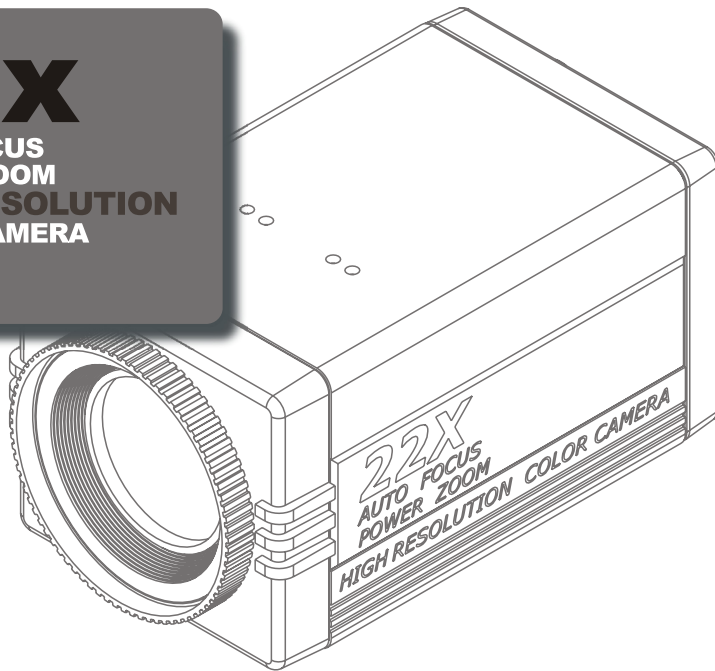


# 22x

**AUTO FOCUS  
POWER ZOOM  
HIGH RESOLUTION  
COLOR CAMERA**





---

## the BEGINNING



### BEGINNING

---

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- 7** ABOUT THE ZOOM CAMERA
- 8** CONTENTS IN BOX
- 9** ELECTRIC SHOCK CAUTION
- 10** CONFIGURATION

## INSTALLATION



### INSTALLATION

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- 14** CONNECTION OF VIDEO CABLE  
AND REMOTE CONTROL
- 15** Attention! Remote Control  
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## the OTHERS



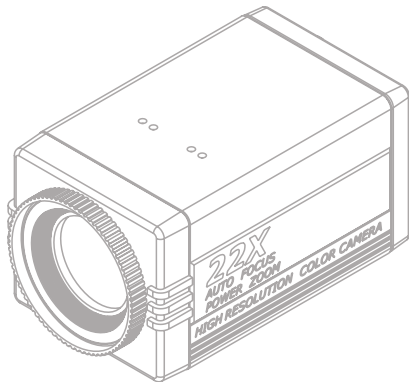
### OTHERS

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- 47** ASSISTANT DEVICES
- 48** APPLICABLE PLACE
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- 52** SPECIFICATION
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- 56** TROUBLE SHOOTING
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This chapter is concerned with what a user should know before using the camera.  
Please read the following thoroughly before using the camera.



## the BEGINNING



A

### BEGINNING

---

- 6** INTRODUCTION
- 7** ABOUT THE ZOOM CAMERA
- 8** CONTENTS IN BOX
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---

# INTRODUCTION

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This manual is for the users of the zoom camera

A user who has not used the camera. before, must know the contents of manual and keep this safely, since it includes the camera briefing, the names of each parts, explanation of functions and control of menu.

---

## **Before installing the camera, the user is recommended to know features of power and video mode**

- ☑ When installing the camera outdoor, please insert it in proper housing considering the humidity, dust and possible external shock because it is indoor camera.
- ☑ The camera is a very sensitive product. Be careful that carelessness cause any problem and if there is any problem caused in manufacture processing please contact your seller then you can get an exchange.
- ☑ The remote control of the camera enables the user to control the camera more conveniently. And the camera can be controlled by computer and various controller via RS-485 serial communication.

---

# About THE ZOOM CAMERA

The camera has 22X optical zoom function

This is a high quality surveillance camera equipped with the optical x22 magnification and the digital x10 magnification zoom function

High performance of the camera enables it to be used in industrial, general and particular field. And, it provides high picture quality and color.

---

## AUTO FOCUS POWER ZOOM CAMERA

The camera has SDR(Super Dynamic Range) function which is superior to BLC(Back Light Compensation)

The camera's zoom function and menu can be set up by remote control and various controller via RS-485 serial communication.

Every variables are set up with factory default value. And user available functions are explained in manual easily.

---

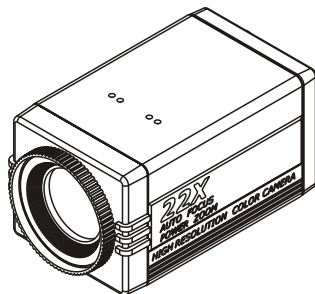
# CONTENTS IN BOX

## Note

Check if all the parts are included

Please contact us when there are any missing parts. Promptly we will take care of it.

