VIDEOMATE 5000

Video Slide Projector
Instruction Manual

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VideoMate Slide-to-Video Systems

Today's sophisticated audiences expect high quality visual aids in the presentations they attend. Since a picture is "worth a thousand words," as they say, there is no better way to increase the effectiveness of a presentation than to pack it full of interesting visual images.

A Navitar VideoMate is an ideal presentation tool, because it enables you to easily integrate 35mm slides into presentations by converting them into video images which can be projected through a video projector or viewed on a TV monitor. VideoMates produce high resolution images with outstanding contrast and vivid color rendition, so slides can be shown as large projected video images without losing clarity or legibility. VideoMates are ideal for use in boardrooms, auditoriums and training rooms, or for AV rental and video production.

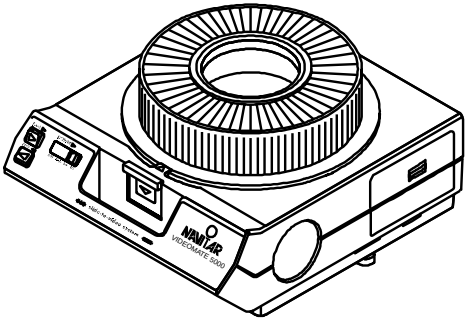
Description of the VideoMate 5000

The VideoMate 5000 is based on a Kodak Ektagraphic slide projector. Integrated inside are three state-of-the-art red, green and blue Hyper HAD CCD's which give the VideoMate 5000 true RGB/Sync output. Also included are a color balanced illumination system and a high resolution Navitar zoom lens.

The system's built-in 3-chip technology provides 570 TV lines of resolution. This unprecedented image quality allows an entire room of viewers to read the small print on charts and graphs.

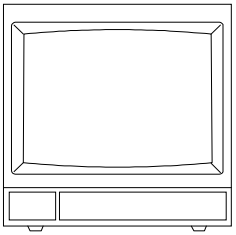
The VideoMate 5000 allows the user to select the video data output: RGB/Sync for inputting images into a video projector or S-Video or composite video for viewing images on a high resolution TV monitor. Unlike traditional single CCD slide-to-video units that look best in Y/C (S-Video) output, the 3-CCD VideoMate 5000 offers its peak performance in RGB/Sync output.

