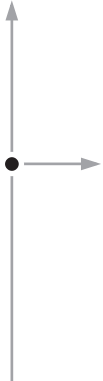


CameraMan

CPT-2018 3-CCD CAMERA SYSTEM

Installation and Operation Manual



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Contacting Grass Valley

Region	Voice	Fax	Address	Web Site
North America	(800) 547-8949 Support: 530-478-4148	Sales: (530) 478-3347 Support: (530) 478-3181	Grass Valley P.O. Box 599000 Nevada City, CA 95959-7900 USA	www.thomsongrassvalley.com
Pacific Operations	+852-2585-6688 Support: 852-2585-6579	+852-2802-2996		
U.K., Asia, Middle East	+44 1753 218 777	+44 1753 218 757		
France	+33 1 45 29 73 00			
Germany, Europe	+49 6150 104 782	+49 6150 104 223		

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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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General

The CameraMan 3-CCD DIGITAL 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 3-CCD DIGITAL 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.

The CPT-2018 3-CCD DIGITAL Camera includes these components:

- One CameraMan 3-CCD DIGITAL Camera (with 20x, or 19x, lens and Mini Docking Station attached)
- One Camera Control Keypad
- 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

3-CCD Product Descriptions

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

Product Description

The 3-CCD DIGITAL Camera's pan/tilt functions, zoom perspective, focus and IMAGE settings can be controlled via Grass Valley's Remote Control Keypad, DIGITAL SHOT Director, or Tracking Keypad. In addition to the camera-control these 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 conference 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 (Figure 1), 3-CCD RF Tracking Keypad, and Main Docking Station.

Figure 1. Tracking Ring Package



FIGURE 1.1 Tracking Ring Package

Recommended Accessories

SHOT Director

Some applications require precise and flexible camera control. The Grass Valley DIGITAL 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.

Figure 2. JSC-2000D Digital SHOT Director



For a visual indication of which camera is selected in a multi-camera application, the CameraMan Tally Light (Figure 3) 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 upgradable.

Figure 3. CameraMan Tally Light



SCRIPT Viewer Display

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

3-CCD DIGITAL Camera Components

Following is a description of each part that came with the CameraMan CPT-2018 3-CCD DIGITAL Camera.

CameraMan 3-CCD DIGITAL 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.

Figure 4. Front of Camera



Lens Shroud

The 20x version of the 3-CCD DIGITAL Camera includes a rectangular lens shroud (Figure 5).

Figure 5. Lens Shroud

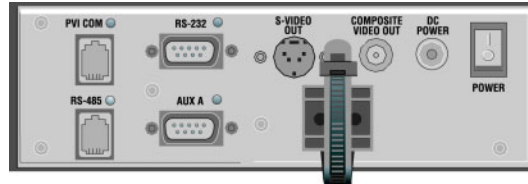


Camera Control Block

The camera control block 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 or Deluxe Camera System was purchased, the camera control block is not needed.

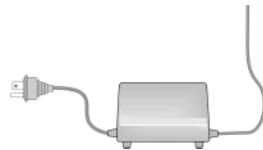
Figure 6. Camera Control Block



CameraMan Power Supply

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

Figure 7. CameraMan Power Supply



Connection Accessories

- RS-485 T Connector ([Figure 8](#))
- 3' CameraMan Communication Cable
- 25' CameraMan Keypad Cable

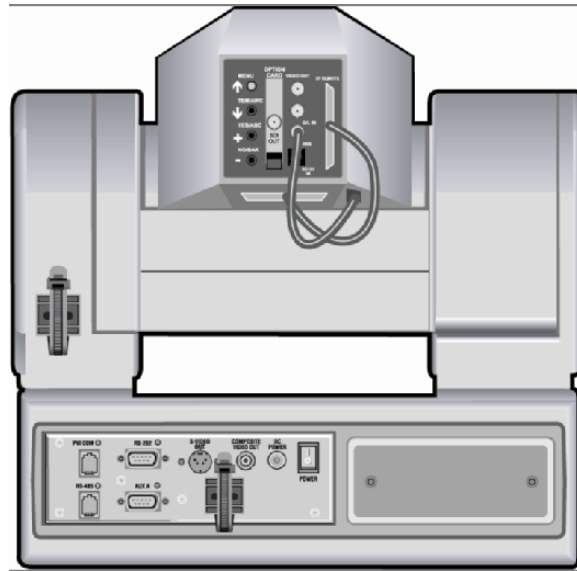
Figure 8. T Connector












CameraMan Ports and Jacks

The back of the CameraMan CPT 200D 3-CCD DIGITAL Camera ([Figure 9](#)) has a variety of ports and jacks used to connect the camera to other video, audio, and camera control components in a system.

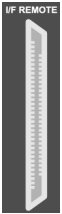
Figure 9. Back of Camera



Back of Camera Block Overview

- Turns on the on-screen menu for appearance adjustments. Also used to scroll upward through the on-screen menus. 
- When in shooting mode, the automatic white balance control can be set with this switch. It can also be used to scroll downward through the on-screen menus. 
- When in shooting mode, the automatic black balance control can be set with this switch. It is also used to display and increase the value of the sub-menus of the main on-screen menu. 
- When in shooting mode, the color bar and the shooting conditions are alternately indicated by pressing this switch. This is also used to scroll downward through, or lower the value of sub-menu items. 
- A digital video signal is provided at this BNC connector. 
- This is an ANALOG Video Out signal which is utilized to view the on-screen menus. 
- A GEN LOCK BNC connector used to synchronize the camera by connecting it to the network's Video Timing Source. 
- Input terminal for lens iris control. 
- Not Used. 

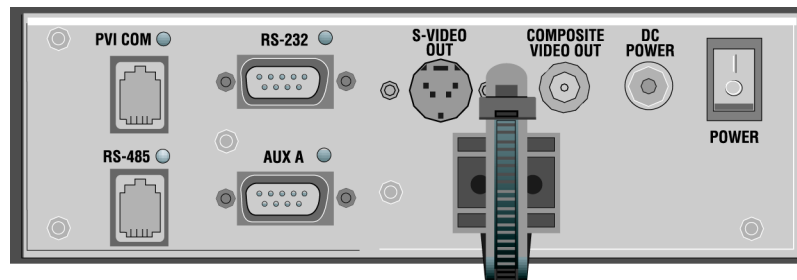
- Allows communication with the pan/tilt unit.



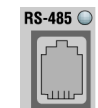
Camera Control Block Overview

Interface connections are located on the back of the camera control block (Figure 10).

Figure 10. Camera Control Block



- 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.
- 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.
- Provides RS-232 communications to external devices such as PC's or other vendor control systems. This connector is a standard DB-9 (female) connector.
- Non-functional
- Helps keep cables from becoming disconnected, or hindering the pan and tilt capabilities of the camera.
- Non-functional



- 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.
- Used to power on/off the CameraMan Camera.



CameraMan LED Displays

On the front of the CameraMan CPT 2018 3-CCD Camera, there are several LEDs (Figure 11). These indicate various functions that are being performed by the camera.

Figure 11. CameraMan LEDs

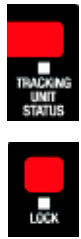


When the camera is first powered ON, all LEDs will illuminate. During this time, basic system hardware checks are being performed. These checks include communication with the camera interface board which verifies proper installation of the camera block on the pan/tilt unit. After the initial system checks 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:

- Indicates that the camera has an active power supply and is powered ON.
- (Between the Power and COM LEDs) The camera is in the camera setup mode.
- 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).
- Indicates that the camera is in autoTRACK mode. The IR spinners are running and the camera is attempting to acquire data from the TRP.



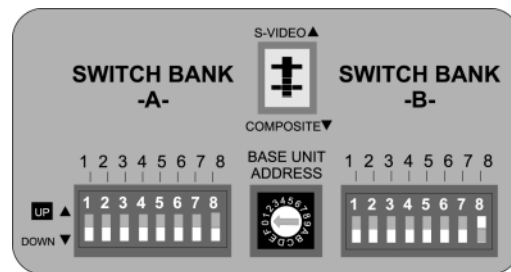
- Indicates that the camera has acquired the RF signal from the TRP and is receiving valid data. When this LED is OFF, TRP power is usually OFF.
- Reserved for future use.



CameraMan Configuration Panel

Behind the configuration plate on the lower right side rear of the 3-CCD DIGITAL 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 12. Configuration Panel



Note After changing any switch's settings, turn the camera off, then back on to activate the change.

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 and 6	Reserved for future use.

Center Control Switches	
Video Select Switch	Non-functional
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 and 7	Reserved for future use.

Tally Light Interface Port

The Tally Light Interface Port ([Figure 13](#)) provides output and external control for CameraMan Tally Light.

Figure 13. Tally Light Interface Port



Mounting the Camera

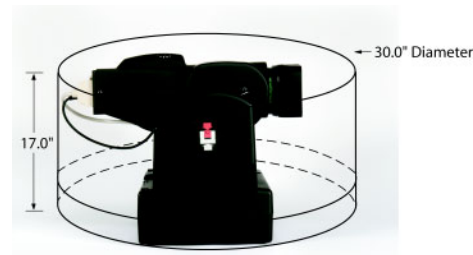
Mount the DIGITAL Camera on any flat, non-slick, non-metal surface with a minimum supporting area of 8" x 8" by following these easy steps.

1. Check the selected camera location to ensure that there is enough camera and cable clearance space (Figure 14) for the CameraMan to pan and tilt without obstruction.

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

Note To assist in placing the CameraMan to achieve optimum optical views, see the respective appendix in this manual.

Figure 14. Clearance Diagram



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).
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 non-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.

Connecting the Camera System

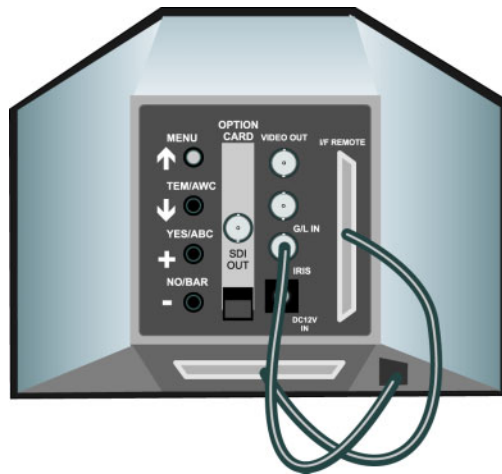
Follow the instructions below to begin connecting the camera to the system.

Note After connecting each cable to the camera, let it hang loosely behind the camera. Then follow the instructions in [Cable Restraint on page 21](#) before attaching the other ends of the cable to other equipment. This relieves undue stress on the cables and allows the camera to move freely.

Connecting Camera Control Cables

- On the back of the camera block ([Figure 15](#)), there are two cables. These provide the camera lens, power, and video signals. The cables must be attached for the camera to operate properly.
- Connect the 12-pin connector to the IRIS jack.
- Connect the 50-pin SCSI connector to the I/F REMOTE jack.

Figure 15. Back of Camera Block



Connecting the SDI Video Output

The 3-CCD DIGITAL Camera supports SDI format (270 Mbls component out).

Connect to the BNC jack labeled SDI OUT on the back of the camera shroud, using a standard SDI coaxial cable with a BNC connector.

Connecting to the RS-232 Port

The 3-CCD DIGITAL 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 DIGITAL 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 handshaking using Grass Valley High Reliability or Basic protocols.

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

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

Connecting Camera Control Devices

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

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

Camera Control Keypad (or Tracking System Keypad)

The included 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 (Figure 16) of the keypad.

Figure 16. Keypad Battery Compartment



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

Note 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.

DIGITAL SHOT Director

The optional DIGITAL SHOT Director multi-camera controller can be connected in hard-wired mode only. Follow these directions to connect the DIGITAL 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 17. Back of SHOT Director



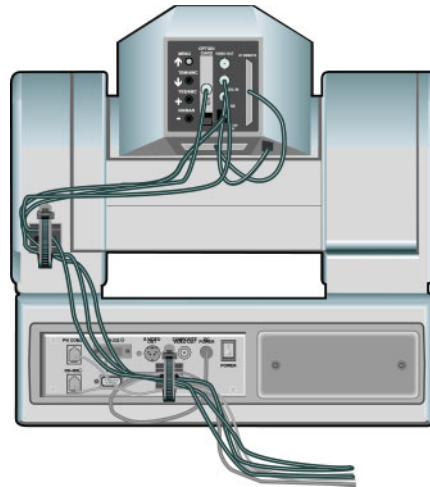
2. Connect the other end of the cable to:
 - The jack labeled RS-485 on the camera control block for single camera applications, or
 - The T-Connector for multiple-camera applications. Then use the provided 3' CameraMan Communication Cable to connect the T-connector to the camera's RS-485 jack.

Note If using a Camera Control Keypad or DIGITAL SHOT Director, refer to the respective operation manual. If it is unavailable, contact your local reseller or Grass Valley.

Cable Restraint and System Power

Notice that, if left alone, the connected cables may impede camera movement. To prevent this, the 3-CCD DIGITAL Camera comes equipped with two cable restrainers—one on the left back and one on the camera control block. See [Figure 18](#). Follow the instructions below to properly restrain the cables and power-up the camera.

Figure 18. Camera Cable Restraint



Cable Restraint

For upper (i.e. GEN LOCK) cable connections (if used)

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.

Power Supply Connection

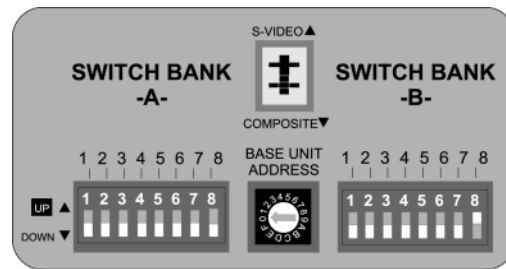
Mount the Power Supply with any orientation, or on top of a table or roll-about unit by using the following steps.

1. Verify that the POWER switch, on the back of the camera, is turned OFF.
2. Plug the 5.5mm power supply cord connector into the DC POWER jack on the back of the camera.
3. Connect the other end of the power supply to a 120/240 V ac power source.

Switch Configuration

Once connected to the power supply and control devices, the DIGITAL 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 19).

Figure 19. Configuration Switches



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

Switch Bank A	
Dip Switch 7 (Baud Rate)	Used to configure camera Baud Rate for the RS-232 and RS-485 ports. Set the switch in the UP position for 19,200 baud and the DOWN position for 9600 baud. (The factory default is UP.)
Dip Switch 8 (Memory)	For the majority of applications, this switch should be set to the UP (UNLOCK) position. When in the DOWN (LOCK) position, all programmed features are locked and cannot be overridden. (The factory default is UP.)

Central Control Switches	
Base Unit Address	Use the 16-position rotary switch labeled BASE UNIT ADDRESS to set the unique identification number for the specific CameraMan camera. If using the optional Keypad, DIGITAL SHOT Director, or another control system, refer to the documentation provided with those accessories for proper configuration.

Switch Bank B	
Dip Switch 1 (Protocol)	Selects the communication protocol to 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. (The factory default is DOWN.)
Dip Switch 4 (RF Command)	In the DOWN position, the camera responds to commands sent from an RF Keypad. In the UP position, the RF receiver in the camera is disabled and the camera cannot receive commands directly from a wireless keypad. (The factory default is DOWN.)

Note 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)	Determines how the preset settings are recalled. DOWN recalls Manual Gain, Iris, and Focus settings. UP recalls only the Auto settings for presets and autoTRACK Views. (The factory default is DOWN.)
Dip Switch 8 (Interlink)	Use this feature in multi-camera applications. When it is in the DOWN position, all commands are passed onto the RS-485 communication bus to the appropriate camera. For a single-camera application, this switch setting does not matter. (The factory default is DOWN.)

System Startup

Note Before powering the CameraMan system, ensure all necessary connections and configurations are complete

1. Just switch the Power button on the back of the CameraMan DIGITAL Camera to the ON position. The Camera should automatically enter its position calibration mode and then stop at the zero degree point.
2. Verify that the camera is now facing in the direction the “FRONT” label was pointing during mounting.
3. If you are using the Camera Control Keypad or DIGITAL 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.

Troubleshooting

Should any problems occur with the CameraMan CPT 2018 3-CCD DIGITAL 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 OUT connection is being used on the back of the camera shroud.
2. Verify that the video output of the camera is connected to the appropriate video input on the switcher or CODEC.

Problem

No communications through the RS-232 port.

Solution

1. Verify that the cable being used is wired correctly.
2. Verify that the PROTOCOL SELECT switch on the rear configuration panel is set properly.
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.

Multi-Camera Applications

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

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

1. Connect 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 to Pin 1
 - Pin 2 to Pin 2
 - Pin 3 to Pin 3
 - Pin 4 to Pin 4

Note Do NOT use a pre-wired standard phone cable. The wiring is different and may cause damage.

3. Using the BASE UNIT ADDRESS rotary switch located on the back of the Camera, configure each camera with a unique Base Unit Address; i.e. Camera One set with address 0, Camera Two set with address 1, and so on.
4. 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.

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

Note In the following specifications the CPT 2018-A3D is shown without brackets and the CPT 2018 A3DP is shown in brackets.