---



**22x** AUTO FOCUS  
POWER ZOOM



**MANUAL**



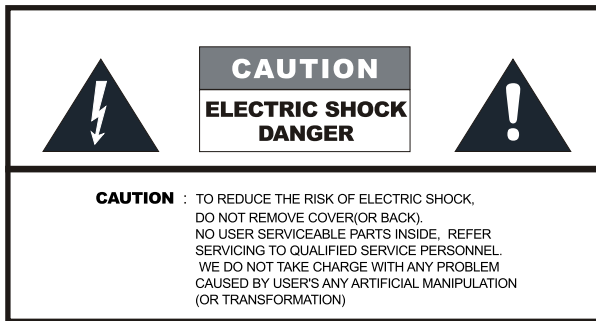
**LENS CAP**



**CONNECTOR**



**3PIN WIRE**

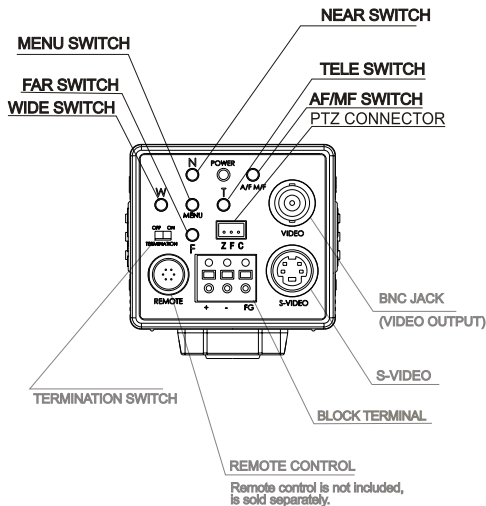


This symbol is intended to alert the user the presence of uninsulated dangerous voltage in the products enclosure that may be sufficient of magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operation and maintenance (Servicing) instructions in the literature accompanying the appliance

# CONFIGURATION



## WIDE SWITCH

zoom-out the screen  
(The view angle becomes wide but the size of a subject in the screen becomes smaller.)

## TELE SWITCH

zoom-in the screen  
(The view angle becomes narrow but the size of a subject in the screen becomes bigger.)

## NEAR SWITCH

focusing near  
(to focus on the image of near subject manually )

## FAR SWITCH

focusing far  
(to focus on the image of far subject manually)

## MENU SWITCH

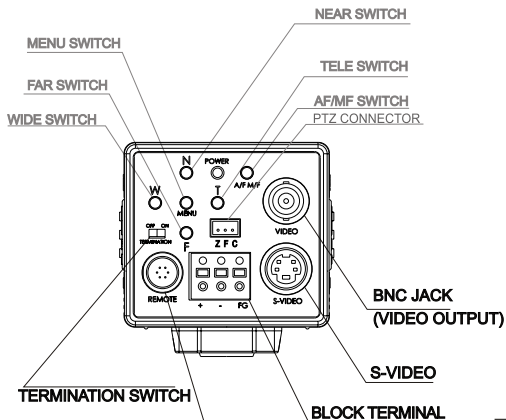
moving to setup menu.

## AF/MF SWITCH

Switching A/F and M/F

## PTZ CONNECTOR

Used when connected to PTZ.  
(Please connect it to PTZ controller with 3 PIN wire)



**REMOTE CONTROL**  
Remote control is not included,  
is sold separately.

## BNC JACK(VIDEO OUTPUT)

Connector for video cable adopting BNC type .

## S-VIDEO

It is used to see high quality picture.  
You must be sure that there is S-VIDEO connector  
on the monitor and S-VIDEO cable.

## BLOCK TERMINAL

Terminal for the power source.

## REMOTE CONTROL JACK

CONNECTOR for remote control  
You can use also RS-485 serial communication.

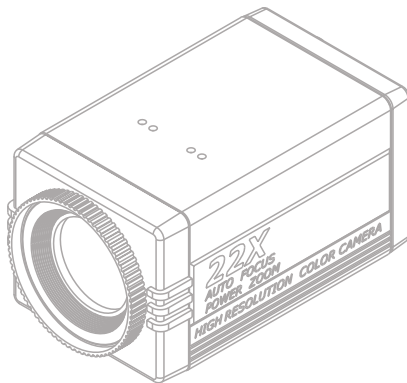
## TERMINATION SWITCH

It is to use RS-485 serial communication.

- ON** : When you use 1 to 1 communication with PC or controller  
you can turn the last camera on.
- OFF** : When you use multi-communication, you should turn  
all the cameras off except for the last one.  
(Use only constant DC 12V 500mA adapter.)

**CAUTION** This product is very sensitive to power source.  
Use of AC adaptor make the camera break down.  
But this mistake happens occasionally because  
the adapter is provided separately. Damage  
caused by this mistake can not be compensated.  
So, please make sure that your adapter is DC 12V,500mA

This chapter is regarding how to install the camera.  
Please read it thoroughly.



## INSTALLATION

# B

### INSTALLATION

---

- 13** ATTENTION WHILE INSTALLING
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  - 15** Attention! Remote Control Connector Pin Diagram
- 16** CONNECTION OF POWER SUPPLY



# INSTALLATION

## ATTENTION WHILE INSTALLING

---

In order to use the camera for a long time without problems, please handle it with care. Improper keeping and handling might cause any problems.

---

The camera is recommended to be used under proper temperature and humidity as written below.

**Temperature : -10°C ~ +50°C (14°F ~ 122°F)**

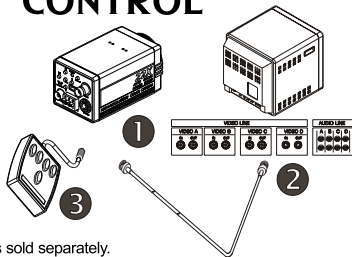
**Humidity: under 90%**

The camera is recommended to be used by proper standard power source as written below.

