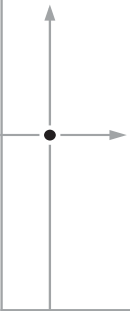


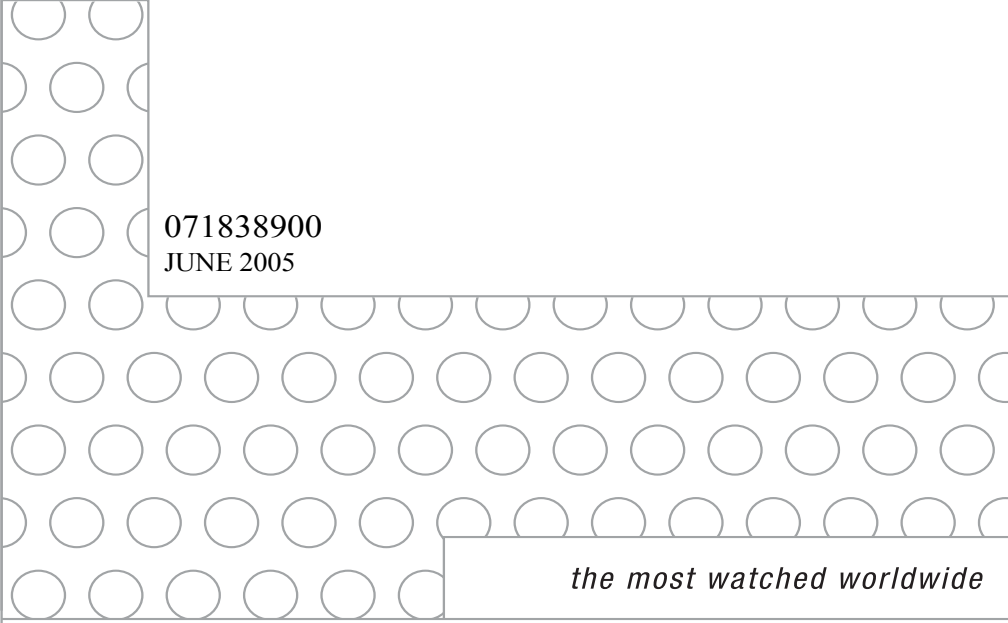
Shot Director

DIGITAL 3e CAMERA CONTROLLER

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

Meet the DIGITAL SHOT Director

About this Manual

DIGITAL SHOT Director is the key to ultimate camera control. The DIGITAL SHOT Director is designed for use with Grass Valley's CameraMan 3-CCD DIGITAL Cameras. Use this manual with the *CameraMan 3-CCD DIGITAL Camera Installation and Operations Manual* or the *CameraMan 3-CCD ANALOG Camera Installation and Operations Manual*.

Important Note

The DIGITAL SHOT Director is compatible only with:

- CameraMan 3-CCD Camera ver. 8.0 or higher
- STUDIO Analog and Digital Systems
- PRM (Programmable Response Module) software revision 2.4 or higher.

To verify the software revision number of the Camera, remove its ROM card per the instructions in the Camera Installation and Operations Manual. The

revision number is located on the label of each chip. If you have any questions, please contact Grass Valley Customer Support.

The DIGITAL SHOT Director should include these components:

- One DIGITAL SHOT Director
- One SHOT Director Power Supply
- One 25 ft (7.6 m) CameraMan Communication Cable
- One DIGITAL SHOT Director Installation and Operations Manual

This manual covers the connection, configuration, and operation of the DIGITAL SHOT Director, which combines robotic camera control with Grass Valley's proven autoTRACK capabilities (in autoTRACK models), location presets, and virtual CCU control for up to 16 separate cameras - all in one control unit.

The DIGITAL SHOT Director can store and recall up to 125 presets and up to 15 autoTRACK views per camera. DIGITAL SHOT Director also offers variable pan/tilt and zoom speed through two slider adjustments for precise, smooth camera control. Its powerful backlit LCD display enables adjustment of tracking views, attainment of camera movement readouts, and adjustment of each camera's CCU settings on-the-fly without compromising the video.

For questions regarding the installation or operation of the CameraMan 3-CCD Cameras, please refer to the installation and operation manual included with the camera.

The following icons will be present in this manual:



This icon indicates **important instructions** in the operation and maintenance of the DIGITAL SHOT Director.



This icon indicates **tips or noteworthy suggestions** in the operation, use or maintenance of the DIGITAL SHOT Director.



This icon refers to the **General Pan/Tilt Camera Installation and Operations Manual** that came with the camera.

Important Identification Numbers

Before starting to assemble and use the DIGITAL SHOT Director, please take a moment to find the Model and Serial number tag on the unit, and fill out the following information.

PARKERVISION™

MODEL # _____

SERIAL # _____

FCC ID # _____

FIGURE 1.1 Number Tag

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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 the installation and operations manual that came with your CameraMan camera.

No part of this manual may be copied or reproduced without express written consent of Grass Valley, Inc. 2001 Grass Valley, Inc.

Safety Instructions

The following section describes important material and instructions regarding the installation and use of Grass Valley equipment.

Safety Notices

Instructions to the user:

1. Do not use this apparatus near water.
2. Clean only with a damp cloth.
3. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.
4. Unplug this apparatus during lightning storms or when unused for long periods of time.
5. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as damaging a power supply cord or plug, spilling liquid or objects falling into the apparatus, exposing the apparatus to rain or moisture, operating abnormally, or dropping the apparatus.

DIGITAL SHOT Director Components

DIGITAL SHOT Director

The following information introduces you to each of the SHOT Director components and their features.

The DIGITAL SHOT Director is a unique, multiple-camera control device combining pan/tilt, CCU, and autoTRACK control.

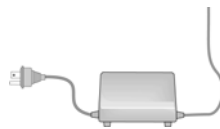


FIGURE 1.2 DIGITAL SHOT Director

Power and Connection Accessories



- 25' (7.6 m) CameraMan Communication Cable



- US Power Supply: 120 VAC, 60 Hz, 100 W Power Supply with attached cords

or



International Power Supply: 100-240 VAC, 50/60 Hz, 2.0A, 20VDC Power Supply

Knobs, Buttons, and Slide Controls

Look at the top of the DIGITAL SHOT Director. Notice that it is divided into four sections: the knobs (left), the buttons (lower-middle), the slide controls and joystick (right), and the LCD display (upper-middle).

