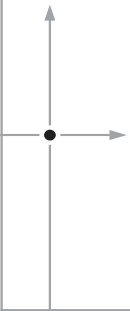


CameraMan

3e 3-CCD CAMERA

Installation and Operations Manual



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Grass Valley Web Site

The www.thomsongrassvalley.com web site offers the following:

Online User Documentation — Current versions of product catalogs, brochures, data sheets, ordering guides, planning guides, manuals, and release notes in .pdf format can be downloaded.

FAQ Database — Solutions to problems and troubleshooting efforts can be found by searching our Frequently Asked Questions (FAQ) database.

Software Downloads — Software updates, drivers, and patches can be downloaded.

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Chapter 1

CameraMan 3e 3-CCD

Camera Overview

About this Manual

The CameraMan 3e 3-CCD Camera is unmatched in quality, flexibility and expandability, providing one of the best video-communications cameras in the industry.

This manual will introduce the CameraMan 3e 3-CCD Camera, explain how to install, connect and configure it, and how to use it in single and multi-camera network applications. In addition, useful diagrams and charts can be found in the appendices, providing technical specifications.

Two icons are used throughout this manual:



This icon alerts ***important instructions*** in the operation and maintenance of the CameraMan 3e 3-CCD Camera.



This icon alerts ***tips or noteworthy suggestions*** in the operation or maintenance of the CameraMan 3e 3-CCD Camera.

The terms Visibly Better, System II, IMAGE, WhisperDRIVE Plus and General Pan/Tilt Camera System are registered trademarks of Grass Valley, Inc. in the United States of America. The terms CameraMan and Grass Valley are registered logos in the United States of America. Any commercial use of these registered trademarks and logos is prohibited by federal law.

The manufacturer reserves the right to change specifications and warranty at any time without notice or obligation.

Refer all Warranty and Servicing to the Grass Valley Consumer Center listed in the back of this manual.

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The 3e 3-CCD Camera should include these components:

- One CameraMan 3e 3-CCD Camera with Mini Docking Station attached (when applicable)
- One CameraMan Power Supply
- One RS-485 Connector "T"
- One 3' CameraMan Communication Cable
- One 25' CameraMan Keypad Cable
- One 3-CCD Installation and Operations Manual

The 3e 3-CCD Camera models addressed in this manual include:

- CPT-3012-A3DS
- CSC-3012-A3DS
- CPC-3012-A3DS



The CameraMan 3e 3-CCD is compatible with the SHOT Director JSC-2200 only.

3-CCD Product Description

The 3-CCD Camera is designed to be used in a variety of applications. This camera may have been purchased with one of the below packages. Information on upgrade paths, and recommended accessories can be found in this section.

Product Description

The 3-CCD Camera's pan/tilt functions, zoom perspective, focus and IMAGE settings can be controlled via Grass Valley's Remote Control Keypad, SHOT Director, or Tracking Keypad. In addition to the camera-control the optional accessories provide, they also provide multi-camera control and store up to 125 presets per camera.

Student Camera Upgrade Package

Used in distance learning applications, this system gives each student the power to be instantly identified by the camera with the touch of a press to talk microphone (such as Grass Valley's Low Profile Microphones). This includes the Programmable Response Module for distributed preset control and a 3-CCD Camera Control Keypad.

Presenter Camera Upgrade Package

Used in distance learning, telemedicine and video-conferencing applications. The system gives presenters and instructors the ability to provide dynamic presentations while the camera automatically follows their every move. Includes a Tracking Ring Package, 3-CCD RF Tracking Keypad, and Main Docking Station.

Recommended Accessories

Camera Control Keypad

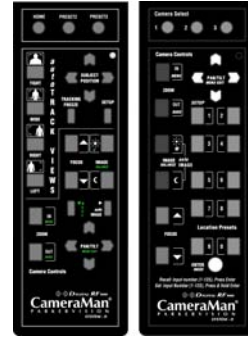


FIGURE 1.1 3-CCD Camera Control Keypads

Whether used in wireless RF, or hard-wired mode, this keypad gives the ability to control the pan, tilt, zoom, focus, iris, and location presets for up to three separate cameras. The standard keypad comes standard with the Student Camera System, and the Tracking Keypad comes standard with the Presenter Camera Systems.

SHOT Director



FIGURE 1.2 SHOT Director

Some applications require precise and flexible camera control. Grass Valley's SHOT Director is a joystick controller designed to give ultimate control by affording the ability to adjust to the pan, tilt, zoom, focus, iris, CCU functions and location presets on 1 to 16 different cameras from one location. And its built-in CCU functionality allows adjustment of each camera's on-screen image.

CameraMan Tally Light



For visual indication of which camera is selected in a multi-camera application, the CameraMan Tally Light provides a high intensity indication from an easy-to-install interface on the rear of the camera. A bright red indicator is mounted to the top of a flexible pedestal, allowing precise adjustment and positioning of the light for the best possible studio-wide observation. Control of the Tally Light can be accomplished through Control Center, and STUDIO, as well as via an external closure connected to a side-mounted Phoenix connector. All current 3-CCD cameras are Tally Light compatible, and previous models are factory upgradeable.

SCRIPT Viewer Display



FIGURE 1.3 SCRIPT Viewer Display

Adding a full-feature teleprompting display that moves with the camera is now available with the addition of Grass Valley's powerful SCRIP Viewer system. The 15" active matrix, full color displays are available separately and are easily mounted to the camera. Contact your reseller for more information on the complete Script Viewer system.

3-CCD Camera Components

This section includes a description of each part that came with the CameraMan 3e 3-CCD Camera.

CameraMan 3e 3-CCD Camera

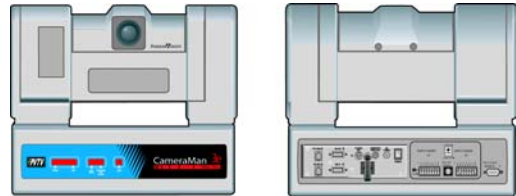


FIGURE 1.4 Front and Rear View of Camera

The camera and its integrated intelligent pan/tilt system is the primary component, and the basis for all of Grass Valley's CameraMan camera systems.

