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NEC's Wireless MT1065

Review by David Colin | Jan 31, 2003 | [ProjectorCentral.com](#) | [Subscribe](#)

Hang on to your lens cap. We're taking a different review approach on this wireless (Wi-Fi) unit. This time we'll give you added in-depth coverage of features and provide some information on related NEC projectors that are configured to meet different needs and budgets.

Basic Features of the MT1065

Packaged in a silver gray enclosure, this 13 pound projector is rated at 800:1 contrast and utilizes 3 LCDs equipped with micro lenses to increase light output. At 3,200 ANSI lumens the projector achieves high brightness with a relatively low wattage lamp.

The lamp has an economy mode that can reduce the ANSI lumen output to 2,600, thereby extending the lamp life 50% to (2000 hours to 3000 hours), significantly reducing fan noise from 39 dB to 34dB, and lowering the heat generated by the projector. NEC also offers a long life replacement lamp (4000 hours).

The native resolution is 1024 x 768 pixels (XGA), but it will handle resolutions up to 1600 x 1200 pixels (UXGA) and scale them to fit its native XGA resolution. Scaling has the benefit of allowing higher resolution computers or images to be seen on the MT1065.

Although projector scaling is very good these days, some information is lost in the process by all projectors. It's the old 5 pounds in a 4-pound bag problem. It doesn't fit and something has to give. This is especially noticeable when there is considerable detail in the image. For example, a one pixel wide line might disappear or text may look a little out-of-focus, but the benefits out-weigh the drawbacks.

To ease setup, the unit is equipped with power focus and a 1.25:1 power zoom lens. Manual keystone correction features can fix all keystone problems within plus or minus 40 degrees vertical and 27 degrees horizontal. The power focus is very quick and an auto focus feature is provided for rapid focusing in the event that the projector or screen location is changed.

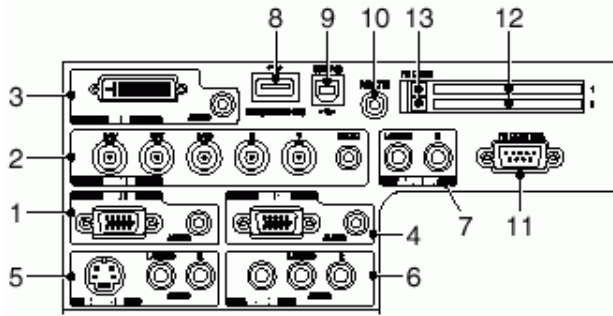
The unit supports DVI-D and offers RGB and BNC inputs for data or component video. A monitor loop-through provides a connection for local viewing on a monitor. The MT1065 also supports all the popular video sources including 1080p, 1080i, 720p, 480p, 480i, component video, S-Video and composite.

Its dual PC Card slots can support memory cards, wireless Wi-Fi 802.11b or a wired connection such as an Ethernet card. The Manufacturer's Suggested Retail Price is \$9,995. This price does not include a Wi-Fi or memory card. You will need to purchase Wi-Fi cards for the projector and each of your wireless users, and memory cards only if you have a need for them.

MT1065 Connector Panel

For those interested in the physical ins and outs, the MT1065 connector panel is illustrated for your reference.

- 1** - RGB1 IN / Component Input, RGB1, Audio Input Stereo Mini Jack
- 2** - RGB2 IN / Component Input (BNC), RGB2 Audio Input Stereo Mini Jack
- 3** - DVI IN (24 pin), Audio Input Stereo Mini Jack
- 4** - RGB OUT for computer monitor loop through, RGB Audio Out Stereo Mini Jack



NEC MT1065 Connector Panel

- 5 - S-Video In (Mini DIN 4 Pin), S-Video
- Audio Input Jacks R/L (RCA)
- 6 - Composite Video In (RCA), Composite Video Audio Input Jacks R/L (RCA)
- 7 - Audio Output Jacks R/L (RCA)
- 8 - USB Port (Mouse/Hub) (Type A) for USB supplied mouse or USB peripheral
- 9 - USB Port (PC) (Type B) PC mouse control with Remote or USB mouse.

10 - Remote (Mini Jack) for wired remote control operation

11 - PC Control Port (D-Sub 9 pin) for projector control by a PC using a serial cable.

12 - 2 PC Card Slots (Type 2) for a wired or wireless LAN, Memory Card(s)

13 - PC Card ejection buttons

Business and Pleasure

The wide range of features offered by the MT1065 makes it a prime candidate for the conference room where excellent connectivity for data, video, and audio allows the unit to support a wide range of devices concurrently as well as a wide range of users from networked to wireless.

