

MultiSync® XG85™ and XG135LC™



Unsurpassed image focus,
brightness and sharpness

Exceptionally easy set-up
and control

Outstanding compatibility

The new **MultiSync XG Series** projectors from NEC Technologies take CRT projectors to the next level, offering you the most **dynamic, versatile** presentation technology available. They feature NEC Technologies exclusive IMMS (Intelligent Memory Management System) technology, a **breakthrough in image stability** and **ease of operation** that makes autoconvergence systems a thing of the past.

Delivering accurate, lifelike images with **unsurpassed brightness, focus and sharpness**, the second-generation MultiSync XG Series projectors also offer **tremendous ease of use**, including easy setup and control of nearly every projector function without ever having to go inside the unit.

Their **outstanding compatibility** with virtually every computer and video source in use today makes them a **versatile** display solution that can meet any information display requirement. Their **superior quality and reliability** mean you can count on these projectors to display **high-quality images** for years to come.

The MultiSync XG Series at a glance

Two models are available to meet the needs of every user.

MultiSync XG85



The **MultiSync XG85™** projector is ideal for the general computer and video display requirements of corporate conference rooms, training facilities, medical training and sophisticated entertainment applications.

Horizontal Scan Rate:	15-85kHz
Video Bandwidth:	110MHz
Brightness:	1100 Lumens Peak White/ 230 ANSI Lumens
Lens:	HD144
Video Compatibility:	NTSC, PAL, SECAM, NTSC 4.43, HDTV
RGB Compatibility:	up to 1280 x 1024

MultiSync XG135LC



The **MultiSync XG135LC™** projector is best suited for environments demanding the most precise, high-resolution images, where there can be no compromise on image quality.

Horizontal Scan Rate:	15-135kHz
Video Bandwidth:	150MHz
Brightness:	1200 Lumens Peak White/ 240 ANSI Lumens
Lens:	HD134 Liquid Coupled
Video Compatibility:	NTSC, PAL, SECAM, NTSC 4.43, HDTV
RGB Compatibility:	up to 2500 x 2000

IMMS technology for a perfectly converged image every time

Fast, accurate convergence with advanced IMMS (Intelligent Memory Management System).

NEC Technologies exclusive IMMS technology makes autoconvergence systems obsolete with a fast, reliable way to ensure that a converged image will always be displayed, even when new signals are added.

IMMS incorporates an improved signal search process that increases the accuracy of on-screen signal convergence:

1. When a signal is converged and stored within an IMMS memory location, that signal acts as a reference signal for a specific signal frequency range.
2. When a new signal is input into the projector, the system first looks for the exact signal match in memory and uses that memory location to converge the new signal.
3. If an exact match is not found, the system searches again for a similar signal. If no

matching signal is found, the system searches the

reference memory blocks for the correct frequency range.

4. Once the correct memory block is chosen, the reference signal contained in the block is used to converge the new signal.

The result is a perfectly converged signal every time. Only minor position amplitude or size adjustments need to be made, and these can be done without technician involvement.

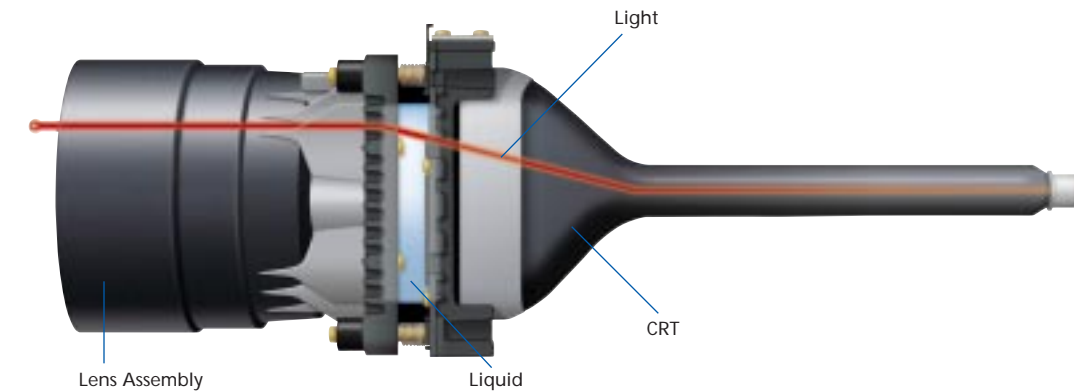
In addition, new signals can be entered into memory as they are introduced, increasing the number of references and the accuracy of the system.