Mini Docking Station



FIGURE 1.5 Mini Docking Station

The Mini Docking Station should be attached to the back of the camera. This box is the point of connection for all RS-232 and RS-485. The only time this box needs to be removed is if the camera is upgraded to a Presenter Camera System.



Note: If a Presenter System was purchased, the Mini Docking Station is not needed.

CameraMan Power Supply

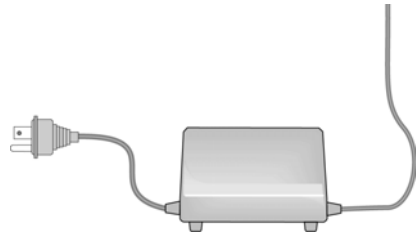


FIGURE 1.6 Power Supply

The included power supply enables use with 50/60 Hz, 100-240V Power sources.

Connection Accessories

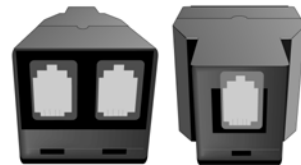


FIGURE 1.7 Front and Back of T-Connector

- RS-485 Connector “T”
- 3’ CameraMan Communication Cable
- 25’ CameraMan Keypad Cable

CameraMan Ports and Jacks

The back of the CameraMan 3e 3-CCD Camera has a variety of ports and jacks used to connect the camera to other video and camera control components in a system.



FIGURE 1.8 Ports and Jacks

VIDEO OUT	This is a Composite Video Out signal on the left and an SDI Video Out signal on the right.
PVI COM Jack	Used by certain Grass Valley devices as a communication interface to the camera system. (For example, a hard-wired keypad would attach here). This is a standard 6-conductor RJ-11 jack.
RS-485 Jack	Used for RS-485 communications between the camera system and other Grass Valley devices. This jack can be used to network multiple cameras or to connect appropriate Grass Valley approved peripherals using a Grass Valley T-connector. This is a standard 4-position modular handset jack.
Auxiliary Communication Port	Provides communications to select Grass Valley peripherals and provides capability for future expansion.
RS-232 Port	Provides RS-232 communications to external devices such as PC's or other vendor control systems. This connector is a standard DB-9 (female).
S-Video Jack	Y/C
Cable Restrainer	Helps keep cables from becoming disconnected, or hindering the pan and tilt capabilities.
Composite Video Jack	Y/Pr/Pb

DC Power Jack

Power input for the CameraMan Camera. Plug only a Grass Valley power supply (supplied) into this jack. No other types of power supplies should be used.

Power

Used to power on/off the CameraMan Camera.



The SHOT Director can communicate with the cameras through either the RS-485 or RS-232 port.

CameraMan LED Displays

On the front of the CameraMan 3e 3-CCD Camera, there are several LEDs. These indicate various functions that are being performed by the camera. Below is a description of each.

When the camera is first powered ON, all LEDs will illuminate. During this time, basic system hardware checks are being performed. These checks include communication with the camera interface board which verifies proper installation of the camera block on the pan/tilt unit. After the initial system checks are completed, the LEDs will turn on and off one by one in a binary pattern. This pattern represents the progress the camera is making during hardware initialization. During this initialization, pan/tilt positions and camera settings are being restored. Once initialization is complete, the camera LEDs will represent the following functions:

Power

Indicates that the camera has an active power supply and is powered ON.

Setup

The camera is in the camera setup mode.

COM

Indicates that the camera is receiving valid network data on a communication link (the LEDs on the back of the camera only indicate line activity, not valid data).

AutoTRACK	Indicates that the camera is in autoTRACK mode. The IR spinners are running and the camera is attempting to acquire data from the TRP.
Tracking Unit Status	Indicates that the camera has acquired the RF signal from the TRP and is receiving valid data. When this LED is OFF, TRP power is usually OFF.
Lock	Non-functional.

CameraMan Configuration Switches

Behind the configuration plate on the lower right side rear of the 3-CCD Camera is the configuration panel. These DIP and rotary switches are used to link the camera's settings to other components in the system.

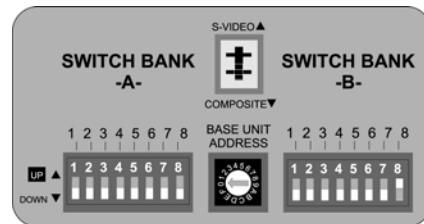


FIGURE 1.9 Configuration Panel



Note: After changing any switch's settings, turn the camera off, then back on to activate the change. Refer to page 21 for Dip Switch configuration.

Switch Bank A

Switch 7 (Baud Rate Switch)	Used to change the camera's Baud Rate
Switch 8 (Memory Lock Select Switch)	Can be used to prevent programmed settings from being accidentally overridden.
Switches 1, 2, 3, 4, 5, 6	Reserved for future use.

Center Control Switches

Video Select Switch

Used to set the video source to Composite (down) or S-Video (up). Cannot be used simultaneously.

Base Unit Address

Used to configure the address of the Camera.

Switch Bank B

Switch 1 (Protocol Select Switch)

Used to select the type of Protocol being used for RS-232 and RS-485 communications. This can be configured as either Basic or High Reliability.

Switch 4 (RF Commands Switch)

Used to enable or disable the RF Receiver in the CameraMan camera.

Switch 5 (Preset Save)

Used to determine how the preset settings will be saved.

Switch 8 (Interlink Switch)

Used to disable commands from being sent on the RS-485 bus to other CameraMan devices.

Switches 2, 3, 6, 7

Reserved for future use.

Tally Light Interface Port



Provides output and external control for CameraMan Tally Light.