Output to Video Equipment

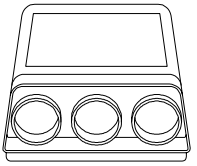


VideoMate
Slide-to-Video

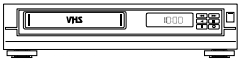
Output to Video Equipment



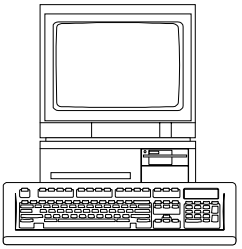
TV Monitor



Video Projector

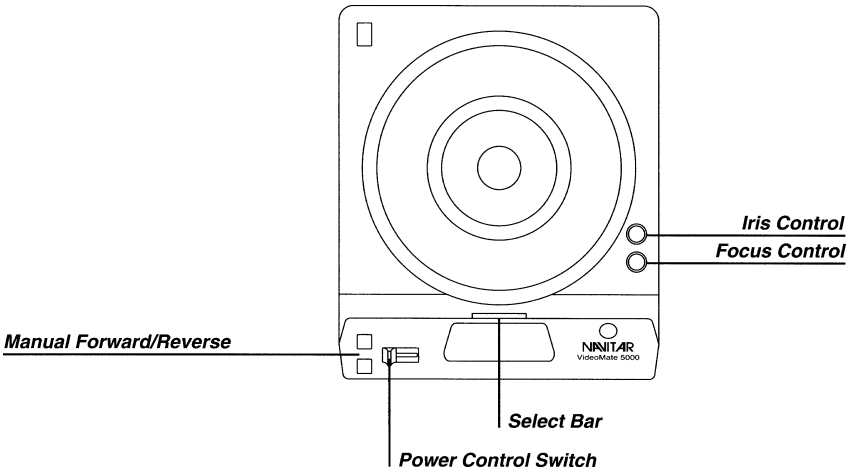


VCR

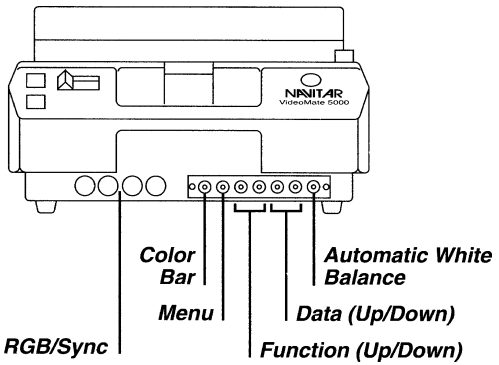


Computer

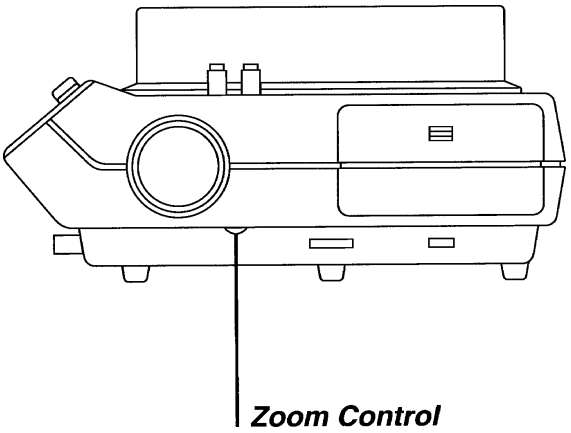
Top View



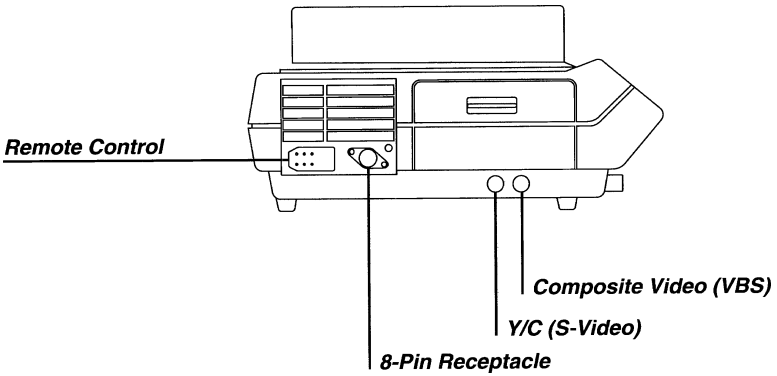
Side View



Front View



Rear View



Safety Precautions

To prevent damage to the equipment and operating personnel, please observe the following precautions:

Use the correct voltage source as specified on the label.

Make sure that the voltage source contains a satisfactory path to ground.

Do not operate the unit where liquids can come into contact with the electrical components.

Maintain a six inch air space around all sides of the equipment to allow for proper ventilation.

When changing the bulb:

1. Disconnect the electrical supply.

2. Allow the unit to cool.

3. Use only ESJ or ESH lamps or the equivalent (82 volt, 85 watt). Higher wattage lamps will cause severe internal damage to the camera and electronics.

There are no user serviceable components (other than changing the lamp). Opening the unit will expose dangerous voltage levels and sensitive electronic components. A qualified technician should perform all repairs.

To protect the unit from damaging condensation and thermal shock, certain procedures must be followed:

1. In cold weather, always put the unit in a moisture proof container or enclosure before transporting.

2. Either keep the unit warm during transportation, or allow sufficient time for it to warm up at the destination. Keep the unit in the original moisture proof package while it warms up. (The goal is to prevent warm, moist air from striking the cold electronic and optical components which will cause damaging condensation).