Input	H-(freq.)(kHz)	Registered Default Data
1	15 to 25	15kHz (60Hz)
2	20 to 40	31.5kHz (60Hz)
3	35 to 50	48kHz (60Hz)
4	45 to 75	61.8kHz (60Hz)
5	70 to 110	89.3kHz (60Hz)
6	105 to 135	115kHz (60Hz)



The ultimate in image quality

MultiSync XG Series projectors deliver the unsurpassed image quality that make them **the ultimate projection choice**. Their brightness, color and contrast combine to create the best image reproduction available. A wealth of adjustments is available that enables users to fine tune the projector to exactly match their preferences. No other projector or technology can provide the versatility, sharpness and true color reproduction of the MultiSync XG Series projectors for any resolution, display source or application.



Liquid Coupled Optical System

The liquid coupled lens system on the MultiSync XG135LC projector replaces the air space between the CRT and the lens elements with a liquid, reducing the amount of light lost through secondary reflection. This results in a 40% increase in contrast and a 20% increase in brightness.

AccuBeam™ Dynamic Astigmatism Adjustment

AccuBeam technology enables custom zone focusing for improved image accuracy. AccuBeam maps the screen image into nine different zones and enables you to adjust only the area of the screen that needs refocusing, without affecting other portions of the screen image. This results in sharp, crisp images from corner to corner and edge to edge of the screen. The adjustment is easily performed using the projector's remote control. No technical expertise or physical access to the projector is required.



Image without AccuBeam adjustment.
Projectors without zone focus capability exhibit softer corner and edge sharpness.



Image with AccuBeam adjustment.
AccuBeam enables the most precise focus by allowing individual adjustment of the corner, edge and center of the screen image.

Gamma Correction

Most projection systems have difficulty in reproducing the color nuances of the original source, producing different colors at various intensities. MultiSync XG Series projectors feature gamma correction that corrects images for this non-linearity in color reproduction, resulting in images that faithfully reproduce the original source. Gamma correction assures a linear gray scale and linear gray scale tracking for the most accurate on-screen representation.



Without gamma correction, correct luminance and chrominance levels for each gray scale component cannot be maintained.



MultiSync XG CRT projectors feature gamma correction for the most accurate gray scale and color representation.



Enhanced Color Purity Filter

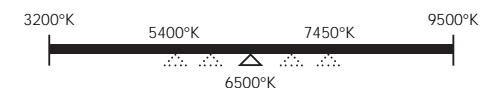
The enhanced color purity filter on each lens provides more accurate color reproduction and increased color saturation for the most lifelike image quality available.

Contrast Modulation

The contrast modulation feature allows the user to adjust contrast over multiple points on the screen, reducing hot spots and improving brightness uniformity. This enables even contrast, brightness and color across the screen or on multiple screens for a more uniform screen image.

Linear Color Temperature Adjustment

In projection systems, the color of white can range from a reddish to a bluish tint. With the linear color temperature adjustment, this tint can be adjusted in a linear fashion, without steps, for optimal display of white in video and computer signals. Video looks best at 5400°K or towards the warmer (lower) temperature. Computer images look best towards the cooler (higher) temperature.



The color temperature can be adjusted from 3200° to 9500°K linearly, without steps.

Exceptionally easy set-up and control

MultiSync XG Series projectors are so easy to use, even the novice presenter will feel at ease.