The Knobs

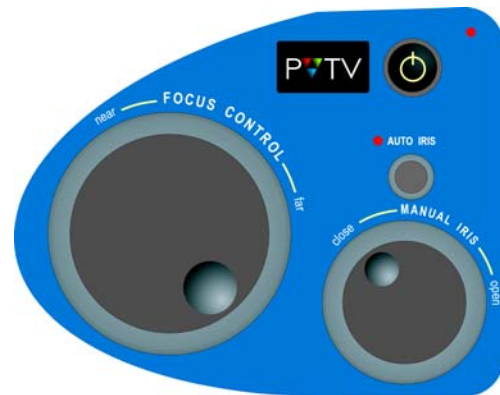


FIGURE 1.3 The Knobs

- Focus Control** Used to manually adjust the focal point of the lens and also to adjust the values on the settings menus.
- Power Switch** Turns the DIGITAL SHOT Director on and off. The powerLED is illuminated when power is ON.
- Auto Iris** When active, the DIGITAL SHOT Director will adjust the camera's IRIS and GAIN automatically to maintain a constant video level. The AUTO IRIS LED illuminates when AUTO IRIS is active. This AUTO IRIS button is also used to disable AUTO IRIS.
- Manual Iris** Used to manually adjust the camera's IRIS to brighten and darken the video picture. AUTO IRIS must be disabled for the MANUAL IRIS knob to function.

The Buttons

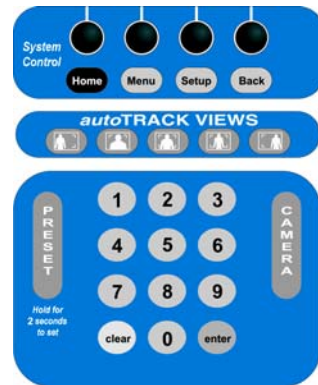


FIGURE 1.4 The Buttons

Upper Section Used to navigate through the various LCD displays.

- HOME** Displays the CAMERA CONTROL HOME MENU.
- MENU** Displays the ONSCREEN MENU, which allows for access to and changes in the video display.
- SETUP** Displays menus allowing adjustments of the Camera, Pan/Tilt Unit, DIGITAL SHOT Director, autoTRACK and network settings.
- BACK** Displays the last menu viewed.

The four CAMERA QUICK SELECT buttons on the SYSTEM CONTROL section correspond to the DIGITAL camera numbers that appear on the bottom of the CAMERA CONTROL HOME MENU on the LCD display

Middle Section When autoTRACK is activated, these buttons are used to store and recall the five preset autoTRACK Views: Left, Tight, Mid, Wide and Right.

Lower Section Used to store and recall location presets and autoTRACK Views, select between cameras in a multi-camera network, and enter and clear information found on the LCD display.

The Slide Controls and Joystick

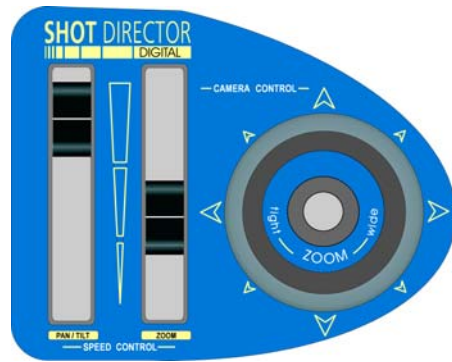


FIGURE 1.5 The Slide Controls and Joystick

- Speed Control Slides** Used to manually adjust the maximum speed of the camera's pan and tilt motions and its zoom capabilities. When the slide control is adjusted to the down limit, the control is OFF.
- Joystick (X-Y Control)** Used to manually control the camera's pan/tilt motion. This control is speed proportional.
- Joystick (Rotational Control)** Used to manually zoom in (clockwise) for tighter views and to zoom out (counter-clockwise) for wider views. This control is speed proportional.
- Joystick** Can also be used as a pointer to navigate through the LCD display screens.
- AutoTRACK Button** Used to activate (when used in combination with the ENTER button) and deactivate the autoTRACK capabilities to enable the camera to follow the presenter automatically. This button is also used as a pointer-select button.

LCD Display, Jacks and Ports

The knobs, buttons, and slide controls are used in conjunction with the display screen at the top of the DIGITAL SHOT Director. The jacks and ports on the back of the DIGITAL SHOT Director are used to communicate with the CameraMan network.

LCD Display Features



FIGURE 1.6 Camera Control Menu

- The Camera Control Home Menu** Shows the values associated with the camera currently being controlled.
- Camera Quick Select** Allows for easy selection of the camera being controlled by DIGITAL SHOT Director.
- Control Window with Slider Indicator** An on-screen visual of joystick control. The slider indicator (left-side of the CONTROL WINDOW) indicates proper calibration. If missing, calibration needs to be performed again.

Jacks and Ports

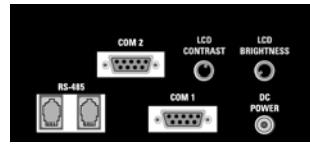


FIGURE 1.7 Backplate of SHOT Director

- LCD Contrast Knob** Used to increase and decrease the contrast on the SHOT Director's LCD Display.
- LCD Brightness Knob** Used to increase and decrease the intensity of the LCD Display.
- RS-485 Ports** Used for communications with CameraMan 3-CCD cameras.
- RS-232 Jack (COM 2)** Used to communicate with STUDIO.
- 18-20 VDC ===** Used to supply power to the SHOT Director.
- RS-232 Jack (COM 1)===** Used to connect to a PC (i.e. to download DIGITAL SHOT Director software).

Chapter 2

Connecting DIGITAL SHOT Director

Connecting to the CameraMan Network

Begin connecting the DIGITAL SHOT Director to the CameraMan network by following these steps:

1. Position the DIGITAL SHOT Director on a flat surface. Leave enough space around the unit so all controls can be accessed.
2. Using the CameraMan Power Supply, connect the DC Plug into the DIGITAL SHOT Director port labeled **18-20 VDC ===**, and connect the other end into a standard wall outlet.
3. Connect the RS-485 port of the SHOT Director to the RS-485 port of the CameraMan or Main Docking Station using a Grass Valley-supplied cable. The RS-485 cable is a 4-conductor cable wired straight through with RJ-type handset connectors.



Using any other wiring configuration may cause damage.



Multiple camera's require daisy-chain wiring (see diagram below).