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Chapter 2

Connecting the CameraMan 3e 3-CCD Camera

Mounting the CameraMan 3e 3-CCD Camera

Mount the Camera on any flat, non-slick, non-metal surface with a minimum supporting area of 8" x 8" by following these easy steps.

Step 1

Check the selected camera-location to ensure that there is enough camera and cable clearance space for the CameraMan to pan and tilt without obstruction (see Figure 2.1).

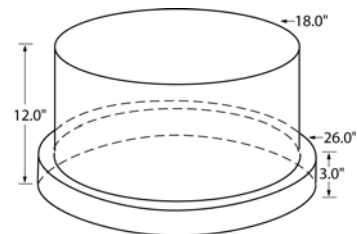


FIGURE 2.1 Camera Clearance Diagram



Note: Do not mount the camera upside down, or with more than a 10° angle from horizontal.



Tip: See Appendix E: FIELD OF VIEW SPECIFICATIONS on page 41, to assist in placing the CameraMan to achieve optimum optical views.

Step 2

Locate the zero-degree position mark labeled FRONT on the bottom of the base unit. This mark helps ensure that the base unit is calibrated correctly. Point this indicator mark in the direction that best reflects the center of travel in which the camera will be used (usually the center of the room).



FIGURE 2.2 Bottom of Camera

Step 3

To ensure that the camera-mounting is not prone to vibrations, securely fasten the camera to a rigid flat surface using a 1/4"-20 UNC cap screw that does not extend into the base platform by more than 0.4". (The screw hole is provided in the base platform for this purpose. The cap screw is not provided.) This screw should be hand-tightened. If necessary, use a hardening threadlock to prevent the screw from loosening.



Note: Be sure to take environmental conditions into consideration when operating the camera. Always operate the camera indoors, and follow the temperature and humidity specifications outlined in Appendix C: CAMERA SPECIFICATIONS on page 37.

Connecting to the Camera System

Follow the instructions found in this section to begin connecting the camera to the system.



Tip: After connecting each cable to the camera, let it hang loosely behind the camera. Then follow the instructions about restraining the cables on page 19 before attaching the other ends of the cable to other equipment. This will relieve undue stress on the cables, allowing the camera to move freely.

Connecting to Video Outputs on Mini Docking Station

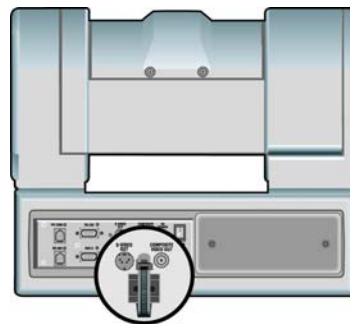


FIGURE 2.3 Back of Camera with Video Outs

CameraMan supports both composite and S-VIDEO formats, although you can use only one at a time.

For composite format, connect to the BNC jack on the Connector Box on the back of the camera, labeled **COMPOSITE VIDEO OUT**, using a standard coaxial cable with a BNC connector (not provided).

Verify that the Video Select switch is set to **COMPOSITE**. The switch is located behind the switch plate on the back right of the camera.

For S-VIDEO format, connect to the **S-VIDEO** jack on the back of the camera using a standard S-VIDEO cable (not provided). Verify that the Video Select switch is set to **S-VIDEO**. The switch is located behind the switch plate on the back right

Connecting to the RS-232 Port

of the camera. For video output specifications, refer to Appendix C: CAMERA SPECIFICATIONS on page 37.

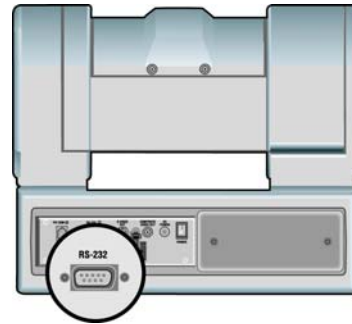


FIGURE 2.4 Back of Camera with RS-232 Port

The 3e 3-CCD Camera provides for RS-232 communications using the DB-9 jack on the back of the camera, labeled RS-232. This RS-232 port can be used to control the CameraMan Camera from external devices such as a PC or other vendor control system (i.e.: AMX, Crestron). Connect to this port using a standard computer cable with a DB-9 connector. When used with a SHOT Director, this port operates at 19,200 Baud, No Parity and software hand-shaking using Grass Valley High Reliability protocol. Otherwise, the port operates at 9600 Baud, No Parity, and software hand-shaking using Grass Valley High Reliability or Basic protocols.



Note: To verify which protocol is being used, check the PROTOCOL switch on the configuration panel on the back lower-right of the Camera.



Tip: The COM light above the RS-232 port is used to indicate communication activity.



Tip: For the DB-9 pinout port information, see the Appendix D: PIN-OUT DIAGRAMS, page 39.

Connecting Optional Camera Control Devices



CCU functionality is only accessible via SHOT Director, AMX, Crestron, or the CameraMan 3e PC-based CCU application.

Connecting Camera Control Devices

There are several ways to control the CameraMan's movement. The following information explains how to connect and configure the optional Camera Control Keypad, or the SHOT Director.



Note: Do not use the Camera Control Keypad and the CameraMan SHOT Director at the same time.

Camera Control Keypad

The optional Camera Control Keypad controls the camera's movement via wireless RF technology (up to 60 feet), or hard-wired connection (up to 250 feet). If you choose to use a Camera Control Keypad in the hard-wired mode, follow these directions for installation.

1. Using the 25' CameraMan Keypad Cable included with your camera, connect one end of the cable to the RJ-11 type jack located in the battery compartment of the keypad.



FIGURE 2.5 Battery Compartment of Keypad

2. Connect the other end of the cable to the RJ-11 type jack on the back of the camera, labeled PVI COM.

SHOT Director



Tip: When the system is powered on, the light on the keypad should illuminate momentarily, indicating the keypad is ready for operation. The light located above the PVI COM port is used to indicate communication activity.