Image Elements	1/2" IT type 3-CCD
Pixels	Total Elements: Approx. 410,000 [470,000] Effective Elements: Approx. 380,000 [440,000]
Imaging Area	6.4 H x 4.8 V (equivalent to 1/2")
Scanning System	2:1 interlaced NTSC system [2:1 interlaced PAL system]
Scanning Frequency	Horizontal = 15.734kHz [15.625kHz] Vertical = 59.94Hz [50Hz]
Lens Mount	1/2" Bayonet Mount
Synchronize System	Internal/external synchronization
Standard Illumination	2000 lx, F14
Minimum Illumination	0.005 lx (F1.4) 0.00005 lx (F1.4) (2 sec. CCD accumulation)
Signal-to-Noise Ratio	67 dB (DNR on) [65 dB (DNR on)]
Horizontal Resolution	850 lines
Registration	0.05%
Image Enhancer	Horizontal/vertical
White Balance	A/B 2 memory AWC, ATW
Black Balance	Self-adjusting
Color Bar	SMPTE color bar (setup 0/7.5 IRE) [EBU color bar]
Shutter Speed	OFF, 1/100 [1/120], 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 Synchro-scan ELC
Gain	Manual: max. 72dB (0~30 dB in steps, Night Eye/H, Digital Gain 0~30 dB in 6 dB steps) Auto: max. 42dB (AGC 0~30 dB, Night Eye/H)
Iris	Auto (Manual by RCU control)
Video Output	Composite: 1 Vp-p/75 ohm (BNC, 50P connector) YC: Y 1Vp-p, C 0.286Vp-p [0.3Vp-p] (50P connector) Component: Y 1.0Vp-p, Pr/Pb 0.7Vp-p, RGB 0.7Vp-p/ 75 ohm (50P connector)
Operating Temperature	14°F~113°F (-10°C~+45°C)

Image Elements	2/3" IT type 3-CCD
Pixels	Total Elements: Approx. 510,000 [595,728] Effective Elements: Approx. 460,000 [538,200]
Imaging Area	8.8H X 6.6V (mm) (2/3" 4:3) 9.6H X 5.4V (mm) (2/3" 16:9)
Scanning System	2:1 interlaced NTSC system [2:1 interlaced PAL system]
Scanning Frequency	Horizontal = 15.734 kHz [15.625 kHz] Vertical = 59.94 Hz [50 Hz]
Lens Mount	2/3" Bayonet Mount
Synchronize System	Internal/external synchronization
Standard Illumination	2000 lx, F11
Minimum Illumination	0.4 lx (F1.7, Night Eye H)
Signal-to-Noise Ratio	65 dB (DNR on) [63 (DNR on)]
Horizontal Resolution	850 lines
Registration	0.05%
Image Enhancer	Horizontal/vertical
White Balance	A/B 2 memory AWC,ATW
Black Balance	Self-adjusting
Color Bar	SMPTE color bar (setup 0/7.5IRE) [EBU color bar]
Shutter Speed	OFF, 1/100 [1/120], 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 Synchro-scan ELC
Gain	Manual: max. 42 dB (0~30 dB in steps, Night Eye H/L) Auto: max. 42 dB (AGC 0~30 dB, Night Eye/H)
Iris	Auto (Manual by RCU control)
Video Output	Composite: 1 Vp-p/75 ohms (BNC, 50P connector) YC: Y 1 Vp-p, C 0.286 Vp-p [0.3 Vp-p] (50P connector) Component: Y 1.0 Vp-p, Pr/Pb 0.7 Vp-p, RGB 0.7 Vp-p/ 75 ohms (50P connector)
Operating Temperature	14°F~113°F (-10°C~+45°C)


CameraMan Clearance

The minimum dimension for the CameraMan is a circular diameter of 30". This accounts for both camera and cable clearance. Check cable movement to avoid binding and stress on the camera.

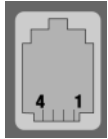
Pin-Out Diagrams

Following are the pinout connections on the rear of the CameraMan camera control block. Diagrams are for reference.

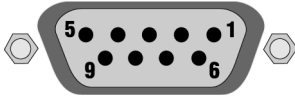
PVI COM RJ-11

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


RS-485 Four Position Modular Handset

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

RS-232 9-pin D-9

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

5.5 mm dc Power Connector

Connector	Pin	Signal
	1	+ 18v DC
	2	Ground

Field-Of-View Specifications

The following reference charts represent the approximate size of the field of view and angle of view from various distances and with different lenses.

20 x 6.4 Lens on Standard 4:3 DIGITAL Camera.

Dist. from Lens (feet)	No Zoom			Full Zoom		
	Hor. (ft)	Vert. (ft)	ft ²	Hor. (ft)	Vert. (ft)	ft ²
10	9.78	7.50	73.39	0.50	0.38	0.19
15	14.68	11.25	165.12	0.75	0.56	0.42
20	19.57	15.00	293.54	1.00	0.75	0.75
25	24.46	18.75	458.66	1.25	0.94	1.17
30	29.35	22.50	660.67	1.50	1.13	1.69
35	34.24	26.25	898.97	1.75	1.31	2.30
40	39.13	30.00	1174.16	2.00	1.50	3.00
45	44.03	33.75	1486.05	2.25	1.69	3.80
50	48.92	37.50	1834.62	2.50	1.88	4.70
55	53.81	41.26	2219.90	2.75	2.06	5.68
60	58.70	45.01	2641.86	3.00	2.25	6.76
65	63.59	48.76	3100.52	3.25	2.44	7.93
70	68.48	52.51	3595.86	3.50	2.63	9.20
Angle of View	53° 08'	41° 07'		2° 52'	2° 09'	

19 x 9 Lens on 16:/4:3 DIGITAL Camera switched to Aspect Ratio without crossover Adaptor.

Dist. from Lens (feet)	No Zoom			Full Zoom		
	Hor. (ft)	Vert. (ft)	ft ²	Hor. (ft)	Vert. (ft)	ft ²
10	9.78	7.34	71.75	0.52	0.39	0.20
15	14.66	11.01	161.43	0.78	0.58	0.45
20	19.55	14.68	286.98	1.04	0.78	0.80
25	24.44	18.35	448.41	1.30	0.97	1.26
30	29.33	22.02	645.71	1.56	1.16	1.80
35	34.22	25.69	878.88	1.81	1.36	2.46
40	39.11	29.36	1147.93	2.07	1.55	3.21
45	43.99	33.02	1452.85	2.33	1.74	4.07
50	48.88	36.69	1793.64	2.59	1.94	5.02
55	53.77	40.36	2170.31	2.85	2.13	6.08
60	58.66	44.03	2582.84	3.11	2.33	7.23
65	63.55	47.70	3031.25	3.37	2.52	8.49
70	68.43	51.37	3515.54	3.63	2.71	9.84
Angle of View	52.1°	40.3°		2.97	2.22°	

Note To obtain the conventional 4:3 view, the user must use a crossover adapter

19 x 9 Lens on 16:/4:3 DIGITAL Camera switched to Aspect Ratio with crossover Adaptor.

Dist. from Lens (feet)	No Zoom			Full Zoom		
	Hor. (ft)	Vert. (ft)	ft ²	Hor. (ft)	Vert. (ft)	ft ²
10	8.00	6.00	48.00	0.42	0.31	0.13
15	12.00	9.00	108.00	0.63	0.47	0.30
20	16.00	12.00	192.00	0.84	0.63	0.53
25	20.00	15.00	299.99	1.05	0.79	0.82
30	24.00	18.00	431.99	1.26	0.94	1.18
35	28.00	21.00	587.99	1.47	1.10	1.61
40	32.00	24.00	767.98	1.68	1.26	2.11
45	36.00	27.00	971.98	1.89	1.41	2.67
50	40.00	30.00	1199.97	2.09	1.57	3.29
55	44.00	33.00	1451.97	2.30	1.73	3.98
60	48.00	36.00	1727.96	2.51	1.89	4.74
65	52.00	39.00	2027.95	2.72	2.04	5.56
70	56.00	42.00	2351.94	2.93	2.20	6.45
Angle of View	43.6°	33.4°		2.4°	1.8°	

Note When the camera is switched to a 16:9 aspect ratio, the wide-angle conversion is at approximately 11mm

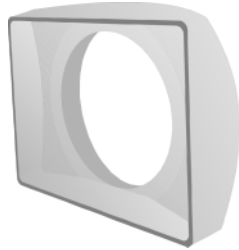
19 x 9 Lens on 16:/4:3 DIGITAL Camera switched to 16:9 Aspect Ratio.

Dist. from Lens (feet)	No Zoom			Full Zoom		
	Hor. (ft)	Vert. (ft)	ft ²	Hor. (ft)	Vert. (ft)	ft ²
10	10.66	6.00	63.94	0.56	0.31	0.18
15	15.98	9.00	143.87	0.84	0.47	0.39
20	21.31	12.00	255.77	1.12	0.63	0.70
25	26.64	15.00	399.64	1.40	0.79	1.10
30	31.97	18.00	575.48	1.68	0.94	1.58
35	37.30	21.00	783.297	1.96	1.10	2.15
40	42.63	24.00	1023.08	2.23	1.26	2.81
45	47.95	27.00	1294.84	2.51	1.41	3.55
50	53.28	30.00	1598.56	2.79	1.57	4.39
55	58.61	33.00	1934.26	3.07	1.73	5.31
60	63.94	36.00	2301.93	3.35	1.89	6.32
65	69.27	39.00	2701.57	3.63	2.04	7.42
70	74.60	42.00	3133.19	3.91	2.20	8.60
Angle of View	56.1°	33.4°		3.2°	1.8°	

The 20x Lens Shroud

The 20x version of the CameraMan 3-CCD DIGITAL Camera comes equipped with a rectangular lens shroud (Figure 20). The shroud helps to keep out glares from light sources located on the sides of the camera.

Figure 20. Lens Shroud



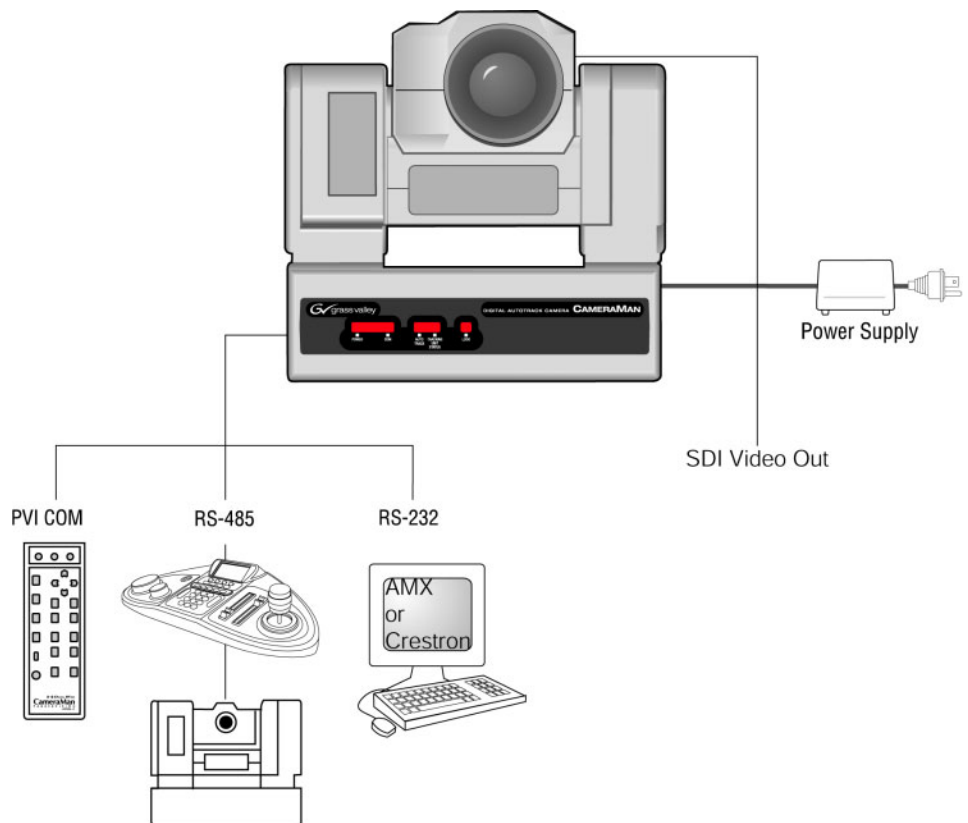
1. Locate the red dots on the top and bottom of the shroud, and on the lens itself.
2. Align the red dot on the shroud with the dot on the lens, then slide the shroud over the lens.
3. Tighten the shroud in place using the bolt attached to the shroud.

Typical CameraMan System Diagram

Below is a typical setup for the CameraMan camera system.

Note Items in the diagram are not to scale.

Figure 21. Typical Setup Diagram



Appendix G — Typical CameraMan System Diagram

CPT 2018-A3D On-Screen Menus

The 3-CCD DIGITAL Camera allows for adjustments to the camera settings via on-screen menus by using the controls on the back of the camera block, the Camera Control Keypad, or DIGITAL SHOT Director. These adjustments should be performed by qualified technical personnel only. If your system includes a DIGITAL SHOT Director, always use the DIGITAL SHOT Director's LCD menus to make these adjustments.

Use Mode Setting

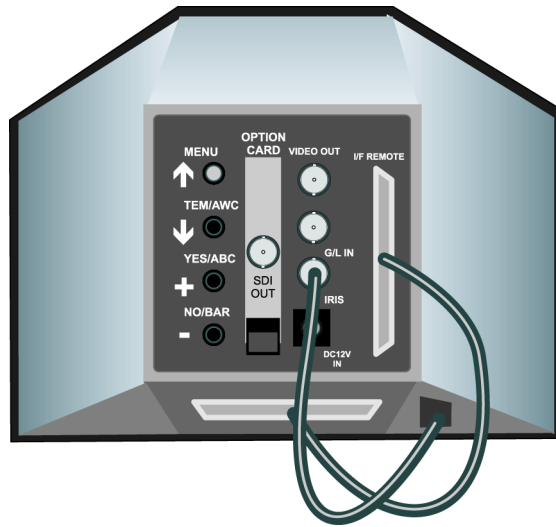
The camera has four use modes, and various functions for four use modes have been preset. Functions can be set as best suited to each use mode.

- Halogen mode
- Suited to indoor shooting, such as at weddings, parties, lecture meetings, events, etc. Settings can be changed using a simple menu.
- Fluorescent mode
- Suited to indoor shooting under fluorescent lighting. Settings can be changed using a simple menu.
- Outdoor mode
- Suited to outdoor shooting. Settings can be changed using a simple menu.
- User mode
- Settings can be changed using a detail menu.

Setting by Camera

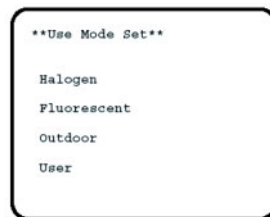
1. Turn the camera on while keeping the MENU switch ([Figure 22](#)) depressed.

Figure 22. Camera Back Switches



2. The use mode setting menu (Figure 23) appears on the monitor screen and one of the use modes blinks.

Figure 23. Use Mode Setting Menu



3. Press the MENU switch, ITEM/AWC switch, or NO/BAR switch to let the desired use mode blink.
 - MENU switch: The blinking item moves up one.
 - ITEM/AWC switch, NO/BAR switch: The blinking item moves down one.
4. Press the YES/ABC switch. The blinking use mode comes into effect. After the use mode setting menu is shown for about 5 seconds, the camera returns to be ready for operation. Then, the camera operates in the selected use mode.

Note On-screen menu items can only be viewed by connecting to the analog VIDEO OUT connector on the rear of the camera block.

Menu Item Setting

- Each of the four use modes of the camera has a main menu (Figure 24).

Figure 24. Main Menu - Halogen, Fluorescent, Outdoor Mode



- Each item of the main menu has a submenu comprising several settings.
 - These settings have been preset to the optimum values to suit each use mode, and can be changed to suit actual shooting conditions.
1. On the camera, keep the MENU switch depressed for 5 seconds or more. The main menu appears on the monitor screen.
 2. Each time the MENU switch, ITEM/ AWC switch, or NO/BAR switch is pressed, the blinking item moves up or down.
 3. When the YES/ABC switch is pressed after selecting the desired item to blink, the submenu for the selected item appears on the screen.
 4. Select the desired item to be changed in its settings using the MENU switch and ITEM/ AWC switch.
 5. Press the YES/ABC switch or NO/BAR switch to change the settings.
 6. Select [Return] using the MENU switch and ITEM/ AWC, then press the YES/ABC switch to return to the main menu.
 7. After changing the settings, take the following steps. **Camera alone:** Select [End] using the MENU switch and ITEM/ AWC switch and press the YES/ABC switch.

Submenus Overview

The submenus on page 46 through page 49 are for Halogen Mode, Fluorescent Mode, and Outdoor Mode on the NTSC version of the 4:3 Fixed 3-CCD Digital Camera. Refer to page 50 through page 58 for the User Mode submenus.

