be learned from experience.



Butterfly Light

"Butterfly" lighting, named for the butterfly-shaped shadow projected under the subject's nose, is a popular way to light portraits, especially classic women's portraits. To achieve this effect, place your main light above and closer to the subject. Then align a secondary fill light to soften the shadow beneath the subject's nose.

Tools: Tripod, light stand with boom, flash unit or lamp, shoot-through umbrella or softbox

Check List:

Flash Units

On-Camera	☐ Have	☐ Need
Monolight	☐ Have	☐ Need
Ring Flash	☐ Have	☐ Need

Flash Unit Accessories

Transmitter	☐ Have	☐ Need
Flash Bracket	☐ Have	☐ Need
Diffuser	☐ Have	☐ Need
Gel Filters	☐ Have	☐ Need

Pack & Head Supplies

Flash Heads	☐ Have	☐ Need
AC / DC Pack	☐ Have	☐ Need
AC Power Plugs	☐ Have	☐ Need
Head Ext Cables	☐ Have	☐ Need

Continuous Lights

Fresnel	☐ Have	☐ Need
PAR	☐ Have	☐ Need
Cyclight	☐ Have	☐ Need
Soft/Scoop	☐ Have	☐ Need
Fluorescent	☐ Have	☐ Need
Broad	☐ Have	☐ Need
LED	☐ Have	☐ Need
HMI	☐ Have	☐ Need

Lighting Accessories

Light Meter	☐ Have	☐ Need
Umbrella	☐ Have	☐ Need
Softbox	☐ Have	☐ Need
Reflector	☐ Have	☐ Need
Barndoors	☐ Have	☐ Need
Grid	☐ Have	☐ Need
Snoot	☐ Have	☐ Need
Scrim	☐ Have	☐ Need
Cucaloris	☐ Have	☐ Need
Gel Filters	☐ Have	☐ Need
Light Tent	☐ Have	☐ Need
Shooting Table	☐ Have	☐ Need
Rail System	☐ Have	☐ Need
Background	☐ Have	☐ Need

Light Stands

Portable	☐ Have	☐ Need
Wheeled	☐ Have	☐ Need
Air-cushioned	☐ Have	☐ Need
Heavyweight	☐ Have	☐ Need
Boom	☐ Have	☐ Need

General Accessories

Power Cord	☐ Have	☐ Need
Sync Cable	☐ Have	☐ Need
Batteries	☐ Have	☐ Need
Extension Cord	☐ Have	☐ Need
Cable Ties	☐ Have	☐ Need
Power Strip	☐ Have	☐ Need
Gaffer Tape	☐ Have	☐ Need
Specialty Tape	☐ Have	☐ Need
Leather Gloves	☐ Have	☐ Need
Grip Arms	☐ Have	☐ Need
Sandbags	☐ Have	☐ Need
Light Cases	☐ Have	☐ Need
Handtruck/Cart	☐ Have	☐ Need

Notes:

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