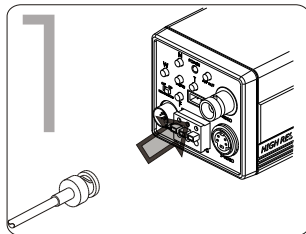
**Power : 4.8W (MAX)**

**Voltage : DC 12V, 500mA (MAX)**

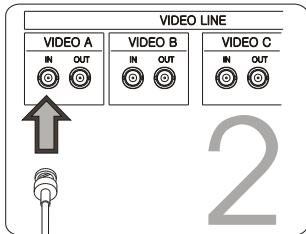
# CONNECTION OF VIDEO CABLE & REMOTE CONTROL



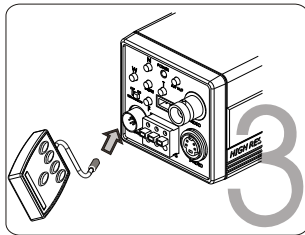
Remote control is sold separately.  
 (To avoid any problem, use remote control  
 made by Sunkwang Electronics Co., Ltd.)



Connect one connector of the BNC(or S-VIDEO)  
 cable with VIDEO OUT(or S-VIDEO) terminal  
 on the camera.

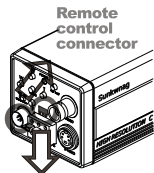


Connect the other connector of the BNC  
 (or S-VIDEO) cable with VIDEO INPUT  
 terminal on the monitor.

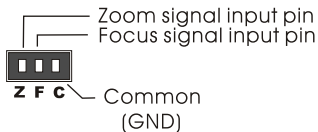


Connect the 6-pin connector of remote control  
 with REMOTE connector on the camera.

## Attention! Remote Control Connector Pin Diagram

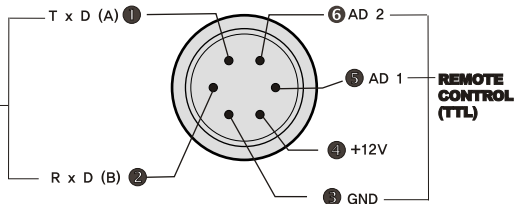


**Pan Tilt Zoom  
Connector**

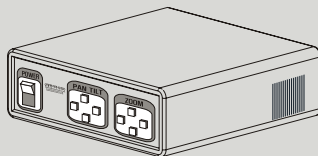


### RS-485 Serial Communication

If you want to know more information about RS-485 communication contact the service center.



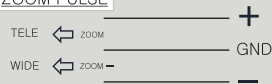
\* Generally how to control P.T.Z is the same as how to control Remote Control .



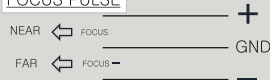
## Pan Tilt Zoom

\* P.T.Z is not included.

### ZOOM PULSE

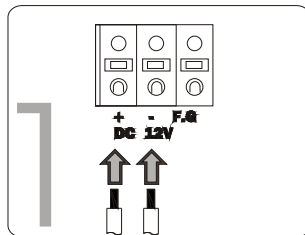
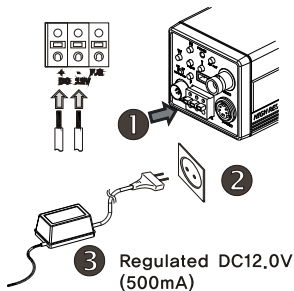


### FOCUS PULSE

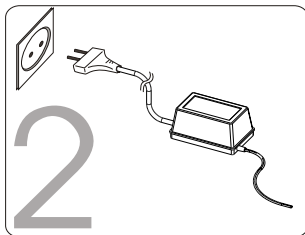


\* Press WIDE and FAR button together to open/close MENU window on the screen. MENU window will be closed in 7seconds after the last press of button.

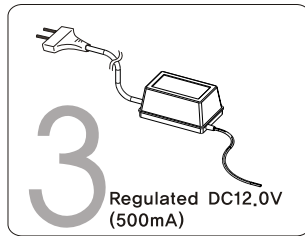
# CONNECTION OF POWER SUPPLY



Check the + wire and ⊖ wire of adapter and connect each wire with ⊕, ⊖ terminal in the camera. Make sure that ⊕ wire is connected with ⊕ terminal and ⊖ wire is connected with ⊖ terminal.

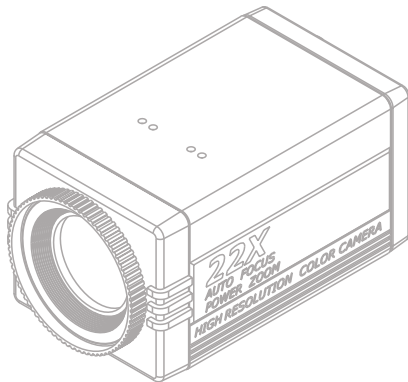


Connect the plug of adapter with the power source.



Note using DC 12V, 500mA adapter.

This chapter is regarding how to set setup menu.  
Please read this before using.



## SETUP MENU



### SETUP MENU REVIEW

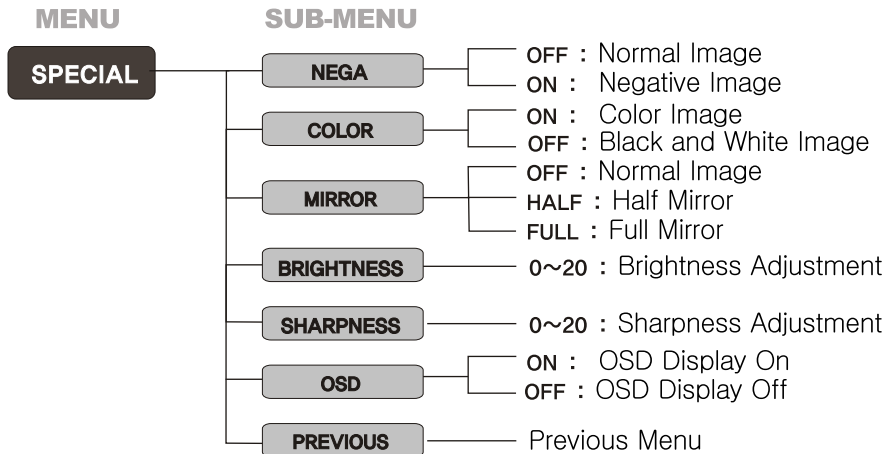
- 18** CONFIGURATION CHART
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- 22** NEGATIVE EFFECT
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- 36** SHUTTER SPEED ADJUSTMENT
- 38** AGC SWITCHING
- 40** SDR(SUPER DYNAMIC RANGE) SWITCHING
- 42** W/B(White Balance) CONTROL