Warning! Never operate a cold projector to warm it up.

Quick Start

If you are familiar with both the operation of a 35mm slide projector and your video display, you may follow an abbreviated start-up procedure.

Before starting, review the precautions on page 6.

To “Quick Start” the VideoMate 5000, proceed as follows:

1. Unwind the cord under the base of the unit and plug it into a suitable power supply.

2. Connect your TV monitor to the Y/C (S-Video) and/or RGB/Sync output connectors of the VideoMate. The composite video connector can only be used if the Y/C output is switched OFF (see Installation section).

3. Load the slide tray onto the projector.

4. Turn the TV monitor on and set the VideoMate power switch to HIGH.

5. Select a relatively “white” slide to represent the highest signal level the electronics must accommodate. Adjust the iris (I) and the TV monitor to produce a suitable image. The focus (F) should also be adjusted at this time.

   NOTE: A very dark slide may require readjustment of the iris, but a setting can usually be reached that produces an acceptable display throughout a range of slides.

6. Adjust the zoom lens control to achieve the correct image size. This zoom lens can be zoomed in on slides for increased magnification, but cannot be zoomed out to view whole vertical slides.

Installation

Before starting, review the precautions on page 6.

To install the VideoMate 5000, proceed as follows:

1. Unwind the power cord under the base of the unit and plug it into a suitable power source.

2. Connect the cable to your peripheral equipment (TV monitor, video projector, etc.). The connection for composite video is BNC and is a 4-PIN MiniDin for Y/C (S-video). RGB/Sync can be accessed by 4 BNC connectors located under the handle.

   The VideoMate 5000 outputs true red, green and blue information as well as one standard video output. At the factory, the unit was set up for RGB/Sync and Y/C outputs. To use composite video (or vise versa), you need to access the Menu button and switch off the Y/C output.

   Press MENU. This brings the menu to the TV screen.
   Press FUNCTION and move to Page 1.
   Press DATA (while on Page 1). This will change to Page 2.
   Press FUNCTION and move to D-Sub Y/C.
   Press DATA. This will change D-Sub VBS.
   Press MENU to clear the menu from the TV screen.

3. Load the slide tray and “power-up” all equipment

4. Switch the power switch to HIGH.

5. Adjust the iris (I) and TV monitor controls to produce satisfactory image. Select a darker slide to adjust the iris if necessary. The goal is to reach a compromise position.

6. Adjust the focus (F) to produce a clear image.

NOTE: Opening the iris will decrease depth of field. This means that the darker slides, you will open the iris more and will be able to judge focus more critically; but, it also means that any deformities in the slide will cause a visible “out-of-focus” condition.

7. Adjust the zoom lens control located in the front. This zoom lens can be zoomed in on slides for increased magnification, but cannot be zoomed out to view whole vertical slides.

8. To shut the system down, hold the select bar down and rotate the slide tray to the zero index position. Set the power switch to OFF.

9. For instructions on setting up slide trays, changing lamps, etc., refer to the appropriate sections of this manual.

NOTE: Video connections should only be made to the source being utilized. If you are using composite video, only the composite video BNC should be connected. If you are using Y/C (S-video), only the 4-Pin MiniDin should be connected. RGB/Sync can be run simultaneously with either composite video or Y/C.

Understanding Which Video Output is Best for You

Composite Video
Standard video image quality, fine for showing pictures of objects on a TV monitor.

Y/C (also known as S-video and S-VHS)
Improved resolution that is less grainy due to the elimination of dot crawl. Better for presentation of text and graphic slides, since words are more defined.

True RGB/Sync
Separate red, green and blue signals are output for display on devices that are RGB/Sync capable. This is similar to Y/C in performance, but colors seem more pleasing to the eye.

Setting Up the Slide Tray

This system is designed to permit the use of already prepared presentations without requiring the reorientation of slides.