At 13 pounds the MT1065 is not light by today's portable standards, but it is equipped with a carrying handle to allow easy transport from room to room or on the road. This projector is clearly targeted for business and government, and is overkill for the road warrior doing presentations from a notebook.

The splendid picture makes it suitable for most any video need from business to home theater. As a home theater projector, the MT1065 begs for a very large screen as it has ample light output even in economy mode (2,600 ANSI lumens). The lens can handle an image diagonal from 25 to 500 inches (63.5 to 1,270 centimeters) and throw distances from 2.5 to 68.9 feet (0.7 to 21 meters). With its wealth of video support, this projector can serve almost any corporate video need from HDTV to composite and switch seamlessly between them.

Using the network capability you can remotely diagnose, monitor and control the projector. Features such as e-mail notification when the unit needs service or a new lamp, projector usage information, or power on/off are easily handled through the network.

Picture Setup

The MT1065 comes equipped with a Wall Color Correction feature that allows you to manually or automatically adjust red, green and blue to give you the proper color balance on a colored wall whether it's in a conference room, hotel room, or at home.

A Picture Management menu offers 5 preset selections for presentation, sRGB, graphics, video, movie and 4 user definable settings. If you're a videophile and you want to tweak the image, NEC let's you get into as much trouble as you like. Start with one of NEC's presets and then fiddle with gamma correction, 6 level color correction plus color gain, color temperature from 5000°K to 10,500°K, and white balance.

Computerless Presentations

For those seeking a simple presentation solution, store your presentation on the optional Memory Cards and eliminate the computer during presentation. This is equivalent to turning the MT1065 into a slide projector and it's handy if you're traveling to deliver a presentation and you don't want to take a computer with you, or you are computer challenged.

NEC provides the software that allows you to create these presentations using images from your computer or projected images you capture. If you are a PowerPoint user, an "add-in function" is provided for Microsoft PowerPoint 2000/2002 users to simplify the transfer to the PC Memory Card.

Things that Control, Point, and Write

To NEC's credit, they have done a nice job of providing a variety of tools to allow the presenter to enhance the spoken word, direct attention, or clarify information.

The remote control of the projector includes a built-in laser pointer. An electronic pointer can also be activated and controlled with the remote control. If you connect your computer to the projector using the supplied USB cable, the remote control can control your mouse. Not uncommon features on today's business projectors.

A less common feature is a USB mouse that plugs directly into the projector and presents you with a large pointer that can be used to draw attention to information and control all the menus. This is an extremely efficient way to handle setup or any extensive use of the menu system. Click the digital zoom and you zoom in on the location of the mouse pointer. Connect your computer to the projector using the supplied USB cable and the projector mouse is now your computer mouse.

The USB mouse also supports a 'John Madden chalk talk' feature that allows annotation of the projector image. Open the Chalkboard Menu, select a pen size and color, and write on the projected image with the mouse. If you are using a memory card in the PC Card slot, you can save your computer images and annotations to the memory card.

While the Chalkboard is a nice feature and easier to operate with a mouse than a remote control, it would have far greater utility if it used a tablet and pen rather than a mouse - preferably wirelessly.

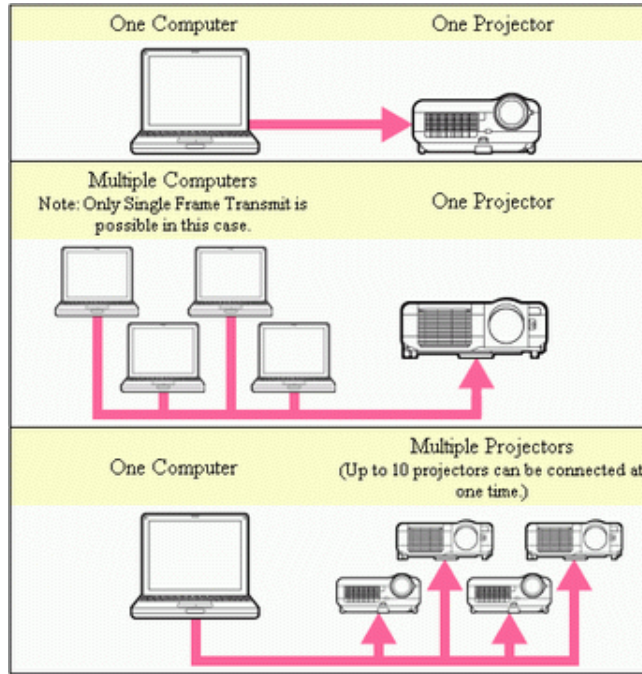
Wireless Networking

Speaking of wireless, let's get to the heart of our subject. We tested the MT1065 with a Samsung Wi-Fi 802.11b card in both the projector and our notebook. Following NEC's installation

https://www.projectorcentral.com/wireless_nec_mt1065.htm

instructions, we loaded the software provided by NEC on a Windows XP platform. Having previously tested the NEC LP260, it appears that the software tools are nearly identical and the installation was painless.