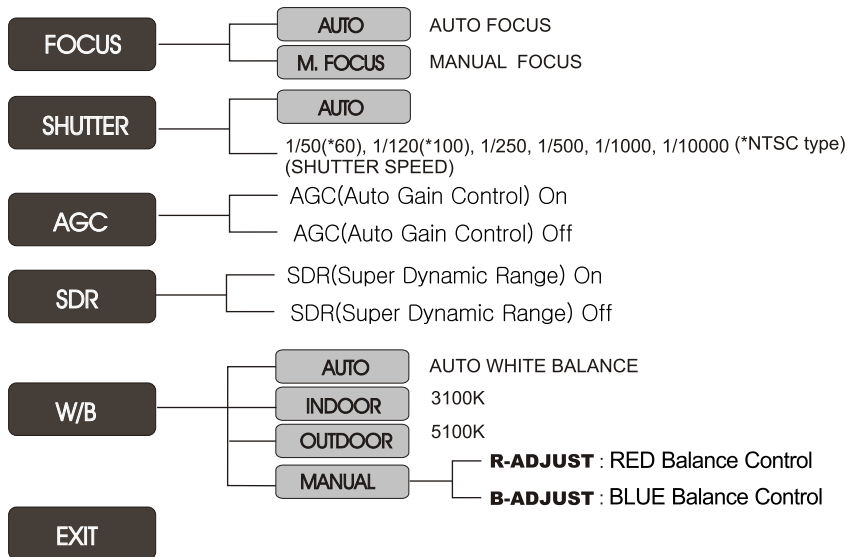
# SETUP MENU REVIEW

## CONFIGURATION CHART

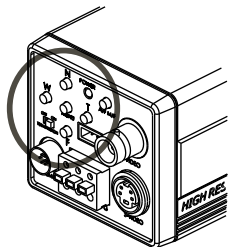


# SETUP MENU REVIEW

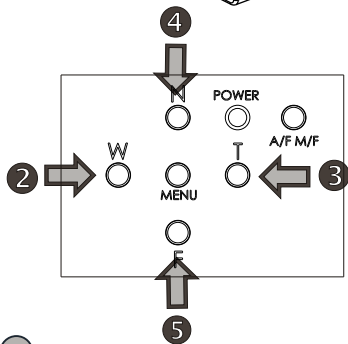
## CONFIGURATION CHART



# HOW TO USE CONTROL KEY



There are 6 buttons on the rear side of the camera.  
These buttons are used to set setup menu and values.  
And each button has different functions up to the menu  
and they are described as followings.



## ZOOM BUTTON (T, W)

- 2:: **W(WIDE)BUTTON** : W(Wide) is button for zoom out function which makes the image of the subject farther and smaller
- 3:: **T(TELE)BUTTON** : T(Tele) is button for zoom in function which makes the image of the subject nearer and bigger

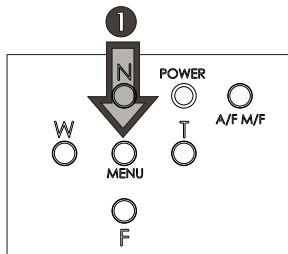
## FOCUS BUTTON (F, N)

- 4:: **N(NEAR) BUTTON** : N(Near) is button for focusing nearer with the same view of angle
- 5:: **F(FAR) BUTTON** : F(Far) is button for focusing farther with the same view of angle

These are buttons for adjustment of manual focus.



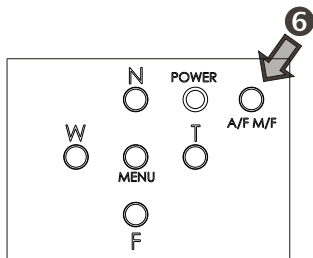
# HOW TO USE CONTROL KEY



## MENU BUTTON(at the center)

**1** :: A button to open or close setup menu

\* Menu window will be closed in 7 seconds after the last press of button.



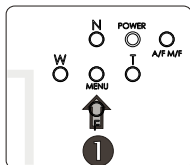
## AF/MF BUTTON

**6** :: A quick button to switch Auto Focus and Manual Focus.

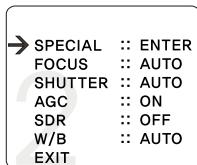
# SETUP MENU ADJUSTMENT

## SPECIAL MODE

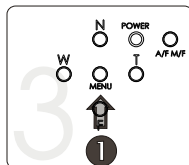
### 1. NEGATIVE EFFECT SETTING



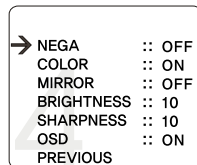
Press number 1 button to open the menu window on monitor screen



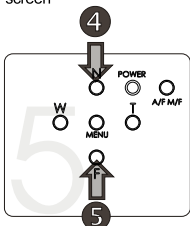
(monitor screen)



Press number 1 button to move to sub-menu.