Brightness Setting

Figure 25. Brightness Setting Submenu

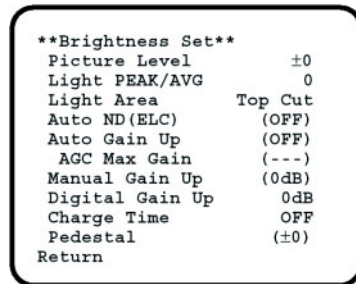


Table 1. Brightness Settings

Picture Level	(-50 to +50) Convergence level of AUTO IRIS/AUTO GAIN UP/AUTO ND (ELC) can be adjusted.
Light PEAK/AVG	(P50 to A50) The ratio of AUTO IRIS/AUTO GAIN up/AUTO ND (ELC) detected peak to average can be adjusted within a predetermined range.
Light Area	A photometric measurement method can be selected for AUTO IRIS/AUTO GAIN UP/AUTO ND (ELC). ALL: All the screen area is measured. Center: The screen is measured mainly in the center area, about one-third of both the top and bottom and one-third of both the right and left portions of the screen are excluded from measurement. Top Cut: About one-third of the top part of the screen is excluded from measurement. BTM Cut: About one-third of the bottom portion of the screen is excluded from measurement. R/L Cut: About one-third of both the right and left portions of the screen are excluded from measurement.
Auto ND (ELC)	This cannot be set unless either "OFF" or "Auto" has been set for the Charge Time. ON: The electronic shutter is controlled to automatically adjust the luminance. OFF: Luminance is not automatically adjusted by the electronic shutter.
Auto Gain Up	This cannot be set when "Auto" has been set for the Charge Time. OFF: No auto gain up takes place. (Gain can be increased manually.) ON: The light quantity is adjusted automatically. The maximum to which the gain can be increased using the auto gain up function is selected by the AGC Max Gain setting.

Table 1. Brightness Settings

AGC Max Gain	(6dB, 12dB, 18dB, 24dB, N/Eye L, N/Eye H) This is used to set the maximum amount to which the gain can be increased when "ON" has been selected as the Auto Gain Up setting.
Manual Gain Up	Manual setting is possible only when the Auto Gain Up setting is "OFF". 0 dB: 0 dB should be selected in normal cases. 1 dB to 30 dB: Use this range if sufficient video output cannot be obtained even when the lens iris is opened in shooting dark scenes. Night Eye L: Use this setting if it is not possible to achieve a satisfactory video output at 30 dB. Night Eye H: Use this setting if it is not possible to achieve a satisfactory video output even at the Night Eye L setting.
Digital Gain Up	(0dB, 6dB, 12dB, 18dB, 24dB, 30dB) This can be set only when "OFF" has been selected as the Auto Gain Up setting. 0dB: Under normal circumstances, this setting is used. 6 dB to 30dB: Use this setting while shooting dark scenes if it is not possible to achieve a satisfactory video output even when the lens diaphragm is opened and "Night Eye" is selected as the Manual Gain Up setting.
Charge Time	This is used to set the CCD storage time. Auto: ALC is performed followed by AGC and then by the data storage, and the camera automatically adjusts the light quantity. If "ON" is selected as the Auto ND (ELC) setting, ELC is performed followed by ALC, AGC and then by the data storage in this order, and the light quantity is automatically adjusted. The Shutter Speed cannot be changed. OFF: Under normal circumstances, this setting is used. 1/30s to 2s: Use this setting if it is not possible to achieve a satisfactory video output even when the gain up setting is used. The Auto ND (ELC) setting and Shutter Speed go "OFF" and cannot be changed. *If the V Resolution setting has been set to "Fine", 1/15s - 2s is selected as the storage time setting, and the sensitivity is set to about one-half of that obtained with when they have been set to "Normal".
Pedestal	(-150 to +150) The black level (pedestal) of the luminance (Y) signal can be set. Used in adjusting the black levels of two or more cameras.

Color Setting

Figure 26. Color Setting Submenu

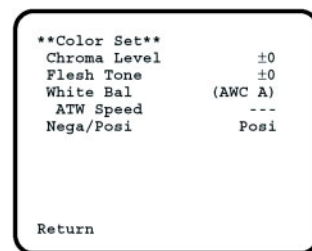


Table 2. Color Settings

Chroma Level	(-3 to +3) Chroma Level can be decreased or increased to any of three levels each.
Flesh Tone	(-3 to +3) Skin color can be decreased or increased to any of three levels each.
White Bal	ATW: The white balance is automatically adjusted to be always right. AWC A, AWC B: Once the white balance is adjusted with the ITEM/AWC switch on the back of the camera, it is no longer necessary to set the white balance again if you simply select AWC A or AWC B, provided that the camera is used under the same conditions. Fine color adjustment can be made after setting AWC by red/blue gain adjustment in User Mode. P SET 3200K: The white balance is adjusted to 3200K illumination. P SET 5600K: The white balance is adjusted to 5600K illumination.
ATW Speed	(SLOW 2, SLOW 1, MID, FAST 1, FAST 2) ATW Speed can be set.
Nega/Posi	Posi: Normal image. Nega: Image is shown reversed in darkness and color.

G/L Color Bar Setting

Figure 27. G/L Color Bar Setting Submenu

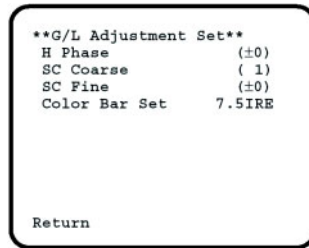


Table 3. G/L Color Bar Settings

H Phase	(-206 to +49) Horizontal phase can be adjusted when a genlock signal is supplied.
SC Coarse	(1, 2, 3, 4) Coarse adjustment of subcarrier phase can be made when a genlock signal is supplied.
SC Fine	(-511 to +511) Fine adjustment of subcarrier phase can be made when a genlock signal is supplied.
Color Bar Set	(0.0 IRE, 7.5 IRE) The setup level of color bar can be adjusted.

Sharpness (DTL) Setting

Figure 28. Sharpness (DTL) Setting Submenu

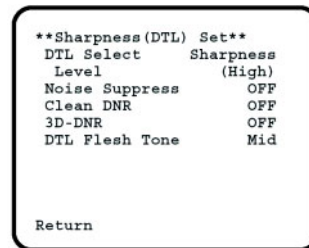


Table 4. Sharpness (DTL) Settings

DTL Select	(Sharpness, Super DTL) If contour correction is not sufficient at the Sharpness position when Detail Level setting is set to LOW or HIGH, select the Super DTL position. *Neither Sharpness nor Super DTL is valid for contour correction if Detail Level setting is in the OFF position.
Level	(OFF, Low, High) Detail level can be adjusted when DTL Select setting is at Sharpness. Super DTL level can be adjusted when DTL Select setting is at Super DTL.
Noise Suppress	(OFF, Low, High) Screen noise can be reduced when Level setting is at HIGH or LOW.
Clean DNR	(OFF, Low, High) This enables the clean DNR effect to be selected.
3D-DNR	(OFF, Low, Mid, High) This enables the 3D-DNR effect to be selected. When "Mid" or "High" is selected, the noise is reduced but lag increases.
DTL Flesh Tone	Low: The roughness of the flesh tones is minimized. Mid: This is the standard setting. High: The outline compensation for the flesh tones is accentuated.

Other Settings

Figure 29. Other Settings Submenus

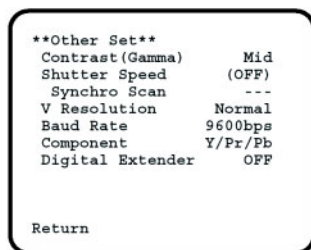


Table 5. Other Settings

Contrast (Gamma)	(Low, Mid, High) The contrast can be adjusted to any of three levels.
Shutter Speed	OFF: Electronic shutter is turned off. 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000: Electronic shutter operates at one of these speeds as selected. S/Scan (Synchro Scan): Electronic shutter operates at the speed set with the electronic shutter synchro-scan setting. Auto ND: Electronic shutter is controlled to automatically adjust the luminance. (ELC)
Synchro Scan	(60.34 Hz to 15.75 kHz) This setting is possible only when the Shutter Speed setting is at S/Scan. Horizontal bar noise can be reduced by synchro-scan adjustment (i.e. shooting workstation scenes). *For luminance settings at each shutter speed and synchro-scan shutter speed, refer to the table:

Shutter Speed	Synchro-scan	Required luminance ratio
OFF	-	1
1/100	99.68 Hz	2
1/250	250.0 Hz	4
1/500	492.2 Hz	8
1/1000	984.4 Hz	16
1/2000	1.969 kHz	32
1/4000	3.938 kHz	64
1/10000	7.875 kHz	160

V Resolution	Normal: Normal image. (CCD storage will be by field storage.) Fine: Vertical resolution increases. (Vertical resolution is raised without increasing residual images by frame storage and electronic shutter. Normal is recommended for general use because sensitivity will decrease at the Fine setting.)
Baud Rate	(1200bps, 2400bps, 4800bps, 9600bps) Select a communication speed in controlling the camera from the computer.
Component	(RGB, Y/Pr/Pb, Y/C) This enables RGB, Y/Pr/Pb or Y/C to be selected as the component signals which are to be output from the I/F REMOTE connector.
Digital Extender	OFF: Under normal circumstances, this setting is used. ON: An extender effect which is approximately 1.5 times greater is achieved. However, the resolution drops when the digital extender is set to "ON".

User Mode Submenus Overview

Iris, Shutter, Gain Settings

Figure 30. Iris, Shutter, Gain Setting Submenu

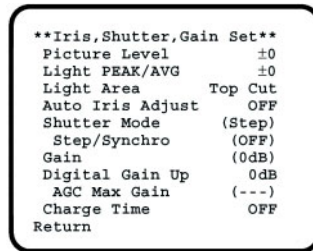


Table 6. Iris, Shutter, Gain Settings

Picture Level	(-50 to +50) Convergence level of AUTO IRIS/AGC/ELC can be adjusted.
Light PEAK/AVG	(P50 to A50) The ratio of AUTO IRIS/AGC/ELC detected peak to average can be adjusted within a range.
Light Area	A photometric measurement method can be selected for AUTO IRIS/AGC/ELC. All: All the screen is measured. Center: The screen is measured mainly in the center area, about one-third of both the top and bottom and one-third of both the right and left portions of the screen are excluded from measurement. Top cut: About one-third of the top portion of the screen is excluded from measurement. BTM cut: About one-third of the bottom portion of the screen is excluded from measurement. R/L cut: About one-third of both the right and left portions of the screen are excluded from measurement.
Auto Iris Adjust	(ON, OFF)
Shutter Mode	Step: Electronic shutter operates at the speed selected by the Step/Synchro setting. ELC: Electronic shutter is controlled to automatically adjust the luminance. S/Scan (Synchro Scan): Electronic shutter operates at the speed selected in Step/Synchro setting. *If Frame 1 is selected in Field/Frame setting, Shutter Mode setting cannot be added.
Step/Synchro	This can be set when "Step" or "S/Scan" has been selected as the Shutter Mode setting. When "Step" has been selected as the Shutter Mode setting: OFF: The electronic shutter is set to OFF. 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000: The electronic shutter operates at the shutter speed selected. When "S/Scan" has been selected as the Shutter Mode Setting: 60.34Hz to 15.75kHz: When the screen of a work station, etc. is to be shot, the noise on the horizontal bars can be reduced by proceeding with the synchro-scan adjustment. *Refer to the table below for the light quantity settings to be used in each shutter mode and during synchro scanning.

Shutter Speed	Synchro-Scan	Required Luminance Ratio
OFF	-	1
1/100	100.3 Hz	2
1/250	250.0 Hz	4

1/500	492.2 Hz	8
1/1000	984.4 Hz	16
1/2000	1.969 kHz	32
1/4000	3.938 kHz	64
1/10000	7.875 kHz	160

Gain	<p>When "Auto" has been selected as the Charge Time setting, the setting is kept to "Auto" regardless of the Gain setting selected here.</p> <p>Auto: The light quantity is adjusted automatically.</p> <p>0 dB: Under normal circumstances, this setting is used.</p> <p>1 dB to 30 dB: Use this setting while shooting dark scenes if it is not possible to achieve a satisfactory video output even when the lens diaphragm is opened.</p> <p>N/Eye L (Night Eye L): Use this setting if it is not possible to achieve a satisfactory video output even at 30 dB.</p> <p>N/Eye H (Night Eye H): Use this setting if it is not possible to achieve a satisfactory video output even at the Night Eye L setting.</p>
Digital Gain Up	<p>(0dB, 6dB, 12dB, 18dB, 24dB, 30dB) This can be set when a setting other than "Auto" has been selected as the Gain setting.</p> <p>0 dB: Under normal circumstances, this setting is used.</p> <p>6 dB to 30 dB: Use this setting while shooting dark scenes if it is not possible to achieve a satisfactory video output even when the lens diaphragm is opened and "Night Eye" is selected as the Gain setting.</p>
AGC Max Gain	<p>(6dB, 12dB, 18dB, 24dB, N/Eye L, N/Eye H) This is used to set the maximum gain up when "Auto" has been selected as the Gain setting.</p>
Charge Time	<p>(Auto, OFF, 1/30s, 1/15s, 1/8s, 1/4s, 1/2s, 1s, 2s) This is used to set the CCD storage time.</p> <p>OFF: Under normal circumstances, this setting is used.</p> <p>Auto: ALC is performed followed by AGC and then by the data storage, and the camera automatically adjusts the light quantity.</p> <p>If the Shutter Mode setting is set to "ELC", ELC is performed by ALC, AGC and then by the data storage in this order, and the light quantity is automatically adjusted. The Shutter Mode setting cannot be changed at this time.</p> <p>1/30s to 2s: Use this setting if it is not possible to achieve a satisfactory video output even when the gain up setting is used.</p> <p>The electronic shutter goes "OFF" at this time, the Shutter Mode setting and Step/Synchro setting cannot be changed.</p> <p>*If the Field/Frame setting has been set to "Frame1" or "Frame2", 1/15s to 2s is selected as the storage time setting, and the sensitivity is set to about one-half of that obtained with when the Field/Frame setting has been set to "Field".</p>

Color Settings

Figure 31. Color Setting Submenu

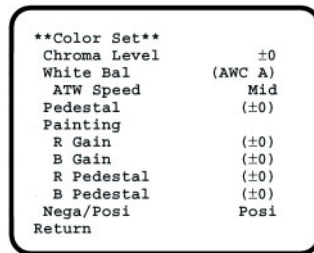


Table 7. Color Settings

Chroma Level	(-3 to +3) Chroma Level can be decreased or increased to three levels.
White Bal	ATW: The white balance is automatically adjusted to the optimum position. AWC A, AWC B: Color temperature conditions at two points can be stored at AWC A and AWC B. Once the white balance is adjusted with the ITEM/AWC switch on the back of the camera, it is no longer necessary to set the white balance again if you simply select AWC A or AWC B, provided that the camera is used under the same conditions. Fine color adjustment can be made after setting AWC by red/blue gain adjustment in Painting setting. P SET 3200K: The white balance is adjusted to 3200K illumination. P SET 5600K: The white balance is adjusted to 5600K illumination.
ATW Speed	(SLOW 2, SLOW 1, MID, FAST 1, FAST 2) ATW Speed can be set.
Pedestal	(-150 to +150) The black level (pedestal) of the luminance (Y) signal can be set. Used in adjusting the black levels of two or more cameras.
Painting	(-150 to +150) R Gain, B Gain: Fine adjustment of the white balance can be made after AWC setting when AWC A or AWC B is selected in White Balance Setting. The set value returns to ±0 after AWC setting in using the camera alone. R Pedestal, B Pedestal: Fine adjustment of the black balance can be made after ABC setting. The set value returns to ±0 after ABC setting in using the camera alone.
Nega/Posi	Posi: Normal image. Nega: Image is shown reversed in darkness and color.

G/L Adjustment Settings

Figure 32. G/L Adjustment Setting Submenu

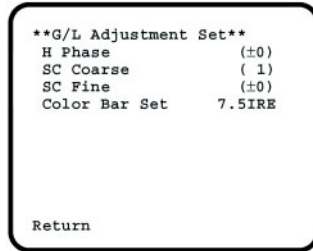


Table 8. G/L Adjustment Settings

H Phase	(-206 to +49) Horizontal phase can be adjusted when a genlock signal is supplied.
SC Coarse	(1, 2, 3, 4) Coarse adjustment of subcarrier phase can be made when a genlock signal is supplied.
SC Fine	(-511 to +511) Fine adjustment of subcarrier phase can be made when a genlock signal is supplied.
Color Bar Set	(0.0 IRE, 7.5 IRE) The setup level of color bar can be adjusted.

