

Analog Video Camera

User's Guide

Before attempting to set up or operate this camera, please read this user's guide and retain it for future reference.

Model No.

CP180

V1-110607 P/N: 3GA0310721

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Important Notices

Regulatory Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Safety Rules

- The camera ought to be installed by a qualified technician.
- Place the camera on a level surface whenever possible.
- Do not drop the camera body to the ground; it may cause the damage to main parts.
- Please do not disassemble or remodel the product; it may cause damage or fire.
- Do not shake, move or disturb the camera when it is in operation, as such actions may result in the malfunction of the device.
- Power off the camera as soon as it is found smoking or smelt unusual.
- Please do not place the camera around the heat sources, such as television or microwave oven.

Product Overview



Hardware Overview





- 1 Body cap Remove the body cap to mount the lens you purchased.
- 2 Screw hole For ceiling mount and bracket.
- 3 Screw hole For ceiling mount and bracket.
- **4** DC auto iris lens connector Connect to the cable from your DC auto iris lens.
- 5 Operation buttons Used to perform OSD settings.
- 6 Video output terminal Connect to a BNC video cable.

IR connector – Connect to a switch to control IR-cut filter externally. Under external D/N mode, when the positive and negative pole are connected (with a jumper or otherwise), the IR-cut filter will be used; when they are disconnected, the IR-cut filter will be removed.

8 Power input terminal – A 3-pin power connector.



The camera is configured in digital day/night mode by default, which does not use IR cut filter during daytime and nighttime. And once the positive and negative pole of the IR connector are disconnected, camera image will turn monochromatic. To switch to external day/night mode, refer to the 'D/N Mode Jumper' section.

IR Connector Pinout

Note:

The following describes the pinout of the IR connector used to control IR-cut filter.



Pin	Function
1	3.3V DC or floating: camera switches to night mode with IR-cut filter removed. Ground or connection to pin-2: camera switches to day mode with IR-cut filter in use.
2	Ground

Power Connector Pinout

The following describes the pinout of the terminal power connector.



Pin	Function
1	+ 12V DC
2	СОМ
3	24V AC

Installation & Connections

Installing Lens

The following describes how to attach your lens to the camera.

- 1. Remove the body cap at the front of the camera.
- 2. Screw the lens into the camera body. While you're gently turning the lens clockwise, you will hear a 'click'. Then twist the lens by another one-third inch to firmly secure the lens. If you are installing a DC auto iris lens, connect the lens' control cable to the DC iris connector located at the back of the camera.



Connecting Video and Power

- 1. Use a BNC video cable to connect the terminal BNC connector from the camera to a mating BNC connector.
- 2. Attach the Power adapter (optional accessory) to the terminal power connector on the camera. The recommended adapter specifications is DC 12V/500mA or AC 24V/500mA. Then connect the power plug to a power outlet.



Power Adapter

D/N Mode Jumper

The D/N mode jumper lets you toggle between digital day/night mode (default) and external day/night mode. In digital D/N mode, the IR-cut filter is always removed. In external D/N mode, the IR-cut filter is used/removed by connecting/disconnecting the positive pole and negative pole of the IR connector. If you wish to externally control the IR-cut filter, follow the description below to switch to external D/N mode.

1. Power off the camera and loosen the four screws shown in the below figure to remove the back panel. Then gently pull out the main circuit board connected to the back panel to reveal the D/N jumper as circled in the figure below.



- 2. Reset the jumper (J7) to pins 2-3 to use external D/N mode. Then re-attach the back panel.
- 3. Connect the IR connector on the back panel to an external switch or light sensor.
- Connect the camera to a monitor and power. Press the setting button ↓ J on the back panel to enter the OSD menu. Select 'DAY/NIGHT' item and set it as 'COLOR' (in digital D/N mode, set the 'DAY/NIGHT' item as 'AUTO').

Operating the Camera

Setup Menus

Prior to using this camera, enter the setup menu and make the appropriate settings for each item in accordance with the condition of the camera's monitoring area. Listed below is the structure of the setup menu.