(monitor screen)



Press number 4 or 5 button to switch Nega On/Off



# SETUP MENU ADJUSTMENT

## SPECIAL MODE

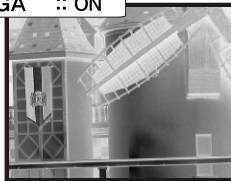
### 1. NEGATIVE EFFECT SETTING

→ NEGA :: OFF



**Normal Image**

→ NEGA :: ON

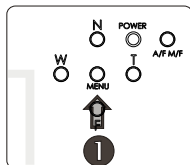


**Negative Image**

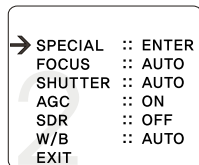
# SETUP MENU ADJUSTMENT

## SPECIAL MODE

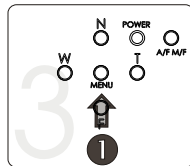
### 2. COLOR AND B/W SWITCHING



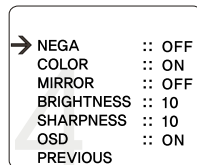
Press number 1 button to open the menu window on monitor screen



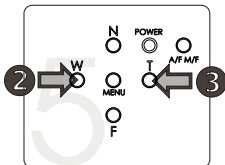
(monitor screen)



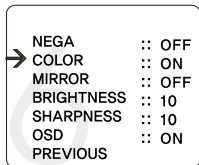
Press number 1 button to move to sub-menu.



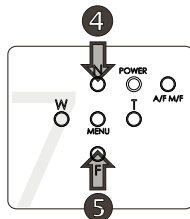
(monitor screen)



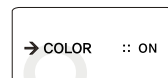
Press number 2 or 3 button to move to COLOR menu.



(monitor screen)



Press number 4 or 5 button to switch color or b/w.



---

# SETUP MENU ADJUSTMENT

## SPECIAL MODE

### 2. COLOR AND B/W SWITCHING

→ COLOR :: ON



**Color Image**

→ COLOR :: OFF

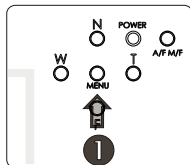


**B/W(Black and White) Image**

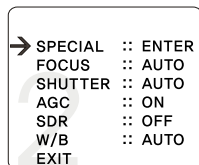
# SETUP MENU ADJUSTMENT

## SPECIAL MODE

### 3. MIRROR EFFECT

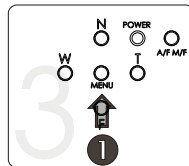


Press number 1 button to open the menu window on monitor screen

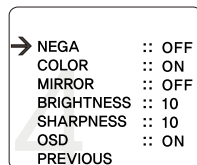


→ SPECIAL :: ENTER  
FOCUS :: AUTO  
SHUTTER :: AUTO  
AGC :: ON  
SDR :: OFF  
W/B :: AUTO  
EXIT

(monitor screen)

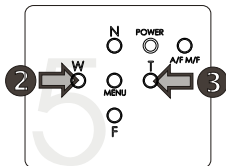


Press number 1 button to move to sub-menu.

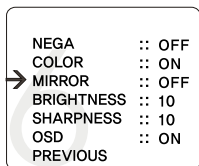


→ NEGA :: OFF  
COLOR :: ON  
MIRROR :: OFF  
BRIGHTNESS :: 10  
SHARPNESS :: 10  
OSD :: ON  
PREVIOUS

(monitor screen)

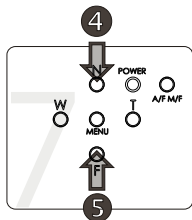


Press number 2 or 3 button to move to MIRROR menu.

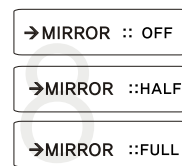


→ NEGA :: OFF  
COLOR :: ON  
MIRROR :: OFF  
BRIGHTNESS :: 10  
SHARPNESS :: 10  
OSD :: ON  
PREVIOUS

(monitor screen)



Press number 4 or 5 button to switch MIRROR OFF/HALF/FULL.



→ MIRROR :: OFF

→ MIRROR :: HALF

→ MIRROR :: FULL

# SETUP MENU ADJUSTMENT

## SPECIAL MODE

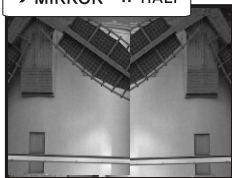
### 3. MIRROR EFFECT

→MIRROR :: OFF



**NORMAL IMAGE**

→ MIRROR :: HALF



**HALF MIRROR  
(SYMMETRICAL IMAGE)**

→MIRROR :: FULL

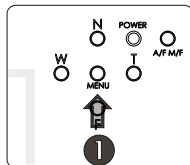


**MIRROR IMAGE**

# SETUP MENU ADJUSTMENT

## SPECIAL MODE

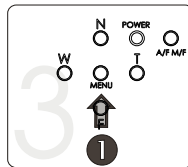
### 4. BRIGHTNESS ADJUSTMENT



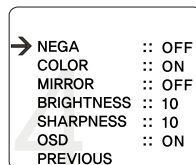
Press number 1 button to open the menu window on monitor screen



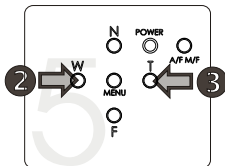
(monitor screen)



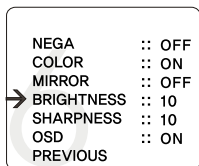
Press number 1 button to move to sub-menu.



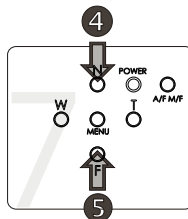
(monitor screen)



Press number 2 or 3 button to move to BRIGHTNESS menu.