Note: Using cable other than Grass Valley supplied cable for the PVI COM port may cause damage.

The optional SHOT Director multi-camera controller can be connected in hard-wired mode only. Follow these directions to connect the SHOT Director to the CameraMan.

1. Using a standard RS-485 cable, connect one end of the cable to one of the RS-485 jacks (either one) on the back of the SHOT Director.



FIGURE 2.6 Back of SHOT Director

2. Connect the other end of the cable to:
 - The jack labeled RS-485 on the back of the CameraMan connector box for single camera applications, or
 - The T-Connector for multiple-camera applications. Then use the provided 3' CameraMan Communication Cable to connect the T-connector to the camera's RS-485 jack.



Note: If using a Camera Control Keypad or SHOT Director, refer to its operations manual. If it is unavailable, contact your local reseller, or Grass Valley.



To use the RS-232 port for communication between the camera and SHOT Director, connect one end of the cable to the RS-232 port on the CameraMan Connector Box (Mini Docking Station), and connect the other end of the RS-232 cable to the COM 1 Port on the SHOT Director.

Cable Restraint and System Power

Notice that if left alone, the connected cables may impede the camera's movement. To combat this, the 3e 3-CCD Camera comes equipped with two cable restrainers on the left back, and on the Mini Docking Station. Follow these instructions to properly restrain the cables and power-up the camera.

1. Locate the cable restraint on the back left side of the camera.
2. Insert cable(s) through the cable restraint from left to right.



Note: Allow 16" of cable between the restraint and the connection port to provide enough slack for the camera's tilting movement.

3. Tighten the restraint by pulling on the strap's "free" end to prevent any cable from becoming dislodged. (The cable restraint is reusable and adjustable).
4. Group the cables with all the other cables connected to the connector box and follow the instructions below to feed them through the lower cable restraint.

For lower cable connections

1. Insert all cables (upper and lower) through the cable restraint from left to right. This will result in the cables being located approximately in the center of the camera, instead of near the edge.
2. Tighten the restraint by pulling on the strap's "free" end to prevent any cable from becoming dislodged.



Note: To relieve undue stress on the camera and the cable connections, it is important to fasten all cables using the cable restrainer on the back of the camera.



Note: Be sure to leave enough slack in the cables for the camera to pan left and right free of any constraints.

Connecting the Power Supply

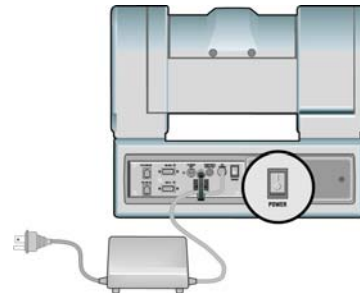


FIGURE 2.7 Back of Camera with Power

Mount the Power Supply with any orientation, or on top of a table or roll-about unit by using the following steps.

1. Verify that the POWER switch, on the back of the camera, is turned OFF.
2. Plug the 5.5mm female connector from the power supply cord into the DC POWER jack in the back of the camera.
3. Connect the other end of the power supply into a 120 VAC source.

Powering On

1. Simply switch the Power button on the back of the CameraMan Camera.

Chapter 3

Configuring the CameraMan 3e 3-CCD Camera

Switch Configuration

Now that CameraMan is connected to the power supply and control devices, the Camera must be configured to work in the desired application. To begin, remove the configuration plate on the back right side of the camera by removing the two screws holding it in place. Behind it are the configuration switches.

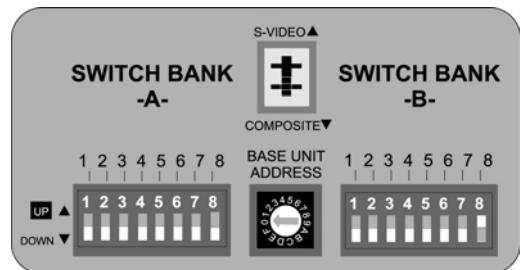


FIGURE 3.1 Configuration Plate

Switch Bank A

**Dip Switch 7
(Baud Rate)**

This switch is used to configure the camera's Baud Rate for the RS-232 and RS-485 ports. Switch UP for 19,200 and DOWN for 9600. (factory default: UP)

**Dip Switch 8
(Memory)**

For the majority of applications, this switch should be set to UNLOCK (UP). When DOWN, all programmed features are locked and cannot be overridden. (factory default: UP)

Central Control Switches

Base Unit Address

Use the 16-position rotary switch labeled BASE UNIT ADDRESS to set the unique identification number for this CameraMan. If using the optional Keypad, SHOT Director, or another control system, refer to the documentation provided with those accessories for proper configuration.



For setting up a camera network, see page 35, Appendix B: MULTIPLE CAMERA APPLICATIONS.

Switch Bank B

**Dip Switch 1
(Protocol)**

Select the communication protocol which will be used by the RS-232 and RS-485 ports on the camera. The High Reliability protocol includes some advanced error checking that is not performed in the Basic protocol. (factory default: DOWN)

**Dip Switch 4
(RF Command)**

When this switch is DOWN, the camera responds to commands sent from an RF Keypad. When it is UP, the RF receiver in the camera is disabled and the camera cannot receive commands directly from a wireless keypad. (factory default: DOWN)



When using multiple cameras networked on the RS-485 bus, only one camera should have its RF receiver enabled. Set switch 4 on the other cameras to UP.

**Dip Switch 5
(Preset Save)**

Use this switch to determine how the preset settings will be recalled. DOWN recalls your Manual Gain, Iris, and Focus settings. UP recalls only the Auto settings for presets and autoTRACK Views. (factory default: DOWN)

**Dip Switch 8
(Interlink)**

Use this feature in multi-camera applications. When it is DOWN, all commands will be passed onto the RS-485 communication bust to the appropriate camera. For a single-camera application, the setting of this switch does not matter. (factory default: DOWN)



All switches not discussed in this section should remain in the DOWN or OFF position.

