

# CCD Camera

## KP-201/200

### OPERATION MANUAL

Please read this operation manual carefully for proper operation, and keep it for future reference.

Hitachi Kokusai Electric Inc.

# CCD カメラ

## KP-201/200

### 取扱説明書

この取扱説明書には、あなたや他の人々への危害や財産への損害を未然に防ぎ、この機器を安全にお使いいただくために守っていただきたい事項を示しています。ご使用になる前に、この取扱説明書をよくお読みいただき、正しい使い方でご愛用ください。お読みになった後も、この機器のそばなどいつも手元に置いてご使用ください。

株式会社 日立国際電気

Introduction .....	1
Features .....	1
Operating considerations .....	2
CCD inherent properties .....	3
Names and functions .....	4
Connections .....	6
Lens .....	7
Recommended lenses .....	7
Note on lens selection .....	7
Installation of CS-mount lens .....	7
Lens selector switch .....	8
Lens connector .....	8
Flangeback adjustment .....	9
DC control lens .....	10

Camera mount .....	11
Sensitivity setting switches .....	12
Sensitivity setting switches .....	12
Electronic shutter switches .....	13
Auto electronic shutter (AES) .....	13
Light setting area .....	14
Major specifications .....	15
Accessories .....	16

# Introduction

The KP-201/200 is a high performance CCD camera that offers superior resolution and sensitivity in the near-infrared spectrum. The many important functions include AES and AGC.

## Features

### **Extremely high sensitivity**

The CCD is selected for sensitivity in the near-infrared region. The camera is an optimum choice for surveillance under infrared lighting.

### **Superior resolution**

Total picture elements are 410,000 (470,000 CCIR) of which effective pixels are 768 (H) × 494 (V) (752 (H) × 582(V) CCIR). The recently developed CCD provides horizontal resolution of 570 TV lines (560 TV lines CCIR) and vertical resolution of 485 TV lines(575 TV lines CCIR) .

### **AES and AGC**

Automatic electronic shutter (AES) and automatic gain control (AGC) functions are provided. Up to 8 fixed shutter speeds are obtained from 1/100 (1/120 CCIR) to 1/100000 second.

# Names and functions

## Tripod adapter holes

Use when attaching the camera to a tripod. See further description under Installation.

## Sensitivity setting switches [gain and AGC]

See page 12.

## Lens D/V switch

Set according to lens type.  
D : DC control voltage type lens  
V : Video signal input type lens  
See page 8.

## Lens connector

Use for connecting the control cable of an auto iris lens.  
See page 8.

## Camera mounting hole

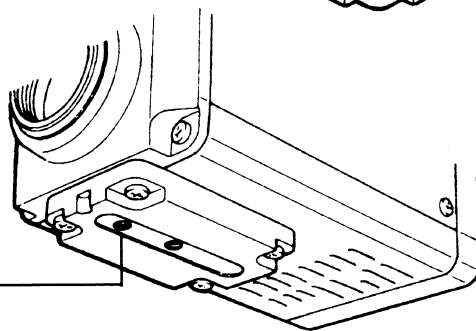
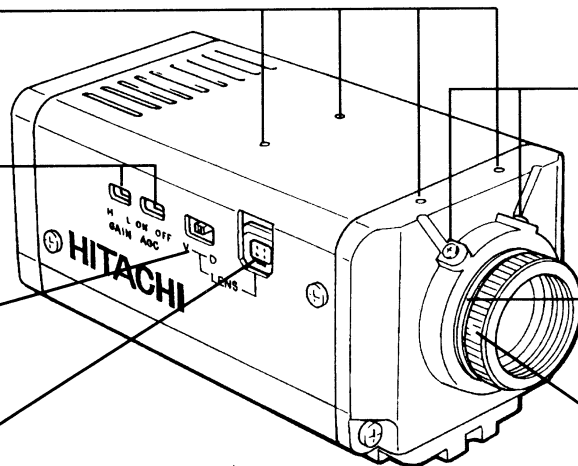
## Lens mount screws

Secure the lens mount after adjusting the flangeback.  
See page 9.