(monitor screen)



Press number 4 or 5 button to adjust BRIGHTNESS.





# SETUP MENU ADJUSTMENT

## SPECIAL MODE

### 4. BRIGHTNESS ADJUSTMENT



**The smaller the value is,  
the darker the image is.**

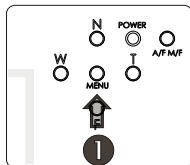


**The larger the value is,  
the brighter the image is**

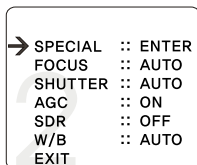
# SETUP MENU ADJUSTMENT

## SPECIAL MODE

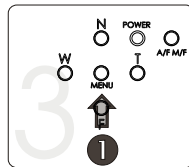
### 5. SHARPNESS ADJUSTMENT



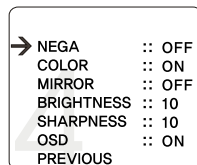
Press number 1 button to open the menu window on monitor screen



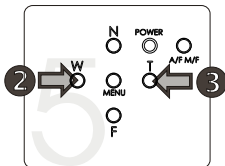
(monitor screen)



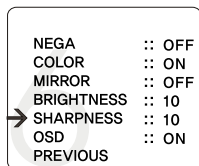
Press number 1 button to move to sub-menu.



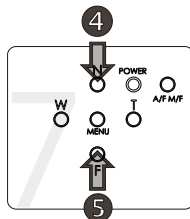
(monitor screen)



Press number 2 or 3 button to move to SHARPNESS menu.



(monitor screen)



Press number 4 or 5 button to adjust SHARPNESS.



# SETUP MENU ADJUSTMENT

## SPECIAL MODE

### 5. SHARPNESS ADJUSTMENT

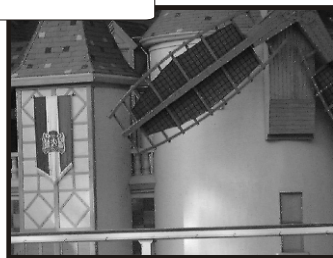
→ SHARPNESS :: 0



**The smaller the value is,  
the softer the image is.**



→ SHARPNESS :: 20

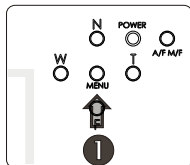


**The larger the value is,  
the sharper the image is.**

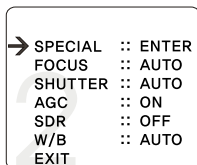
# SETUP MENU ADJUSTMENT

## SPECIAL MODE

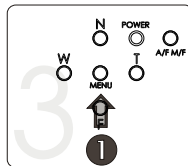
### 6. OSD ON/OFF



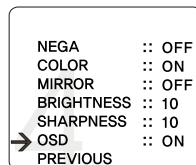
Press number 1 button to open the menu window on monitor screen



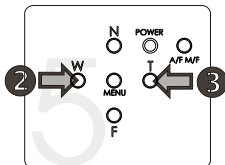
(monitor screen)



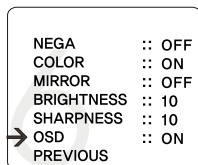
Press number 1 button to move to sub-menu.



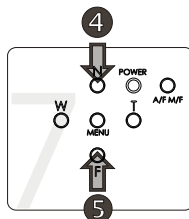
(monitor screen)



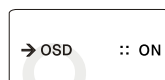
Press number 2 or 3 button to move to OSD menu.



(monitor screen)



Press number 4 or 5 button to switch OSD on/off



# SETUP MENU ADJUSTMENT

## SPECIAL MODE

### 6. OSD ON/OFF

---

OSD (ON SCREEN DISPLAY))

Function to display some information on screen

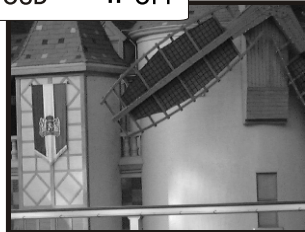
---

→ OSD    :: ON



**OSD ON**

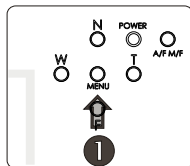
→ OSD    :: OFF



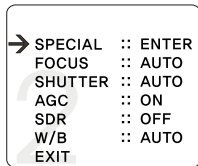
**OSD OFF**

# SETUP MENU ADJUSTMENT

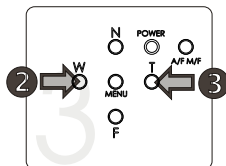
## ZOOM AND AUTO FOCUS SETTING



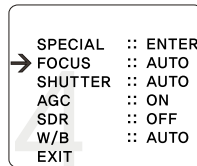
Press number 1 button to open the menu window on monitor screen.



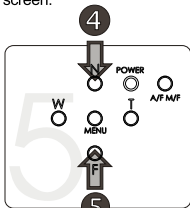
(monitor screen)



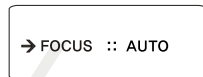
Press number 2 or 3 button to move to FOCUS menu.



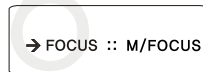
(monitor screen)



Press number 4 or 5 button to switch Auto or Manual Focus.



This configuration is for manual zoom and auto focus.



This configuration is for manual focus.

# SETUP MENU ADJUSTMENT

## ZOOM AND AUTO FOCUS SETTING

OPTICAL ZOOM MODE



Normal



Optical x16 magnification



Optical x22 magnification zoom

DIGITAL ZOOM MODE



Optical x22 magnification



Digital x4 magnification



Digital x10 magnification zoom

**THE CAMERA** has  
**22X optical zoom and  
10X digital zoom function.**

When the zoom is working,  
Zoom from x 001 to x 220 is shown below  
on the screen.