We have used Samsung MagicLan Wi-Fi cards in the past and based on that experience and the results we got with the MT1065, it appears that they gave a better range and maintained a stronger data rate at all signal levels than other wireless cards we have tried.



NEC MT60 or LT200 Series Wireless Configurations

Wireless operation can be done in either continuous or single frame transmit. In continuous mode the image is refreshed whenever the computer content changes. Mouse movements are easy to follow. Single frame transmit is just like a slide projector. When you enable the feature, your computer image is transmitted only when you command it.

To test image quality and transfer times, we ran 1999/2000 INFOCOMM Shootout images and a graphics package to generate high content graphic images, and a spreadsheet and word processor for data and text. Transferring full screen high content graphics took up to 4 seconds per image, which seems to be typical for detailed images with high color content in XGA resolution using Wi-Fi 80211b.

Keep in mind that the resolution, detail and color content will determine the transfer time. For example, you can expect the same images in SVGA would transfer more quickly. If signal quality is low, transfer rate is below 11 megabits per second (Mbps), or you have interference from RF interference, you can expect further slowdowns. For our tests we were operating in ranges up to 50 feet from the projector without any problem or noticeable degradation in image quality or transfer time.

Projectors provide the best image quality when the resolution of your source matches the native resolution of the projector. This is particularly true with wireless operation when viewing text. Avoid image scaling by having your computer output in the same resolution as your projector.

Five levels of signal quality that we observed are shown below with the corresponding obstructions, distance and data rate experienced. Keep in mind that your own experience will vary depending on the types of line-of-sight obstructions in the room and other sources of potential radio interference:

Signal	Obstruction	Distance	Mbps
Excellent	none	30 feet	11
Very Good	wall	36 feet	11
Good	wall	48 feet	11
Low	2 walls & ceiling	54 feet	11
Very Low	ceiling & 2 walls	60 feet	2

Regardless of the transfer mode selected, there was no noticeable degradation of the image as long as the transfer rate stayed at 11 Mbps (megabits per second). Updates to the image had a refresh rate from 0.5 seconds to 4 seconds depending on the amount of content that changed. Typing text would change at the 0.5 second rate and replacing entire graphic images at the 4 second rate when operating at 11 Mbps. Only when the signal strength went to Low did the transfer rate drop below 11 Mbps. At these levels we lost considerable performance and experienced occasional break-up of the image.

Security

Whether you're trying to protect a corporate asset or keep folks from messing with your setup, NEC has a three level solution. First, you can disable the projector keyboard to

prevent unauthorized changes from occurring at the projector. This could be handy during a presentation. The person with the remote control is in charge. Sounds like home.

Second, using a password lock you can prevent any changes from being made to any of the setup values. This is helpful and recommended, if you have one person responsible for setup and support of the projector or if you expect to share the unit with inexperienced users. Losing that wireless configuration or that User Setting you spent the day tweaking can make you cranky.

And finally, you can't keep someone from stealing this projector unless you physically secure it (an option that is also available), but you can render it worthless to the thief by setting a security password. Without the password you cannot view anything with the projector. You can also require that a registered PC Card be inserted before the unit can be used. If you have more than one authorized user, multiple PC Cards can be issued.

Some Nice Features

Sometimes it's the little things that make a difference.

An especially nice feature that will be appreciated by all who have ever lost the User's Manual is a built-in help menu. With the advent of the Internet it is now possible to find a user manual online and this is true with NEC and every supplier of any product would do well to provide similar support. However, NEC went a step further by including the basics of the User's Manual in the projector. Hit the Help key at anytime and you get instant guidance. This may not seem like much to the new buyer, but we receive plenty of mail from users looking for replacement manuals, especially if the projector is shared or mobile.

Aside from the cable hookups and the various plugins that go with the MT1065, the primary human interface of projectors is embodied in their remote controls and their menus. The more features the product has the greater the need for good navigation controls. To this end, NEC did a nice job of taking a complex set of functions and putting

them together in a series of menus. More importantly, if you don't like what they decided will be on your main menu, you can change it.

The only complaint we had about the remote control was that the LAN is not among the directly selectable sources. This made it awkward to switch between the LAN and RGB, for example. Fortunately, the programmability of the menu system helped solve the problem, but it wasn't ideal as this process should be menu-less.