## Lens mount ring

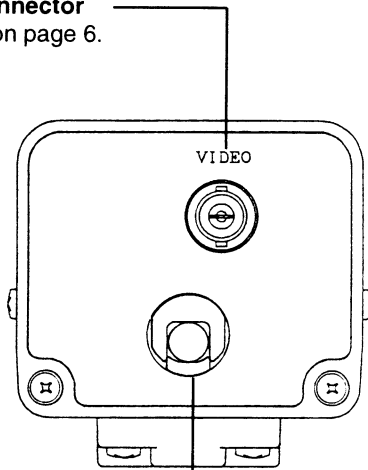
## C mount adaptor

Remove when using a CS mount type lens.



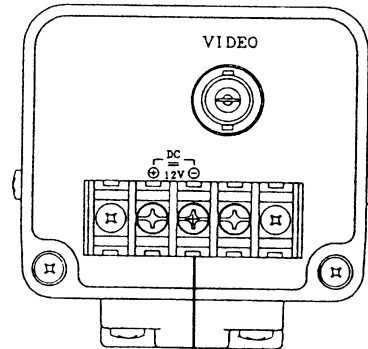
[KP-201]

**Video output connector**  
See Connection on page 6.



**AC power cord**

[KP-200]



**Power supply input connector**  
Connect an external DC power supply.

# Connections

## Video output connection

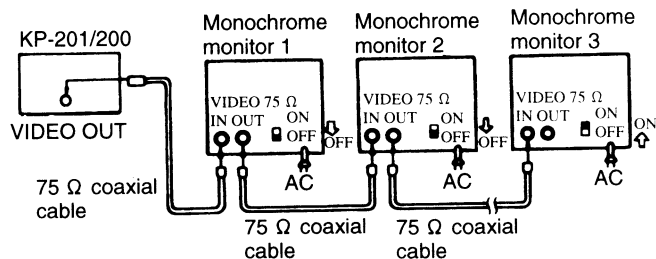
Connect the video output of the camera to the video input of a monitor or other equipment. When using a "loop through" connection of two or more monitors, set the 75  $\Omega$  switch of only the final monitor to ON. Determine the type of cable according to the distance of the connected equipment. The maximum cable lengths indicated below are recommended for avoiding appreciable picture degradation.

3C-2V : 150 meters

5C-2V : 200 m

7C-2V : 300 m

10C-2V : 400 m

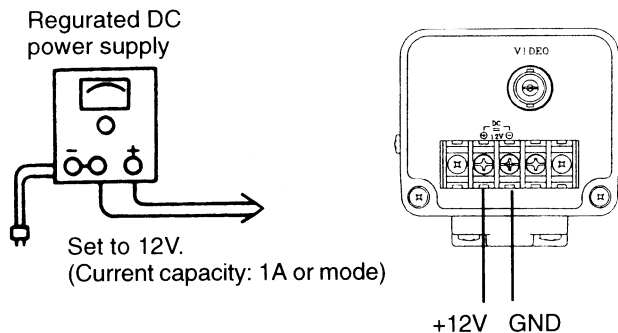


Set the 75  $\Omega$  switch of only the final monitor to on. Set the 75  $\Omega$  switch of other monitors to off.

## Connection of DC power supply (KP-200 only)

Use a DC power supply rated 12V  $\pm$  10%, 1A or more.

**Caution :** Prior to turning on the power switch, be sure to check that the polarities of the power supply are correct.



# Lens

## Recommended lenses

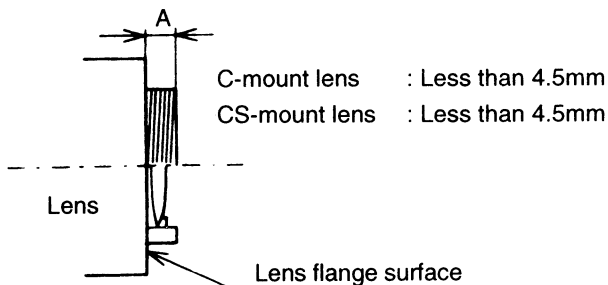
**Notes:** Please appoint wiring of plug as EIAJ (Electronic Industries Association of Japan) when a lens is ordered.

## Note on lens selection

- 1) Observe the maximum size limit (A in the figure) when installing the lens. Internal damage can occur if a larger lens is used.
- 2) Avoid using a lens that is heavier than the camera. If unavoidable, be sure to fix the lens itself on a support.

