



How to choose a projector ?

Finding the right projector is easier than you might think. There are hundreds of projectors currently on the market, but you can find the best solutions for you by answering four simple questions:

- A - How bright should it be?
- B - What resolution should it be?
- C - Does weight matter?
- D - How much will it cost?

A - How bright should it be ?

Projectors come in a wide range of light output. All other things being equal, the brighter the projector, the more it costs. When it comes to "optimum brightness" the rule is simple: get the brightest projector you can afford.

Things to Consider When Choosing Brightness:

There are four primary considerations when choosing your projector's brightness:

1. How many people will typically be in the room?

This determines the size of the projected image that is required for easy viewing by everyone present. As the number of people in the room increases, the image must increase and this diminishes the apparent brightness of the projector as the light is spread over a larger area.

2. How much light is in the room?

A dark room will provide the best image regardless of projector brightness; however, most meetings require some lighting for note taking and eye contact. A room where the lights cannot be turned off or dimmed from within the room or direct sunlight strikes the projected image will require a bright projector.

3. What kind of projection screen is available?

This can have a profound effect on the image brightness and quality. Most projection screens today provide significant light reflection making even a relatively low brightness projector look good in the proper setting. If the room lacks a projection screen, as is sometimes common in a mobile sales presentation, you will wish you had a high brightness projector as a wall is a poor reflector of light.

4. What is your application?

Applications such as training and workgroups will demand more brightness because of the need to see and read detail. These applications also require more room light for note taking and communication. Applications that use presentation graphics or video are visually less demanding and are more likely to be shown in a darkened room. If the projector will be mobile either within a building or travelling, consider your most demanding setting.

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ANSI = American National Standards Institute

Brightness is measured in **ANSI** lumens: the brighter the projector, the higher the ANSI lumen rating.

In today's market, projectors can be grouped by ANSI lumen output as follows:

- **Less than 1000 lumens** - these are the lowest light-output projectors available today, and they are typically the least expensive. If you are on a tight budget, there are a number of products in this category that may be perfect for your needs. Keep in mind that the low light output means that you will want to make your presentations in a dark or dimly lit room so that the image on the screen is not washed out by ambient room light.

- **1000 to 2000 lumens** - this lumen range is a step up in performance and price. There are many **SVGA** and **XGA** products in this class to choose from. These machines are suitable for normal business conference room and classroom use. Presentations should be done with the room lighting reduced somewhat for best screen viewing, although a totally dark or dimly lit room is usually not necessary.

- **2000 to 3000 lumens** - this represents the high-performance range of the portable and semi-portable projectors. Products in this class are suitable for large conference rooms and classrooms. They offer more flexibility in terms of ambient room light, since the image is bright enough that a reasonable amount of room light can be tolerated without washing out the image. They also offer more flexibility in terms of audience size since they can illuminate a larger screen without much loss of image quality.

- **3000 lumens and up** - the ultra-bright projectors are in several performance classes unto themselves, ranging from 3000 up to 12000 lumens or more. Prices of these products also cover a wide range depending on other performance characteristics. They are used in a variety of large venue applications, including board rooms, conference rooms, training rooms, auditoriums, churches, concerts, night-clubs, and so forth.

SVGA = SVGA is used to define a specific display resolution of 800 horizontal pixels and 600 vertical pixels giving a total display resolution of 480,000 individual pixels that are used to compose the image delivered by a projector.

XGA = XGA is used to define a specific display resolution of 1020 horizontal pixels and 768 vertical pixels giving a total display resolution of 783,360 individual pixels.

SUMMARY:

500-1000 lumens - suitable for dark rooms and home cinema

1000-1500 lumens - ideal for dimly lit classrooms with very little natural light

1500-2000 lumens - bright enough give a large image in a well-lit room, suitable for large bright classrooms

2000+ lumens - very bright projectors suited to providing a large screen size for lecture theatres or very bright classrooms with a lot of natural light

B - What resolution should it be ?

The sharpness and clarity of the picture on the screen is determined by a projector's resolution. Resolution is simply the number of pixels (or "picture elements") the projector uses to create the image. The more pixels it uses, the "higher" the resolution.