If you're conserving energy on your monitor by using automatic power off when your computer goes idle, you'll like the Power Management option of the NEC MT1065. Once set, your projector will automatically shut down 5 minutes after your computer signal goes away, thus saving your lamp life and conserving energy. Furthermore, government users will be pleased to know that the MT60 Series complies with ADA508 that allows for menu color selection and closed captioning, and Executive Order 13221, which places a purchasing priority for equipment that consumes not more than 1 watt of power in standby mode.

Summary

The NEC MT1065 is a high performance projector. Rich in features and powerful in light output, this unit does just about everything. A host of connections allow you to hook up virtually any type of data or video source from analog to digital and HDTV to DVI.

Network users will find wireless and wired networking supported. Presenters and educators have networked and wireless computer access, as well as computer-less presentation support using the optional memory cards. Group meetings can enjoy wireless collaboration.

The plethora of video options and the ability to control virtually every aspect of the image is a videophile's dream. Home theater on a business projector. Hmmm, business theater perhaps.

The [NEC MT1065](#) is one of 4 projectors in the MT60 Series. The 3 other projectors of the MT60 Series include:

1. [MT1060R](#) - a 2500 ANSI lumen short throw projector with all the features of the MT1065 except no zoom, power focus or LCD micro lens. The unit is designed for rear projection applications.
2. [MT1060](#) - a 2600 ANSI lumen projector with all the features as the MT1065 except the LCD micro lens, which accounts for the 600 ANSI lumen difference between the products.
3. [MT860](#) - a 2800 ANSI lumen SVGA (800 x 600) projector with all the features of the MT1065 except it lacks the auto focus, wall color correction, and DVI-D input.

We have also tested the wireless [LT260](#), which has two sister products the [LT240](#) and [LT220](#). Unlike the MT60 Series, the LT200 Series is based on the Texas Instruments DLP display technology and offers a fixed lens with a manual zoom and focus rather than the replaceable powered lens. In many ways the LT200 series is a junior version of the MT60 Series including smaller size, lighter weight, less lumen output, fewer connections and lower price, but otherwise similar to the MT60 Series. Use the links below for a side-by-side comparison of the two series.

[Compare the MT60 Series](#)

[Compare LT200](#)

[Compare MT1065 & LT260](#)

[Compare MT1060 & LT240](#)

[Compare MT860 & LT220](#)

Performance Fundamentals

An XGA projector has 1024 by 768 pixels of resolution and each can have 24 bits or more of color. That's about 19 million bits of information on one screen. Wireless 802.11b has a data rate of 11 million bits per second. This implies that it would take about 1.7 seconds to transfer a full color XGA image. Now that might not seem too severe if you're doing a

presentation, but the truth is the real data rate of 802.11b is much less considering the protocol overhead and the handshaking required for the wireless computers connected to the projector. The real data rate can be half the maximum. That doubles the transfer time to almost 3.5 seconds. Clearly this becomes a problem.

When using wireless technology, transfer speeds tend to be a bigger issue than image quality. Actual transfer speeds for Wi-Fi 802.11b wireless operation with XGA projectors varies from 0.5 seconds for simple text input to 4 seconds for a detailed graphic image.

To deal with the transfer time issue, compression and scaling algorithms are used; however, the techniques used by each manufacturer will vary and so do the results. Ideally you want the same performance you get with a wired connection, but this generation of wireless is about convenience, not performance, and its audience is primarily presentation, classroom, and collaborative meetings where information is presented and discussed.

Wireless Security Issues

An 802.11b Wi-Fi device is basically a digital radio broadcasting in the 2.4 GHz band. Outdoors Wi-Fi can transmit tens of miles and therein lies a security issue. If your data is not encrypted, then it is vulnerable. A security algorithm known as WEP (Wired Equivalent Privacy) is intended to overcome this vulnerability; however, the industry consensus seems to be that it can be easily violated by those skilled at hacking.

So beware, a passerby seeking free Internet access or someone with more fiendish intent can access an unsecured wireless network. This practice is known as war-driving and people who indulge in this include freeloaders, thieves, and some that are simply trying to create an awareness of security issues. War-drivers may also engage in war-chalking, which is a throwback to the communication technique used by hobos to alert other hobos with chalk markings identifying free places to sleep or eat. Like the hobos, these war-chalking symbols alert other war-drivers of free services, so if you unplug and go wireless, look for a war-chalking sign near you.

For more detailed specifications and connections, check out our [NEC MT1065](#) projector page.

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