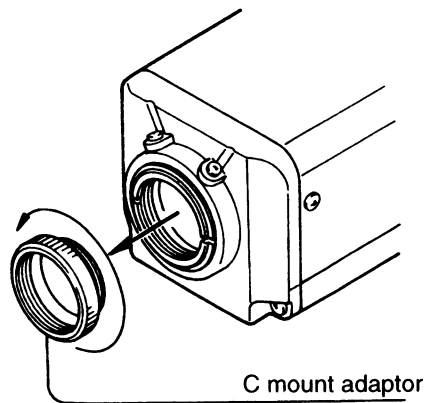
## Caution:

A heavy lens can disturb the balance with respect to the camera and possibly result in damage.



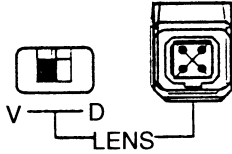
## Installation of CS-mount lens

C-mount adaptor is provided for the camera in the factory. When using a CS-mount lens, unscrew and remove the C-mount adaptor. Save the C-mount adaptor for possible future use.



## Lens selector switch

Set the switch according to the type of auto-iris lens. The factory setting is D.



**D:** Set to D when using a DC control voltage input type lens.

**V:** Set to V when using a video signal input type lens.

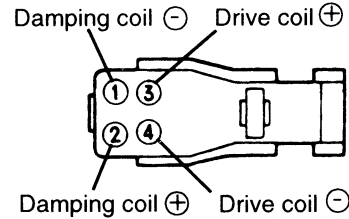
### Notes

1. To the extent possible, set the lens response to Average. Hunting can occur toward the Peak setting.
2. Set the switch to DC when using a manual iris lens with auto electronic shutter (AES) at the same time.

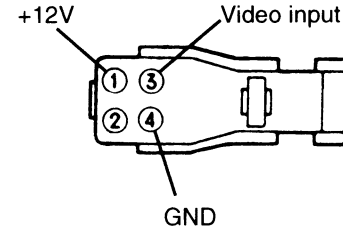
## Lens connector

When using an auto iris lens, install the lens plug on the lens cable as indicated in the figures. Refer to the lens instructions regarding the signals and wire colors.

### DC type lens



### VIDEO type lens



After installing the plug on the cable, connect it to the Lens connector on the rear of the camera.



## Flangeback adjustment

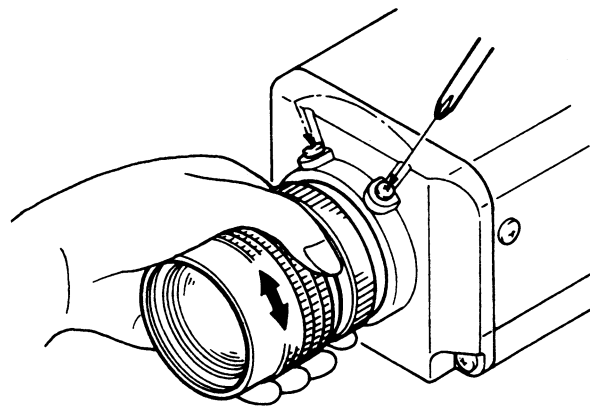
Flangeback adjustment is needed in cases where focus cannot be obtained by normal lens focus operation or focus is lost at the maximum telephoto and wide angle settings of a zoom lens. In such cases, open the lens iris and adjust as follows.

### 1. Fixed focus lens

Set the lens focus ring to infinity and pickup a camera subject at least 20 meters distant. Loosen the lens mount setscrews (2 screws) and turn the lens and lens mount ring to adjust the focus. After adjusting, tighten the lens mount setscrews.