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Chapter 4

Using the CameraMan 3e 3-CCD Camera

System Startup

Once all necessary connections and configurations are made, you are ready to turn on the system.

1. Just switch the Power button on the back of the CameraMan Camera to the ON position. The Camera should automatically enter its position calibration mode and then stop at the zero degree point.

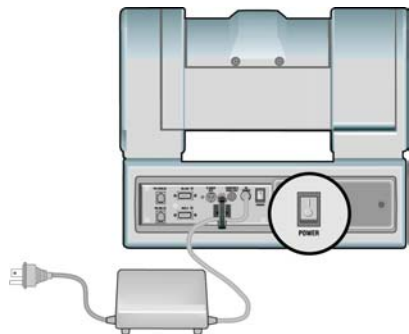


FIGURE 3.1 Back of Camera with Power

2. Verify that the camera is now facing in the direction the “FRONT” label was pointing during mounting (see page 14).
3. If you are using the optional Camera Control Keypad or SHOT Director, make sure its base unit address is the same as on the camera. If they are, verify that the camera’s PAN and TILT functions are working properly.

Cameras 1-16 on SHOT Director correspond to Base Unit Addresses 0-F respectively: 1=0, 2=1, 3=2... 11=A, etc.



Tip: If the camera does not move, refer to the TROUBLESHOOTING section of the Camera Control Keypad, or SHOT Director manual.

Chapter 5

Installing and Using the 3e Application

CameraMan 3e 3-CCD PC Application

Hardware and OS Requirements

The next few pages discuss the installation of the CameraMan 3e Application. CCU functions can be accessed and manipulated through use of this application.

To install and run CameraMan 3e application, your system must be running one of the following operating systems:

- Windows 95
- Windows 98
- Windows NT
- Windows ME
- Windows 2000
- Windows XP

The PC on which you install CameraMan 3e Application should have the following hardware:

- A Pentium or later microprocessor

Installing the CameraMan 3e Application

- 32 MB of RAM
- At least one free COM port for communication with the target system
- A CD-ROM drive (for software installation)

If you have not installed CameraMan 3e application, do so now by inserting the CameraMan 3e CD in your PC's CD-ROM drive. If autorun is enabled, the CD installation will begin automatically.

If autorun is disabled or the installation otherwise does not start, use the Windows **Start / Run menu** or Windows Disk Explorer to launch setup.exe from the root folder of the CD-ROM.

The installation program will guide you through the installation process. Most steps of the process are self-explanatory and not covered in this section.

Connecting the Camera to the PC



The PC can be connected directly to any CameraMan 3e Pan/Tilt in the NETWORK or to a Digital SHOT Director through a 9-D straight-thru cable.

In order to address every camera, the user needs to change the camera number under the **settings** menu.

Starting the CameraMan 3e Application

1. Use the Windows **Start / Programs** and find the application shortcut to start the **CameraMan 3e Application**. Double-click the shortcut.
2. Once the application is initiated and connected to the camera network, the **LOAD** button will flash to indicate that the current CCU camera settings are ready for download. Click on the **LOAD** button to begin download. During the download process, a progress bar will appear underneath the **LOAD** button.

Once the **LOAD** process is complete, the user can modify any settings available and save those settings as a "power-on default" by clicking on **SAVE + OK**. To verify that the settings were properly saved, cycle power the CameraMan 3e unit and proceed to download the camera CCU settings. A confirmation

screen will appear prior to overwriting the factory defaults.

By default, this application will be set for COM1 and CAM-1. If you are using another port, click on **SETTINGS** to select the correct COM port. The camera number can also be selected here.

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APPENDIX A

CCU Default Settings

The following is a list of the factory default CCU settings. These can only be accessed through the SHOT Director, the CameraMan 3e PC-based Application, or a third party device that supports the CameraMan 3e 3-CCD. AMX and Crestron are two such devices.

Exposure

Function	Set to
Shutter Speed	Auto (unknown)
Exposure Mode	Auto
Gain	Auto (unknown)

Miscellaneous

Function	Set to
Display	Off
Aspect Ratio	4:3
Picture Effect	Off

Pain Controls

Function	Set to
AWC Mode	Auto
Red Gain	Auto (unknown)
Blue Gain	Auto (unknown)

Lens Controls

Function	Set to
Auto Focus	On
Focus Position	Auto (unknown)
Auto Iris	On
Iris Position	Auto (unknown)
Digital Zoom	On
Zoom Position	0

Shutter Speed

(Shutter mode must be set to Manual)

0 = 1/4	7 = 1/125	14 = 1/1500
1 = 1/8	8 = 1/250	15 = 1/2000
2 = 1/15	9 = 1/250	16 = 1/3000
3 = 1/30	10 = 1/350	17 = 1/4000
4 = 1/60	11 = 1/500	18 = 1/6000
5 = 1/90	12 = 1/725	18 = 1/10000
6 = 1/100	13 = 1/1000	

White Balance Mode

- 0 = Full Auto
- 1 = Indoor
- 2 = Outdoor
- 3 = OnePushWB
- 4 = Manual

Gain

(White Balance Mode must be set to Manual)

0 = -3 db

1 = 0 db

3 = 3 db

4 = 6 db

5 = 9 db

6 = 12 db

7 = 18 db

One Push AWC

(White Balance Mode must be set to OnePushWB)

0 = or any # < 256

Red Gain

(White Balance Mode must be in Manual)

0 ~ 255 = Red Gain

Blue Gain

(White Balance Mode must be set to Manual)

0 ~ 255 = Blue Gain

Shutter Mode

0 = Auto

1 = Manual

Digital Zoom Mode

0 = Optical Zoom

1 = Optical + Digital

Focus Mode

0 = Manual

1 = Auto

Wide Mode

0 = off

1 = 16:9

Picture Effect

0 = off

1 = Negative art

2 = Black and White

Display Mode

0 = off

1 = on

APPENDIX B

Multi-Camera Applications

If using more than one CameraMan 3e 3-CCD Camera, the cameras need to be set up in a “daisy-chain” network configuration by following these steps:

1. Connect the cameras together by plugging the Grass Valley T-connector into the RS-485 port on the back of the camera.
2. Connect each camera using a 4-conductor cable, with 4-position modular handset plugs wired “straight-through”:

Pin 1... Pin 1

Pin 2... Pin 2

Pin 3... Pin 3

Pin 4... Pin 4



Note: Do NOT use a standard phone cable, as these are wired differently and may cause damage.