Resolution is usually quoted in two numbers, such as "800 x 600," where the first number refers to the number of pixels from side to side across the screen, and the second number refers to the number of pixels vertically from top to bottom.

True Resolution/Native Resolution:

When speaking of a projector's resolution, it is common to refer to "true" or "native" resolution. If a projector's native resolution is 800 x 600, that means that the actual number of physical pixels on the display device is 800 x 600.

Advantage of Higher Resolution:

High resolution projectors are able to show more picture details than low resolution projectors. Also, since there are more pixels used to make the image, each individual pixel is smaller, so the pixels themselves become less visible on the screen. However, you will pay more for higher resolution.

Advantage of Lower Resolution:

Lower resolution projectors are much less expensive, and they can produce images that are just as bright and attractive as higher resolution machines. Unless you really have a need to display fine details, lower resolution products will be your best bet from a cost perspective.



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Resolution

Resolution options:

Your basic choices for native, or true resolution are the following:

1. SVGA, or "800 x 600" - This is a very popular resolution today, because of their attractive prices and great images.

2. XGA, or "1,024 x 768" - XGA projectors are generally more expensive, and are an equally popular resolution format to SVGA. They have gotten more popular as XGA resolution computers have become more plentiful.

3. SXGA, or "1,280 x 1,024" - SXGA products are high resolution, and notably more expensive than XGA. These products are targeted for high end personal computer users and low end workstation users. They are used primarily for command and control, engineering and CAD/CAM applications where acute resolution of small details is important.

4. UXGA, or "1,600 x 1,200" - UXGA is for very high resolution workstation applications that are detail or information intensive. These are expensive projectors that support a broad range of computer equipment. Relatively few products on the market have this native resolution.

Which resolution is right for you?

One of the key factors in choosing the right resolution is your typical application. Do you have a need for very accurate display of small visual details, or not?

If your primary use of the system is for "Powerpoint" style graphics, pie charts, graphs, and general business presentation, you don't need to pay extra for high resolution equipment. SVGA resolution is perfect for this kind of work, and the best solution for the money.

On the other hand, if you are often presenting materials like Excel spreadsheets with a lot of numeric data on the screen, you will probably be happier with XGA resolution. This format is able to produce a clearer and more legible image of small numbers and other data.

Finally, if you are projecting engineering drawings or other images of a highly detailed and technical nature, you will probably need a very high resolution SXGA projector to produce an acceptable image for your purposes.

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Resolution

How do I check my computer's resolution ?

Windows operating systems

1. Left mouse click on the Windows **START** button (*often situated on the bottom left of your desktop on the taskbar*)
2. Now go to '**Settings**'
3. Click on '**Control Panel**'
4. Click on '**Display**'
5. In the Display Properties window, left click on the top right hand tab '**Settings**'
6. Your computer's resolution will be displayed in the slide ruler entitled '**Screen Area**'

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Matching your computer to your projector.

Keep in mind that the best resolution for your projector is the resolution of the computer you intend to use with it. If you typically use a notebook computer with SVGA resolution, you will want a projector with the same native SVGA resolution in order to get the sharpest and cleanest image. Similarly, if you normally use a computer with XGA output, you will get the best picture from a projector that has XGA as its native resolution.

Most of the projectors on the market today are capable of projecting input signals other than their native resolutions. For example, you can usually hook up an XGA computer to an SVGA projector. The projector will automatically convert the incoming 1,024 x 768 signal to its native 800 x 600 output. However, there is always a loss of sharpness and detail in the process, so you will end up with a picture that is not quite as sharp as if the incoming signal had been the same format as the projector's native resolution.

This loss of sharpness also happens if you plug an SVGA computer into a higher-resolution XGA projector. You will usually get a decent image, but the conversion from the 800 x 600 input to a 1,024 x 768 output will produce some fuzziness that you may not appreciate after having spent the money for an XGA projector.

The projector's process of converting a different input format to its native output format is called "scaling." Some projectors are very good at scaling, so the resulting image fuzziness is relatively minor, and the image is very adequate no matter what the source. The quality of scaling varies widely among projectors and like all technology, it is constantly being improved. If scaling is an important consideration, be sure you see it demonstrated as you would use it.



C - Does weight matter ?