Setup Item	Description	Available Options	Submenu Items
LENS	Lets you select the iris adjustment mode of your lens.	AUTO / MANUAL	Under 'AUTO': type, mode, speed
SHUTTER / AGC	Allows you to configure the shutter speed and auto gain control function.	AUTO / MANUAL	Under 'AUTO': mode and brightness for high/low luminance Under 'Manual': mode, shutter, AGC
WHITE BAL	Provides adjustment on white balance.	ATW / PUSH / USER1 / USER2 /ANTI CR / MANUAL / PUSH LOCK	Under 'ATW': speed, delay cnt, atw frame, environment Under 'USER1/2': b-gain, r-gain Under 'MANUAL': level
BACKLIGHT	Enables or disables the back light compensation function.	OFF / BLC / HLC	N/A
PICT ADJUST	Specifies video properties.	MIRROR / BRIGHTNESS / CONTRAST / SHARPNESS / HUE / GAIN	Under 'MIRROR': off, on Under 'BRIGHTNESS/ CONTRAST/ SHARPNESS/HUE/ GAIN': 0~255
ATR	Lets you switch on/off the ATR (Adaptive Tone Reproduction) function.	OFF / ON	Under 'ON': luminance, contrast
MOTION DET	Configures the motion detection mode.	OFF / ON	Under 'ON': detect sense, block disp, monitor area, area sel, top, bottom, left, right, right

Setup Item	Description	Available Options	Submenu Items
PRIVACY	Protects sensitive areas in the scene.	OFF / ON	Under 'ON': area sel, top, bottom, left, right, color, transp, mosaic
DAY / NIGHT	Configures the day/night function.	AUTO / COLOR/ B/W	Under 'AUTO': burst, delay cnt, day > night, night > day Under 'B/W': burst
NR	Provides settings for the digital noise reduction function.	NR MODE	off, y, c, y/c
CAMERA ID	Creates a camera title to be displayed on the screen.	OFF / ON	Under 'ON': key-in ID, chr1, chr2, clr, pos
LANGUAGE	Changes the language of the setup menu	ENGLISH / DEUTSCH / FRANCAIS / РУССКИЙ / PORTUGUĚS / ESPAÑOL	N/A
CAMERA RESET	Restores all the settings to the default value	N/A	N/A

Camera Operation Setting

Entering and Navigating the Setup Menu

To enter the camera setup menu, press the setting button on the back panel. Press UP/ DOWN/LEFT/RIGHT button to navigate the menu. The currently selected menu item will be highlighted in pink on screen. To modify the setting of a highlighted menu item, simply press the LEFT/RIGHT button. A menu item with the \downarrow icon indicates it has a submenu. To enter a submenu, select an item with the \downarrow icon and press the setting button.



Button	Operation
UP	Move the cursor up
DOWN	Move the cursor down
LEFT	Change to the previous setting for the selected menu item
RIGHT	Change to the next setting for the selected menu item
Setting button (الح	Call up the OSD menu; set; enter a submenu

After you finish adjusting the settings, move the cursor to 'SAVE ALL' and press the setting button, and then move the cursor to 'EXIT' and press the setting button again to exit the setup menu.

Restore to Default Settings

To restore all the settings to default, press the setting button to enter the OSD menu. Move the cursor to [NEXT] and press the setting button, and then move the cursor to [CAMERA RESET] and hit the setting button again.

Lens

Select the iris aperture control method between 'AUTO' and 'MANUAL' by pressing LEFT or RIGHT button. When 'AUTO' is selected, you can press the setting button to enter its submenu, as shown below.

SETUP MENU		
TYPE Mode Speed	DC Auto	080
RETURN↓		

'TYPE' lets you select between DC iris and video iris. However, video iris mode is not supported on this camera. For the item 'MODE', you can select 'AUTO' to let the camera automatically adjust the diameter of aperture. You can also set the camera to open the aperture to the maximum degree, or use the minimum aperture. The 'SPEED' item allows you to set aperture adjustment speed.

Shutter / AGC

Configure the shutter and auto gain control function here.

Automatic Shutter / AGC

Selecting 'AUTO', which is recommended when using a DC-iris lens, will allow the camera to adjust shutter speed automatically based on the lighting conditions. Configure the function under different lighting conditions in the submenu of 'AUTO', as shown below.

