

# CCD-1

## CCD CAMERA

### Owner's Manual

Thank you for purchasing the EDIROL CCD-1.

**Before using this unit, carefully read the sections entitled: "USING THE UNIT SAFELY" and "IMPORTANT NOTES" (p. 2 – p. 4). These sections provide important information concerning the proper operation of the unit. Additionally, in order to feel assured that you have gained a good grasp of every feature provided by your new unit, Owner's manual should be read in its entirety. The manual should be saved and kept on hand as a convenient reference.**

#### CCD-1 Features

- 380,000-pixel 1/3" color CCD image sensor
- Highly-sensitive CCD works with a minimum illumination of 0.1 Lux
- Auto Iris Lens handles a wide range of lighting in locations from dark to bright
- Numerous settable functions
  - Flickerless Mode, Backlight Compensation, Auto Gain Control, White Balance, Mirror, Digital Zoom (x1/x2)
- Focal point adjustable with lens
- Included bracket provides freedom in setting the vertical and horizontal camera angle
- Included adaptor allows attachment of the camera to mic stands

#### Package Contents



- CCD-1 (Camera)
- AC Adaptor
- Mic Stand Adaptor
- Video Power Extension Cord (5 m)
- CS-Mount Lens (8 mm, F1.2)
- Bracket
- BNC-RCA Pin Adaptor Plug
- Owner's Manual



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# USING THE UNIT SAFELY

## INSTRUCTIONS FOR THE PREVENTION OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

About  WARNING and  CAUTION Notices






 <b>WARNING</b>	Used for instructions intended to alert the user to the risk of death or severe injury should the unit be used improperly.
 <b>CAUTION</b>	Used for instructions intended to alert the user to the risk of injury or material damage should the unit be used improperly. * Material damage refers to damage or other adverse effects caused with respect to the home and all its furnishings, as well to domestic animals or pets.

About the Symbols







	The  symbol alerts the user to important instructions or warnings. The specific meaning of the symbol is determined by the design contained within the triangle. In the case of the symbol at left, it is used for general cautions, warnings, or alerts to danger.
	The  symbol alerts the user to items that must never be carried out (are forbidden). The specific thing that must not be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the unit must never be disassembled.
	The  symbol alerts the user to things that must be carried out. The specific thing that must be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the power-cord plug must be unplugged from the outlet.

### ALWAYS OBSERVE THE FOLLOWING


#### **WARNING**

- Before using this unit, make sure to read the instructions below, and the Owner's Manual. 
- Do not open (or modify in any way) the unit or its AC adaptor. 
- Do not attempt to repair the unit, or replace parts within it (except when this manual provides specific instructions directing you to do so). Refer all servicing to your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page. 
- Never use or store the unit in places that are: 
  - Subject to temperature extremes (e.g., direct sunlight in an enclosed vehicle, near a heating duct, on top of heat-generating equipment); or are 
  - Damp (e.g., baths, washrooms, on wet floors); or are
  - Humid; or are
  - Exposed to rain; or are
  - Dusty; or are
  - Subject to high levels of vibration.


#### **WARNING**

- Make sure you always have the unit placed so it is level and sure to remain stable. Never place it on stands that could wobble, or on inclined surfaces. 
- Be sure to use only the AC adaptor supplied with the unit. Also, make sure the line voltage at the installation matches the input voltage specified on the AC adaptor's body. Other AC adaptors may use a different polarity, or be designed for a different voltage, so their use could result in damage, malfunction, or electric shock. 
- Use only the attached power-supply cord. Also, the supplied power cord must not be used with any other device. 
- Do not excessively twist or bend the power cord, nor place heavy objects on it. Doing so can damage the cord, producing severed elements and short circuits. Damaged cords are fire and shock hazards! 
- Do not allow any objects (e.g., flammable material, coins, pins); or liquids of any kind (water, soft drinks, etc.) to penetrate the unit.  


## **WARNING**

- In households with small children, an adult should provide supervision until the child is capable of following all the rules essential for the safe operation of the unit. 