3. Using the BASE UNIT ADDRESS rotary switch, which is located on the back of the Camera, configure each camera with a unique Base Unit Address. (i.e.: Camera One would be set with address 0, Camera Two would be set with address 1, and so on)
4. In order to control each camera with your Camera Control Keypad, the rotary switch inside the keypad battery compartment must match the lowest Base Unit Address in your system. For example, if the Base Unit Address switches are set according to the illustration on the next page, the rotary switch inside the keypad should be set to zero. The Camera control Keypad can control up to three cameras.

CameraMan Clearance

The minimum dimension for the CameraMan is a circular diameter of 26”. This accounts for both camera and cable clearance. Check cable movement to avoid binding and stress on the camera.



Tip: See clearance diagram on page 13.

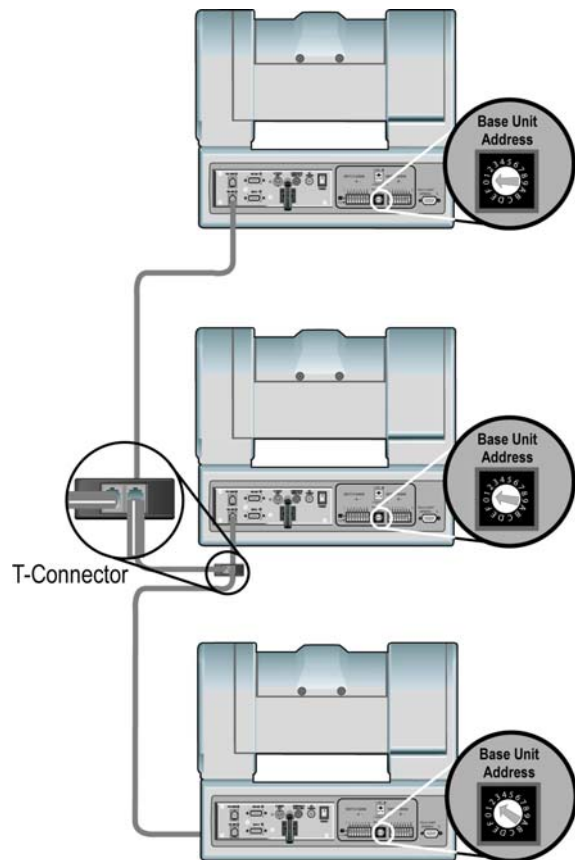


FIGURE B.1 Camera Network

APPENDIX C

Camera Specifications

This device complies with part 15 of the FCC rules. Operation is subject to the condition that this device does not cause harmful interference. FCC identifier: JFECM003-AA.

Mechanical

Mechanical Drives WhisperDRIVE Plus Rated For 5000 Hrs. Of Continuous Motion

Tilt $\pm 25^{\circ}$ (Speed: $1^{\circ}/\text{Sec}$ to $50^{\circ}/\text{Sec}$)

Pan 359° (Speed: $1^{\circ}/\text{Sec}$ to $45^{\circ}/\text{Sec}$)

Location Presets 125

Location Preset Data Pan, Tilt, Zoom, Focus, Iris

Location Preset Accuracy $\pm 0.125^{\circ}$

Inputs/Outputs

Video Output Composite: 1V[p-p] (75 ohm) BNC
SDI: 270mb/s component (SMPTE 259M) BNC
Y/C: Y: 1.0 Vp-p (sync negative) C: 0.286 Vp-p

RS-232 Port DB-9(F) Connector

RS-485 Port Bus Up To 16 Cameras (4 pos. RJ handset port)

Image Sensor 3CCD 1/4.7-type Interline Transfer, Advanced HAD CCD

Hor. Resolution 530 TV Lines

Lens 2x zoom, $f=3.6\text{mm}$ (wide) to 43.2mm (tele)

Digital Zoom 4x (48x with optical zoom)

Aspect Ratio 4:3/16:9 Switchable

Focal Length F1.6 to F2.8mm

Pixels 960 (H) x 720 (V) (690,000 pixels) in 4:3 mode
1152 (H) x 648 (V) (746,000 pixels) in 16:9 mode.

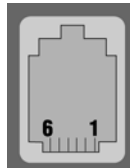
S/N Ratio	>50 dB
Angular FOV	Approx. 37.8° (wide) 3.3° (tele) (4:3 mode) Approx. 45.4° (wide) 4.0° (tele) (16:9 mode)
Angular FOV w/ 0.5x Converter	Approx. 68.0° (wide) 6.5° (tele) (4:3 mode) Approx. 79.8° (wide) 8.0° (tele) (16:9 mode)
Minimum Working Distance	100mm (wide end) to 1,000mm (tele end)
System	NTSC Only
 <u>Video Output</u>	
Analog	VBS: 1.0 Vp-p (sync negative) Y/C: Y: 1.0 Vp-p (sync negative) C: 0.286 Vp-p (without sync) R/G/B/Sync: 0.7 Vp-p (sync: 5V TLL level)
Digital	Composite: 1V[p-p] (75 ohm) BNC SDI: 270Mb/s component (SMPTE 259M) via BNC
Sync System	Internal
Min. Illumination	15.0 lx, F1.6
White Balance	Auto, Indoor, Outdoor, One-Push, Manual
AE Control	Auto, Manual, Iris Priority, Shutter Priority
Focusing System	Auto, Manual, One-Push AF, Infinity, Zoom trigger
Electronic Shutter	1/4 to 1/10,000s, twenty (20) steps
Operating Temperature	32°F to 113°F (0° to 45°)
 <u>CameraMan Clearance</u>	
	The minimum dimension for the CameraMan is a circular diameter of 26". This accounts for both camera and cable clearance. Check cable movement to avoid binding and stress on the camera.