Another consideration in selecting the ideal projector is its weight. If you are on the road a lot, you may want the lightest, most portable machine available. If you travel some, but want a bit more performance and are willing to carry a heavier unit to get it, take a close look at the projectors in the 4 to 6 kilo weight range. As a class, these very portable projectors are brighter and more fully featured than the machines which are sub 3kg.

If you don't intend to travel with the projector, but still want the ability to move it around the office, from classroom to classroom, or to take it home on weekends, there are many excellent products in the 4-7 kg range that should be considered.

Finally, if you are going to use the projector in a specific place and have no need to move it around, weight is not an issue. So you should ignore it and make your selection on other cost and performance factors.

Other factors

Contrast ratio

Contrast ratio is the ratio between the brightest and darkest areas of the image. Contrast ratios should be high (400:1 or higher) to get the best video image or the most legible computer/graphics image. Room light substantially impacts contrast ratios. If you intend to use your projector with the lights on, consider projectors with very high contrast ratios.

Ceiling mountable

If you want to mount your projector on the ceiling, it will need the capability to project the image upside down. The large majority of projectors will do this today, but verify that this feature exists. Also, you must verify that a ceiling mount exists as an option for this product.

Aspect ratio

Often in the form of 4:3 or 16:9.
4:3 ratio is the most commonly used ratio for computers and data applications.
16:9 ratio projectors are typically for home cinemas as they achieve true wide screen formats for DVDs.



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Other factors



Lamp life

The average lamp life is 2000 hours, however more modern and economical projectors can go up to 6000 hours average.

Lamp life is an important consideration as most lamps are priced around £200-300.

The lamp life expectancy reduces as the resolution and the brightness of the projector get higher.

Remote mouse

Would you like to control your computer from anywhere in the room ? Remote mouse enables you to control your mouse through your projector remote control.

Lens

If you are using your projector for mobile applications, a zoom lens can be very handy. It gives you the ability to set the projector at a convenient location, and adjust the projected image size. Without a zoom lens, the only way to adjust the picture size is move the projector forward or back. A note of caution though: many of the micro-portables have zoom lenses with limited range. A unit with a zoom factor of 1.2x will only let you adjust picture size by 20%. You can often move the projector a foot or two either way and accomplish the same adjustment. Nevertheless, if you have a fixed screen size you are trying to fill, even a limited range zoom will make it easier to fine tune the image size to the screen.

Please note optional lenses are typically around £1000.

Rear projection

If you want to set up your projector to shoot from behind a screen, it needs to have the ability to reverse the image so that it looks right on the screen. Most projectors have this feature today, but if you need it, you can eliminate any projector that doesn't have this capability from your short list.

Audible noise

All projectors produce a level of noise, the majority of this being fan noise.

The average noise level of today's projectors is 35dB however some machines produce a whisper 25dB.

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Other factors

Monitor out

Commonly known as monitor re-drive. Monitor out is very useful as it enables you to display your computer's output on both the monitor and the projector simultaneously.

Data signal ports

Most importantly, make sure the projector you choose supports the computers you intend to use now and in the near future. This is a significant investment and the pace of change in the computer industry should be a consideration. PC and PC compatibles are nearly always supported with a direct connection, but Macintosh may be a separate connector or require an adaptor. If you are using a workstation, check that the models you intend to use are supported in the manner you intend to use them and if adaptors are needed, know whether they are included or an additional cost item.

Multiple computer ports

If you want to connect multiple computers or video sources to the projector simultaneously, you will need multiple input jacks to accommodate this. For example, you may want to connect a notebook computer and a desktop computer to support two consecutive presentations, or two different presenters. If your projector only has one computer source, you'll have to unplug the notebook and plug in the desktop between speakers. Check to make sure the projector has enough connections to support your typical use.

LCD or DLP ?

LCD technology uses an electric current passed across certain types of crystals and changes the way these crystals polarise light passed through them.

DLP is a recent development in display technology by Texas Instrument. It uses mirrors to display the image. Better than LCD for video display, DLP is now used in most low to middle range projectors.

LCD is often preferred to DLP for general computer usage, and DLP preferred when displaying video.

LCD = Liquid Crystal Display

DLP = Digital Light Processing

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