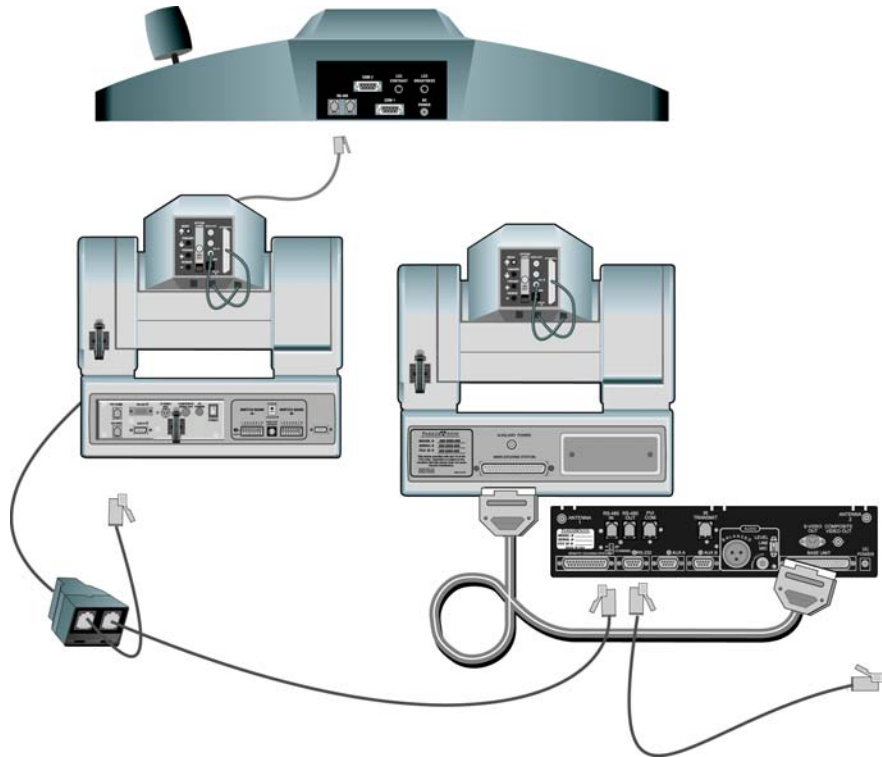


FIGURE 2.1 Daisy-Chain Wiring

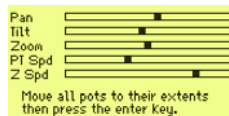


For more information on multiple camera applications, refer to the CameraMan 3-CCD Camera Installation and Operations Manual.

Powering Up

To power up the DIGITAL SHOT Director and CameraMan network, power up the cameras and devices in the network, then press POWER on the DIGITAL SHOT Director. The power light will illuminate. The very first time the DIGITAL SHOT Director is powered up, the calibration menus will appear. After the initial calibration, everytime the DIGITAL SHOT Director is powered up, the CAMERA CONTROL HOME MENU will appear.

Startup LCDs



Joystick Calibration

If the joystick has never been calibrated, the calibration screen will appear immediately after boot-up. When the joystick has entered calibration mode, the Center Joystick screen will appear. Ensure that the joystick is in the center position and press ENTER.

The Zeroing Joystick screen will be displayed for approximately 5 seconds. Do NOT touch the joystick during this time.

When finished zeroing, move the joystick control and the sliders to their extreme positions so that DIGITAL SHOT Director can record minimum and maximum levels. When finished, press ENTER.

The Calibrate Joystick screen will appear. Note that if OK is selected, calibration will be complete, but if ENTER is pressed, the calibration process will repeat. Before selecting OK, make sure the mouse pointer (which is controlled with the joystick) is able to reach all four corners of the screen.



If manual calibration is needed (see troubleshooting section), press and hold SETUP on the keypad while powering ON the DIGITAL SHOT Director.



If necessary, adjust the LCD CONTRAST and LCD BACKLIGHT on the rear panel of the DIGITAL SHOT Director to obtain the best LCD clarity.



For more information on powering up other devices in the CameraMan network, see the operations manuals that came with those devices.

Camera Control Home Menu

Press **HOME** just below the display to access the CAMERA CONTROL HOME MENU.



FIGURE 2.2 Camera Control Menu

- PAN** Indicates horizontal plane rotation relative to the camera's 0 point (the arrow indicated on the bottom of the camera).
- TILT** Indicates the vertical plane rotation relative to horizontal (0.0 degrees).
- ZOOM** Indicates the value of zoom setting.
- FOCUS** Indicates the value of the focus setting.
- IRIS** Indicates the value of the iris setting or AUTO when AUTO IRIS is enabled.
- CAMERA** Indicates the active camera for DIGITAL SHOT Director control (also shown in upper-left corner of LCD). The controlled camera can be changed by using the CAMERA QUICK SELECT buttons that correspond to the camera numbers across the bottom of the screen. A specific camera can also be selected using the keypad by pressing CAMERA, then the camera #, then ENTER/OK.
- PRESET** Indicates the last camera preset selected.
- CONTROL WINDOW (bottom right corner)** Shows the absolute position of the joystick and speed controls.

Chapter 3

Setting Up the DIGITAL SHOT Director

CameraMan and DIGITAL SHOT Director Setup

After powering up the system for the first time and calibrating the joystick, begin setting up the DIGITAL SHOT Director to work with the cameras in the system. The SETUP menus enable the configuration of both the DIGITAL SHOT Director and each camera in the network.

Setting Up Multiple-Camera Systems

1. Set the BASE UNIT ADDRESS on each camera in your network. The DIGITAL SHOT Director automatically numbers the CameraMan cameras in the network from 1 to 16. These numbers correspond to addresses 0-F on the CameraMan base unit. Therefore, set the base unit address of the cameras as follows:

Camera Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Camera Base Unit Address	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F



For details on changing the CameraMan 3-CCD camera's base unit address, see the CameraMan 3-CCD Camera Installation and Operations Manual.



Camera Location Presets

2. Use the DIGITAL SHOT Director keypad to select a camera to configure.
 - Press **CAMERA**. This will open the CAMERA SWITCH dialog box.
 - Press the number of the camera to be configured, or use the FOCUS knob to scroll through the available camera numbers.
 - Use the mouse to select OK or select ENTER on the keypad.
 - Verify that the **HOME** menu indicates the selected camera.
3. Repeat steps 1-2 to set up each camera.

Location Presets enable the positioning and adjustment of the view quickly for any camera on the network. Using the DIGITAL SHOT Director's numeric keypad and camera control features, pan/tilt position, zoom perspective, iris, and focus setting for each Location Preset can be stored and recalled. Up to 125 presets can be stored for each of the up to 16 cameras in the network.

To store a Location Preset:

1. Select the desired camera (if it is not already selected).
2. Adjust the camera for the desired Pan, Tilt, Zoom, Focus, and Iris settings.
3. Key in the number of the preset location desired, or use the FOCUS knob to scroll the list.
4. Use the mouse pointer to select STORE, or press ENTER.



A Preset can also be stored by entering the PRESET number on the keypad, and then holding the PRESET button for 3 seconds. If sound is enabled, DIGITAL SHOT Director will beep when the Preset is successfully stored.