For those setting up a new tray and/or presentation:

1. Arrange the slides in the order that they should appear in the presentation. Arrange them so that they are upright and reading correctly from left to right.

2. Rotate each slide to turn the image upside down (do not turn the slide over). Mark a sequential number in the upper right corner of each slide (this will be extremely useful if the slides ever become mixed). Use a felt tip marker, rather than labels that will be loosened by the heat.

3. Make sure that the bottom metal plate on the slide tray is indexed into the zero position (the plate will not rotate with respect to the top tray). Remove the top lock ring by rotating it counterclockwise.

4. Insert slide #1 into slot #1. The number written on the upper right corner of each slide should be at the top and facing the next higher numbered slot. Load all slides and replace and lock the top lock ring.

Installing the Slide Tray

1. Center the tray over the post on the projector.

2. Gently rotate the tray until the #0 slide slot is at the index mark and the tray will drop into position. If the tray does not drop into position, check to see that the lower metal plate is locked in the zero position (rotate until it locks).

Removing the Slide Tray

To remove the tray from the projector without loosening the slides:

1. Hold the selector bar down and rotate the tray back to the zero index position.

2. Lift the tray at the point opposite the index mark.

Slide Tray Jam

The tray may jam if a damaged slide is caught in the gate. To release the tray:

1. Turn the unit off.

2. Push the select bar down and the slide should come up.

If the tray is still jammed:

1. While holding the projector post release tab located at the center of the slide tray, grasp the tray on the side opposite the index mark and lift. When the tray is removed, the select bar will release the slide.

2. Invert the slide tray and rotate the bottom metal plate until it locks into the zero position. This will prevent the slides from falling out from the bottom of the slide tray.

3. Return the tray to an upright position and remove the lock ring. If the slide is undamaged, return it to its proper slot. Replace the lock ring and continue.

Lamps

The VideoMate will function with either of the 85 watt, 82 volt lamps listed below. One provides a higher color temperature, while the other exhibits a much longer life.

Warning

To prevent a severe "melt-down," do not use 250-300 watt, 82 volt slide projector lamps, or the equipment will suffer a severe melt-down.

Lamp#	Voltage	Watts	Life	Color Temp.
ESH	82	85	250 hr.	2950 K
ESJ*	82	85	40 hr.	3350 K

*Standard lamp supplied with VideoMate.

Replacing the Lamp

The entire illumination system is contained in a unit called a lamp module. This module is a drawer type configuration, which may be removed from the projector to change the lamp.

Unfortunately, it takes 5 to 10 minutes to change the lamp, because it must first be allowed to cool down. Therefore, if timing is critical, you should keep a spare lamp module on-hand in case a lamp burns out in the middle of a presentation. Replacing the module takes considerably less time than changing the lamp. Spare lamp modules can be purchased. Please call for price and availability (Navitar part #2-10299)

To change the lamp:

1. If the unit has been running, switch the power to FAN and wait 5 to 10 minutes for it to cool down.

2. Turn the power switch to OFF.

3. Press down on the door latch of the lamp module and pull it slowly outward until the module clears the projector.

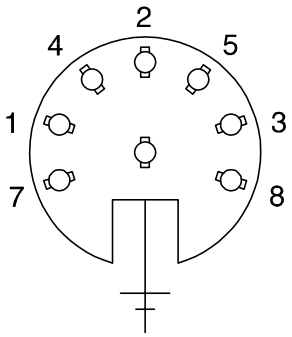
4. Unclasp the wire bail which holds the lamp in place and push from underneath the lamp to slide the lamp out of the receptacle.

5. Reverse the procedure to insert the new lamp (make sure that the new lamp is properly seated).

6. Lock the new lamp into place with the wire bail.

8-Pin Receptacle

The 8-pin receptacle provides access to the circuitry of the projector and allows for additional external control and programming capability. Functions include forward and reverse slide change, sensing of the zero tray position when the shutter is closed and electrical grounding. 8-contact or “DIN-type” 3 and 5 contact plugs may be used. 22.5 volts of isolated power is available.