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- Protect the unit from strong impact. (Do not drop it!) 


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- Do not force the unit's power-supply cord to share an outlet with an unreasonable number of other devices. Be especially careful when using extension cords—the total power used by all devices you have connected to the extension cord's outlet must never exceed the power rating (watts/ amperes) for the extension cord. Excessive loads can cause the insulation on the cord to heat up and eventually melt through. 


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- Before using the unit in a foreign country, consult with your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page. 


## **CAUTION**

- The unit and the AC adaptor should be located so their location or position does not interfere with their proper ventilation. 


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- Always grasp only the plug on the AC adaptor cord when plugging into, or unplugging from, an outlet or this unit. 


## **CAUTION**

- At regular intervals, you should unplug the AC adaptor and clean it by using a dry cloth to wipe all dust and other accumulations away from its prongs. Also, disconnect the power plug from the power outlet whenever the unit is to remain unused for an extended period of time. Any accumulation of dust between the power plug and the power outlet can result in poor insulation and lead to fire. 


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- Try to prevent cords and cables from becoming entangled. Also, all cords and cables should be placed so they are out of the reach of children. 


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- Never climb on top of, nor place heavy objects on the unit. 


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- Never handle the AC adaptor or its plugs with wet hands when plugging into, or unplugging from, an outlet or this unit. 


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- Before moving the unit, disconnect the AC adaptor and all cords coming from external devices. 


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- Before cleaning the unit, turn off the power and unplug the AC adaptor from the outlet. 

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- Whenever you suspect the possibility of lightning in your area, disconnect the AC adaptor from the outlet. 

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- Should you remove BNC/RCA phono converter plug, make sure to put them in a safe place out of children's reach, so there is no chance of them being swallowed accidentally. 

# IMPORTANT NOTES

In addition to the items listed under “USING THE UNIT SAFELY” on page 2, please read and observe the following:

## Power Supply

- Do not connect this unit to same electrical outlet that is being used by an electrical appliance that is controlled by an inverter (such as a refrigerator, washing machine, microwave oven, or air conditioner), or that contains a motor. Depending on the way in which the electrical appliance is used, power supply noise may cause this unit to malfunction or may produce audible noise. If it is not practical to use a separate electrical outlet, connect a power supply noise filter between this unit and the electrical outlet.
- The AC adaptor will begin to generate heat after long hours of consecutive use. This is normal, and is not a cause for concern.
- Before connecting this unit to other devices, turn off the power to all units. This will help prevent malfunctions and/or damage to speakers or other devices.

## Placement

- This device may interfere with radio and television reception. Do not use this device in the vicinity of such receivers.
- Noise may be produced if wireless communications devices, such as cell phones, are operated in the vicinity of this unit. Such noise could occur when receiving or initiating a call, or while conversing. Should you experience such problems, you should relocate such wireless devices so they are at a greater distance from this unit, or switch them off.
- When moved from one location to another where the temperature and/or humidity is very different, water droplets (condensation) may form inside the unit. Damage or malfunction may result if you attempt to use the unit in this condition. Therefore, before using the unit, you must allow it to stand for several hours, until the condensation has completely evaporated.