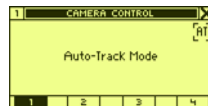
To recall a Location Preset:

1. Key in the number of the desired preset.
2. Press and release the **PRESET** button.

AutoTRACK and Setup Menu Overview

The SETUP menus allow defining of Camera, DIGITAL SHOT Director, Pan/Tilt Unit, autoTRACK, and Network settings. The main SYSTEM SETUP menu is the first step to accessing any and all of the areas mentioned above. Follow the steps on the following pages to navigate through the different SETUP menus.

AutoTRACK Mode



In order to use autoTRACK presets, a camera must be selected, and the DIGITAL SHOT Director must be in autoTRACK Mode. To access autoTRACK Mode, press and hold ENTER on the keypad and simultaneously press the autoTRACK button on the top of the joystick. The AUTO-TRACK MODE Camera Control Screen will appear.

- The currently selected autoTRACK preset is indicated by the icon in the upper-right corner of the screen. This icon will not restore after a camera switch.
- With the exception of Zoom, Focus, and Iris, camera controls are disabled when in autoTRACK mode.
- To deactivate autoTRACK mode, press the autoTRACK button on the top of the joystick.

Setup Menu Overview



FIGURE 3.1 System Setup Menu



The initial setup menu appears when the SETUP button on the SYSTEM CONTROLS panel is pressed.

CAMERA Used to access the camera settings menus.

PAN/TILT UNIT Used to access the pan/tilt settings menus.

SHOT DIRECTOR Used to access the DIGITAL SHOT Director settings menus.

AUTO-TRACK Used to access the autoTRACK settings menus.

NETWORK Used to access the Network settings (camera polling) menus.

ABOUT Gives information about DIGITAL SHOT Director software, copyright.

DIAG Shows raw input values to the embedded micro-controller in the joystick.

CameraMan 3-CCD DIGITAL Camera Settings Menus

When CAMERA is selected on the SYSTEM SETUP screen, the CAMERA SETTINGS screen opens. From here, it is possible to navigate through and change camera settings and select default values.

Downloading Camera Data

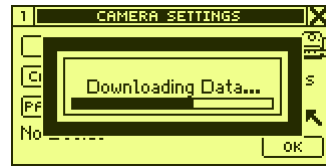


FIGURE 3.2 Downloading Camera Data

When the CAMERA SETTINGS menu is accessed for the first time by selecting CAMERA on the SYSTEM SETUP screen, or when the controlled camera changes from one to another while on the CAMERA SETTINGS page, DIGITAL SHOT Director will take a few seconds to download the selected camera's settings. During this time, a DOWNLOADING DATA message will appear across the CAMERA SETTINGS screen. A COMMUNICATION ERROR message will appear if there is no camera connected, or if a break in Camera-to-DIGITAL SHOT Director communication occurs. When a COMMUNICATION ERROR occurs, the camera in the upper-right corner of the LCD menu will continually flash.

Camera Settings Menu

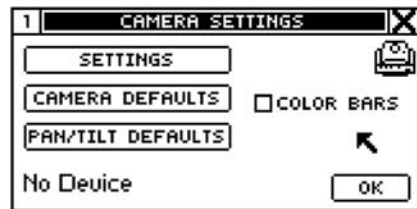


FIGURE 3.3 Camera Settings Menu

Access to the CAMERA SETTINGS page is gained by selecting CAMERA on the SYSTEM SETUP screen.

SETTINGS Accesses gain, pedestal, iris, shutter, and color bar values that can be adjusted.

CAMERA DEFAULTS Sets camera default values.

PAN/TILT DEFAULTS Sets pan/tilt default values.

COLOR BARS Turns camera color bars on/off.

NO DEVICE Indicates either that no camera is being controlled, or the controlled camera's device ID and version number.



FIGURE 3.4 Camera Settings Tabs

After selecting SETTINGS from the CAMERA SETTINGS main screen, the CAMERA SETTINGS TAB screen appears. Selecting one of the tabs allows for access to various camera settings controls.

EXP Camera EXPOSURE settings and on-screen menu mode settings.

COL Camera COLOR settings.

EXT Camera Miscellaneous settings, including white balance.

BARS Color bar settings.

SH Camera SHUTTER settings.

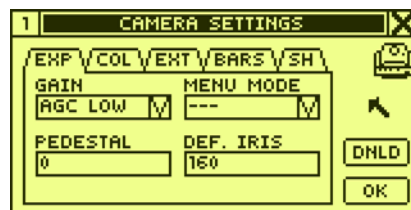


FIGURE 3.5 EXP - Camera Exposure Settings

GAIN Dropdown box for camera GAIN settings.

MENU MODE Dropdown box for camera onscreen menu mode setting.

PEDESTAL Record camera pedestal setting.

DEF. IRIS Records the iris position to be used when toggling from auto to manual iris control.



The DNLD button found on the CAMERA SETTINGS page is used to download the current camera settings.

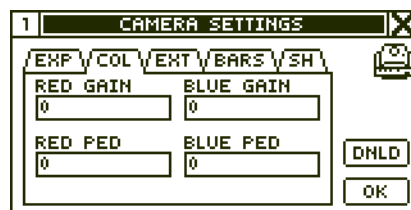


FIGURE 3.6 COL - Camera Color Settings

RED GAIN Records camera red gain setting.

BLUE GAIN Records camera blue gain setting.

RED PED Records camera red pedestal setting.

BLUE PED Records camera blue pedestal setting.

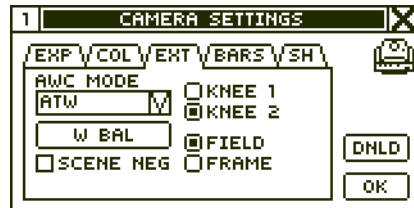


FIGURE 3.7 EXT - Miscellaneous Camera Settings

- AWC MODE** Records camera red gain setting.
- KNEE** Records camera blue gain setting.
- W BAL** Records camera red pedestal setting.
- FIELD** Records camera blue pedestal setting.
- SCENE NEG** Records camera red gain setting.

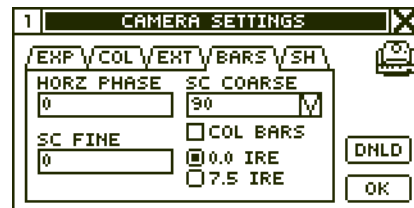


FIGURE 3.8 BARS - Camera Color Bar Settings

- HORZ PHASE** Adjusts the camera's horizontal phase setting.
- SC FINE** Adjusts the sub-carrier fine setting.
- SC COARSE** Adjusts the sub-carrier coarse setting.
- COL BARS** Turns the camera's color bars on/off.
- 0.0 IRE** and **7.5 IRE** Turns the specified color bar settings on/off.