AUTO SETUP		
HIGH LUMINANCE Mode Brightness	AUTO IRIS	026
LOW LUMINANCE Mode Brightness	AGC x0.75	
RETURN↓		

Under 'HIGH LUMINANCE', you can choose 'AUTO IRIS' mode (default setting) to use a fixed shutter while making the camera adjust iris level according to the brightness of the scene. Choose 'SHUT+AUTO IRIS' mode to have the camera adjust iris level according to the brightness, and control the exposure with DC iris. If you have previously selected 'MANUAL' for the 'LENS' item, the mode will be forced as 'SHUT'. The 'BRIGHTNESS' item let you adjust the aperture to tailor the brightness to your preference.

Under 'LOW LUMINANCE', you can choose 'AGC' mode (default setting) to have the camera automatically increase the gain when in low light conditions to produce a brighter image. The 'BRIGHTNESS' item allows you to tailor brightness level to your needs.

Manual Shutter / AGC

Opt for manual shutter / AGC option when you have selected 'MANUAL' for the 'LENS' item, which then provides a submenu that contains mode, shutter and AGC setting. 'SHUTTER' item lets you specify the shutter time (between 1/50 sec and 1/10000 sec). Adjust 'AGC' level according to your lighting conditions.

White Balance

You can fine-tune the color of the image here. 'ATW' (Auto White Balance) is the default setting. Besides 'ATW', there are also 'PUSH', 'USER1', 'USER2', 'ANTI CR', 'MANUAL', and 'PUSH LOCK'.

ATW (Auto White Balance)

ATW allows the camera to adjust white balance in accordance with the color temperature of the light source. 'ATW' contains a submenu (shown below). 'SPEED' controls the speed of ATW. Changing the 'ATW FRAME' and 'ENVIRONMENT' setting will affect the color temperature range. Smaller value for 'ATW FRAME' leads to a smaller range of color temperature. The color temperature ranges from 2500K to 9500K for indoor environment, and 1800K to 10500K for outdoor environment.

ATW			
Speed Delay CNT ATW FRAME Environment	1111 111111111111111111111111111111111	026 026	
RETURN↓			

Selecting 'USER1/2' mode will allow you to adjust the blue gain and red gain individually. 'MANUAL' mode will let you adjust the blue gain and red gain simultaneously. The 'ANTI CR' (anti color rolling suppression) mode uses a smaller range of color temperature than ATW mode does.

Backlight

Switch on/off the backlight compensation function. 'BLC' helps correct the problem of subjects being darker than expected in the image when there are bright lights directly shining behind them. In addition, selecting 'HLC' (High light compensation) will display the extreme bright areas in the scene in black.

Picture Adjustment

Press the setting button when the \downarrow icon is highlighted to enter picture adjustment menu. Enabling 'MIRROR' mode will flip the image horizontally. Press the UP/DOWN button to select any of the video properties and then press LEFT/RIGHT to adjust the slider.

	-	
MIRROR	OFF	
BRIGHTNESS		042
CONTRAST		154
SHARPNESS		138
HUE		128
GAIN		154
RETURN		

ATR (Adaptive Tone Reproduction)

Similar to Wide Dynamic Range, ATR can compensate for gradation of the subjects to the optimal level and thereby improve contrast in both bright and dark areas in the picture. Switch on ATR and then press the setting button to enter its submenu. Use the operation buttons to select 'LUMINANCE' or 'CONTRAST' and then adjust the level to your preference.

ATR		
	MID	
CONTRAST	MID	
RETURN↓		J

Motion Detection

You can configure the motion detection function here. Switch to 'ON' and then press the setting button to enter its submenu. You can create up to 4 motion detection areas by enabling 'MONITOR AREA' and adjusting the 'TOP/BOTTOM/LEFT/RIGHT' slider separately. You can also adjust the detection sensitivity. 'BLOCK DISP', when switched on, will highlight moving objects in the scene with color blocks; when switched to 'ENABLE \downarrow ', it allows you to enter a grid screen in which you will use the operation buttons to move the translucent square and, by pressing the setting button, specify areas in the scene that will not be detected (which then will become transparent). To exit the grid screen, press and hold the setting button for 2 seconds before releasing it.

MOTION DET			
DETECT SENSE BLOCK DISP MONITOR AREA	OFF	111	
AREA SEL	1/4		
BOTTOM		000	
LEFT RIGHT		000 000	
RETURN↓	-		

Privacy

Privacy function can create up to 4 masks to protect sensitive areas in the scene. Switch to 'ON' to enter its submenu as shown below. Select an area and adjust the 'TOP/ BOTTOM/LEFT/RIGHT' slider separately to create a mask on screen. You can also specify the color, transparency (1 being opaque) and mosaic setting (not effective on opaque masks).