Detail Settings

Figure 33. Detail Setting Submenus

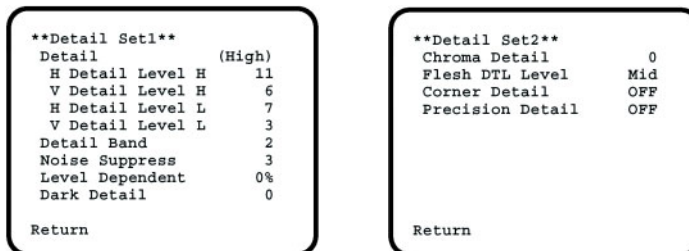


Table 9. Detail Settings

Detail	(OFF, Low, High) Contour correction quantity can be selected. Detail settings made using the Horizontal/Vertical Detail Level High/Low setting.
	Detail level can be set in horizontal (H) and vertical (V) directions with the Detail setting at High or Low. Whichever the direction, H or V, the set level at High must be at least one position higher than that at Low.
H Detail Level H	(L+1 to +63)
V Detail Level H	(L+1 to +31)
H Detail Level L	(0 to H-1)
V Detail Level L	(0 to H-1)
Detail Band	(1 to 5) A contour correction band can be set with the Detail at High or Low. The higher setting, the finer will be the detail.
Noise Suppress	(1 to 10) Screen noise can be reduced with the Detail setting at High or Low. If the noise suppress compensation level is set too high, a fine object will be reproduced less sharply.
Level Dependent	(0% to 25%) Screen noise due to the detail of dark parts of an object can be reduced. If level compensation is set too high, however, hair, for example, will be reproduced less sharply.

Table 9. Detail Settings

Dark Detail	(0 to 5) The contours of the darker portions of an object can be emphasized. This setting is possible only when the Level Dependent setting is set to 0%.
Chroma Detail	(0 to 15) The contours of high-hue portions of an object can be emphasized.
Flesh DTL Level	Low: The roughness of the flesh tones is minimized. Mid: This is the standard setting. High: The outlines of the flesh tones are accentuated.
Corner Detail	(OFF, ON) Corner detail, which improves the resolution of corners, can be turned on or off when the Detail setting is at High or Low.
Precision Detail	(OFF, Low, High) This setting is to narrow detail width and suppress detail glare.

Color Matrix Settings

Figure 34. Color Matrix Setting Submenus

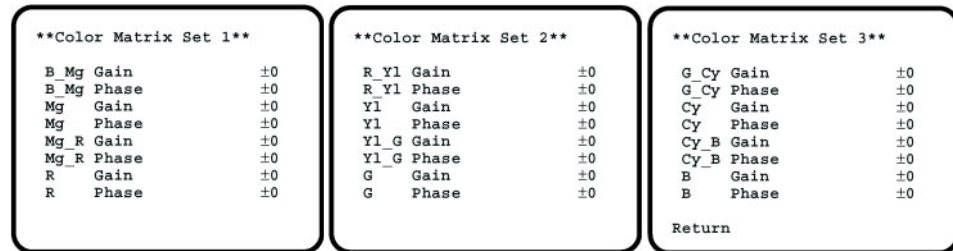


Table 10. Color Matrix Settings

B_Mg	Gain	Increases or decreases the intermediate color between blue and magenta.
B_Mg	Phase	Varies the hue of the intermediate color between blue and magenta.
Mg	Gain	Increases or decreases the magenta.
Mg	Phase	Varies the hue of the magenta.
Mg_R	Gain	Increases or decreases the intermediate color between magenta and red.
Mg_R	Phase	Varies the hue of the intermediate color between magenta and red.
R	Gain	Increases or decreases the red.
R	Phase	Varies the hue of the red.
R_Yl	Gain	Increases or decreases the intermediate color between red and yellow.
R_Yl	Phase	Varies the hue of the intermediate color between red and yellow.
Yl	Gain	Increases or decreases the intermediate color of yellow.
Yl	Phase	Varies the hue of the yellow.
Yl_G	Gain	Increases or decreases the intermediate color between yellow and green.
Yl_G	Phase	Varies the hue of the intermediate color between yellow and green.
G	Gain	Increases or decreases the green.
G	Phase	Varies the hue of the green
G_Cy	Gain	Increases or decreases the intermediate color between green and cyan.
G_Cy	Phase	Varies the hue of the intermediate color between green and cyan.
Cy	Gain	Increases or decreases the cyan.

Table 10. Color Matrix Settings

Cy	Phase	Varies the hue of the cyan.
Cy_B	Gain	Increases or decreases the intermediate color between cyan and blue.
Cy_B	Phase	Varies the hue of the intermediate color between cyan and blue.
B	Gain	Increases or decreases the intermediate color between blue and magenta.
B	Phase	Varies the hue of the intermediate color between blue and magenta.

Other Settings

Figure 35. Other Setting Submenus

Other Set1		**Other Set2**	
Gamma	0.45	Field/Frame	Field
Knee Point	98%	Baud Rate	9600bps
White Clip	110%	Component	Y/Pr/Pb
Flare R	0	Digital Extender	OFF
Flare G	0	Filter	Normal
Flare B	0		
Black Stretch	OFF		
Clean DNR	OFF		
3D-DNR	OFF		
2D LPF	OFF		
Return		Return	

Table 11. Other Settings

Gamma	(0.35 to 0.55) Gamma correction level can be set.
Knee Point	88% - 98%: The level of video signals subject to knee compensation (knee point) can be set. Dynamic: Knee compensation level is automatically adjusted according to the scene.
White Clip	(95% to 110%) The peak level of video signals to be white-clipped can be set.
Flare R/G/B	(0 to 100) Flare correction level can be adjusted. *Flare correction level has already been adjusted prior to shipment from the factory.
Black Stretch	Black stretch to correct the suppression of black portions at low luminance can be set to ON or OFF.
Clean DNR	(High, Low, OFF) This enables the clean DNR effect to be selected.
3D-DNR	(OFF, Low, Mid, High) This enables the 3D-DNR effect to be selected.
2D LPF	(OFF, Low, High) The 2D lowpass filter that reduces moire and cross color can be set.
Field/Frame	Field: CCD storage will be by field storage. Frame 1: Vertical resolution increases in frame storage. Frame 2: Vertical resolution is raised without increasing residual images by frame storage and electronic shutter.
Baud Rate	(1200bps, 2400bps, 4800bps, 9600bps) This setting is to select a communication speed in controlling the camera from the computer.
Component	This enables RGB, Y/Pr/Pb or Y/C to be selected as the component signals which are to be output from the I/F REMOTE connector.
Digital Extender	OFF: Under normal circumstances, this setting is used. ON: An extender effect which is approximately 1.5 times greater is achieved. However, resolution drops when the digital extender is set to "ON".
Filter	IR Through: The infrared shooting mode is established. Irradiate the subject with infrared light. Normal: Under normal circumstances, this setting is used. 1/16ND: The 1/16 ND filter is inserted. Use this setting when the lens cannot be stopped down enough by the diaphragm. 1/64ND: The 1/64 ND filter is inserted. Use this setting when the lens cannot be stopped down enough by the diaphragm even at the 1/16ND setting.

Initial Settings

Note For an incorrect setting in any use mode, take the following steps to return to the initial settings.

1. Select [Initialize Data] on the main menu screen of each Use Mode. Press the YES/ABC switch, then the [Initialize Data] screen shows for about 10 seconds.
2. Press the YES/ABC switch within about 10 seconds to return to the initial settings, the existing settings are initialized, and the camera returns to main menu
3. If the NO/BAR switch is pressed, or if the YES/ABC switch is not pressed, within about 10 seconds, and the camera returns to main menu, then the existing settings are not initialized.

Resetting

Table 12. Factory preset values for Halogen Mode, Fluorescent Mode, and Outdoor Mode

	Item	Halogen mode	Fluorescent mode	Outdoor mode
Brightness Set	Picture Level Light PEAK/AVG Light Area Auto ND (ELC) Auto Gain Up AGC Max Gain Manual Gain Up Digital Gain Up Charge Time Pedestal	±0 0 Top cut OFF OFF --- 0dB 0dB OFF 0	±0 0 Top cut OFF OFF --- 0dB 0dB OFF 0	±0 0 Top cut ON ON N/Eye H --- --- OFF -40
Color Set	Chroma Level Flesh Tone White Bal ATW Speed Nega/Posi	±0 ±0 AWC A --- Posi	±1 ±0 AWC A --- Posi	±2 ±0 ATW Mid Posi
G/L, Color Bar Set	H Phase SC Coarse SC Fine Color Bar Set	±0 1 ±0 7.5 IRE	±0 1 ±0 7.5 IRE	±0 1 ±0 7.5 IRE
Sharpness (DTL) Set	DTL Select Level Noise Suppress Clean DNR 3D-DNR DTL Flesh Tone	Sharpness HIGH OFF OFF OFF Mid	Sharpness HIGH OFF OFF OFF Mid	Sharpness HIGH OFF OFF OFF Mid
Other Set	Contrast (Gamma) Shutter Speed Synchro Scan V Resolution Baud Rate Component Digital Extender	Mid OFF --- Normal 9 600bps Y/Pr/Pb OFF	Mid OFF --- Normal 9 600bps Y/Pr/Pb OFF	Mid Auto ND --- Normal 9 600bps Y/Pr/Pb OFF

Initial Settings (User Mode)

Table 13. Factory preset values for User Mode

	Item	User mode
Iris, Shutter, Gain Set	Picture Level Light PEAK/AVG Light Area Auto Iris Adjust Shutter Mode Step/Synchro Gain Digital Gain Up AGC Max Gain Charge Time	± 0 0 Top cut OFF Step OFF 0dB 0dB --- OFF
Color Set	Chroma Level White Bal ATW Speed Pedestal Painting R Gain B Gain R Pedestal B Pedestal Nega/Posi	+2 AWC A Mid ± 0 ± 0 ± 0 ± 0 ± 0 Posi
G/L, Color Bar Set	H Phase SC Coarse SC Fine Color Bar Set	± 0 1 ± 0 7.5 IRE
Detail Set 1	Detail H Detail Level H V Detail Level H H Detail Level L V Detail Level L Detail Band Noise Suppress Level Dependent Dark Detail	High 15 12 8 7 2 3 0% 0
Detail Set 2	Chroma Detail Flesh DTL Level Corner Detail Precision Detail	0 Mid OFF OFF

Table 13. Factory preset values for User Mode

Color Matrix Set 1	B_Mg	Gain	±0
	B_Mg	Phase	±0
	Mg	Gain	+27
	Mg	Phase	±0
	Mg_R	Gain	±0
	Mg_R	Phase	±0
	R	Gain	+15
	R	Phase	±0
Color Matrix Set 2	R_YI	Gain	±0
	R_YI	Phase	±0
	YI	Gain	+18
	YI	Phase	±6
	YI_G	Gain	±0
	YI_G	Phase	±0
	G	Gain	+30
	G	Phase	+112
Color Matrix Set 3	G_Cy	Gain	0
	G_Cy	Phase	0
	Cy	Gain	+44
	Cy	Phase	-15
	Cy_B	Gain	0
	Cy_B	Phase	0
	B	Gain	-20
	B	Phase	+36
Other Set 1	Gamma		0.45
	Knee Point		88%
	White Clip		110%
	Flare R		0
	Flare G		0
	Flare B		0
	Black Stretch		OFF
	Clean DNR		OFF
3D-DNR		OFF	
2D LPF		OFF	
Other Set 2	Field/Frame		Field
	Baud Rate		9 600bps
	Component		Y/Pr/Pb
	Digital Extender		OFF
	Filter		Normal

CPT 2018-A3DP On-Screen Menus

The 3-CCD DIGITAL Camera allows for adjustments to the camera settings via on-screen menus by using the controls on the back of the camera block, the Camera Control Keypad, or DIGITAL SHOT Director. These adjustments should be performed by qualified technical personnel only. If your system includes a DIGITAL SHOT Director, always use the DIGITAL SHOT Director's LCD menus to make these adjustments.

Use Mode Setting

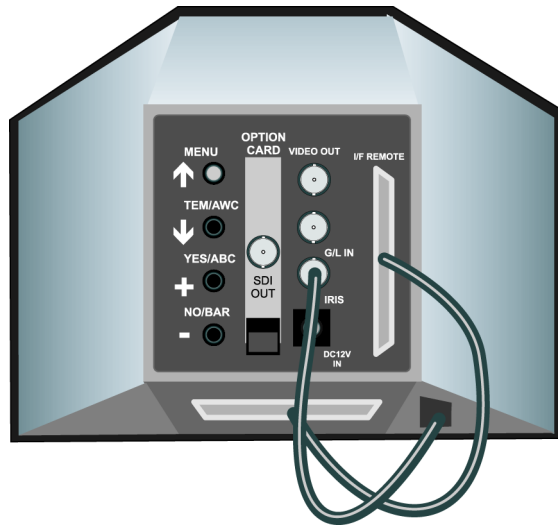
The camera has four use modes, and various functions for four use modes have been preset. Functions can be set as best suited to each use mode.

- Halogen mode
- Suited to indoor shooting, such as at weddings, parties, lecture meetings, events, etc. Settings can be changed using a simple menu.
- Fluorescent mode
- Suited to indoor shooting under fluorescent lighting. Settings can be changed using a simple menu.
- Outdoor mode
- Suited to outdoor shooting. Settings can be changed using a simple menu.
- User mode
- Settings can be changed using a detail menu.

Setting by Camera

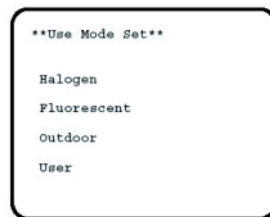
1. Turn the camera on while keeping the MENU switch ([Figure 36](#)) depressed.

Figure 36. Back of Camera Block



2. The use mode setting menu (Figure 37) appears on the monitor screen and one of the use mode blinks.

Figure 37. Use Mode Setting Menu



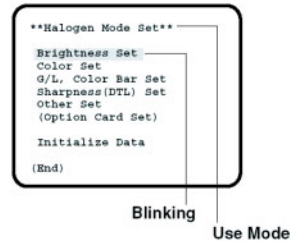
3. Press the MENU switch, ITEM/AWC switch, or NO/BAR switch to let the desired use mode blink.
 - MENU switch: The blinking item moves up one.
 - ITEM/AWC switch, NO/BAR switch: The blinking item moves down one.
4. Press the YES/ABC switch. The blinking use mode comes into effect. After the use mode setting menu is shown for about 5 seconds, the camera returns to be ready for operation. Then, the camera operates in the selected use mode.

Note On-screen menu items can only be viewed by connecting to the analog VIDEO OUT connector on the rear of the camera block.

Menu Item Setting

- Each of the four use modes of the camera has a main menu (Figure 38)

Figure 38. Main Menu - Halogen, Fluorescent, Outdoor Mode



- Each item of the main menu has a submenu, which consists of several settings.
 - These settings have been preset to the optimum values to suit each use mode, and can be changed to suit actual shooting conditions.
1. **From the camera alone:** Keep the MENU switch depressed for 5 seconds or more. The main menu appears on the monitor screen.
 2. Each time the MENU switch, ITEM/ AWC switch, or NO/ BAR switch is pressed, the blinking item moves up or down.
 3. When the YES/ ABC switch is pressed after selecting the desired item to blink, the submenu for the selected item appears on the screen.
 4. Select the desired item to be changed in its settings using the MENU switch and ITEM/ AWC switch.
 5. Press the YES/ ABC switch or NO/ BAR switch to change the settings.
 6. Select [Return] using the MENU switch and ITEM/ AWC, then press the YES/ ABC switch to return to the main menu.
 7. After changing the settings, take the following steps. **Camera alone:** Select [End] using the MENU switch and ITEM/ AWC switch and press the YES/ ABC switch.

Submenus Overview

The submenus on page 62 through page 66 are for the Halogen Mode, Fluorescent Mode, and Outdoor Mode on the PAL version of the 4:3 Fixed 3-CCD Digital Camera. Refer to page 66 through page 72 for the User Mode submenus.

Brightness Setting Overview

Figure 39. Brightness Setting Submenu

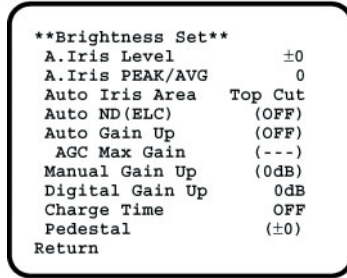


Table 14. Brightness Settings

A.Iris Level	(-50 to +50) Convergence level of AUTO IRIS/AUTO GAIN UP/AUTO ND (ELC) can be adjusted.
A.Iris PEAK/AVG	(P50 to A50) The ratio of AUTO IRIS/AUTO GAIN UP/AUTO ND (ELC) detected peak to average can be adjusted within a predetermined range.
Auto Iris Area	A photometric measurement method can be selected for AUTO IRIS/AUTO GAIN UP/AUTO ND (ELC). All: All the screen area is measured. Centre: The screen is measured mainly in the centre area, about one-third of both the top and bottom and one-third of both the right and left portions of the screen are excluded from measurement. Top cut: About one-third of the top part of the screen is excluded from measurement. BTM cut: About one-third of the bottom portion of the screen is excluded from measurement. R/L cut: About one third of both the right and left portions of the screen are excluded from measurement.
Auto ND (ELC)	This cannot be set unless either "OFF" or "Auto" has been set for the Charge Time setting. ON: The electronic shutter is controlled to automatically adjust the luminance. OFF: Luminance is not automatically adjusted by the electronic shutter.
Auto Gain Up	This cannot be set when "Auto" has been set for the Charge Time setting. OFF: The light quantity is not adjusted automatically. ON: The light quantity is adjusted automatically. The maximum to which the gain can be increased using the auto gain up function is selected by the AGC maximum gain setting.