Virtually every projector function—including focus, convergence, color, source selection and projector orientation—can be controlled via a comprehensive remote control. Designed for both attended and unattended operation, the projectors feature an innovative sequencer function that permits them to turn on and off automatically, to change sources on their own and even select the day of the week they operate.

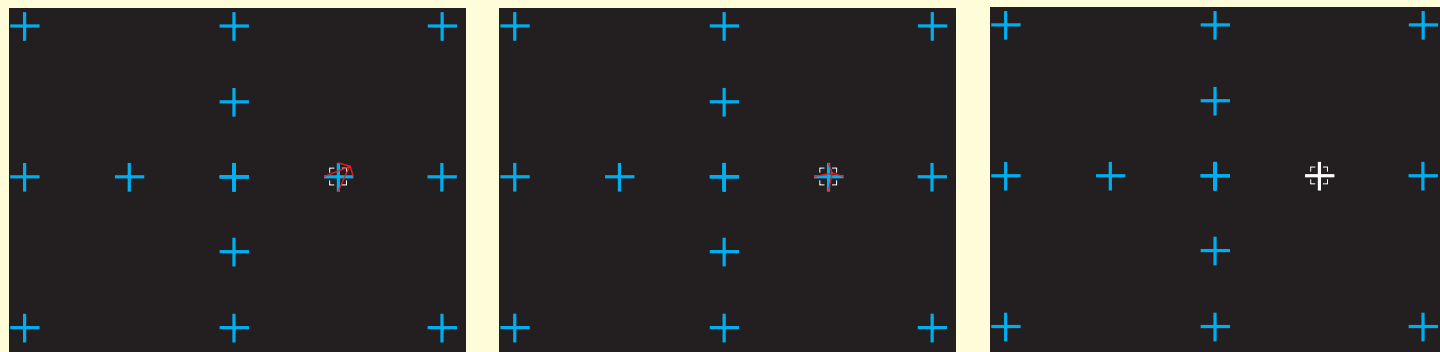
Responsive service and support, plus specially designed features provide the ultimate in quality and reliability. Every MultiSync XG Series projector features the unsurpassed quality and reliability you expect from NEC Technologies, the leader in projection technology. Features designed to increase service life and reliability include NEC's Image Shift phosphor-saving technology, continual self-diagnosis and a status display that allows service technicians to know what the issue is before beginning repairs. And of course, all MultiSync XG Series projectors are covered by a two-year limited warranty in addition to NEC Technologies responsive service and support.

MCAT delivers the latest in convergence technology.

Now truly accurate convergence can be achieved quickly and easily without the hassles of cameras or other complicated convergence add-ons. Introducing NEC Technologies exclusive MCAT (Microprocessor Controlled Auto-Convergence Technology).

MCAT consolidates pincushion, amplitude, linearity and all other convergence adjustments into 13 point cross hair alignment points. By manipulating the red, green and blue colors at these points, MCAT allows MultiSync XG Series projectors to automatically determine all other convergence parameters and aligns them to greater than 98% accuracy.

Quicker set-up and simpler maintenance are just a few of the additional benefits realized through this innovative technology. AccuZone and AccuPoint convergence adjustments are also available.



After manipulating the red, green and blue colors at the 13 crosshair alignment points, NEC Technologies MCAT technology automatically determines all other convergence parameters and aligns them to greater than 98% accuracy.

Dual remote controls

Two remote controls are included with MultiSync XG Series projectors. A full-featured setup remote enables comprehensive image adjustments, source selection and program settings, and is backlit for ease of use in a darkened room.

The compact user remote provides hand-held access to adjustments such as source selection, brightness and contrast for easier use during presentations.