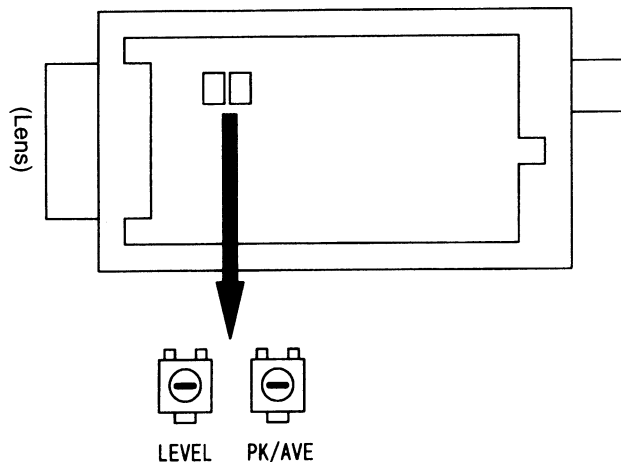
### 2. Zoom lens

- 1) Set the lens to maximum telephoto and pickup a camera subject at least 3 meters distant. Loosen the lens mount setscrews (2 screws) and turn the focus ring to adjust the focus while using care not to turn the lens and lens mount ring .
- 2) Set the lens to maximum wide angle and pickup the same camera subject. While using care not to turn the lens focus ring, turn the lens and lens mount ring to adjust the focus. Repeat these steps until focus is obtained at both telephoto and wide angle settings. After adjusting, tighten the lens mount setscrews.



## DC control lens

Factory setting is average (AVE). If necessary due to scene conditions, open the camera cover and adjust the PK/AVE control for best image control for best image.

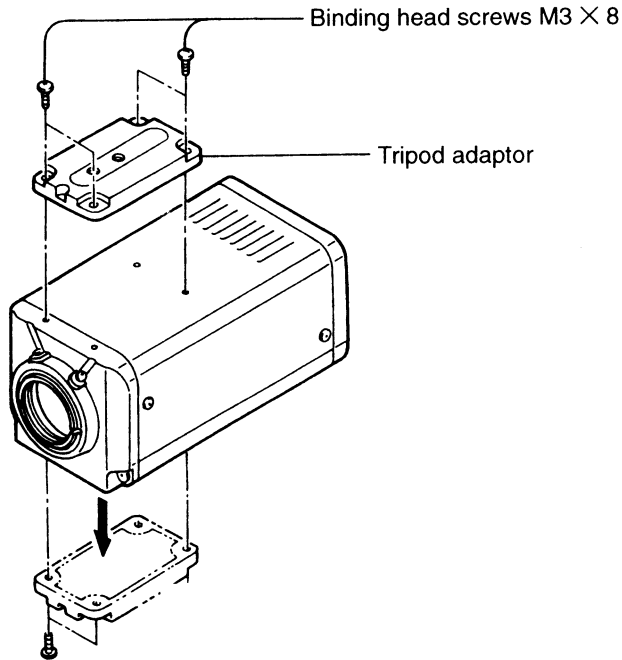


### Note

The PK/AVE control functions only with a DC input type lens. In the Video mode, the value is fixed at the factory.

# Camera mounting

If the camera is to be suspended from the ceiling, change the position of the tripod adaptor from the bottom to the top of the camera, as indicated in the figure.

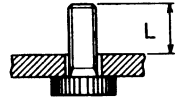


**Caution :** Use the following type of camera mounting screw.

Type : U 1/4-20

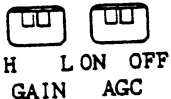
Length L : less than 7 mm

If longer than 7 mm, there is risk of internal damage to the camera. Conversely, if too short, the camera will not be firmly secured and there is risk of dropping.



# Sensitivity setting switches

## ● Sensitivity setting switches

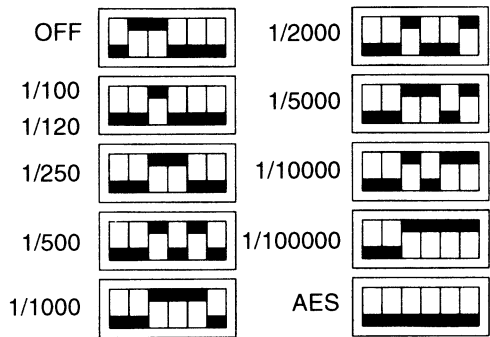
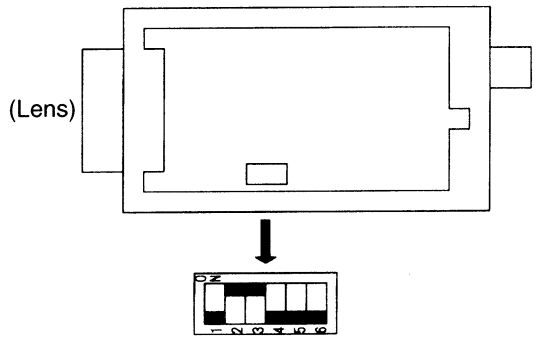


Switch combination sets the camera sensitivity.