Table 14. Brightness Settings

AGC Max Gain	(6dB, 12dB, 18dB, 24dB, N/Eye L, N/Eye H) This can be used to set the maximum amount to which the gain can be increased when "ON" has been selected as the Auto Gain Up setting.
Manual Gain Up	Manual setting is possible only when the Auto Gain Up setting is "OFF." 0 dB: 0 dB should be selected in normal cases. 1 dB to 30 dB: Use this range if sufficient video output cannot be obtained even when the lens iris is opened in shooting dark scenes. N/Eye L (Night Eye L): Use this setting if it is not possible to achieve a satisfactory video output even at 30 dB. N/Eye H (Night Eye H): Use this setting if it is not possible to achieve a satisfactory video output even at the Night Eye L setting.
Digital Gain Up	(0dB, 6dB, 12dB, 18dB, 24dB, 30dB) This can be set only when "OFF" has been selected as the Auto Gain Up setting. 0 dB: Under normal circumstances, this setting is used. 6 dB to 30 dB: Use this setting while shooting dark scenes if it is not possible to achieve a satisfactory video output when the lens diaphragm is opened and "Night Eye" is selected as the Manual Gain Up setting.
Charge Time	(Auto, OFF, 1/25s, 1/12s, 1/6s, 1/3s, 1/2s, 1s, 2s) This is used to set the CCD storage time. Auto: ALC is performed followed by AGC and then by the data storage, and the camera automatically adjusts the light quantity. If "ON" is selected as the Auto ND (ELC) setting, ELC is performed followed by ALC, AGC and then by the data storage in this order, and the light quantity is automatically adjusted. The Shutter Speed setting cannot be changed. OFF: Under normal circumstances, this setting is used. 1/25s to 2s: Use this setting if it is not possible to achieve a satisfactory video output even when the gain up setting is used. The Auto ND (ELC) setting and Shutter Speed setting go "OFF" and cannot be changed. *If the V Resolution setting has been set to "Fine", 1/12s to 2s is selected as the storage time setting, and the sensitivity is set to about one-half of that obtained with when they have been set to "Normal".
Pedestal	(-150 to +150) The black level (pedestal) of the luminance (Y) signal can be set. Used in adjusting the black levels of two or more cameras.

Color Setting

Figure 40. Color Setting Submenu

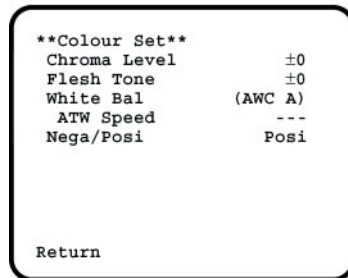


Table 15. Color Settings

Chroma Level	(-3 to +3) Chroma Level can be decreased or increased to any of three levels each.
Flesh Tone	(-3 to +3) Skin color can be decreased or increased to any of three levels each.
White Bal	ATW: The white balance is automatically adjusted to be always right. AWC A, AWC B: Once the white balance is adjusted with the ITEM/AWC switch on the back of the camera, it is not longer necessary to set the white balance again if you simply select AWC A or AWC B, provided that the camera is used under the same conditions. Fine color adjustment can be made after setting AWC by red/blue gain adjustment in user mode or from the RCU (RCB). P SET 3200K: The white balance is adjusted to 3200K illumination. P SET 5600K: The white balance is adjusted to 5600K illumination.
ATW Speed	(Slow 2, Slow 1, Mid, Fast 1, Fast 2) ATW Speed can be set.
Nega/Posi	Posi: Normal image Nega: Image is shown reversed in darkness and color.

G/L Color Bar Setting

Figure 41. G/L Color Bar Setting Menu

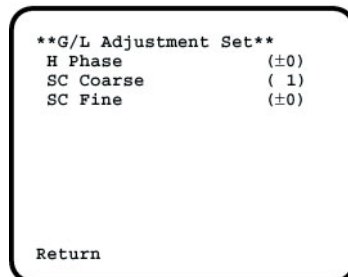


Table 16. G/L Color Bar Settings

H Phase	(-206 to +49) Horizontal phase can be adjusted when a genlock signal is supplied.
SC Coarse	(1, 2, 3, 4) Coarse adjustment of subcarrier phase can be made when a genlock signal is supplied.
SC Fine	(-511 to +511) Fine adjustment of subcarrier phase can be made when a genlock signal is supplied.

Sharpness (DTL) Setting

Figure 42. Sharpness (DTL) Setting Submenu

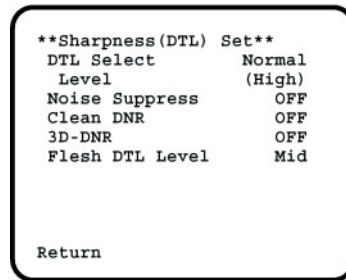


Table 17. Sharpness (DTL) Settings

DTL Select	(Normal, Super DTL) If contour correction is not sufficient at the Normal position when Detail Level setting is set to LOW or HIGH, select the Super DTL position. *Neither Normal nor Super DTL is valid for contour correction if Level setting is in the OFF position.
Level	(OFF, Low, High) Detail level can be adjusted when Detail Select setting is at Normal. Super DTL level can be adjusted when it is at Super DTL.
Noise Suppress	(OFF, Low, High) Screen noise can be reduced when Level setting is at High or Low.
Clean DNR	(High, Low, OFF) This enables the clean DNR effect to be selected.
3D-DNR	(OFF, Low, Mid, High) This enables the 3D-DNR effect to be selected. *When "Mid" or "High" is selected, the noise is reduced but lag increases.
Flesh DTL Level	Low: The roughness of the flesh tones is minimized. Mid: This is the standard setting. High: The outline compensation for the flesh tones is accentuated.

Other Settings

Figure 43. Other Settings Submenu

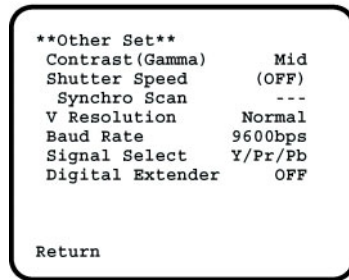


Table 18. Other Settings

Contrast (Gamma)	(Low, Mid, High) The contrast can be adjusted to any of three levels.
Shutter Speed	OFF: Electronic shutter is turned off. 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000: Electronic shutter operates at one of these speeds as selected. S/Scan (Synchro Scan): Electronic shutter operates at the speed set with the Synchro Scan setting. Auto ND: Electronic shutter is controlled to automatically adjust the luminance. (ELC) Flickering may increase at Auto ND under fluorescent lights. Auto ND is automatically selected if Auto ND (ELC) setting is set to ON.
Synchro Scan	(50.24Hz to 15.63kHz) This setting is possible only when Shutter Speed setting is at S/Scan. Horizontal bar noise can be reduced by synchro-scan adjustment in shooting workstation scenes, for example. *For luminance settings at each shutter speed and synchro-scan shutter speed, refer to the following table.

Shutter Speed	Synchro-scan	Required luminance ratio
OFF	-	1
1/120	120.2 Hz	2
1/250	250.0 Hz	4
1/500	492.2 Hz	8
1/1000	984.4 Hz	16
1/2000	1.969 kHz	32
1/4000	3.938 kHz	64
1/10000	7.875 kHz	160

V Resolution	Normal: Normal image. (CCD storage will be by field storage. Fine: Vertical resolution increases. (Vertical resolution is raised without increasing residual images by frame storage and Electronic shutter.) Normal is recommended for general use because sensitivity will decrease at the Fine setting.
Baud Rate	(1200bps, 2400bps, 4800bps, 9600bps) Select a communication speed in controlling the camera from the computer.
Signal Select	This enables RGB, Y/Pr/Pb or Y/C to be selected as the component signals which are to be output from the I/F REMOTE connector.
Digital Extender	OFF: Under normal circumstances, this setting is used. ON: An extender effect which is approximately 1.5 times greater is achieved. However, the resolution drops when the digital extender is set to "ON".

User Mode Submenus Overview

Iris, Shutter, Gain Settings Overview

Figure 44. Iris, Shutter, Gain Setting

```

**Iris,Shutter,Gain Set**
A.Iris Level          ±0
A.Iris PEAK/AVG      ±0
Auto Iris Area       Top Cut
Auto Iris Adjust     OFF
Shutter Mode         (Step)
Step/Synchro         (OFF)
Gain                 (0dB)
Digital Gain Up      0dB
AGC Max Gain         (---)
Charge Time          OFF
Return
  
```

Table 19. Iris, Shutter, Gain Settings

A. Iris Level	(-50 to +50) Convergence level of AUTO IRIS/AGC/ELC can be adjusted.
A. Iris PEAK/AVG	(P50 to A50) The ratio of AUTO IRIS/AGC/ELC detected peak to average can be adjusted within a range.
Auto Iris Area	A photometric measurement method can be selected for AUTO IRIS/AGC/ELC. ALL: All the screen area is measured. Centre: The screen is measured mainly in the centre area, about one-third of both the top and bottom and one-third of both the right and left portions of the screen are excluded from measurement. Top cut: About one-third of the top portion of the screen is excluded from measurement. BTM cut: About one-third of the bottom portion of the screen is excluded from measurement. R/L cut: About one-third of both the right and left portions of the screen are excluded from measurement.
Auto Iris Adjust	ON: Fine adjustment of auto iris convergence level can be made with the iris control. OFF: The iris is invalid.
Shutter Mode	Step: Electronic shutter operates at the speed selected by the Step/Synchro setting. ELC: Electronic shutter is controlled to automatically adjust the luminance. S/Scan (Synchro Scan): Electronic shutter operates at the speed selected in Step/Synchro setting. *If Frame 1 is selected in Field/Frame setting, Shutter Mode setting cannot be added.
Step/Synchro	This can be set when "Step" or "S/Scan" has been selected as the Shutter Mode setting. When "Step" has been selected as the Shutter Mode setting: OFF: The electronic shutter is set to OFF. 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000: The electronic shutter operates at the shutter speed selected. When "S/Scan" has been selected as the Shutter Mode Setting: 60.34Hz to 15.75kHz: When the screen of a work station, etc. is to be shot, the noise on the horizontal bars can be reduced by proceeding with the synchro-scan adjustment. *Refer to the table below for the light quantity settings to be used in each shutter mode and during synchro scanning.

Shutter Speed	Synchro-scan	Required luminance ratio
OFF	-	1
1/120	120.2 Hz	2
1/250	250.0 Hz	4

1/500	492.2 Hz	8
1/1000	984.4 Hz	16
1/2000	1.969 kHz	32
1/4000	3.938 kHz	64
1/10000	7.875 kHz	160

Gain	<p>When "Auto" has been selected as the Charge Time setting, the setting is kept to "Auto" regardless of the gain setting selected here.</p> <p>Auto: The light quantity is adjusted automatically.</p> <p>0 dB: Under normal circumstances, this setting is used.</p> <p>1 dB to 30 dB: Use this setting while shooting dark scenes if it is not possible to achieve a satisfactory video output even when the lens diaphragm is opened.</p> <p>N/Eye L (Night Eye L): Use this setting if it is not possible to achieve a satisfactory video output even at 30 dB.</p> <p>N/Eye H (Night Eye H): Use this setting if it is not possible to achieve a satisfactory video output even at the Night Eye L setting.</p>
Digital Gain Up	<p>(0dB, 6dB, 12dB, 18dB, 24dB, 30dB) This can be set when a setting other than "Auto" has been selected as the Gain setting.</p> <p>0 dB: Under normal circumstances, this setting is used.</p> <p>6 dB to 30 dB: Use this setting while shooting dark scenes if it is not possible to achieve a satisfactory video output even when the lens diaphragm is opened and "Night Eye" is selected as the Gain setting.</p>
AGC Max Gain	<p>(6dB, 12dB, 18dB, 24dB, N/Eye L, N/Eye H) This is used to set the maximum gain up when "Auto" has been selected as the Gain setting.</p>
Charge Time	<p>(Auto, OFF, 1/25s, 1/12s, 1/6s, 1/3s, 1/2s, 1s, 2s) This is used to set the CCD storage time.</p> <p>OFF: Under normal circumstances, this setting is used.</p> <p>Auto: ALC is performed followed by AGC and then by the data storage, and the camera automatically adjusts the light quantity. If the Shutter Mode setting is set to "ELC", ELC is performed followed by ALC, AGC and then by the data storage in this order, and the light quantity is automatically adjusted. The Shutter Mode setting cannot be changed at this time.</p> <p>1/25s to 2s: Use this setting if it is not possible to achieve a satisfactory video output even when the gain up setting is used. The electronic shutter go "OFF" at this time, the Shutter Mode setting and Step/Synchro setting cannot be changed.</p> <p>*If the Field/Frame setting has been set to "Frame1" or "Frame2", 1/12s to 2s is selected as the storage time setting, and the sensitivity is set to about one-half of that obtained with when the Field/Frame setting has been set to "Field".</p>

Color Settings

Figure 45. Color Setting Submenu

Colour Set	
Chroma Level	±0
White Bal	(AWC A)
ATW Speed	Mid
Pedestal	(±0)
Painting	
R Gain	(±0)
B Gain	(±0)
R Pedestal	(±0)
B Pedestal	(±0)
Nega/Posi	Posi
Return	

Table 20. Color Settings

Chroma Level	(-3 to +3) Chroma Level can be decreased or increased to three levels.
White Bal	ATW: The white balance is automatically adjusted to the optimum position. AWC A, AWC B: color temperature conditions at two points can be stored at AWC A and AWC B. Once the white balance is adjusted with the ITEM/AWC switch on the back of the camera, it is no longer necessary to set the white balance again if you simply select AWC A or AWC B, provided that the camera is used under the same conditions. Fine color adjustment can be made after setting AWC by red/blue gain adjustment in Painting setting. P SET 3200K: The white balance is adjusted to 3200K illumination. P SET 5600K: The white balance is adjusted to 5600K illumination.
ATW Speed	(Slow 2, Slow 1, Mid, Fast 1, Fast 2) ATW Speed can be set.
Pedestal	(-150 to +150) The black level (pedestal) of the luminance (Y) signal can be set. Used in adjusting the black levels of two or more cameras.
Painting	(-150 to +150) R Gain, B Gain: Fine adjustment of the white balance can be made after AWC setting when AWC A or AWC B is selected in White Bal setting. The set value returns to ±0 after AWC setting in using the camera alone. R Pedestal, B Pedestal: Fine adjustment of the black balance can be made after ABC setting. The set value returns to ±0 after ABC setting in using the camera alone.
Nega/Posi	Posi: Normal image Nega: Image is shown reversed in darkness and color.

G/L Adjustment Settings

Figure 46. G.L Adjustment Setting Submenu

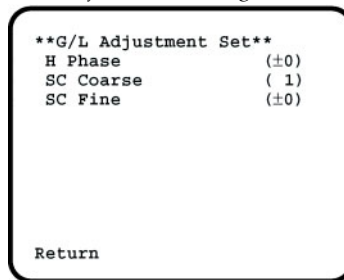


Table 1 —

H Phase	(-206 to +49) Horizontal phase can be adjusted when a genlock signal is supplied.
SC Coarse	(1, 2, 3, 4) Coarse adjustment of subcarrier phase can be made when a genlock signal is supplied.
SC Fine	(-511 to +511) Fine adjustment of subcarrier phase can be made when a genlock signal is supplied.

Detail Settings

Figure 47. Detail Settings Submenus

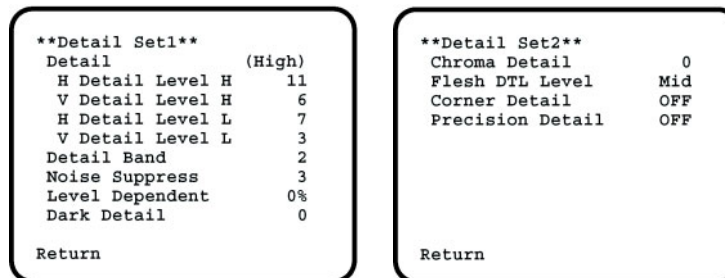


Table 21. Detail Settings

Detail	(OFF, Low, High) Contour correction quantity can be selected. Detail settings made using the Horizontal/Vertical Detail Level High/Low Setting.
	Detail level can be set in horizontal (H) and vertical (V) directions with the Detail setting at High or Low. Whichever the direction, H or V, the set level at High must be at least one position higher than that at Low.
H Detail Level H	(L+1 to +63)
V Detail Level H	(L+1 to +31)
H Detail Level L	(0 to H-1)
V Detail Level L	(0 to H-1)
Detail Band	(1 to 5) A contour correction band can be set with the Detail setting at High or Low. The higher setting, the finer will be the detail.
Noise Suppress	(1 to 10) Screen noise can be reduced with the Detail setting at High or Low. If the noise suppress compensation level is set too high, a fine object will be reproduced less sharply.
Level Dependent	(0% to 25%) Screen noise due to the detail of dark parts of an object can be reduced. If level dependent compensation level is set too high, however, hair, for example, will be reproduced less sharply.

Table 21. Detail Settings

Dark Detail	(0 to 5) The contours of the darker portions of an object can be emphasized. This setting is possible only when the Level Dependent setting is set to 0%.
Chroma Detail	(0 to 15) The contours of high-hue portions of an object can be emphasized.
Flesh DTL Level	Low: The roughness of the flesh tones is minimized. Mid: This is the standard setting. High: The outlines of the flesh tones are accentuated.
Corner Detail	Corner detail, which improves the resolution of corners, can be turned ON or OFF when the Detail setting is at High or Low.
Precision Detail	(OFF, Low, High) This setting is to narrow detail width and suppress detail glare.