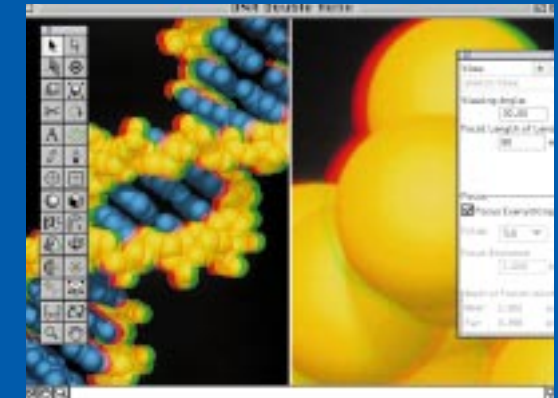
HDTV and the ATSC Standards

When you consider the 18 DTV standards approved by the Advanced Television Standards Committee (ATSC), there is only one technology today, and for the foreseeable future, that can faithfully reproduce all of the resolutions, aspect ratios and pixel formats that DTV and HDTV has to offer. That technology is the tried and proven CRT. Fixed pixel display systems do not have the aspect ratio agility and pixel density that is inherent in CRT projection systems. NEC Technologies CRT projection systems and MultiSync capability guarantee full compatibility with not only the established ATSC standards, but also with any conversion scheme or video scaler that will be introduced to display this new and exciting medium. NEC Technologies CRT systems provide true resolution for any HDTV source and don't interpolate or downconvert the image resolution. NEC CRT projectors faithfully resolve every nuance, color value and pixel format with outstanding accuracy and fidelity.

ATSC Standards

Horizontal	Vertical	Aspect	Pixel	24 P	30 P	30 I	60 P	60 I
1920	1080	16:9	Square	■	■	■		
1280	720	16:9	Square	■	■		■	
704	480	16:9	Non-Square	■	■		■	■
704	480	4:3	Non-Square	■	■		■	■
640	480	4:3	Square	■	■	■	■	

Optimize your MultiSync XG Series projector for 3D imaging



Simulated 3-D image

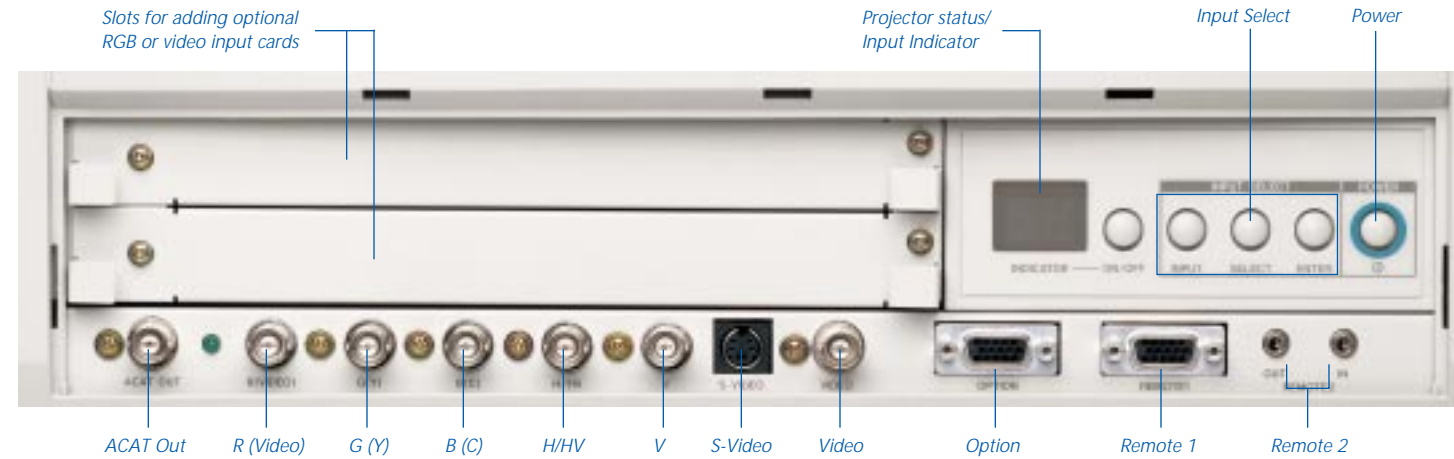
MultiSync XG Series projectors can be optimized for 3D image projection with the addition of a short persistence green phosphor tube. "Persistence" refers to the length of time the CRT phosphor glows after the electron beam has stopped projecting electrons onto its surface. Phosphors with longer persistence have a higher light output. However, long persistence also can cause a "ghosting" effect, which occurs when the phosphor continues to glow from the previous image while a new image is projected. Because 3D imaging systems have a very fast refresh frequency, they require projectors with short-persistence phosphors in the CRT. Adding the short-persistence phosphor option to the CRT of MultiSync XG Series projectors, ensures optimum performance with 3D imaging systems.