APPENDIX D

Pin-Out Diagrams

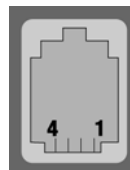
The following pinout connections can be found on the back of the Mini Docking Station on the rear of the CameraMan. These diagrams are for reference.

PVI COM RJ-11



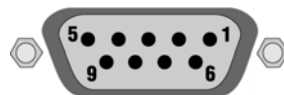
Pin	Signal
1	12v
2	12v
3	Ground
4	Signal A
5	Signal B
6	Ground

RS-485 Four Position Modular Handset



Pin	Signal
1	Ground
2	Signal A
3	Signal B
4	Ground

RS-232 9-Pin Female D-9 Sub



Pin	Signal
2	Transmit
3	Receive
5	Ground
1,4,6-9	Not Used

5.5mm DC Power Connector



1	+ 18v DC
2	Ground

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APPENDIX E

Field-Of-View Specifications

The following reference charts represent the size of the field of view and angle of view from various distances and with different lenses in 4:3 and 16:9 modes.

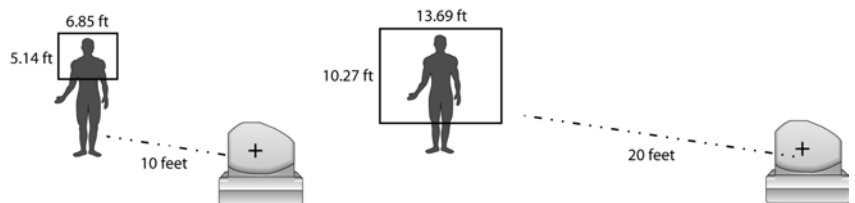


FIGURE E.1 Distance's Impact on FOV

Dist. from Lens (feet)	Without Adapter (4:3 mode)			Without Adapter (16:9 mode)		
	No Zoom (wide)			No Zoom (Wide)		
	Hor. (ft)	Vert. (ft)	Square Feet	Hor. (ft)	Vert. (ft)	Square Feet
10	6.85	5.14	35.17	8.36	4.70	39.32
15	10.27	7.70	79.13	12.54	7.05	88.47
20	13.69	10.27	140.67	16.72	9.41	157.28
25	17.12	12.84	219.80	20.90	11.76	245.75
30	20.54	15.41	316.51	25.08	14.11	353.88
35	23.97	17.98	430.81	29.26	16.46	481.68
40	27.39	20.54	562.69	33.44	18.81	629.13
45	30.81	23.11	712.15	37.63	21.16	796.24
50	34.24	25.68	879.20	41.81	23.51	983.01
55	37.66	28.25	1063.83	45.99	25.87	1189.44
60	41.08	30.82	1266.05	50.17	28.22	1415.54
65	44.51	33.38	1485.85	54.35	30.57	1661.29
70	47.93	35.95	1723.24	58.53	32.92	1926.70
Angle of View	37.80°	28.81°		45.38°	26.46°	

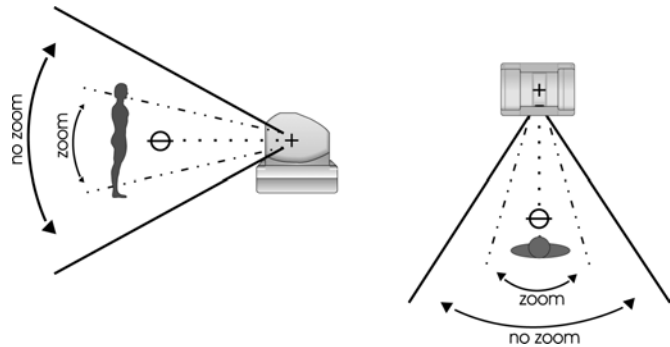


FIGURE E.2 Zoom's Impact on FOV

	With 0.5x Adapter (4:3 mode)			With 0.5x Adapter (16:9 mode)		
Dist. from Lens	No Zoom (wide)			No Zoom (wide)		
(feet)	Hor. (ft)	Vert. (ft)	Square Feet	Hor. (ft)	Vert. (ft)	Square Feet
10	13.69	10.27	140.67	16.72	9.41	157.28
15	20.54	15.41	316.51	25.08	14.11	353.88
20	27.39	20.54	562.69	33.44	18.81	629.13
25	34.24	25.68	879.20	41.81	23.51	983.01
30	41.08	30.82	1266.05	50.17	28.22	1415.54
35	47.93	35.95	1723.24	58.53	32.92	1926.70
40	54.78	41.09	2250.76	66.89	37.62	2516.51
45	61.63	46.23	2848.62	75.25	42.33	3184.96
50	68.47	51.36	3516.81	83.61	47.03	3932.04
55	75.32	56.50	4255.34	91.97	51.73	4757.77
60	82.17	61.63	5064.21	100.33	56.43	5662.14
65	89.01	66.77	5943.41	108.69	61.14	6645.16
70	95.86	71.91	6892.95	117.06	65.84	7706.81
Angle of View	68.80°	54.37°		79.80°	50.37°	

APPENDIX F

Typical System Diagrams

Below is a typical setup for the CameraMan camera. The items in the diagram are not to scale.