Color Matrix Settings

Figure 48. Color Matrix Settings Submenus

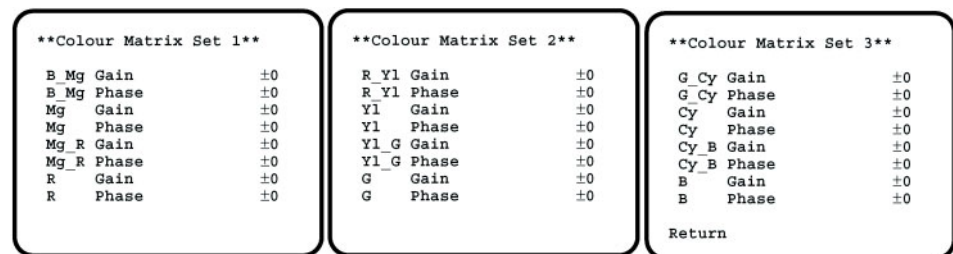


Table 22. Color Matrix Settings

B_Mg	Gain	Increases or decreases the intermediate color between blue and magenta.
B_Mg	Phase	Varies the hue of the intermediate color between blue and magenta.
Mg	Gain	Increases or decreases magenta.
Mg	Phase	Varies the hue of the magenta.
Mg_R	Gain	Increases or decreases the intermediate color between magenta and red.
Mg_R	Phase	Varies the hue of the intermediate color between magenta and red.
R	Gain	Increases or decreases the red.
R	Phase	Varies the hue of the red.
R_Yl	Gain	Increases or decreases the intermediate color between red and yellow.
R_Yl	Phase	Varies the hue of the intermediate color between red and yellow.
Yl	Gain	Increases or decreases the intermediate color of yellow.
Yl	Phase	Varies the hue of the yellow.
Yl_G	Gain	Increases or decreases the intermediate color between yellow and green.
Yl_G	Phase	Varies the hue of the intermediate color between yellow and green.
G	Gain	Increases or decreases the green.
G	Phase	Varies the hue of the green.
G_Cy	Gain	Increases or decreases the intermediate color between green and cyan.
G_Cy	Phase	Varies the hue of the intermediate color between green and cyan.
Cy	Gain	Increases or decreases the cyan.

Table 22. Color Matrix Settings

Cy	Phase	Varies the hue of the cyan.
Cy_B	Gain	Increases or decreases the intermediate color between cyan and blue.
Cy_B	Phase	Varies the hue of the intermediate color between cyan and blue.
B	Gain	Increases or decreases the intermediate color between blue and magenta.
B	Phase	Varies the hue of the intermediate color between blue and magenta.

Other Settings

Figure 49. Other Setting Submenus

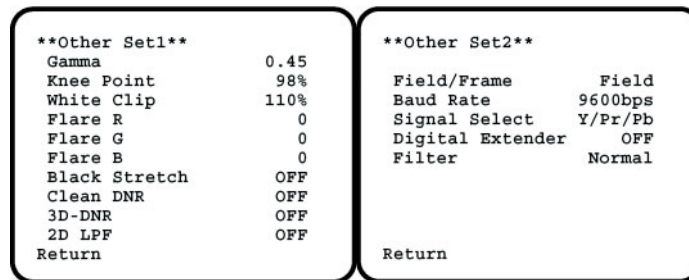


Table 23.

Gamma	(0.35 to 0.55) Gamma correction level can be set.
Knee Point	88% to 98%: The level of video signals subject to knee compensation (knee point) can be set. Dynamic: Knee compensation level is automatically adjusted according to the scene.
White Clip	(95% to 110%) The peak level of video signals to be white-clipped can be set.
Flare R/G/B	(0 to 100) Flare correction level can be adjusted. *Flare correction level has already been adjusted prior to shipment from the factory.
Black Stretch	Black stretch to correct the suppression of black portions at low luminance can be set to ON or OFF.
Clean DNR	(High, Low, OFF) This enables the clean DNR effect to be selected.
3D-DNR	(OFF, Low, Mid, High) This enables the 3D-DNR effect to be selected. *When "Mid" or "High" is selected, the noise is reduced but lag increases.
2D LPF	(OFF, Low, High) The 2D low pass filter that reduces moire and cross color can be set.
Field/Frame	Field: CCD storage will be by field storage. Frame 1: Vertical resolution increases in frame storage. Frame 2: Vertical resolution is raised without increasing residual images by frame storage and electronic shutter.
Baud Rate	(1200bps, 2400bps, 4800bps, 9600bps) This setting is to select a communication speed in controlling the camera from the computer.
Signal Select	This enables RGB, Y/Pr/Pb or Y/C to be selected as the component signals which are to be output from the I/F REMOTE connector.
Digital Extender	OFF: Under normal circumstances, this setting is used. ON: An extender effect which is approximately 1.5 times greater is achieved. However, the resolution drops when the digital extender is set to "ON".
Filter	IR Through: The infrared shooting mode is established. Irradiate the subject with infrared light. Normal: Under normal circumstances, this setting is used. 1/16ND: The 1/16 ND filter is inserted. Use this setting when the lens cannot be stopped down enough by the diaphragm. 1/64ND: The 1/64 ND filter is inserted. Use this setting when the lens cannot be stopped down enough by the diaphragm even at the 1/16ND setting.

Initial Settings

Resetting

Table 24. Factory preset values for Halogen Mode, Fluorescent Mode, and Outdoor Mode

	Item	Halogen mode	Fluorescent mode	Outdoor Mode
Brightness Set	A.Iris Level A.Iris PEAK/AVG A.Iris Area Auto ND (ELC) Auto Gain Up AGC Max Gain Manual Gain Up Digital Gain Up Charge Time Pedestal	±0 0 Top cut OFF OFF --- 0dB 0dB OFF OFF ±0	±0 0 Top cut OFF OFF --- 0dB 0dB OFF OFF ±0	±0 0 Top cut ON ON N/Eye H --- --- OFF OFF -40
Color Set	Chroma Level Flesh Tone White Bal ATW Speed Nega/Posi	±0 ±0 AWC A --- Posi	±0 ±0 AWC A --- Posi	±0 ±0 ATW Mid Posi
G/L Set	H Phase SC Coarse SC Fine	±0 1 ±0	±0 1 ±0	±0 1 ±0
Sharpness (DTL) Set	DTL Select Level Noise Suppress Clean DNR 3D-DNR Flesh DTL Level	Normal HIGH OFF OFF OFF Mid	Normal HIGH OFF OFF OFF Mid	Normal HIGH OFF OFF OFF Mid
Other Set	Contrast (Gamma) Shutter Speed Synchro Scan V Resolution Baud Rate Signal Select Digital Extender	Mid OFF --- Normal 9 600bps Y/Pr/Pb OFF	Mid OFF --- Normal 9 600bps Y/Pr/Pb OFF	Mid Auto ND --- Normal 9 600bps Y/Pr/Pb OFF

Initial Settings (User Mode)

Table 25. Factory Preset Values for User Mode

	Item	User mode
Iris, Shutter, Gain Set	A.Iris Level A.Iris PEAK/AVG Auto Iris Area Auto Iris Adjust Shutter Mode Step/Synchro Gain Digital Gain Up AGC Max Gain Charge Time	±0 0 Top Cut OFF Step OFF 0dB 0dB --- OFF
Color Set	Chroma Level White Bal ATW Speed Pedestal Painting R Gain B Gain R Pedestal B Pedestal Nega/Posi	±0 AWC A Mid ±0 ±0 ±0 ±0 ±0 Posi
G/L Set	H Phase SC Coarse SC Fine	±0 1 ±0
Detail Set 1	Detail H Detail Level H V Detail Level H H Detail Level L V Detail Level L Detail Band Noise Suppress Level Dependant Dark Detail	High 15 12 8 7 2 3 0% 0
Detail Set 2	Chroma Detail Flesh DTL Level Corner Detail Precision Detail	0 Mid OFF OFF

Table 25. Factory Preset Values for User Mode

Color Matrix Set 1	B_Mg Gain	±0
	B_Mg Phase	±0
	Mg Gain	±0
	Mg Phase	±0
	Mg_R Gain	±0
	Mg_R Phase	±0
	R Gain	±0
	R Phase	±0
Color Matrix Set 2	R_YI Gain	±0
	R_YI Phase	±0
	YI Gain	±0
	YI Phase	±0
	YI_G Gain	±0
	YI_G Phase	±0
	G Gain	±0
	G Phase	±0
Color Matrix Set 3	G_Cy Gain	±0
	G_Cy Phase	±0
	Cy Gain	±0
	Cy Phase	±0
	Cy_B Gain	±0
	Cy_B Phase	±0
	B Gain	±0
	B Phase	±0
Other Set 1	Gamma	0.45
	Knee Point	88%
	White Clip	110%
	Flare R	0
	Flare G	0
	Flare B	0
	Black Stretch	OFF
	Clean DNR	OFF
	3D-DNR	OFF
2D LPF	OFF	
Other Set 2	Field/Frame	Field
	Baud Rate	9 600bps
	Signal Select	Y/Pr/Pb
	Digital Extender	OFF
	Filter	Normal

CPT-2018-A3DS On-Screen Menus

The 3-CCD DIGITAL Camera allows for adjustments to the camera settings via on-screen menus by using the controls on the back of the camera block, the Camera Control Keypad, or DIGITAL SHOT Director. These adjustments should be performed by qualified technical personnel only. If your system includes a DIGITAL SHOT Director, always use the DIGITAL SHOT Director's LCD menus to make these adjustments.

Use Mode Setting

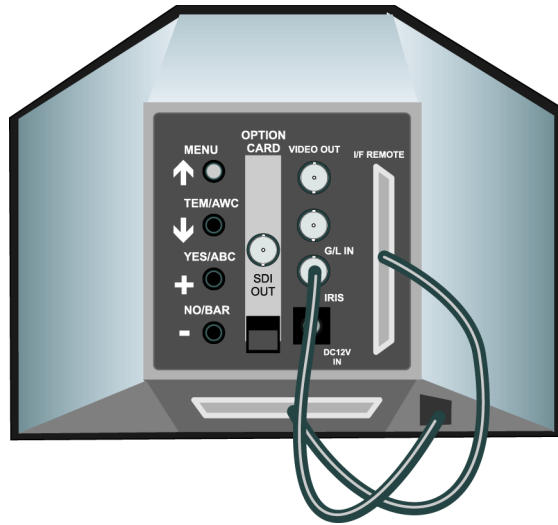
The camera has four use modes, and various functions for four use modes have been preset. Functions can be set as best suited to each use mode.

- Halogen mode
- Suited to indoor shooting, such as at weddings, parties, lecture meetings, events, etc. Settings can be changed using a simple menu.
- Fluorescent mode
- Suited to indoor shooting under fluorescent lighting. Settings can be changed using a simple menu.
- Outdoor mode
- Suited to outdoor shooting. Settings can be changed using a simple menu.
- User mode
- Settings can be changed using a detail menu.

Setting by Camera

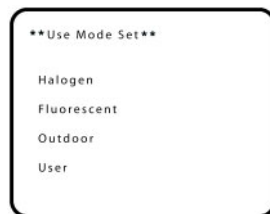
1. Turn the camera on while keeping the MENU switch ([Figure 50](#)) depressed

Figure 50. .Back of Camera Block



2. The use mode setting menu ([Figure 51](#)) appears on the monitor screen and one of the use mode blinks

Figure 51. .Use Mode Setting Menu

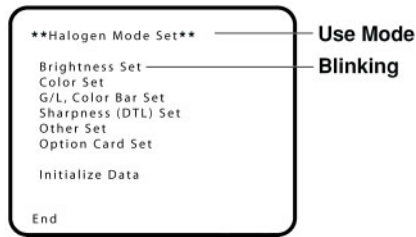


3. Press the MENU switch, ITEM/AWC switch, or NO/BAR switch to let the desired use mode blink.
 - MENU switch: The blinking item moves up one.
 - ITEM/AWC switch, NO/BAR switch: The blinking item moves down one.
4. Press the YES/ABC switch. The blinking use mode comes into effect. After the use mode setting menu is shown for about 5 seconds, the camera returns to be ready for operation. Then, the camera operates in the selected use mode.

Menu Item Setting

- Each of the four use modes of the camera has a main menu ([Figure 52](#)).

Figure 52. Main Menu - Halogen, Fluorescent, Outdoor Mode



- Each item of the main menu has a submenu, which consists of several settings.
 - These settings have been preset to the optimum values to suit each use mode, and can be changed to suit actual shooting conditions.
1. Keep the MENU switch depressed for 5 seconds or more. The main menu appears on the monitor screen.
 2. Each time the MENU switch, ITEM/ AWC switch, or NO/BAR switch is pressed, the blinking item moves up or down.
 3. When the YES/ ABC switch is pressed after selecting the desired item to blink, the submenu for the selected item appears on the screen.
 4. Select the desired item to be changed in its settings using the MENU switch and ITEM/ AWC switch.
 5. Press the YES/ ABC switch or NO/ BAR switch to change the settings.
 6. Select [Return] using the MENU switch and ITEM/ AWC, then press the YES/ ABC switch to return to the main menu.
 7. After changing the settings, take the following steps. Select [End] using the MENU switch and ITEM/ AWC switch and press the YES/ ABC switch.

Changing the Language Setting

The language on the menu screen can be changed from English to Japanese. (Factory setting: English)

- Halogen, Fluorescent, Outdoor Mode – Select Japanese in the Language setting in Other Set submenu.
- Use Mode – Select Japanese in the Language setting in Other Set2 submenu.

Submenus Overview

The submenus on page 80 through page 83 are for Halogen Mode, Fluorescent Mode, and Outdoor Mode on the NTSC version of the 4:3/16:9 Switchable 3-CCD Digital Camera. Refer to page 84 through page 89 for User Mode.

Brightness Setting

Figure 53. Brightness Setting Submenu

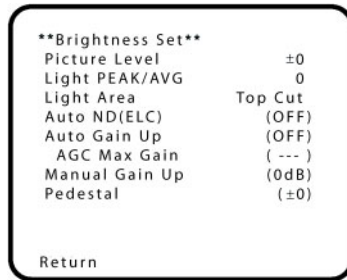


Table 26. Brightness Settings

Picture Level	(-50 to +50) Convergence level of AUTO IRIS/AUTO GAIN UP/AUTO ND (ELC) can be adjusted.
Light PEAK/AVG	(P50 to A50) The ratio of AUTO IRIS/AUTO GAIN up/AUTO ND (ELC) detected peak to average can be adjusted within a predetermined range.
Light Area	<p>A photometric measurement method can be selected for AUTO IRIS/AUTO GAIN UP/AUTO ND (ELC).</p> <p>ALL: All the screen area is measured.</p> <p>Center: The screen is measured mainly in the center area, about one-third of both the top and bottom and one-third of both the right and left portions of the screen are excluded from measurement.</p> <p>Top Cut: About one-third of the top part of the screen is excluded from measurement.</p> <p>BTM Cut: About one-third of the bottom portion of the screen is excluded from measurement.</p> <p>R/L Cut: About one-third of both the right and left portions of the screen are excluded from measurement.</p>

Table 26. Brightness Settings

Auto ND (ELC)	OFF: Luminance is not automatically adjusted by the electronic shutter. ON: The electronic shutter is controlled to automatically adjust the luminance. *ON is automatically selected when the Shutter Speed on the submenu [Other Set] is set to [Auto ND]. OFF is selected when other than [Auto ND] is selected.
Auto Gain Up	OFF: The light quantity is not adjusted automatically. ON: The light quantity is adjusted automatically. The maximum to which the gain can be increased using the Auto Gain Up function is selected by the AGC Max Gain setting.
AGC Max Gain	(6dB, 12dB, 18dB, 24dB, N/Eye L, N/Eye H) This is used to set the maximum amount to which the gain can be increased when "ON" has been selected as the Auto Gain Up setting.
Manu Gain Up	Manual setting is possible only when the Auto Gain Up setting is "OFF". 0 dB: 0 dB should be selected in normal cases. 1 dB - 30 dB: Use this range if sufficient video output cannot be obtained even when the lens iris is opened in shooting dark scenes. N/Eye L (Night Eye L): Use this mode if sufficient video output cannot be obtained even if 30 dB gain up should be selected. N/Eye H (Night Eye H): Use this setting if it is not possible to achieve a satisfactory video output even at the Night Eye L setting.
Pedestal	(-150 to +150) The black level (pedestal) of the luminance (Y) signal can be set. Used in adjusting the black levels of two or more cameras.