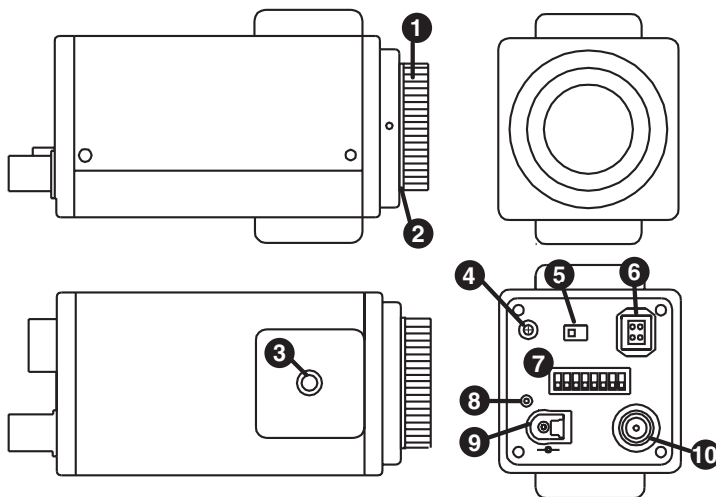
## Maintenance

- For everyday cleaning wipe the unit with a soft, dry cloth or one that has been slightly dampened with water. To remove stubborn dirt, use a cloth impregnated with a mild, non-abrasive detergent. Afterwards, be sure to wipe the unit thoroughly with a soft, dry cloth.
- Never use benzene, thinners, alcohol or solvents of any kind, to avoid the possibility of discoloration and/or deformation.

## Additional Precautions

- Use a reasonable amount of care when using the unit's buttons, sliders, or other controls; and when using its jacks and connectors. Rough handling can lead to malfunctions.
- When connecting / disconnecting all cables, grasp the connector itself—never pull on the cable. This way you will avoid causing shorts, or damage to the cable's internal elements.
- When you need to transport the unit, package it in the box (including padding) that it came in, if possible. Otherwise, you will need to use equivalent packaging materials.

# Names of Things and What They Do



## 1. C-Mount Lens Attachment Screw

Used to attach the C-mount lens to the CCD-1.

The CS-mount lens is normally used, so the C-mount lens attachment screw is not usually necessary.

## 2. CS-Mount Lens Attachment Screw

Use this to attach the included CS-mount lens to the CCD-1.

## 3. Camera Mounting Holes

Used for attaching the included bracket to the CCD-1. The holes are 1/4" in diameter, the same size as attachment screws on conventional camera tripods. There is one hole each on the top and bottom sides. Use the one that best suits your setup.

\* If attaching the CCD-1 to a mic stand, use the mic stand adaptor included with the unit.

## 4. DC Iris Lens Adjustment Control

Adjusts the lens iris. Rotate to the right (clockwise) to make the image brighter, or to the left (counterclockwise) to make the image darker.

Differences in hue may occur when more than one CCD-1 is used. Adjust the DC iris lens control while focusing the cameras on a white object until the tone is uniform. This step of adjusting the iris while focusing the cameras on a white object is also recommended when using the CCD-1 together with another type of camera.

\* Shining a strong light on the object may cause the object to be overly bright, which may turn the screen white and prevent proper imaging. In such instances, rotate the DC iris lens adjustment control to adjust the brightness.

\* In certain situations, such as when the amount of light on the object changes suddenly, it may take some time after adjusting the DC iris lens control for the Auto Iris function to complete processing.

**5. Iris Select Switch**

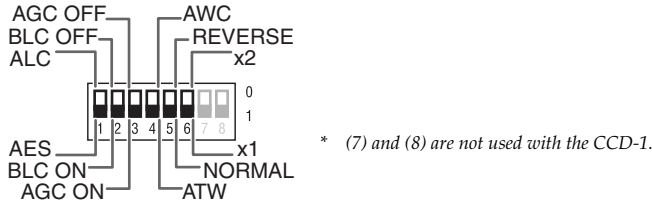
Allows you to select either DC or VIDEO to match the type of lens being used. Set this to DC when using the CCD-1 in combination with the lens that was supplied with it.

**6. Auto Iris Connector**

Plug the CS-mount lens cable to the Auto Iris connector when using the CCD-1 with the included CS-mount lens attached.

**7. Function Select Switch**

Switch used for setting the function.