FIGURE 3.9 SH - Camera Shutter Settings

STEP Sets camera shutter to step mode.

ELC Sets camera shutter to Electronic Luminance Compensation mode.

SYNCHRO Sets camera shutter to synchronization.



The SPEED dropdown box is only present when the STEP option is toggled ON. When SYNCHRO is selected, the FREQUENCY box appears. This box is used to set the shutter synchronization frequency.

Pan/Tilt Unit Settings Menus

Camera Defaults and Pan/Tilt Defaults Menus



FIGURE 3.10 Confirm Pan/Tilt Defaults

When CAMERA DEFAULTS or PAN/TILT DEFAULTS is selected from the CAMERA SETTINGS page, a confirmation dialog box appears. Using the mouse, select YES to set the default values.

System Setup and the Pan/Tilt Unit



FIGURE 3.11 System Setup Screen

The PAN/TILT UNIT settings menu is accessed by selecting PAN/TILT UNIT from the SYSTEM SETUP screen.

Pan/Tilt Unit Settings Menu

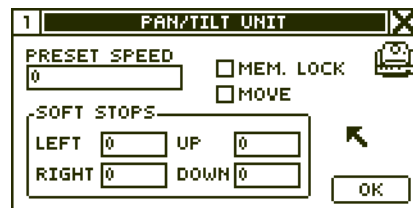


FIGURE 3.12 Pan/Tilt Unit Settings Menu

The Pan/Tilt Unit Settings Menu enables the setting of pan and tilt limits for the camera. Use it to preview and set the speed and degrees of soft stops.

- The numbers lower-left of the screen indicate the camera's current limits.

Function Control Buttons:

1. Using the FOCUS knob, set the left, right, up, and down limit values for the soft stop.
2. Press MOVE button to preview the soft stop.
3. Select OK when finished.
4. Set PRESET SPEED. This determines the rate at which a camera will move to a recalled preset location.

- **Range:** LEFT: -180°/RIGHT: +180°/UP: +25°/
DOWN: -25°



If MEM LOCK is enabled, camera and autoTRACK presets will not be saved!

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Chapter 4

Using DIGITAL SHOT Director

DIGITAL SHOT Director Settings Menu

Setup SHOT Director
Menus



FIGURE 4.1 SHOT DIRECTOR Settings

The DIGITAL SHOT Director Settings LCD menus enable the adjustment of various DIGITAL SHOT Director parameters, and are accessed by selecting SHOT DIRECTOR from the SYSTEM SETUP screen.

- REVERSE PAN** Reverses the actual pan direction of the camera from the pan direction of the joystick for the selected camera.
- REVERSE TILT** Reverses the actual tilt direction of the camera from the tilt direction of the joystick for the selected camera.
- REFRESH** Turns camera data refresh off/on for the selected camera.
- DISPLAY** Opens the DIGITAL SHOT Director display settings page.
- POINTER CONTROL** Opens the pointer control page.
- ADDRESS** Sets the DIGITAL SHOT Director address. 68 should work for most situations.
- BEEP** Enables and disables the DIGITAL SHOT Director's audible beep. The numeric value allows for beep pitch adjustment.

SHOT Director Display Menu



FIGURE 4.2 SHOT Director Display Settings

Selecting DISPLAY on the SHOT DIRECTOR SETTINGS MENU will open the DISPLAY SETTINGS page. This allows for changes to the view of the text on the LCD display.

- HOLLOW TILES** Inverts the text in the title bar.
- INVERT DISPLAY** Inverts the entire display screen.
- SCREEN SAVER** Enables the screen save and allows for setting of delay time.
- SHOW TITLE ON HOME PAGE** Enables/disables the title bar on the Home Menu.

SHOT Director Pointer Control Menu



FIGURE 4.3 Pointer Page

Selecting **POINTER CONTROL** on the **SHOT DIRECTOR SETTINGS MENU** will open the **POINTER** page. This allows for changes to the pointer control.

- SPRING** The pointer tracks the position of the joystick exactly. This is the default pointer setting.
- DRIFT** The pointer interprets the joystick position as speed and direction.

Understanding the PAN Motion

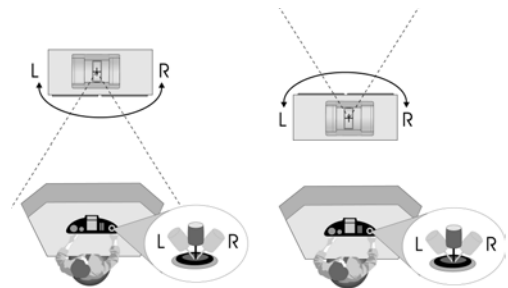


FIGURE 4.4 Reverse and Normal PAN Settings

- In **NORMAL** mode, the camera's PAN motion is designed to operate as if the operator is behind the CameraMan, looking at the subject. In this mode, the camera pans in the direction that the joystick moves.
- The **REVERSE** mode is designed to enable the operator to operate a camera that may be facing toward him/her. In this mode, the camera pans in the opposite direction that the joystick moves.

Understanding the TILT Motion

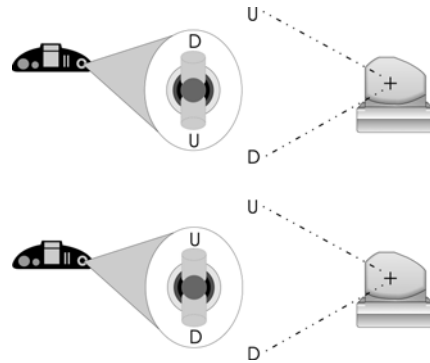


FIGURE 4.5 Reverse and Normal TILT Settings

While the orientation of **PAN** motion is based more on the application need and the orientation of the controller to the camera, the **TILT** orientation is based more on the controller's preference.

- In **NORMAL** mode, the joystick's movement corresponds to the camera's motion. Pushing forward on the joystick makes the camera tilt up.
- In **REVERSE** mode, moving the joystick's movement is opposite the camera's motion. Pushing forward on the joystick makes the camera tilt down.



Try each of these settings to see which is best for your application, and with which you are most comfortable.