From D-zoom, digital zoom is working.

**ZOOM X001**



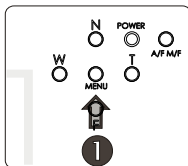
**ZOOM X022** 22X Optical zoom



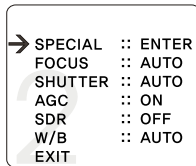
**DZOOM X220** 10X Digital zoom

# SETUP MENU ADJUSTMENT

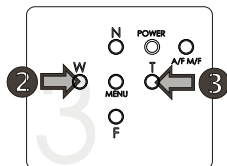
## SHUTTER SPEED ADJUSTMENT



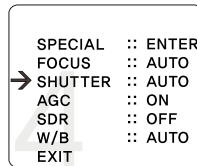
Press number 1 button to open the menu window on monitor screen.



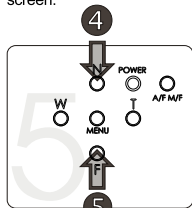
(monitor screen)



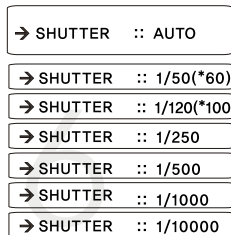
Press number 2 or 3 button to move to SHUTTERSPEED menu.



(monitor screen)



Press number 4 or 5 button to adjust SHUTTERSPEED.



(\*NTSC type)

To control the iris automatically to get proper quantity of light.

To fix the iris to get constant quantity of light.



# SETUP MENU ADJUSTMENT

## SHUTTER SPEED ADJUSTMENT

→ SHUTTER :: AUTO



To control the iris automatically to get proper quantity of light.

**MANUAL MODE :** To fix the iris to get constant quantity of light.

→ SHUTTER :: 1/50(60)



→ SHUTTER :: 1/120(100)



→ SHUTTER :: 1/250



→ SHUTTER :: 1/500



→ SHUTTER :: 1/1,000

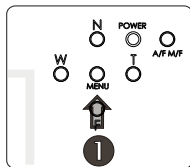


→ SHUTTER :: 1/10,000

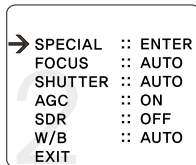


# SETUP MENU ADJUSTMENT

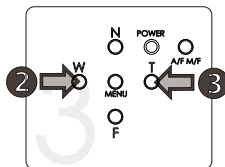
## AGC SWITCHING



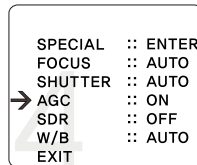
Press number 1 button to open the menu window on monitor screen.



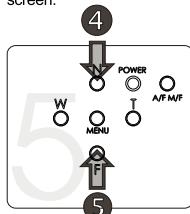
(monitor screen)



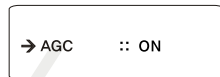
Press number 2 or 3 button to move to AGC menu.



(monitor screen)



Press number 4 or 5 button to adjust AGC.



AGC function is on.



AGC function is off.

# SETUP MENU ADJUSTMENT

## AGC SWITCHING

### AGC (AUTO GAIN CONTROL):

AGC is function to control iris automatically in order to get proper video signal level regardless of changes in light condition.

→ AGC :: OFF



It's dark tone at low light intensity condition.

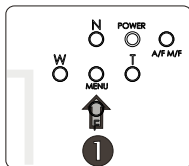
→ AGC :: ON



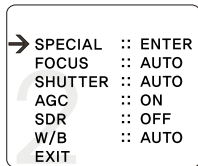
It's bright tone at low light intensity condition.

# SETUP MENU ADJUSTMENT

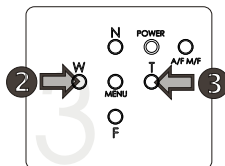
## SDR(SUPER DYNAMIC RANGE) SWITCHING



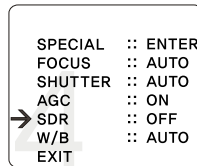
Press number 1 button to open the menu window on monitor screen.



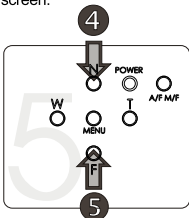
(monitor screen)



Press number 2 or 3 button to move to SDR menu.



(monitor screen)



Press number 4 or 5 button to switch SDR ON/OFF.



SDR is on



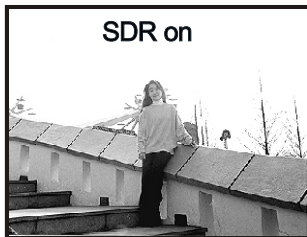
SDR is off

# SETUP MENU ADJUSTMENT

## SDR(SUPER DYNAMIC RANGE) SWITCHING

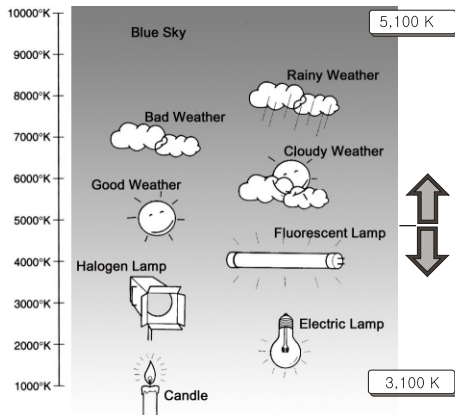
### SDR(Super Dynamic Range)

Strong light from the back of the subject makes the subject dark in the screen, which happen occasionally. The camera is equipped with SDR function which is superior to former days' BLC(Back Light Compensation) function. This function can work out the back light problem.