Warning

All circuits connected electrically to the projector through this receptacle must have a rating of no more than 30 V (rms) and must comply with Underwriters Laboratories, Inc. low voltage, limited-energy circuit requirements.

8-Pin Contact Data

1 and 3 (Zero Position Switch)
Connects to an internal single-pole, single-throw, normally open switch. Contacts are closed when the projector slide tray is at any position other than zero. These leads connect only to the switch terminals. Do not exceed a switching load of 1 A at 30 V ac.

4 and 5 (Shutter Switch)
Connects to an internal single-pole, single-throw, normally closed switch. Contacts are open when a slide is in the projector gate and the shutter is open. These leads connect only to the switch terminals. Do not exceed a switching load of 1 A at 30 V ac.

7 and 8 (Low Voltage Supply)
For operating external equipment. The current is supplied by a secondary winding on the main motor, isolated from the line-voltage power, and is available whenever the main projector motor is running. Supply is 25.5 V, 500 mA (1/2 A) maximum. Contact number 8 is common (return) for the remote-control circuit. Contact number 7 is the "hot" lead and is fused with a slow-blowing fuse. Replacement requires disassembly of the projector by a qualified technician

6 and 8 (Forward Tray Cycle)
Connects to the forward tray-advance circuitry in the projector. These contacts are connected internally to the remote-accessory receptacle and an electrical connection made at either receptacle will result in a forward cycle.

2 and 8 (Reverse Tray Cycle)
Connects to the reverse tray-advance circuitry in the projector. These contacts are connected internally to the remote-accessory receptacle and an electrical connection made at either receptacle will result in a reverse cycle.

Shell (Plug Ground)
If a plug with a conducting shell is used, it is connected to the projector frame (chassis) through the special-application receptacle and to earth ground through the projector's power cable.

Camera Controls

The VideoMate 5000 has push-button on-screen menu controls.

White Balance Adjustment

Correctly setting the white balance, results in a picture with natural tones. This camera allows the white balance to be set both automatically and manually.

Automatic Adjustment

To program the unit for automatic adjustment of the white balance, proceed as follows:

1. Select a relatively white slide.

2. Press the AWB button on the rear panel. (Although the menu is not displayed, the adjustment can be properly made.)

The white balance is then adjusted automatically so that the object appears white on the screen. The adjustment is stored in the camera's memory and is retained even when the power is turned off.

Refer to the chart on the following page for messages that appear after the white balance is adjusted automatically.

Manual Adjustment

White balance can be set manually using the WHT BAL item of the menu.

Automatic Adjustment Messages

The following messages appear after the white balance is adjusted automatically:

Message	Meaning	Remedy
WHITE NG LEVEL LOW	The white balance cannot be adjusted automically becuase the video level is too low.	Increase the illumination of the object.
WHITE NG LEVEL HIGH	The white balance cannot be adjusted automically becuase the video level is too high.	Decrease the illumination of the object.
WHITE OK	The white balance was adjusted automatically without error	
WHITE NG C.TEMP LOW	The color temperature of the object is too low.	Set the C.TEMP parameter to 3200K and adjust the white balance automatically again. If this message appears when C.TEMP is set to 3200K, the white balance cannot be automatically adjusted because the color temperature of the object is too low.
WHITE NG C.TEMP HIGH	The color temperature of the object is too high.	Set the C.TEMP parameter to 5600K and adjust the white balance automatically again. If this message appears when C.TEMP is set to 5600K, the white balance cannot be automatically adjusted because the color temperature of the object is too high.
TRY AGAIN	The white balance cannot be adjusted for a reason other than given above (the object is not white, the object is moving, etc.).	Adjust the white balance automatically again with a suitable object.

Factory Settings

Press the Menu button to view the camera settings.