**Settings Chart**

1	<b>Iris Mode</b>		
	Switches the Iris mode.	<b>OFF</b>	Switches the CCD-1 to Auto Iris mode. This adjusts the diaphragm automatically. <b>AES</b> Auto Digital Shutter Mode
		<b>ON</b>	Switches the CCD-1 to Flickerless mode. Set to Flickerless mode when using the CCD-1 in 50 Hz regions. This eliminates flicker in the images. <b>ALC</b> Auto Level Control Automatically adjusts the iris.
		<b>BLC (Backlight Compensation)</b>	
2	Function that compensates for higher backlight.	<b>ON</b>	Backlight compensation is performed automatically. Use this setting when the background of the object is relatively bright.
		<b>OFF</b>	The backlight is not compensated for automatically.
3	<b>AGC (Auto Gain Control)</b> Auto Gain Control	<b>ON</b>	The gain level is adjusted automatically.
		<b>OFF</b>	The gain level is fixed.
4	<b>White Balance</b> Setting used in compensating for the white level in the white balance.	<b>ATW</b>	Automatically tracks and adjusts the white level.
		<b>AWB</b>	Automatically tracks and adjusts the white level, then locks it in.
5	<b>Mirror</b> A mirror-like effect that reverses the image left to right.	<b>Normal</b>	The actual image as captured by the camera is displayed in the monitor.
		<b>Reverse</b>	The image taken by the camera is reversed laterally then displayed in the monitor.
6	<b>Digital Zoom</b> Allows the images to be enlarged.	<b>x1</b>	The images are shown in the monitor at the normal size.
		<b>x2</b>	The images are shown in the monitor at twice the normal size.

**8. POWER Indicator**

Lights in green when the power is on.

**9. AC Adaptor Jack**

Connect the included AC adaptor here.

Be sure to use only the AC adaptor included with this camera.

**10. BNC Video Signal Output Connector**

Connect the included BNC/RCA phono converter plug here, then connect the RCA phono type AV cable to a television or monitor.

# Setup and Connections

## Attaching the Lens

The CCD-1 is focused manually. Adjust the control at the base of the lens to bring the object into focus according to the distance between the object and the camera.

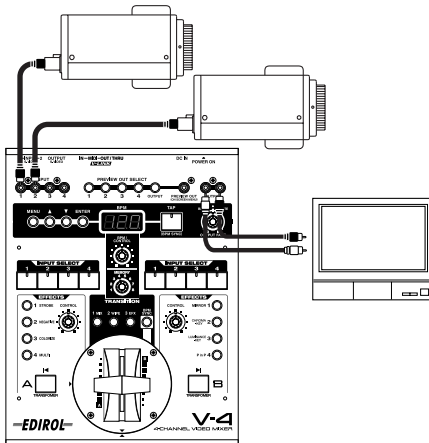
1. Use the CS-mount lens attachment screw to attach the included CS-mount lens.
2. Connect the included CS-mount lens cable to the Auto Iris connector on the CCD-1's rear panel.

## Attaching the Camera to a Mic Stand

1. Attach the upper part of the included bracket to the camera mounting hole on the CCD-1 camera housing.
2. Attach the bottom part of the bracket to the mic stand adaptor.
3. Attach the mic stand adaptor to the mic stand.

## Connection Example

The figure shows two CCD-1 cameras connected to a V-4 video mixer.



- Differences in hue may result when more than one CCD-1 is used. Adjust the DC iris lens control while focusing the cameras on a white object until a uniform hue is achieved.
- Using the camera in dark environments may cause noise to appear in the screen.
- Shining a spotlight at the camera when using it in darker environments may disrupt the white balance.
- Setting the Digital Zoom to x2 results in a coarser image.