This tube is available as an upgrade for your MultiSync XG Series projector or can be purchased with the tube already installed (model numbers XG85S, XG135S).

Outstanding compatibility for greater flexibility

MultiSync XG Series projectors are compatible with virtually any computer and video source used today, providing greater flexibility to meet the varying needs of presenters.

Wide horizontal scan ranges provide compatibility with the most complex, high-resolution computer images. The projectors also are compatible with a variety of video inputs including NTSC, HDTV, PAL, SECAM and S-Video sources. Connection is quick and easy via the comprehensive input panel which accepts numerous video and RGB inputs.



Comprehensive input panel

The comprehensive rear input panel enables you to add RGB and video input capability as needed. MultiSync XG Series projectors include one video, one S-Video and one RGB input standard.

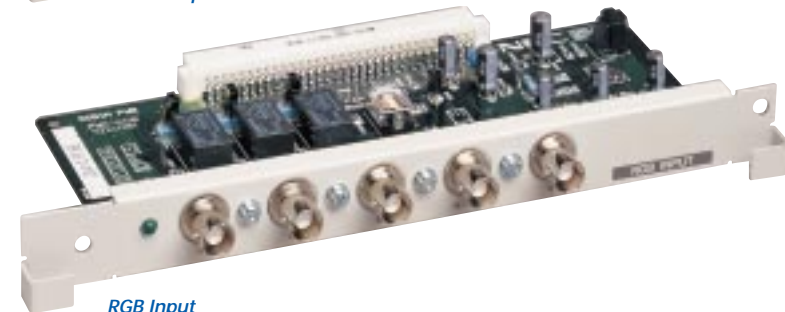
Resolutions Supported		
MultiSync XG75A	MultiSync XG110LC	MultiSync XG135LC
640 x 480 (VGA)	640 x 480 (VGA)	640 x 480 (VGA)
800 x 600 (SVGA)	800 x 600 (SVGA)	800 x 600 (SVGA)
1024 x 768 (XGA)	1024 x 768 (XGA)	1024 x 768 (XGA)
1280 x 1024	1280 x 1024	1280 x 1024
	1600 x 1200	1600 x 1200
		2000 x 2000

Optional input cards

Two optional RGB or video cards can be added for a total of five inputs.



Video Input



RGB Input

The University of Chicago's Section of Cardiology

The University of Chicago's Section of Cardiology utilizes a MultiSync CRT projector and a MultiSync presentation monitor. "Telemedicine" is an exciting concept that promises to help the medical industry save money while it saves lives. At the Section of Cardiology, doctors are exploring this new frontier in a cardiology conference room used to teach cardiologists lifesaving procedures. True color reproduction and super-high resolution are critical as cardiologists view live and recorded procedures in graphic detail. A MultiSync CRT projector used in conjunction with a MultiSync presentation monitor facilitates comfortable viewing for multiple viewers, as well as live videoconferencing capabilities. As medicine moves into the 21st century, only images of the highest caliber will suffice.

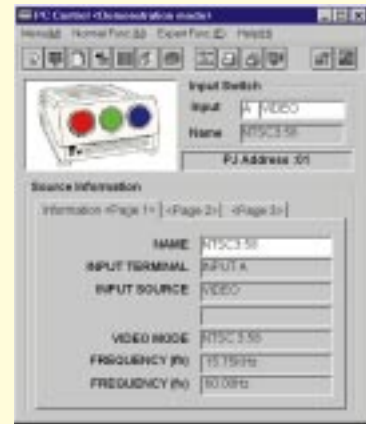


MultiSync XG Series projectors are recipients of the Presenters Choice Award in the "Best CRT Projector" category. The Presenters Choice Awards are given to "the most useful and innovative presentation products."