PRIVACY			
AREA SEL	1/4		
TOP		000	
BOTTOM		000	
LEFT		000	
RIGHT		000	
COLOR	1		
TRANSP	1.00		
MOSAIC	OFF		
RETURN↓			

Day/Night

Configure the day/night function by selecting between 'AUTO', 'COLOR' and 'B/W'. When 'AUTO' is selected, press the setting button to enter its submenu as shown below. The 'DELAY CNT' specifies the delay before a switchover. 'DAY+NIGHT' and 'NIGHT+DAY' determines the lux level at the switching point.



Note:

Having switched to external day/night mode, please set 'DAY/ NIGHT' as 'COLOR'. Refer to the 'D/N Mode Jumper' section for how to switch to external D/N mode to control the camera's IRcut filter externally.

DAY/NIGHT		
BURST Delay CNT	010	
DAY→NIGHT NIGHT→DAY	004 005	
RETURN↓		

When 'COLOR' is selected, color image is always displayed. When 'B/W' is selected, the picture is always displayed in black/white (the burst setting in its submenu is synchronized with the burst setting in the submenu of 'AUTO').

Noise Reduction

Here you can configure the 2D digital noise reduction function (default: off). Its submenu includes 3 noise reduction mode: 'Y', 'C', and 'Y/C'. Select any of the three NR modes, highlight the Y or C level, and then press the LEFT/RIGHT button to adjust the slider for Y level (brightness signal) or C level (color signal return).

NR		
NR MODE	OFF	
CLEVEL	-	
RETURN↓		

Camera ID

You can create a camera title to be displayed on the screen. Switch to 'ON' and press the setting button to input a custom title. The camera title can be named with up to 52 characters in two lines. Highlight and select 'POS₄" to move the title to the preferred position on screen.

Language

Press the LEFT/RIGHT button to change the language of the OSD menu. Available languages include English, Japanese, German, French, Russian, Portuguese, Spanish, and Chinese.

Camera Reset

Move the cursor to 'CAMERA RESET' and then press the setting button to restore all the settings to the factory default.

Technical Specifications

CP180

VIDEO		
Image		
Device	Authentic SONY 1/3" 960H EXview HAD CCD II	
Digital Signal Processor	Authentic SONY Effio-E DSP 12-bit	
Effective Pixel	976 x 494 / 976 x 582	
System		
Scanning	Interlaced	
Synchronization	Internal	
Resolution		
Horizontal	Color: > 680 TV Lines Black/White: > 700 TV Lines	
Day & Night		
Minimum Illumination	0.01 Lux (F1.2, 30 IRE)	
True D/N	Mechanical IR cut filter	
External IR Control	Yes	
Video Output	BNC out x 1	
S/N Ratio	> 50 dB	
LENS		
Lens Type	CS Mount	
Auto Iris	DC drive	
FUNCTION		
OSD	Yes	
Camera ID	Yes	
Lens Control	Yes	
Image Optimization	Mirror, Brightness, Contrast, Sharpness, Hue, Gain	
Motion Detection	Yes (4 zones)	
Privacy Mask	Yes (4 zones)	

Exposure Control	AES, AGC	
White Balance	ATW, Push Lock, Anti-Color Rolling, Manual	
Backlight Compensation	BLC, HLC	
Wide Dynamic Range	Digital (ATR)	
Digital Noise Reduction	2D DNR	
GENERAL		
Multi-lingual OSD Menu	English, Japanese, German, French, Russian, Portuguese, Spanish, Chinese	
Casing	Cast aluminum	
Dimensions	55 X 55 x 113 mm	
Power Requirement	DC 12V, AC 24V, terminal block	
ENVIRONMENTAL		
Operating Temperature	-10°C (14°F) ~ +50°C (122°F)	
Storage Temperature	-20°C (-4°F) ~ +60°C (140°F)	
Humidity	20% ~ 80% (non-condensing)	
CERTIFICATIONS		
Listed	CE / FCC	
OPTIONAL		
Accessories	Power adapter and optical lens	



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