# Specifications

	NTSC	PAL
<b>Dimensions</b>	50.5 (W) x 110 (D) x 64.5 (H) mm 2 (W) x 4-3/8 (D) x 2-9/16 (H) inches	
<b>Weight</b>	Camera 335 g / 12 oz Lens 53 g / 2 oz	
<b>TV System</b>	NTSC	PAL
<b>Image Sensor</b>	1/3-inch CCD	
<b>CCD Total Pixels</b>	816 (H) x 495 (D) pixels	798 (H) x 548 (D) pixels
<b>Pixels</b>	380,000 pixels	
<b>Scanning System</b>	525 lines, 60 fields/sec	625 lines, 50 fields/sec
<b>Sync System</b>	Internal	
<b>Minimum Illumination</b>	0.1 Lux / F 1.2	
<b>Resolution</b>	480 TVL	
<b>S/N Ratio</b>	52 dB (MIN) / 60 dB (TYP: AGC OFF)	
<b>VIDEO Output</b>	Composite 1.0 V 9-9 at 75 ohms	
<b>Gamma Correction</b>	0.45	
<b>Operation Temperature</b>	-20 - 50°C (humidity 85 %)	
<b>Flickerless</b>	ON / OFF switchable	
<b>Gain Control</b>	AGC ON / OFF switchable	
<b>B.L.C. Function</b>	ON / OFF switchable	
<b>White Balance</b>	ATW / AWB switchable	
<b>Mirror Function</b>	NORMAL / REVERSE switchable	
<b>Digital Zoom</b>	ON (x2) / OFF (x1) switchable	
<b>Auto Iris</b>	VIDEO / DC / A.E.S.	
<b>Electronic Shutter</b>	1/60 - 1/100000 sec.	1/50 - 1/100000 sec.
<b>Power Supply</b>	DC 12 V / 150 mA	
<b>Accessories</b>	AC adaptor, CS mount lens (8 mm / 3/8 inches, F 1.2), Bracket, Mic Stand Adaptor, BNC-RCA Pin Adaptor Plug, Video Power Extension Cord (5 m), Owner's Manual	

\* In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.

## Function Select Switch Setting

<b>Color Control setting</b>	120 %
<b>Electronic Shutter setting</b>	1/100 sec.
<b>Iris Adjust Level</b>	95 K

### Function Select Switch

For more detailed information about the functions, refer to “**Function Select Switch**” (p. 6).

<b>1 Iris Mode</b>	0
<b>2 BLC</b>	1
<b>3 AGC</b>	1
<b>4 White Balance</b>	1
<b>5 Mirror</b>	1
<b>6 Digital Zoom</b>	1





This product complies with the requirements of European Directive 89/336/EEC.

For EU Countries

For the USA

## FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY 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 or more 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.

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.

Unauthorized changes or modification to this system can void the users authority to operate this equipment. This equipment requires shielded interface cables in order to meet FCC class B Limit.

For Canada

## NOTICE

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

## AVIS

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

## Information

When you need repair service, call your nearest EDIROL/Roland Service Center or authorized EDIROL/Roland distributor in your country as shown below.

### EDIROL

#### EUROPE

**EDIROL (Europe) Ltd.**  
Studio 3.4 114 Power Road  
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TEL: +44 (0)20 8747 5949  
FAX: +44 (0)20 8747 5948  
<http://www.edirol.com/europe>

Deutschland  
TEL: 0700 33 47 65 20  
France  
TEL: 0810 000 371  
Italia  
TEL: 02 93778329

#### U. S. A. / CANADA

**EDIROL Corporation North America**  
425 Sequoia Drive, Suite 114  
Bellingham, WA 98226  
U. S. A.  
TEL: (360) 594-4276  
FAX: (360) 594-4271  
<http://www.edirol.com/>

## Roland

### ASIA

#### TAIWAN

**ROLAND TAIWAN ENTERPRISE CO., LTD.**  
Room 5, 9th, No. 112 Chung Shan N. Road Sec.2, Taipei, TAIWAN, R.O.C.  
TEL: (02) 2561 3339

### AUSTRALIA

#### AUSTRALIA

**Roland Corporation Australia Pty., Ltd.**  
35 Campbell Avenue  
Dee Why West, NSW 2099  
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### CENTRAL/LATIN AMERICA

#### BRAZIL

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(Westerlo) BELGIUM  
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#### CZECH REP.

**K-AUDIO**  
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CZ-198 00 Praha 9,  
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#### DENMARK

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#### FRANCE

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#### GERMANY

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#### NORWAY

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#### PORTUGAL

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