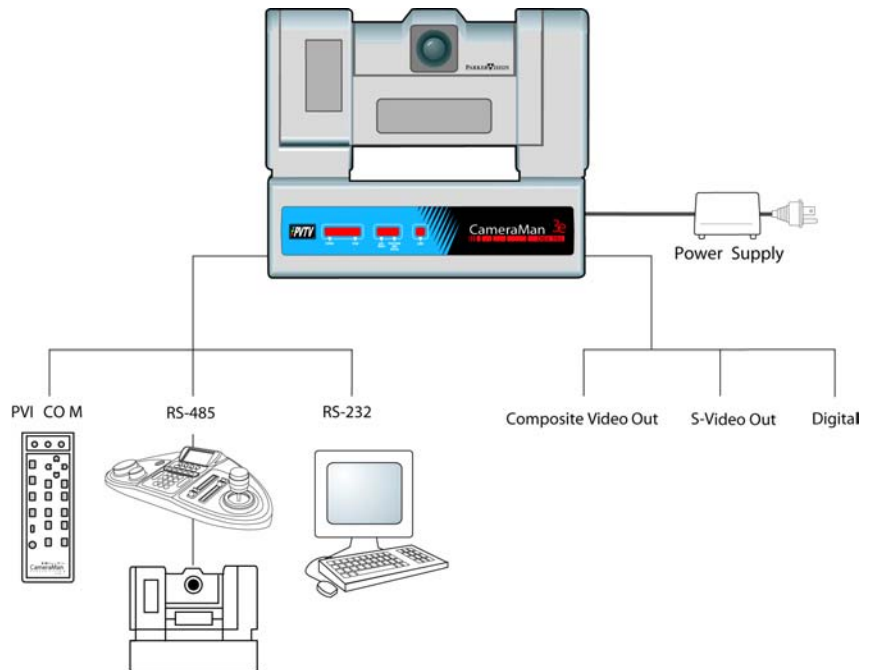


FIGURE F.1 Typical System Setup

APPENDIX G

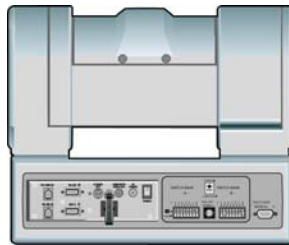
Troubleshooting

Should any problems occur with the CameraMan 3e 3-CCD Camera, please refer to the following guide. If questions or problems still exist after troubleshooting, please contact your authorized Grass Valley reseller, or contact Grass Valley Customer Support directly.

Problem

The Camera's Video is not working properly.

Solution

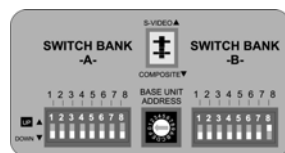


1. Verify that the SDI or COMPONENT VIDEO OUT connection is being used on the back of the camera shroud or that either the COMPOSITE or S-VIDEO OUT connections on the Mini Docking Station is being used and the VIDEO SELECT switch is in the proper position.
2. Verify that the video output of the camera is connected to the appropriate video input on the switcher or CODEC.
3. Verify that the lens cover is off and the Iris is open.
4. Verify that the monitor is an analog monitor. If the monitor is Digital, verify that an A-To-D converter is in use.

Problem

No communications through the RS-232 port.

Solution



1. Verify that the cable being used is wired correctly. (see page 35)
2. Verify that the PROTOCOL SELECT switch on the rear configuration panel is set properly in relation to the controlling device.
3. Verify that the BASE UNIT ADDRESS on the rear configuration panel is set properly.
4. Does the COM light above the RS-232 port on the back of the camera blink when you send a command through this port? If no, change the cable and retry.

5. Verify that the POWER LED, on the front of the camera, is illuminated. Also verify that the 12VDC indicator, on the rear of the camera block, is illuminated. If the POWER LED is not lit, check the POWER switch to make sure that it is ON, then verify that the Power Supply is connected to the camera properly. If the 12VDC LED on the rear of the camera block is not illuminated, verify that the I/F Remote SCSI cable is connected properly.

APPENDIX H

Warranty Information

Grass Valley One-Year Limited Warranty

- Grass Valley warrants to the end user that this product will be free from defects in material and/or workmanship for a one-year period commencing the date of delivery, except where expressly noted.
- Proof of Purchase: Grass Valley's authorized Dealer's dated bill of sale must be retained as evidence of the date of purchase and to establish warranty eligibility.
- Grass Valley will correct all defects in material or workmanship, or any failure of the system to perform to specifications during the warranty period, at no charge for parts and labor.
- The original purchaser must notify Grass Valley, in writing, before the warranty period has expired in the event of a defect in material or workmanship, or failure of the system to perform to specifications.
- If damage occurs in the shipment from the Grass Valley factory, Grass Valley must be notified within five working days of receipt of product in order to make a claim.
- Grass Valley is not obligated at any time to provide the purchaser with a substitute unit.
- The warranty is not extended due to purchasing new products and/or upgrading your original product.
- The warranty is non-transferable.
- Purchaser's failure to make a claim as provided above or continued use of the product shall constitute an unqualified acceptance of such a product and a waiver by purchaser of all claims.

**Product Warranty
Registration Form**

- The warranty period begins the day your Grass Valley product is received.
- Product Warranty Registration is required to ensure your product receives prompt attention if warranty work is ever necessary.

Please see your product warranty registration form, which is packaged with every product, for details on enrolling.

The Warranty is Voided if

- The product is damaged in shipping other than the original shipment from the Grass Valley factory.
- The product is used outside of the specifications or operating guidelines, as outlined in the Grass Valley product manuals.
- The product has sustained physical damage from misuse or abuse.
- The product has sustained damage due to a natural disaster such as fire, lightning, earthquake, etc.
- The product is damaged by non-Grass Valley peripherals.
- A person not authorized by Grass Valley attempted/or has serviced the equipment.
- The product's identification (serial numbers, trademarks, etc.) is removed, defaced, or altered.

Return Policies

For return procedures contact your authorized Grass Valley Reseller.

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