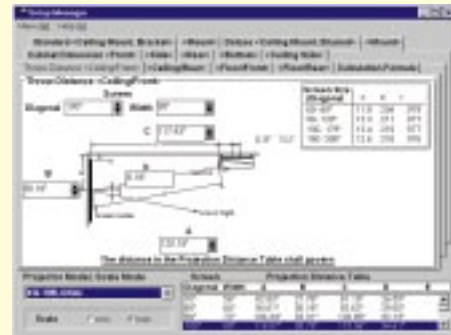
Powerful software for comprehensive control

NEC Technologies new PC control software is the most extensive projector control software available and is very simple to use. This software works in Windows® 3.1 and Windows 95/98 with intuitive pull-down menus. Your computer controls the projector's many functions for ease of operation.

Main Menu—The opening screen of the projector control software includes important source information as well as access to projector functions and an on-line help feature.



Set Up Manager—From this screen, you can calculate the projector's proper throw distance and mounting configuration for any screen size from 60" to 300" (diagonal). This screen also contains dimensional drawings of the projectors as well as dimensional drawings of the ceiling mount hardware.



Function Control (User)—This screen enables the operator to control basic projector functions (picture functions, picture mute, projector power on/off, input selection).

Function Control (Expert)—This screen allows the installer or technician to converge the projector and set all the projector operating parameters upon installation. Gain control adjustments such as focus, alignment, dynamic convergence, uniformity and white balance can all be modified through this menu. Settings can be protected through a passcode lock to prevent unauthorized access, tampering or operation.

Trouble Shooter—This feature is designed to query the projector for any anomalies. If error codes are received, the software directs the servicer as to which boards to test or which service procedure to perform.



Multi Function—This menu controls up to 64 projectors from one computer serial port. You have the ability to cycle the power on or off, change the source of all the projectors simultaneously or select "individual control" and adjust just one projector at a time.

Version Up Tool—This tool gives the user the ability to upgrade the projector's flash ROM with the latest projector operating software.

Sequencer—This function allows the user to set the projector to turn on and off at specific times each day of the week and allows the switching of sources during specified periods. All events can be automated and repeated.

Auto White Balance Adjustment Tool—With an Optional Color Balance Meter, this tool allows the servicer to perform white balance adjustments on the projector automatically.

Data Base—All of the projector's convergence and operating parameters can be downloaded and stored to either a computer hard drive or to a floppy disk. With this feature you have the ability to archive projector convergence and picture memory—a great time-saver, especially if previously converged signals are accidentally erased

or misadjusted. With the Data Base, you can upload previously stored memory information to the projector and return it to its properly converged



Optional accessories for full customization

The optional accessories available from NEC Technologies enable you to create a custom projection system that precisely meets your needs.

MultiSync ISS-6020™ Video/RGB Switcher

The MultiSync ISS-6020 Switcher gives you the ability to configure a projection system to your exact requirements. It enables you to integrate input from multiple video and RGB inputs, greatly simplifying source control. The Switcher includes a total of 11 module slots for extensive input and output flexibility, accepting any combination of video, computer, RGB and high-definition input modules and up to four RGB and video output modules.



High Definition Module
Supports RGB or Y. Pb. Pr. analog inputs and HDTV tri-level sync. Note: installation of each High Definition module requires the use of two slots.