Mode	Gain	AGC
1	Lo	Off
2	Hi	Off
3	Lo	On
4	Hi	On

- Sensitivity increases in the sequence 1, 2, 3 and 4.
- Mode 1 only is fixed sensitivity.
- Mode 4 is maximum sensitivity, use when outdoor light variations are large. If noise is disturbing, use modes 2 and 3.
- Set according to the scene to obtain the best resolution.

● **Electronic shutter switches**



● **AES**

Sets the CCD auto shutter (EIA : 1/60 to 1/100,000 second, CCIR : 1/50 to 1/100,000 second) light response range.

On: When using a fixed iris lens for continuous day/night operation.

Off: When using an auto iris lens. Select according to actual scene conditions.

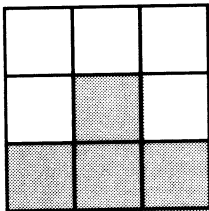
At the On setting, smear is more likely to occur. Also, flicker may occur under fluorescent or other frequency contingent light source.

# Light setting area

## Light sensing area (backlight compensation)

The video signal from scene light sensing area controls the AGC, auto iris lens and AES. Thus, change in light amount outside the light sensing area does not change the video signal level.

The response is effective for strong illumination such as sunlight outside the light sensing area.



# Major specifications

<b>1 Signal system</b>	EIA/CCIR
<b>2 Pickup element</b>	Interline transfer type CCD
Total pixels	EIA 811(H)×508 (V) CCIR 795 (H)×596 (V)
Effective pixels	EIA 768 (H)×494 (V) CCIR 752 (H)×582 (V)
Scanning area	EIA 6.45 (H)× 4.84 (V) mm CCIR 6.47 (H)×4.83 (V) mm
Cell size	EIA 8.4 (H)×9.8 (V) μm CCIR 8.6 (H)×8.3 (V) μm

## 3 Scanning system

## 4 Scanning frequency

2:1 interlace	
Hor. EIA: 15.734 kHz	CCIR: 15.625 kHz
Vert. EIA: 59.94 Hz	CCIR: 50 Hz

## 5 Sync system

## 6 Video signal output

## 7 Resolution

	Standard sensitivity
Hor. EIA	570 lines
Ver. EIA	485 lines
Hor. CCIR	560 lines
Ver. CCIR	575 lines

## 8 S/N (luminance signal)

More than 50 dB  
**9 Minimum illumination** 0.0002 lx (F1.4, AGC and gamma ON)

## 10 Electronic shutter

Yes

## 11 Auto iris lens outputs

Video signal input type lens	Luminance signal 1.0Vp-p/high impedance Power supply 12V DC 40mA
Iris control voltage input (galvanometer) type lens	Coupling coil impedance Damper : 1150 Ω ± 10% Drive : 190 Ω ± 10%

## 12 Lens mount

C/CS mount

## 13 Ambient temperature

-10 to +50°C,  
30 to 80% RH

## 14 Storage ambient

-20 to 60°C,  
30 to 90% RH

## 15 Power supply

U: AC 117V ± 10%, 60Hz  
E,K: AC230V ± 10%, 50Hz  
KP-200: 12V DC ± 1.0V

## 16 Power consumption

U: 3W (including lens load)  
E,K: 4W (including lens load)  
KP-200: 260mA (including lens load)

## 17 External dimensions

64(W) × 55(H) × 122(D)mm



<b>18 Mass</b>	KP-201	U : Approx. 620g
	KP-201	E : Approx. 630g
	KP-201	K : Approx. 580g
	KP-200	: Approx. 400g

**Note:** If used continuously, be sure to operate at less than 40°C for long term stable performance.

## Accessories

<b>Supplied</b>		
Fuse	U: (125 V 630mA)	1 (U type only)
	E,K (250V 400mA)	1 (E,K type only)
Operation manual		1

**Important**  
The fuse must be replaced only by a qualified service technician.

Optional accessories  
lenses  
Lens plug : E4-191-100 Part Code JPE0001