Color Setting

Figure 54. Color Setting Submenu

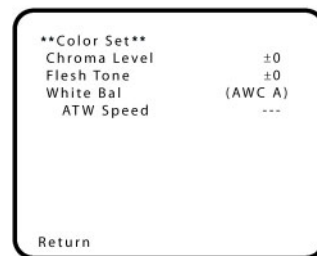


Table 27. Color Settings

Chroma Level	(-3 to +3) Chroma Level can be decreased or increased to any of three levels each.
Flesh Tone	(-3 to +3) Skin color can be decreased or increased to any of three levels each.
White Bal	ATW: The white balance is automatically adjusted to be always right. AWC A, AWC B: Once the white balance is adjusted with the ITEM/AWC switch on the back of the camera, it is no longer necessary to set the white balance again if you simply select AWC A or AWC B, provided that the camera is used under the same conditions. Fine color adjustment can be made after setting AWC by red/blue gain adjustment in user mode. P SET 3200K: The white balance is adjusted to 3200K illumination. P SET 5600K: The white balance is adjusted to 5600K illumination.
ATW Speed	(Slow 2, Slow 1, Mid, Fast 1, Fast 2) ATW Speed can be set.

G/L, Color Bar Setting

Figure 55. G/L, Color Bar Setting Submenu

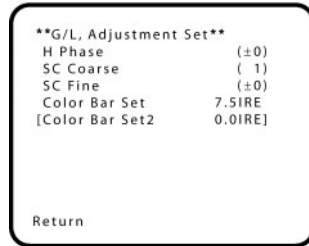


Table 28. Color Bar Settings

H Phase	(-206 to +49) Horizontal phase can be adjusted when a genlock signal is supplied.
SC Coarse	(1, 2, 3, 4) Coarse adjustment of subcarrier phase can be made when a genlock signal is supplied.
SC Fine	(-511 to +511) Fine adjustment of subcarrier phase can be made when a genlock signal is supplied.
Color Bar Set	(0.0 IRE, 7.5 IRE) The setup level of color bar can be adjusted.
Color Bar Set2	(0.0 IRE, 7.5 IRE) Set 0.0 IRE for the SDI card.

Sharpness (DTL) Setting Overview

Figure 56. Sharpness (DTL) Setting Submenu



Table 29. Sharpness (DTL) Settings

DTL Select	(Sharpness, Super DTL) If contour correction is not sufficient at the Sharpness position when Detail Level setting is set to Low or High, select the Super DTL position. *Neither Sharpness nor Super DTL is valid for contour correction if Detail Level setting is in the OFF position.
Level	(OFF, Low, High) Detail level can be adjusted when Detail Select setting is at Sharpness. Super DTL level can be adjusted when it is at Super DTL.
Noise Suppress	(OFF, Low, High) Screen noise can be reduced when Detail Level setting is at High or Low.
Clean DNR	(OFF, Low, High) This enables the clean DNR effect to be selected.
Flesh Noise Sup.	(OFF, Low, High) Flesh noise is suppressed in two steps when the Level setting is at High or Low.

Other Settings Overview

Figure 57. Other Settings Submenu

Other Set	
Contrast (Gamma)	Mid
Shutter Speed	(OFF)
Synchro Scan	---
V Resolution	Normal
Baud Rate	9600bps
Component	Y/Pr/Pb
Aspect Ratio	16:9
Fan SW	Auto
Language	English
Return	

Table 30. Other Settings

Contrast (Gamma)	(Low, Mid, High) Contrast can be adjusted to any of three levels.
Shutter Speed	OFF: Electronic shutter is turned off. 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000: Electronic shutter operates at one of these speeds as selected. S/Scan (Synchro Scan): Electronic shutter operates at the speed set with the Synchro Scan setting. Auto ND: Electronic shutter is controlled to automatically adjust the luminance. *Flickering may increase at Auto ND under fluorescent lights. *Auto ND is automatically selected if Auto ND (ELC) setting is set to ON.
Synchro Scan	(60.34 Hz to 15.75 kHz) This setting is possible only when the Shutter Speed setting is at S/Scan. Horizontal bar noise can be reduced by synchro-scan adjustment in shooting workstation scenes, for example. *For luminance settings at each shutter speed and synchro-scan shutter speed, refer to the following table.

Shutter Speed	Synchro-scan	Required luminance ratio
OFF	-	1
1/100	100.3 Hz	2
1/250	250.0 Hz	4
1/500	492.2 Hz	8
1/1000	984.4 Hz	16
1/2000	1.969 kHz	32
1/4000	3.938 kHz	64
1/10000	7.875 kHz	160

V Resolution	Normal: Normal image. (CCD storage will be by field storage.) Fine: Vertical resolution increases. (Vertical resolution is raised without increasing residual images by frame storage and electronic shutter.) Normal is recommended for general use because sensitivity will decrease at the Fine setting.
--------------	--

Baud Rate	(1200bps, 2400bps, 4800bps, 9600bps) Select a communication speed in controlling the camera from the computer.
Component	This enables RGB, Y/Pr/Pb or Y/C to be selected as the component signals which are to be output from the I/F REMOTE connector.
Aspect Ratio	Aspect ratio can be selected from 16:9 or 4:3.
Fan SW	OFF: Select this setting to stop the fan when its operating sound is found to be bothersome in a studio or other such environment. Auto: The temperature is detected automatically, and the fan starts operating when the temperature exceeds approx. 95°F (35°C). Under normal circumstances, the "Auto" setting is used.
Language	English: Menu screen is displayed in English. Japanese: Menu screen is displayed in Japanese.

User Mode Submenus Overview

Iris, Shutter, Gain Settings Overview

Figure 58. Iris, Shutter, Gain Setting Submenu

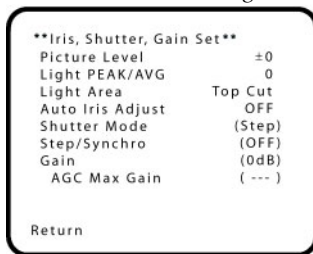


Table 31. Iris, Shutter, Gain Settings

Picture Level	(-50 to +50) Convergence level of AUTO IRIS, AUTO GAIN UP, ELC can be adjusted.
----------------------	--

Table 31. Iris, Shutter, Gain Settings

Light PEAK/AVG	(P50 to A50) The ratio of AUTO IRIS, AUTO GAIN UP, ELC detected peak to average can be adjusted within a range.
Light Area	A photometric measurement method can be selected for AUTO IRIS, AUTO GAIN UP, ELC. All: All the screen is measured. Center: The screen is measured mainly in the center area, about one-third of both the top and bottom and one-third of both the right and left portions of the screen are excluded from measurement. Top cut: About one-third of the top portion of the screen is excluded from measurement. BTM cut: About one-third of the bottom portion of the screen is excluded from measurement. R/L cut: About one-third of both the right and left portions of the screen are excluded from measurement.
Auto Iris Adjust	(ON, OFF)
Shutter Mode	Step: Electronic shutter operates at the speed selected by the Step/Synchro setting. S/Scan (Synchro Scan): Electronic shutter operates at the speed selected in Step/Synchro setting. ELC: Electronic shutter is controlled to automatically adjust the luminance. *If Frame 1 is selected in Field/Frame setting, Shutter Mode setting cannot be added.
Step/Synchro	This setting is possible only when Step or Synchro Scan is selected in Shutter Mode setting. When "Step" has been selected as the Shutter Mode setting: OFF: Electronic shutter is turned off. 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000: Electronic shutter operates at one of these speeds as selected. When "Synchro Scan" has been selected as the Shutter Mode setting: 60.34 Hz to 15.75 kHz: Bar noise can be reduced by synchro-scan adjustment in shooting workstation scenes, for example. *For luminance setting at each shutter speed and synchro-scan shutter speed, refer to the table below.

Shutter Speed	Synchro-Scan	Required Luminance Ratio
OFF	-	1
1/100	100.3 Hz	2
1/250	250.0 Hz	4
1/500	492.2 Hz	8
1/1000	984.4 Hz	16
1/2000	1.969 kHz	32
1/4000	3.938 kHz	64
1/10000	7.875 kHz	160

Gain	Auto: The light quantity is adjusted automatically. 0 dB: 0dB should be selected in normal cases. 1 dB to 30 dB: Use this range if sufficient video output cannot be obtained even when the lens iris is opened in shooting dark scenes. N/Eye L (Night Eye L): Use this mode if sufficient video output cannot be obtained even if 30 dB gain up should be selected. N/Eye H (Night Eye H): Use this setting if it is not possible to achieve a satisfactory video output even at the Night Eye L setting.
AGC Max Gain	(6dB, 12dB, 18dB, 24dB, N/Eye L, N/Eye H) This is used to set the maximum gain up when "Auto" has been selected as the gain setting.

Color Settings

Figure 59. Color Setting Submenu

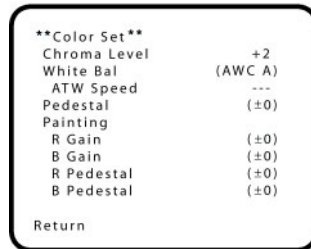


Table 32. Color Settings

Chroma Level	(-3 to +3) Chroma Level can be decreased or increased to three levels.
White Bal	ATW: The white balance is automatically adjusted to the optimum position. AWC A, AWC B: Once the white balance is adjusted with the ITEM/AWC switch on the back of the camera, it is no longer necessary to set the white balance again if you simply select AWC A or AWC B, provided that the camera is used under the same conditions. Fine color adjustment can be made after setting AWC by red/blue gain adjustment in User Mode. 3200K: The white balance is adjusted to 3200K illumination. 5600K: The white balance is adjusted to 5600K illumination.
ATW Speed	(Slow 2, Slow 1, Mid, Fast 1, Fast 2) ATW Speed can be set.
Pedestal	(-150 to +150) The black level (pedestal) of the luminance (Y) signal can be set. Used in adjusting the black levels of two or more cameras.
Painting	(-150 to +150) R Gain, B Gain: Fine adjustment of the white balance can be made after AWC setting when AWC A or AWC B is selected in White Balance Setting. The set value returns to ±0 after AWC setting in using the camera alone. R Pedestal, B Pedestal: Fine adjustment of the black balance can be made after ABC setting. The set value returns to ±0 after ABC setting in using the camera alone.

G/L, Color Bar Settings

Figure 60. G/L, Color Bar Setting Submenu

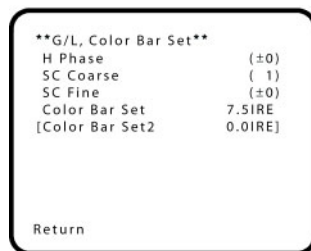


Table 33. G/L, Color Bar Settings

H Phase	(-206 to +49) Horizontal phase can be adjusted when a genlock signal is supplied.
SC Coarse	(1, 2, 3, 4) Coarse adjustment of subcarrier phase can be made when a genlock signal is supplied.
SC Fine	(-511 to +511) Fine adjustment of subcarrier phase can be made when a genlock signal is supplied.
Color Bar Set	(0.0 IRE, 7.5 IRE) The setup level of color bar can be adjusted.
Color Bar Set2	(0.0 IRE, 7.5 IRE) Set to 0.0 IRE for the SDI card.

Detail Settings

Figure 61. Detail Settings Submenus

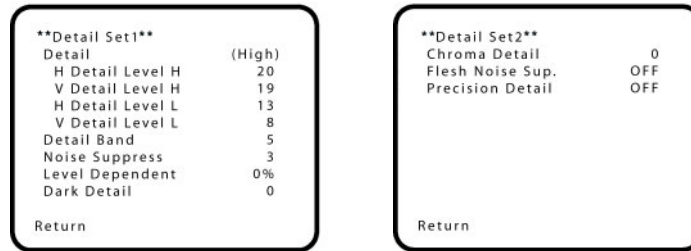


Table 34. Detail Settings

Detail	(OFF, Low, High) Contour correction quantity can be selected. Detail settings made using the Horizontal/Vertical Detail Level High/Low setting.
	Detail level can be set in horizontal (H) and vertical (V) directions with the Detail setting at High or Low. Whichever the direction, H or V, the set level at High must be at least one position higher than that at Low.
H Detail Level H	(L+1 to +63)
V Detail Level H	(L+1 to +31)
H Detail Level L	(0 to H-1)
V Detail Level L	(0 to H-1)
Detail Band	(1 to 5) A contour correction band can be set with the Detail setting at High or Low. The higher setting, the finer will be the detail.
Noise Suppress	(1 to 10) Screen noise can be reduced with the Detail setting at High or Low. If the noise suppress compensation level is set too high, a fine object will be reproduced less sharply.
Level Dependent	(0% to 25%) Screen noise due to the detail of dark parts of an object can be reduced. If the Level Dependencet setting is set too high, however, hair, for example, will be reproduced less sharply.
Dark Detail	(0 to 5) The contours of the darker portions of an object can be emphasized. This setting is possible only when the Level Dependent setting is set to 0%.
Chroma Detail	(0 to 15) The contours of high-hue portions of an object can be emphasized.
Flesh Noise Sup.	(OFF, Low, High) Flesh noise is suppressed in two steps when the Detail setting is at High or Low.
Precision Detail	(OFF, Low, High) This setting is to narrow detail width and suppress detail glare.

Color Matrix Settings

Figure 62. Color Matrix Setting Submenus

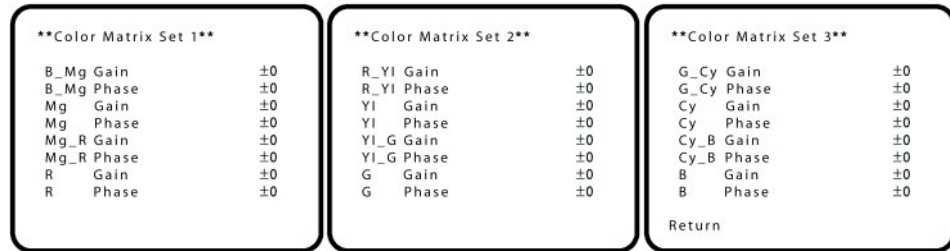


Table 35. Color Matrix Settings

B_Mg	Gain	Increases or decreases the intermediate color between blue and magenta.
B_Mg	Phase	Varies the hue of the intermediate color between blue and magenta.
Mg	Gain	Increases or decreases the magenta.
Mg	Phase	Varies the hue of the magenta.
Mg_R	Gain	Increases or decreases the intermediate color between magenta and red.
Mg_R	Phase	Varies the hue of the intermediate color between magenta and red.
R	Gain	Increases or decreases the red.
R	Phase	Varies the hue of the red.
R_YI	Gain	Increases or decreases the intermediate color between red and yellow.
R_YI	Phase	Varies the hue of the intermediate color between red and yellow
YI	Gain	Increases or decreases the intermediate color of yellow.
YI	Phase	Varies the hue of the yellow.
YI_G	Gain	Increases or decreases the intermediate color between yellow and green.
YI_G	Phase	Varies the hue of the intermediate color between yellow and green.
G	Gain	Increases or decreases the green.
G	Phase	Varies the hue of the green.
G_Cy	Gain	Increases or decreases the intermediate color between green and cyan.
G_Cy	Phase	Varies the hue of the intermediate color between green and cyan.
Cy	Gain	Increases or decreases the cyan.
Cy	Phase	Varies the hue of the cyan.
Cy_B	Gain	Increases or decreases the intermediate color between cyan and blue.
Cy_B	Phase	Varies the hue of the intermediate color between cyan and blue.
B	Gain	Increase or decreases the intermediate color between blue and magenta.
B	Phase	Varies the hue of the intermediate color between blue and magenta.

Other Settings

Figure 63. Other Settings Submenus

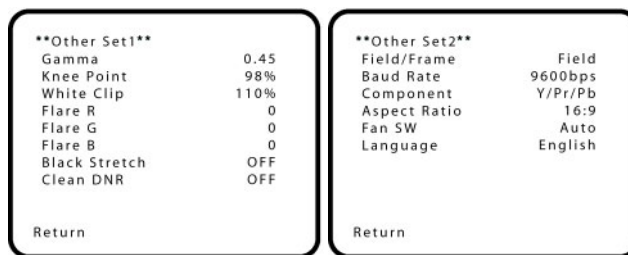


Table 36. Other Settings

Gamma	(0.35 to 0.55) Gamma correction level can be set.
Knee Point	88% to 98%: The level of video signals subject to knee (knee point) can be set. Dynamic: Knee level is automatically adjusted according to the scene.
White Clip	(95% to 110%) The peak level of video signals to be white-clipped can be set.
Flare R/G/B	(0 to 100) Flare correction level can be adjusted.
Black Stretch	Black stretch to correct the suppression of black portions at low luminance can be set to ON or OFF.
Clean DNR	(OFF, Low, High) This enables the clean DNR effect to be selected.
Field/Frame	Field: CCD storage will be by field storage. Frame 1: Vertical resolution increases in frame storage. Frame 2: Vertical resolution is raised without increasing residual images by frame storage and electronic shutter.
Baud Rate	(1200bps, 2400bps, 4800bps, 9600bps) This setting is to select a communication speed in controlling the camera from the computer.
Component	This enables RGB, Y/Pr/Pb or Y/C to be selected as the component signals which are to be output from the I/F REMOTE connector.
Aspect Ratio	Aspect ratio can be selected from 16:9 or 4:3.
Fan SW	OFF: Select this setting to stop the fan when its operating sound is found to be bothersome in a studio or other such environment. Auto: The temperature is detected automatically, and the fan starts operating when the temperature exceeds approx. 95°F (35°C)
Language	English: Menu screen is displayed in English. Japanese: Menu screen is displayed in Japanese.