PAGE 1	
>GAIN	00DB
C.TEMP	3200°K
WHITE BAL	AUTO
SHUTTER	OFF
FRM/FLD	FRM

PAGE 2	
H.PHASE	00
GAMMA	ON
DTL	ON
G.SYNC	OFF
GENLOCK	NORMAL
D-SUB	Y/C

Altering the Factory Settings

The values can be set or changed using the menu displayed on the TV monitor screen.

In the following example of basic operation, we will alter the gain setting. The same procedure is used for setting other parameters. Once a parameter is set, it is stored in the camera's memory and is retained even when the power is turned off.

Example: Altering the Gain Parameter

When the object is insufficiently illuminated and the image appears dark even when the iris is wide open, you can obtain an image of suitable brightness by adjusting the gain.

Refer to the Side View under "System Diagrams" on page 4.

1. Press the MENU button. The first page of the menu appears on the monitor. (See "Page 1" chart above).

2. Move the cursor (>) to GAIN by pressing the FUNCTION UP or FUNCTION DOWN button.

3. Set the gain parameters by pressing the DATA UP or DATA DOWN button. You can set the gain from 0 dB to 18 dB in 1-dB increments.

Page Scrolling

The menu is spread out over two pages. Use the following procedure to display the second page.

1. Move the cursor to PAGE with the FUNCTION UP button.

2. Press the DATA UP or DATA DOWN button. The second page of the menu appears on the TV monitor screen. (See “Page 2” chart on page 17).

Switching the Display

For the following three items, you can switch the display to show one item only: GAIN, WHT BAL or SHUTTER.

The display can be alternately switched to show one item or the entire page by pressing the DISPLAY button on the side panel.

Setting Controls

C.TEMP (color temperature): This function converts the color temperature to obtain the same tone as when shooting under lighting conditions with a normal color temperature (3200K on this camera). The VideoMate is set to 3200K.

WHT BAL (white balance): Adjusts the white balance to obtain an image with a natural tone even under abnormal lighting conditions.

AUTO (automatic adjustment): This setting is used to set the white balance automatically.

MANU (manual adjustment): The R.GAIN (red gain) and B.GAIN (blue gain) can be manually adjusted while viewing the monitor screen. The range of adjustment is -128 through +127 for both red and blue gain.

>WHT BAL	MANU
R.GAIN	-009
B.GAIN	-020

FRM/FLD (frame/field): Switches the charging mode.

FRM: Mode in which the CCD builds up a charge frame by frame. High vertical resolution makes it ideal for still shots.

H.PHASE (horizontal phase): Adjusts the horizontal phase when the camera is controlled with an external sync signal. The setting range is 00 through 30. When the external sync signals are not used, the parameter setting does not change even if the DATA UP or DATA DOWN button is pressed.

PAGE 2
>H.PHASE 00

GAMMA (gamma offset): Offsets the camera input signals to compensate for the luminance characteristics of the cathode ray tube in relation to the input levels. This provides better reproduction of dark parts of an image.

ON: Offsets input signals. This is the normal setting.
OFF: This setting is used when signals that have not been offset are required for image processing.

DTL (detail): Sharpens the outline of the image shot by the camera. RGB signals do not contain DTL signals.

ON: Emphasizes and sharpens the image outline.
OFF: The DTL function does not operate.

G.SYNC

ON: Sync signals are added to the G signals. This setting is used when you use a monitor without a sync signal input connector.
OFF: The G signals are output without sync signals.

D-SUB: The VideoMate 5000 is a 3 CCD unit and always outputs RGB/Sync output. In addition, either Y/C or composite video can be output, but not both simultaneously. D-Sub selects either Y/C or composite video.

VBS: Outputs a composite video signal.
Y/C: Outputs a Y/C signal.