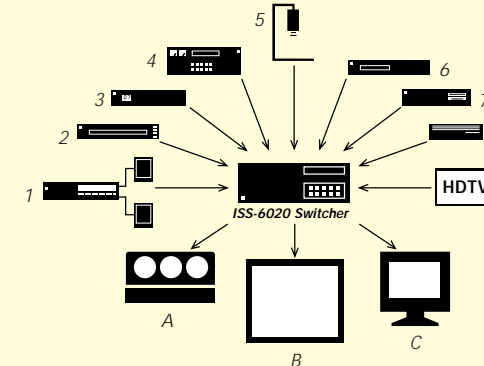
VGA Input Module
Full VGA mode sensing through RGB H/V signal format is a unique feature. For faithful reproduction of VGA or XGA-2 sources this module is mandatory.



Video Input Module
Accepts standard composite video as well as higher-resolution S-Video formats. Like all modules, it accepts stereo audio inputs as well.



Video Output Module
Outputs a standard composite or S-Video signal when a composite or S-Video signal source is selected.

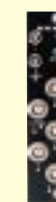


The total system Input:

- 1) Audio amplifier
- 2) Laser disc player
- 3) Tuner
- 4) 3/4" VCR
- 5) Copy stand
- 6) VCR
- 7) IBM PC
- 8) Macintosh
- 9) HDTV

Output:

- A) XG projector
- B) Multimedia/data monitor
- C) Computer monitor



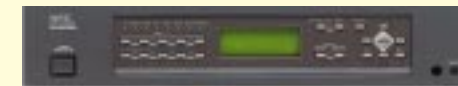
RGB Input Module
Easily handles a wide range of RGB analog sync and signal formats including composite sync, separate horizontal and vertical sync and sync on green.



RGB Output Module
Up to 4 RGB output modules may be installed in the Switcher. This dramatically expands the Switcher's capability to include the functionality of a distribution amplifier.

Image Processing Systems

NEC Technologies image processing systems enhance video for "film-like" images on large screen displays.



IPS4000 Image Processor/Line Doubler IPS4000Q Image Processor/Scaler

As large-screen presentation applications become more common in business and home theater settings, the inherent image-quality problems of NTSC and PAL video formats become more apparent. These standard video formats, created in the 1950's, were designed for the small screen sizes used at that time. Today's large-screen display devices magnify the signal noise and picture artifacts inherent in the standard video signal, but normally not visible on a small screen.



NEC Technologies complete family of image processors enables users to eliminate the quality problems of NTSC and PAL video, enhancing video image appearances for high-impact, high-quality large-screen presentation. Unlike simple line doublers, quadruplers and scalers, these processors deliver complete image processing. They remove picture artifacts, in addition to multiplying the number of scan lines, to create "film-like" large screen displays.

The IPS4000 and IPS4000Q image processors digitally process the input video signal to reduce

The IPS4000 and IPS4000Q offer a variety of connection options including component, composite video and S-Video.

dot interference and cross-color problems while improving the quality of color reproduction. The IPS4000 line doubles and field doubles the horizontal scanning frequency, while the IPS4000Q performs all of the functions of the IPS4000 and scales to PC formats of 800 x 600 and 1024 x 768. The IPS Series corrects time base errors of incoming video, reduces line flicker, increases vertical resolution, eliminates 3:2 pull-down problems and permits output video to be precisely matched to the output resolution of display devices such as LCD, DLP and Plasma.

MultiSync XG85, and XG135LC Specifications Model #XG852, XG1352

Horizontal Scan Frequency

XG85:	15-85kHz
XG135LC:	15-135Hz

Vertical Scan Frequency

Both models:	40-160kHz
--------------	-----------

Retrace Time Horizontal

XG85 and XG135LC:	15-30kHz (6.0µs)
XG135LC:	30-77kHz (2.6µs)
XG135LC:	77-120kHz (2.0µs)
XG135LC:	120-135kHz (1.4µs)

Retrace Time Vertical

Both models:	40-160kHz (270µs)
--------------	-------------------

Video Bandwidth

XG85:	110MHz (-3db)
XG135LC:	150MHz (-3db)

CRT

Both models:	8 inch liquid cooled Deflection angle 90 degrees
--------------	---

Lens

XG85:	HD144 Lens
XG135LC:	HD134 Liquid Coupled Lens

Addressable Pixel Resolution

XG85:	1600 × 1200
XG135LC:	2500 × 2000

Video Resolution

Both models:	1500 TV lines at center (HDTV) 1500 TV lines at corner (HDTV)
--------------	--