Initial Settings

In case of the wrong setting in any use mode, take the following steps to return to the initial settings.

1. Select [Initialize Data] on the main menu screen of each Use Mode. Press the YES/ABC switch, then the [Initialize Data] screen shows for about 10 seconds.
2. Press the YES/ABC switch within about 10 seconds to return to the initial settings, the existing settings are initialized, and the camera returns to main menu

3. If the NO/BAR switch is pressed, or if the YES/ABC switch is not pressed, within about 10 seconds, and the camera returns to main menu, then the existing settings are not initialized.

Resetting

Table 37. Factory preset values for Halogen Mode, Fluorescent Mode, and Outdoor Mode

	Item	Halogen mode	Fluorescent mode	Outdoor mode
Brightness Set	Picture Level Light PEAK/AVG Light Area Auto ND (ELC) Auto Gain Up AGC Max Gain Manu Gain Up Pedestal	±0 0 Top cut OFF OFF --- 0dB ±0	±0 0 Top cut OFF OFF --- 0dB ±0	±0 0 Top cut ON ON N/Eye H --- -40
Color Set	Chroma Level Flesh Tone White Bal ATW Speed	±0 ±0 AWC A ---	±0 ±0 AWC A ---	±0 ±0 ATW Mid
G/L, Color Bar Set	H Phase SC Coarse SC Fine Color Bar Set Color Bar Set 2	±0 1 ±0 7.5 IRE 0.0 IRE	±0 1 ±0 7.5 IRE 0.0 IRE	±0 1 ±0 7.5 IRE 0.0 IRE
Sharpness (DTL) Set	DTL Select Level Noise Suppress Clean DNR Flesh Noise Sup.	Sharpness HIGH OFF OFF OFF	Sharpness HIGH OFF OFF OFF	Sharpness HIGH OFF OFF OFF
Other Set	Contrast (Gamma) Shutter Speed Synchro Scan V Resolution Baud Rate Component Aspect Ratio Fan SW Language	Mid OFF --- Normal 9600bps Y/Pr/Pb 16:9 Auto (English)	Mid OFF --- Normal 9600bps Y/Pr/Pb 16:9 Auto (English)	Mid Auto ND --- Normal 9600bps Y/Pr/Pb 16:9 Auto (English)

Initial Settings (User Mode)

Table 38. Factory preset values for User Mode

	Item	User mode
Iris, Shutter, Gain Set	Picture Level Light PEAK/AVG Light Area Auto Iris Adjust Shutter Mode Step/Synchro Gain AGC Max Gain	± 0 0 Top cut OFF Step OFF 0dB ---
Color Set	Chroma Level White Bal ATW Speed Pedestal Painting R Gain B Gain R Pedestal B Pedestal	+2 AWC A --- ± 0 ± 0 ± 0 ± 0 ± 0
G/L, Color Bar Set	H Phase SC Coarse SC Fine Color Bar Set Color Bar Set2	± 0 1 ± 0 7.5 IRE 0.0 IRE
Detail Set 1	Detail H Detail Level H V Detail Level H H Detail Level L V Detail Level L Detail Band Noise Suppress Level Dependent Dark Detail	High 20 19 13 8 5 3 0% 0
Detail Set 2	Chroma Detail Flesh Noise Suppress Precision Detail	0 OFF OFF

Table 38. Factory preset values for User Mode

Color Matrix Set 1	B_Mg Gain B_Mg Phase Mg Gain Mg Phase Mg_R Gain Mg_R Phase R Gain R Phase	±0 ±0 +27 ±0 ±0 ±0 +15 ±0
Color Matrix Set 2	R_YI Gain R_YI Phase YI Gain YI Phase YI_G Gain YI_G Phase G Gain G Phase	±0 ±0 +18 +6 ±0 ±0 +30 +112
Color Matrix Set 3	G_Cy Gain G_Cy Phase Cy Gain Cy Phase Cy_B Gain Cy_B Phase B Gain B Phase	±0 ±0 +44 -15 ±0 ±0 -20 +36
Other Set 1	Gamma Knee Point White Clip Flare R Flare G Flare B Black Stretch Clean DNR	0.45 88% 110% 0 0 0 OFF OFF
Other Set 2	Field/Frame Baud Rate Component Aspect Ratio Fan SW Language	Field 9600bps Y/Pr/Pb 16:9 Auto (English)

CPT-2018-A3DSP On-Screen Menus

The 3-CCD DIGITAL Camera allows for adjustments to the camera settings via on-screen menus by using the controls on the back of the camera block, the Camera Control Keypad, or DIGITAL SHOT Director. These adjustments should be performed by qualified technical personnel only. If your system includes a DIGITAL SHOT Director, always use the DIGITAL SHOT Director's LCD menus to make these adjustments.

Use Mode Setting

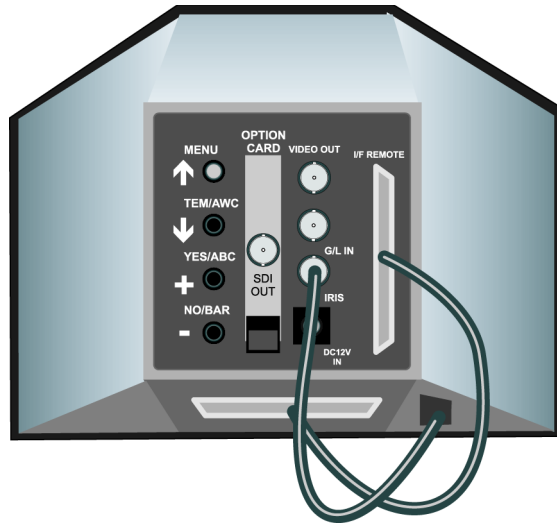
The camera has four use modes, and various functions for four use modes have been preset. Functions can be set as best suited to each use mode.

- Halogen mode
- Suited to indoor shooting, such as at weddings, parties, lecture meetings, events, etc. Settings can be changed using a simple menu.
- Fluorescent mode
- Suited to indoor shooting under fluorescent lighting. Settings can be changed using a simple menu.
- Outdoor mode
- Suited to outdoor shooting. Settings can be changed using a simple menu.
- User mode
- Settings can be changed using a detail menu.

Setting by Camera

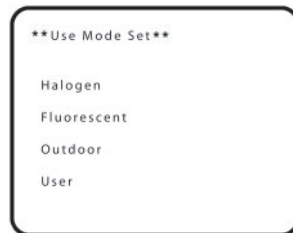
1. Turn the camera on while keeping the MENU switch () depressed.

Figure 64. Back of Camera Block



2. The use mode setting menu (shown below) appears on the monitor screen and one of the use mode blinks

Figure 65. Use Mode Setting Menu

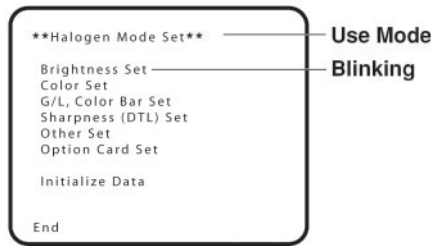


3. Press the MENU switch, ITEM/AWC switch, or NO/BAR switch to let the desired use mode blink.
 - MENU switch: The blinking item moves up one.
 - ITEM/AWC switch, NO/BAR switch: The blinking item moves down one.
4. Press the YES/ABC switch. The blinking use mode comes into effect. After the use mode setting menu is shown for about 5 seconds, the camera returns to be ready for operation. Then, the camera operates in the selected use mode.

Menu Item Setting

- Each of the four use modes of the camera has a main menu (example shown below).

Figure 66. Main Menu of Halogen, Fluorescent, Outdoor Mode



- Each item of the main menu has a submenu, which consists of several settings.
 - These settings have been preset to the optimum values to suit each use mode, and can be changed to suit actual shooting conditions.
5. Keep the MENU switch depressed for 5 seconds or more. The main menu appears on the monitor screen.
 6. Each time the MENU switch, ITEM/AWC switch, or NO/BAR switch is pressed, the blinking item moves up or down.
 7. When the YES/ABC switch is pressed after selecting the desired item to blink, the submenu for the selected item appears on the screen.
 8. Select the desired item to be changed in its settings using the MENU switch and ITEM/AWC switch.
 9. Press the YES/ABC switch or NO/BAR switch to change the settings.
 10. Select [Return] using the MENU switch and ITEM/AWC, then press the YES/ABC switch to return to the main menu.
 11. After changing the settings, take the following steps. Select [End] using the MENU switch and ITEM/AWC switch and press the YES/ABC switch.

Changing the Language Setting

The language on the menu screen can be changed from English to Japanese. (Factory setting: English)

- Halogen, Fluorescent, Outdoor Mode – Select Japanese in the Language setting in Other Set submenu.
- Use Mode – Select Japanese in the Language setting in Other Set2 submenu.

Submenus Overview

The submenus on page 96 through page 98 are for the Halogen Mode, Fluorescent Mode, and Outdoor Mode on the PAL version of the 4:3/16:9 Swit- chable 3-CCD Digital Camera. Refer to page 99 through [cross-reference] for the User Mode submenus.

Brightness Setting

Figure 67. Brightness Setting Submenu

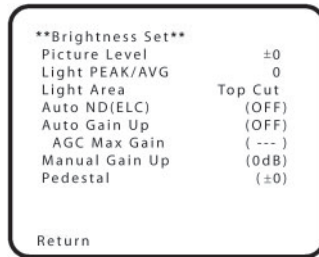


Table 39. Brightness Settings

A.Iris Level	(-50 to +50) Convergence level of AUTO IRIS/AUTO GAIN UP/AUTO ND (ELC) can be adjusted.
A.Iris PEAK/AVG	(P50 to A50) The ratio of AUTO IRIS/AUTO GAIN UP/AUTO ND (ELC) detected peak to average can be adjusted within a predetermined range.
A.Iris Area	A photometric measurement method can be selected for AUTO IRIS/ AUTO GAIN UP/AUTO ND (ELC). All: All the screen area is measured. Centre: The screen is measured mainly in the centre area, about one-third of both the top and bottom and one-third of both the right and left portions of the screen are excluded from measurement. Top cut: About one-third of the top part of the screen is excluded from measurement. BTM cut: About one-third of the bottom portion of the screen is excluded from measurement. R/L cut: About one third of both the right and left portions of the screen are excluded from measurement.
Auto ND (ELC)	ON: The electronic shutter is controlled to automatically adjust the lum- inance. OFF: Luminance is not automatically adjusted by the electronic shutter.
Auto Gain Up	LOW: The Auto Gain Up control with a maximum gain increase of about 18 dB adjust the luminance automatically. HIGH: The Auto Gain Up control with a maximum gain increase of about 30 dB operates. OFF: No auto gain up takes place. (Gain can be increased manually.)
Manu Gain UP	Manual setting is possible only when the Auto Gain Up control is in the OFF position. 0 dB: 0 dB should be selected in normal cases. 1 dB to 30 dB: Use this range if sufficient video output cannot be obtained even when the lens iris is opened in shooting dark scenes. N/Eye (Night Eye): Use this mode if sufficient video output cannot be obtained even if 30 dB gain up should be selected.
Pedestal	(-30 to +30) The black level (pedestal) of the luminance (Y) signal can be set. Used in adjusting the black levels of two or more cameras.
Contrast (Gamma)	(Low, Mid, High) Contrast can be adjusted to any of three levels.

Color Setting

Figure 68. Color Setting Submenu

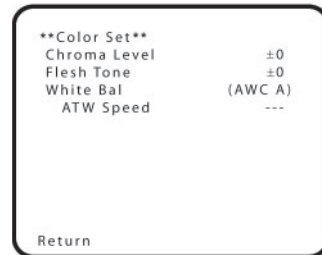


Table 40. Color Settings

Chroma Level	(-3 to +3) Chroma Level can be decreased or increased to any of three levels each.
Flesh Tone	(-3 to +3) Skin color can be decreased or increased to any of three levels each.
White Bal	ATW: The white balance is automatically adjusted to be always right. AWC A, AWC B: Once the white balance is adjusted with the ITEM/AWC switch on the back of the camera, it is not longer necessary to set the white balance again if you simply select AWC A or AWC B, provided that the camera is used under the same conditions. Fine color adjustment can be made after setting AWC by red/blue gain adjustment in user mode or from the RCU (RCB). P SET 3200K: The white balance is adjusted to 3200K illumination. P SET 5600K: The white balance is adjusted to 5600K illumination.
ATW Speed	(Sow 2, Slow 1, Mid, Fast 1, Fast 2) ATW Speed can be set.
Highlight Chroma	(OFF, Low, High) At Low or High, the color dynamic range widens to prevent highlighted white portions from suppression.

Figure 69. G/L Color Bar Setting Submenu

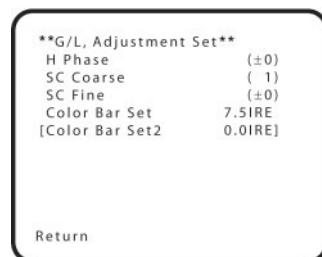


Table 41. G/L Color Bar Settings

H Phase	(-206 to +49) Horizontal phase can be adjusted when a genlock signal is supplied.
SC Coarse	(1, 2, 3, 4) Coarse adjustment of subcarrier phase can be made when a genlock signal is supplied.
SC Fine	(-511 to +511) Fine adjustment of subcarrier phase can be made when a genlock signal is supplied.

Sharpness (DTL) Setting

Figure 70. Sharpness (DTL) Setting Submenu



Table 42. Sharpness (DTL) Settings

DTL Select	(Normal, Super DTL) If contour correction is not sufficient at the Normal position when Detail Level setting is set to Low or High, select the Super DTL position.
Level	(OFF, Low, High) Detail level can be adjusted when Detail Select setting is at Normal. Super DTL level can be adjusted when it is at Super DTL.
Noise Suppress	(OFF, Low, High) Screen noise can be reduced when Detail Level setting is at High or Low.
Flesh Noise Suppress	(OFF, Low, High) Flesh noise is suppressed in two steps when the DTL Level is at High or Low.

Other Settings

Figure 71. Other Settings Submenu

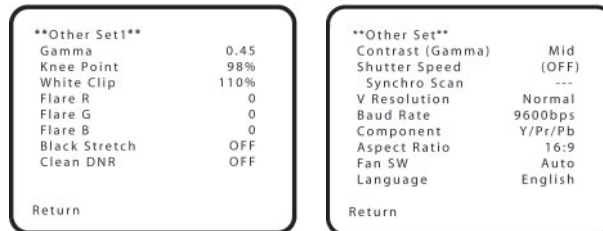


Table 43. Other Settings

Shutter Speed	1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000: Electronic shutter operates at one of these speeds as selected. S/Scan (Synchro Scan): Electronic shutter operates at the speed set with the electronic shutter synchro-scan setting. Auto ND: Electronic shutter is controlled to automatically adjust to luminance. (ELC)
Synchro Scan	(50.40Hz to 15.63kHz) This setting is possible only when Electronic Shutter setting is at S/Scan. Horizontal bar noise can be reduced by synchro-scan adjustment in shooting workstation scenes, for example. *For luminance settings at each shutter speed and synchro-scan shutter speed, refer to the following table.

Shutter Speed	Synchro-scan	Required luminance ratio
OFF	-	1
1/120	120.2 Hz	2
1/250	250.0 Hz	4
1/500	492.2 Hz	8
1/1000	984.4 Hz	16
1/2000	1.969 kHz	32
1/4000	3.938 kHz	64
1/10000	7.875 kHz	160

V Resolution	Normal: Normal image. (CCD storage will be by field storage. Fine: Vertical resolution increases. (Vertical resolution is raised without increasing residual images by frame storage and Electronic shutter.) Normal is recommended for general use because sensitivity will decrease at the Fine setting.
Baud Rate	(1200bps, 2400bps, 4800bps, 9600bps) Select a communication speed in controlling the camera from the computer.
Nega/Posi	Posi: Normal image Nega: Image is shown reversed in darkness and color.
Aspect Ratio	(16:9, 4:3)

Initial Settings

Table 44. Initial Settings

	Item	Halogen mode	Fluorescent mode	Outdoor mode
Brightness Set	A.Iris Level A.Iris PEAK/AVG A.Iris Area Auto ND (ELC) Auto Gain Up Manu Gain Up Pedestal Contrast (Gamma)	±0 0 Top cut OFF OFF 0dB ±0 MID	±0 0 Top cut OFF OFF 0dB ±0 MID	±0 0 Top cut ON HIGH - -10 MID
Color Set	Chroma Level Flesh Tone White Bal ATW Speed High-light Chroma	±0 ±0 AWC A - OFF	±1 ±0 AWC A - OFF	±2 ±0 ATW MIDDLE OFF
G/L. Adjustment	H Phase SC Coarse SC Fine	±0 1 ±0	±0 1 ±0	±0 1 ±0
Sharpness (DTL) Set	DTL Select Level Noise Suppress Flesh Noise Suppress	Normal HIGH OFF OFF	Normal HIGH OFF OFF	Normal HIGH OFF OFF
Other Set	Shutter Speed Synchro Scan V Resolution Baud Rate Nega/Posi Aspect Ratio	OFF - Normal 9 600bps Posi 16:9	OFF - Normal 9 600bps Posi 16:9	Auto ND - Normal 9 600bps Posi 16 :9

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