AutoTRACK Setup Menus

AutoTRACK Views

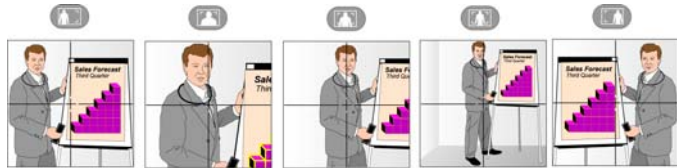


FIGURE 4.6 AutoTRACK Views

DIGITAL SHOT Director is capable of storing and recalling up to 10 autoTRACK Views. Five basic preset views - left, tight, mid, wide, and right - are programmed into the DIGITAL SHOT Director already. These can be adjusted, or new Custom Views can be created. Together with the basic preset views, a total of 15 autoTRACK Views can be stored and recalled.

The five basic preset views enable changing from a close head shot with the **TIGHT** autoTRACK View button to emphasize facial expressions, to a full-body shot by pressing the **WIDE** autoTRACK View button. Presenters also can share the video screen with a flipchart or other key resentation areas with the **LEFT** or **RIGHT** autoTRACK View buttons. The **MID** autoTRACK View gives a medium-range shot.

Each autoTRACK View stores and recalls changes in Window, Sensitivity, Subject Position, Zoom, Focus, and Iris. This enables the customization of each autoTRACK View to suit personal needs.

Setup AutoTRACK Menus

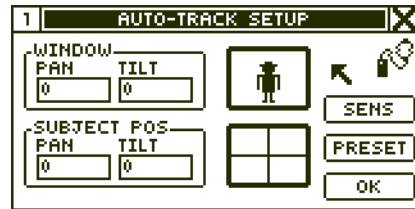


FIGURE 4.7 AutoTRACK Setup Screen

The autoTRACK Setup LCD menus store, recall, create, and edit various autoTRACK views, and are accessed by selecting AUTO-TRACK from the SYSTEM SETUP screen. The values on the AUTO-TRACK SETUP screen can be adjusted using the FOCUS knob for coarse adjustments, or the MANUAL IRIS knob for tighter adjustments.

PAN WINDOW Adjusts the subject’s pan window (visual illustrates adjustment).

TILT WINDOW Adjusts the subject’s tilt window.

PAN POSITION Adjusts the subject’s pan offset position (visual illustrates adjustment).

TILT POSITION Adjusts the subject’s tilt offset position.

SENS Displays TRACKING SENSITIVITY dialog box.

PRESET Displays autoTRACK PRESET dialog box.

AutoTRACK Sensitivity Menu

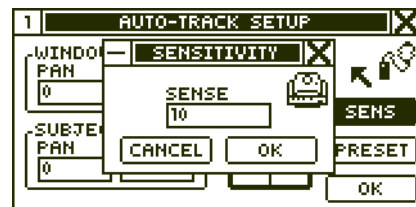


FIGURE 4.8 AutoTRACK Sensitivity Page

Selecting SENS on the AUTO-TRACK SETUP MENU will open the SENSITIVITY page. This is used to adjust the speed at which the DIGITAL CameraMan returns the presenter to the subject position setting.

- Adjust sensitivity up or down using the FOCUS knob.
- **Range:** 10-120, in steps of 1 (10 = slow).

AutoTRACK Preset Menu

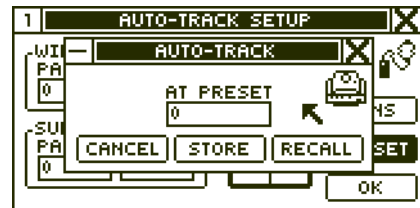


FIGURE 4.9 AutoTRACK Preset Page

Selecting PRESET on the AUTO-TRACK SETUP MENU will open the autoTRACK PRESET page. This is used to store and recall autoTRACK views.

- Adjust pan and tilt values on the AUTO-TRACK SETUP screen.
- Select PRESET.
- Choose a number for the preset (1-10).
- Select STORE.



To adjust and store an autoTRACK view on one of the preprogrammed autoTRACK keypad buttons, set the autoTRACK view parameters using the AUTO-TRACK SETUP screen, press the HOME button to return to the CAMERA CONTROL HOME Menu, then press and hold down the desired autoTRACK keypad button until the DIGITAL SHOT Director beeps.

Controlling the Camera's Movement

Tracking Adjustments

Terms and Definitions:

- An **autoTRACK Window** is an invisible area in which the subject can move without the camera following. If the person moves outside this defined area, the camera begins to follow them again. This window is measured by the number of degrees of **PAN** and **TILT** from the center of the window.
- The **Window Reference** is based on the center of the Pan/Tilt Window. It can be referenced to either the center of the screen - *Center Reference*, or the person wearing the Tracking Ring Sensor - *Sensor Reference*.

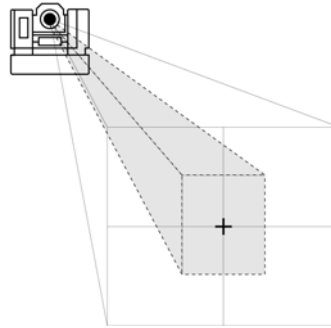


FIGURE 4.10 Window Referenced to Center

- The **Subject Position** refers to the Subject's location as it appears on the screen. This is measured by the distance from the center of the screen. When the Subject moves outside the Pan/Tilt Window, the camera resumes tracking them at the Subject Position offset.
- The **Screen** is the visible area on the monitor.



If the presenter can walk off the screen before the camera begins following, change the size of the Window or decrease the offset of the Subject Position (see Figure 4.11).

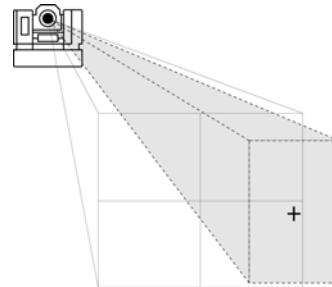


FIGURE 4.11 Presenter Can Walk Off Screen



Zooming in and out impacts the Subject Position. Zooming in causes the subject to move toward the outer edge of the screen. Zooming out causes the subject to move toward the center of the screen.

Tips to Adjusting the Parameters

While in autoTRACK mode, the pan and tilt capabilities of the joystick are disabled, but focus, iris, and zoom functionality can still be used. The following tips can help keep the subject from moving off the screen while zooming in and out in autoTRACK mode.

1. Determine the physical area (presentation space) the camera needs to cover.
2. Ask the subject to wear the Tracking Ring Package, power it up, and stand within the presentation space at the point closest to the camera.
3. Press and hold ENTER and press the autoTRACK button on top of the joystick to enable the camera's autoTRACK functionality.
4. Zoom in on the subject.
5. Make adjustments to the Window, Window Reference, and Subject Position, then focus.
6. Ask the subject to walk around within the presentation area.
7. While the camera follows the subject automatically, zoom in and out to ensure that he/she remains on-screen.

Using AutoTRACK

DIGITAL SHOT Director enables you to use CameraMan's patented autoTRACK technology, so the camera will follow a subject around the room automatically.