RGB Input

RGB Input:	RGB 1:5-BNC Analog (RGB-HV) with full tracking compatibility
HV Sync:	0.7Vp-p 75 ohm Positive (BNC) 0.7-4.0p-p (75 ohm/1 Kohm) Negative or Positive (BNC)
Mix Sync:	0.7-4.0Vp-p (75 ohm/1 Kohm) Negative or Positive (BNC)
G Sync:	0.3-0.6Vp-p 75 ohm Sync Negative (BNC)

Video Input

Both models:	1.0Vp-p 75 ohm Sync Negative
--------------	------------------------------

S-Video Input

Y:	1.0Vp-p 75 ohm Sync Negative
C:	0.28Vp-p 75 ohm (burst level)

Video Compatibility

Both models:	NTSC, PAL, SECAM, NTSC 4.43, HDTV
--------------	-----------------------------------

Light Output

XG85:	230 ANSI lumens, 1100 peak lumens
XG135LC:	240 ANSI lumens, 1200 peak lumens

Picture Size

Both models:	60-300 inch diagonal
--------------	----------------------

High Voltage

Both models:	32KV
--------------	------

Convergence

Both models:	Digital convergence Static and wave convergence Zone convergence, Point convergence
--------------	---

Power Consumption

XG85:	650W (6.5 Amps, 120V)
XG135LC:	700W (7.0 Amps, 120V)

Power Supply

Both models:	AC 108-132V 47-63Hz
--------------	---------------------

Noise Level

Both models:	<45 db
--------------	--------

External Control

Both models:	RS232C, RS422
--------------	---------------

Safety and Regulation

Both models:	UL: 1950 CSA: 950 FCC: Class A DOC DHHS RED ACT ISO9001 approved factory
--------------	--

Cabinet Dimensions (W×H×D)

Both models:	24.02×12.80×32.0 inches / 610×325×812 cm
--------------	--

Weight

Both models:	139 lbs./63kg
--------------	---------------

Environment

Both models:	Temperature: 32-104°F (0-40°C) Humidity: 20-90° non-condensing Storage -4-122°F (-20-50°C)
--------------	--

Included Accessories

Both models:	Wired/Wireless Installation Remote Control (RC-6321), Wireless Operator Remote Control (RC-6320), Terminal Cover, 16 Meter Remote Control Cable, AC Line Cable, User's Manual, Installation Manual, Set-up Manual
--------------	--

Optional Accessories

Both models:	MultiSync ISS-6020 Video/RGB Switcher, NEC IPS4000, NEC IPS4000Q, Video Input Card, RGB Input Card, PC Control Software, Ceiling Mount Kit, Deluxe Ceiling Mount Kit
--------------	--

Warranty

Both models:	2 year limited, parts and labor
--------------	---------------------------------

Your NEC Visual Systems Division Reseller is:

All specifications are the same for all products unless otherwise noted.

MultiSync is a registered trademark and AccuPoint, AccuBeam, XG85, XG135LC, IPS4000, IPS4000Q, FastFacts and the NEC Technologies icon are trademarks of NEC Technologies, Inc. Macintosh is a registered trademark of Apple Computer, Inc. All other brand or product names are trademarks or registered trademarks of their respective holders. All specifications subject to change without notice. Part # M-XGCRTLC-B

For the location of the MultiSync XG dealer nearest you or for more information on MultiSync XG accessories, call **1-800-NEC-INFO**.

To speak to a MultiSync XG customer service representative, call **1-800-836-0655**.

Visit our World Wide Web home page at <http://www.nectech.com>.

For more information via fax, call **NEC FastFacts** at **1-800-366-0476** and request **Catalog #1**.

NEC Technologies, Inc.
1250 N. Arlington Heights Road, Suite 500
Itasca, Illinois 60143-1248