Symptom	Cause/Remedy
There is no image on-screen	Is all of the equipment "powered-up?" Check all of the electrical outlets and equipment power switches. Are the cables or connectors bad? Is the lamp blown? Look in the film gate for a "light on condition." Is the gate shutter stuck in the closed position? Push down on the select bar to release it. Turn the power switch to OFF, wait one minute and then try to restart.
You are unable to recover the image after a brief interruption of power.	Is the lamp blown? The thermal shock of turning the unit on may have caused the lamp to blow. Is the gate shutter stuck in the closed position? Push down on the select bar to release it.
There is no Y/C output or no composite video output.	The VideoMate 5000 is a 3 CCD unit and outputs true RGB outputs as well as one standard video output. It will only output either Y/C or composite video at one time.
There is no color on the Y/C or composite video output.	Go into the Menu to set DSUB to VBS or Y/C, depending on the output selection (see Setting Contents section).
The image is too dark or too light.	Is the illumination level adequate? Set the Iris (I) as required. Is the monitor adjusted correctly?
The image is too dark.	Are the cables for composite video and Y/C both connected? Only the source being utilized should be connected.
The image is not sharp.	Is the focus adjusted properly? Is the illumination level too high? Is the monitor adjusted correctly? Are you using the correct grade of cables? They should be "grounded shield video" grade.
The image does not stabilize.	Is the "sync" signal correct? The VideoMate 5000 is NTSC format (15.734Hz, 59Hz Vertical).

Camera Specifications	
Pick-up device	1/3" Hyper HAD interline transfer CCD (3)
Pixel count	768(H) x 494(V)
Color filter	Complientary Color Mosaic
Signal system	NTSC Standard (PAL optional)
Horizontal resolution	570 TV lines
External sync signals	HD / VD, VS
S/N ratio	59dB
Projector Specifications	
Model number	VM5000
Power consumption	191 watts, 1.7 amps
Power	120 volts, 60Hz
Projection lamp	GE ESJ 85 watt, 82 volt
Slide projector	Modified Kodak Ektagraphic III E
Lens	Navitar 18-35mm
Slide tray capacity	Kodak 80/140 slide trays
Slide projector controls	On/off, forward/reverse
Remote operation	Standard 5-pin remote control input wired or wireless, or external dissolve 7 pin.
CCD control	Iris & focus controls/CCD iris, remote iris
Camera connectors	BNC for composite video and RGB/Sync. 4-pin MiniDin for Y/C (S-Video).
Dimensions	Length: 11.11" Width: 12.93" Height: 4.69"
Weight	15 lbs.
Video Cables (Optional)	Model 1-11787, BNC Cable Model 8-11113, 12 foot, S-Video Cable
Design and specifications are subject to change without notice.	

1 Year Parts/ 1 Year Labor

This product is warranted to be free from defects in material and workmanship for a period of five years from the date of invoice to the original purchaser.

If during the warranty period the product is found to be defective, it will be repaired or replaced at the facilities of Navitar. However, Navitar reserves the right to refund the purchase price if the replacement or repair is not commercially practical or timely. Parts not manufactured by Navitar carry only the warranty of their manufacturer. Lamps and fuses carry no warranty.

This warranty does not cover damage caused in transit; damage caused by misuse, neglect or carelessness; or damage resulting from either improper servicing or modification by someone other than Navitar. Further, this warranty does not cover any routine maintenance work that is reasonably expected to be performed by the purchaser.

No responsibility is assumed for unsatisfactory operating performance due to environmental conditions such as humidity, dust, corrosive chemicals, deposition of oil or other foreign matter, spillage or other conditions beyond the control of Navitar.

For service, repair or return procedures under this warranty, contact your distributor, your local Navitar field officer or Navitar direct at (716) 359-4000 or (800) 828-6778 in the United States.

Except as stated herein, Navitar makes no other warranties, expressed or implied by law, whether of merchantability, fitness for a particular purpose or otherwise. Further, Navitar shall not, under any circumstances, be liable for incidental, consequential or other damages.

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