FIGURE 4.12 Tracking Ring Package



For detailed information on autoTRACK, please refer to the *Presenter* or *Deluxe Camera System Installations and Operation Manual*.

Before entering autoTRACK mode:

1. Ensure that the Main Docking Station is properly installed, and that the subject is wearing the Tracking Ring.
2. Turn the Tracking Ring Power Pack ON.

Entering autoTRACK mode:

1. While pressing the ENTER button on the DIGITAL SHOT Director keypad, press the autoTRACK button on top of the joystick. This puts the camera into autoTRACK mode without changing the current zoom perspective.



FIGURE 4.13 DIGITAL SHOT Director

Network Menu



FIGURE 4.14 Network Devices Menu

The NETWORK DEVICES Menu is displayed when NETWORK is selected on the SYSTEM SETUP screen. This menu records and constantly updates the camera number and version of the cameras connected to the DIGITAL SHOT Director. The cameras in the CameraMan network that are eligible for control by DIGITAL SHOT Director will be listed in the NETWORK DEVICES menu. If no cameras are connected to DIGITAL SHOT Director, NO DEVICES will be displayed.

About Menu

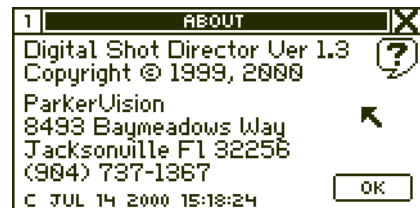


FIGURE 4.15 About Menu

The ABOUT Menu is displayed when ABOUT is selected from the SYSTEM SETUP screen. This menu displays copyright, software and company information.

Diagnostics Menu

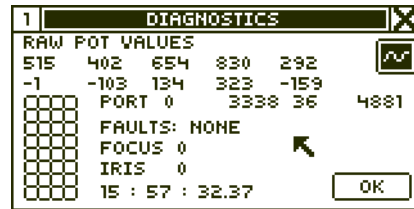


FIGURE 4.16 Diagnostics Menu

The DIAGNOSTICS Menu will scroll when DIAG is selected from the SYSTEM SETUP screen. This menu shows raw input values to the embedded micro-controller in the joystick. The raw pot values from left to right are ZOOM, TILT, PAN, ZOOM SPEED SLIDER, PAN/TILT SPEED SLIDER.

- 1st row of raw pot values are absolute ADC values.
- 2nd row of raw pot values are “zeroed values” offset from center. The first three values should be greater than -30 and less than 30 when the joystick is centered. If the values are outside this range, the joystick needs to be calibrated.
- The grid in the lower-left shows each key state.
- The values in the PORT row represent the number of bytes rx’ed and tx’ed by the serial ports. (RX0, TX0, RX1, TX1).
- The FAULTS field displays any critical errors that may have occurred.

APPENDIX A

Troubleshooting

If you experience any problems with the DIGITAL SHOT Director, please refer to the following Troubleshooting section. If you still have questions, please contact your authorized Grass Valley reseller, or call Grass Valley Customer Support.

Problem **The DIGITAL SHOT Director will not power up.**

- Solution**
- Is the power supply plugged in and the power light illuminated?
 - Is the wall outlet supplying the necessary voltage?
 - Is the power supply working and free of damage?

Problem **The selected camera doesn't move, or it moves sporadically when the joystick is moved.**

- Solution**
- Is the proper CameraMan selected?
 - Does the desired CameraMan's base unit address match the SHOT Director selection?

Camera Base Unit	SHOT Director Camera
0	1
1	2
2	3
	etc.

- Is autoTRACK on? If yes, press the button on top of the joystick to disable autoTRACK and to enable the joystick to control the camera's movement again.
- Are pan/tilt speed slider controls set to the bottom? If so, adjust the sliders upward.
- Are soft stops set too close together?

- Is the joystick calibrated?
 1. Turn Power OFF.
 2. While holding down the SETUP button, power DIGITAL SHOT Director back on.
 3. Continue holding the SETUP button until the calibration screen appears.
 4. Calibrate DIGITAL SHOT Director as described on page 13.
- Is Dip Switch 8 on Switch Bank B of the CameraMan base unit enabled? If disabled, enable the Dip Switch to allow use of keypad and DIGIAL SHOT Director.

Problem **The DIGITAL SHOT Director doesn't beep when setting a location preset or autoTRACK View.**

Solution Is the **Beep** function in the **Setup Director** menu turned **OFF**? If so, go to SETUP>SHOT Director>MENU to enable.

Problem **DIGITAL SHOT Director displays a *COMMUNICATIONS ERROR*.**

Solution The DIGITAL SHOT Director is not communicating properly with the selected camera.

- Check all the connection cables.
- Verify that the selected CameraMan is on your network.
- Verify that the CameraMan's DIP Switch 7 on Switch Bank A is UP (see the CameraMan operations manual for more details).
- Verify that the CameraMan's ROM card revision # is correct. Refer to the CameraMan 3-CCD DIGITAL Camera Manual for details.
- Verify that the base unit address is set accordingly.

Problem **CameraMan will not autoTARCK. (autoTRACK version only)**

- Solution**
- Is autoTRACK turned ON? If not, press and hold the ENTER button, then press the autoTRACK button on the top of the joystick.
 - Is one of the autoTRACK Views selected? If not, press one of the autoTRACK View buttons on the keypad.
 - Are the soft stops set too close together?

Problem **Cannot change any camera settings or presets.**

Solution Is the **Lock** function on the **SETTINGS>PAN/TILT UNIT** Menu selected? If so, deselect the MEM LOCK checkbox by going to **SETTINGS>PAN/TILT UNIT**.

Problem **The camera allows me to walk off-screen before it begins to follow me.**

Solution Have you adjusted your Pan/Tilt Window size or Subject Position?

1. Reset the **Pan/Tilt Window Size** and **Subject Position** to **0**.
2. Readjust the **Pan/Tilt Window Size** and **Subject Position** settings.
3. Make your Pan/Tilt Window size smaller.
4. Zoom out.

Is the sensitivity too low?

Problem **The camera moves faster in one direction than the other.**

Solution Is the joystick calibrated? Follow the directions on the previous page to calibrate the joystick.

APPENDIX B

Glossary and Specifications

In this appendix are some key terms mentioned in this manual, as well as the specifications for the DIGITAL SHOT Director. For the specifications on the 3-CCD DIGITAL camera, see the specifications section of the Installation and Operations Manual that came with the camera.

Glossary

CCU (Camera Control Unit)	A device, external to the camera, that adjusts video characteristics (detail, gains, pedestal, etc).
Detail	Used to sharpen or soften a video image.
Gains	The level of the brightest areas of the video image. Gain may be expressed as separate components of red, blue, and green.
Knee	Video compression at the brightest parts of a picture. The knee is used to get as much detail as possible from very bright objects.
Linear Matrix	Color-correction circuitry used to adjust color without affecting white balance.
Master Pedestal	Adjusts the darkness level of the black parts of the image. Use this function to bring out details of heavily shaded areas.
Paint	Artificially coloring video image to compensate for poor lighting or a subject's color characteristics. Also used to match the color of multiple cameras.
RS-485	The protocol used by the DIGITAL SHOT Director to communicate with the CameraMan camera.
Tracking Views	Presets, stored by the CameraMan, that enable you to change the presenter's position in the autoTRACK frame.
White Balance	Matching the red, green, and blue picture components to achieve proper color hues.

Specifications

Display Type	LCD, H: 1.5 in (3.81 cm) W: 3 in (7.62 cm), Adjustable Contrast and Backlight
Pan/Tilt Control Type	Self-Centering joystick, software configured
Iris/Focus Control Type	Rotary encoders
RS-485 Max Distance	2,500 ft (762.2 m)
Power	100 - 240VAC 50/60 Hz 100w
Dimensions	L: 18 in (45.72 cm) H: 5.5 in (13.97 cm) D: 8.5 in (21.59 cm)
Weight	4.5 lbs. (2.04 kg)
Temperature	32° - 100° F (0° - 37.78° C)
Humidity	0-95% non-condensing

Maximum Pan/Tilt Travel

The CameraMan camera has a maximum pan range of 359° and a maximum tilt range of 50°. It comes programmed with factory default settings of ±90° of PAN (left and right) and ±25° of TILT.

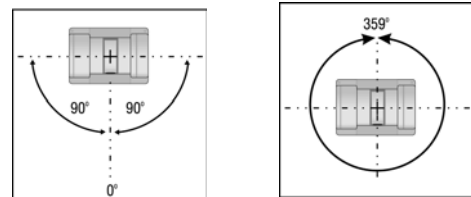


FIGURE B.1 Default and Maximum Pan Settings

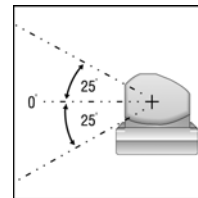


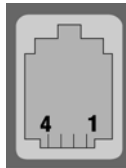
FIGURE B.2 Default and Maximum Tilt Settings

APPENDIX C

Pinout Diagrams

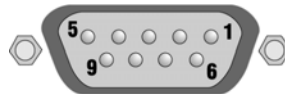
You'll find the following pinout connections on the back of your CameraMan Shot Director. These diagrams are for your reference.

RS-485 Four Position Modular Handset



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

COM 1 9-Pin Female D-9 Sub



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

COM 2 is a 9-pin Male D-9 Sub.

5.5mm DC Power Connector



1	+ 18-20 VDC
2	Ground

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APPENDIX D

Default Reset Settings

Your CameraMan Shot Director gives you the power to adjust various camera, autoTRACK, and location preset settings. Below are the default settings, which take effect if you follow the instructions on page 23 to restore the defaults.

CameraMan Default Settings

System Lock/Unlock	Unlocked
Tracking	Off
Pan Direction	Normal
Tilt Direction	Normal
Pan Soft Stops	+90° to -90°
Tilt Soft Stops	Cleared
Preset Speed	100
Gain	AGC

Default Preset

Pan Position	0°
Tilt Position	0°
Zoom Position	Wide
Iris	Auto

Preset 1

Pan Position	0°
Tilt Position	0°
Zoom Position	Wide
Iris	Auto

Preset 2

Pan Position	45°
Tilt Position	-10°
Zoom Position	Tight
Iris	Auto

Preset 3

Pan Position	-45°
Tilt Position	10°
Zoom Position	Mid-range
Iris	Auto

Note: All other position presets remain unchanged.

AutoTRACK Default Settings: 3-CCD (1-CCD)

Default Tracking View

Zoom Position	0
Iris Position	Auto
Pan Subject Position	0
Tilt Subject Position	0
Pan autoTRACK Window	0°
Tilt autoTRACK Window	0°
Tracking Sensitivity	80

Tight Tracking View

Zoom Position	175 (156)
Iris Position	Auto
Pan Subject Position	0
Tilt Subject Position	0
Pan autoTRACK Window	0° (3°)
Tilt autoTRACK Window	2°
Tracking Sensitivity	110 (70)

Wide Tracking View

Zoom Position	130 (56)
Iris Position	Auto
Pan Subject Position	0
Tilt Subject Position	0
Pan autoTRACK Window	4° (3°)
Tilt autoTRACK Window	2°
Tracking Sensitivity	100 (70)

Right Tracking View

Zoom Position	130 (56)
Iris Position	Auto
Pan Subject Position	-1000 (-2079)
Tilt Subject Position	-231
Pan autoTRACK Window	6° (3°)
Tilt autoTRACK Window	2°
Tracking Sensitivity	80 (70)

Left Tracking View

Zoom Position	130 (56)
Iris Position	Auto
Pan Subject Position	1000 (2079)
Tilt Subject Position	-231
Pan autoTRACK Window	6° (3°)
Tilt autoTRACK Window	2°
Tracking Sensitivity	80 (70)

Mid Tracking View

Zoom Position	152 (106)
Iris Position	Auto
Pan Subject Position	0
Tilt Subject Position	0
Pan autoTRACK Window	2°
Tilt autoTRACK Window	2°
Tracking Sensitivity	100 (70)

Lock Mode

The following settings cannot be changed when the Shot Director is in **LOCKED** mode:

1. All **SETUP** options except for the **LOCK** option itself.
2. All **MENU** options (the **MENU** selection is inaccessible).
3. All **POSITION PRESETS** and **TRACKING VIEWS**.

APPENDIX E

LCD Handling Precautions

Due to the delicate nature of the LCD screen on the DIGITAL SHOT Director, please make note of the following handling precautions.

1. An LCD screen is a fragile item and should not be subjected to strong mechanical shocks.
2. Avoid applying pressure to the screen's surface. This distorts the glass and can cause a change in color.
3. In the event of LCD breakage and fluid leakage:
 - Do not inhale, ingest, or make skin contact with the fluid. If contact is made, then rinse immediately.
 - Contact Grass Valley Customer Support for maintenance/replacement assistance.
4. When cleaning the screen, use a soft, damp cloth with a mild solvent, such as Isopropyl or Ethyl alcohol. **DO NOT** use water, ketone, or aromatic.

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APPENDIX F

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 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.

FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful

interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to insure compliance.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

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