# SETUP MENU ADJUSTMENT

## W/B(White Balance) CONTROL



### Color Temperature :

Illumination is called as color temperature and measured in Kelvin(°K) unit.  
Generally color temperature which we may contact is as followings.

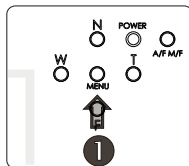
Camera responds to color temperature as blue tone in high color temperature and red tone in low color temperature.

W/B adjustment function enables you to get the natural color according to this color temperature.

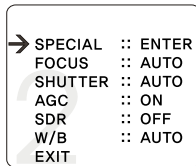
the higher the color temperature is, the bluer the screen tone is.  
the lower the color temperature is, the redder the screen tone is.

# SETUP MENU ADJUSTMENT

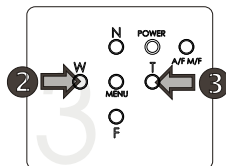
## W/B(White Balance) CONTROL



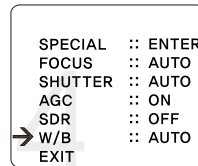
Press number 1 button to open the menu window on monitor screen.



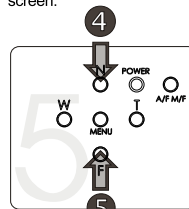
(monitor screen)



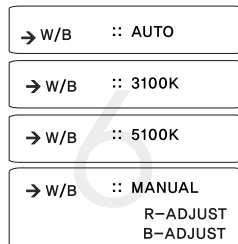
Press number 2 or 3 button to move to control W/B.



(monitor screen)



Press number 4 or 5 button to control W/B.



W/B is controlled automatically

Optimal W/B indoor

Optimal W/B outdoor

RED Balance ADJUST: To control RED Balance

BLUE Balance ADJUST: To control BLUE Balance

# SETUP MENU ADJUSTMENT

## W/B(White Balance) CONTROL



**NORMAL PICTURE**



→ W/B :: AUTO

**AUTO MODE**



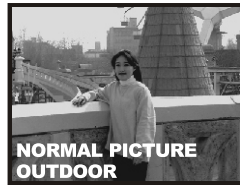
**NORMAL PICTURE  
INDOOR**



→ W/B :: 3100K



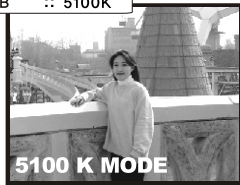
**3100K MODE**



**NORMAL PICTURE  
OUTDOOR**



→ W/B :: 5100K



**5100 K MODE**



# SETUP MENU ADJUSTMENT

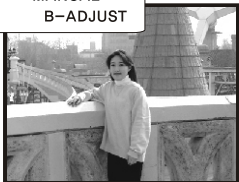
## W/B(White Balance) CONTROL

→ W/B :: MANUAL  
R-ADJUST



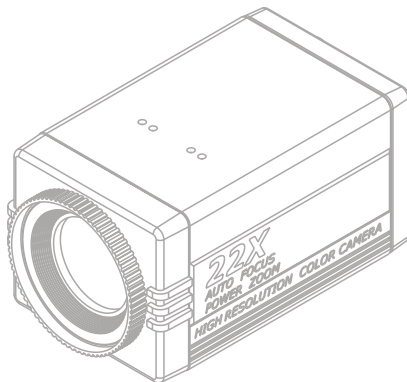
To adjust RED Balance

→ W/B :: MANUAL  
B-ADJUST



To adjust BLUE Balance

This chapter is concerned with troubleshooting and precautions which are recommended to be learned.



## the OTHERS



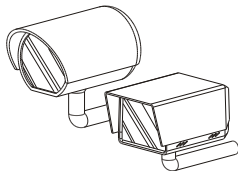
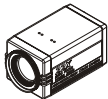
### OTHERS

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- 47** ASSISTANT DEVICES
- 48** APPLICABLE PLACE
- 50** CONNECTION DIAGRAM
- 51** DIMENSION
- 52** SPECIFICATION
- 54** SAFEKEEPING OF THE CAMERA
- 56** TROUBLE SHOOTING
- 57** WARRANTY CARD
- 58** SYMBOL EXPLANATION / GLOSSARY

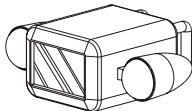
# ASSISTANT DEVICES

External devices used with camera



## HOUSING

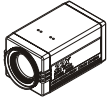
Both Round-shaped and Box-shaped housing are available and waterproof housing is also available



## SEARCH LIGHT

Housing with Lamp to use camera in the darkness

# Applicable place



Various functions and high quality make The camera be applicable to many application fields.



## **Production Line:**

The camera make it possible to deal with various accidents and situations at the large production lines or factories



## **Factory:**

The camera can be used to obtain a larger visual sight.



## **Large Parking Lot:**

The camera makes it possible to observe large parking lot or shopping mall.



## **Airport/Habor:**

The camera makes it much easier to focus on a specific object or person in airport or harbor



## **Highway/Intersection:**

The camera on the highway and the intersection makes it available to rise to emergency promptly.

# Applicable place



## **Playground :**

At a playground for children or a amusement place



## **Office:**

At a various office or an auditorium



## **Housing Complex :**

At entrance of apartment or housing complex to observe passersby



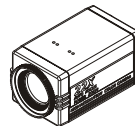
## **Aisle :**

At an aisle or a passage



## **ATM:**

At an ATM or a banking agency



Various functions and high quality make the camera very useful and satisfactory.

# CAMERA CONNECTION DIAGRAM

## 1.CONNECTION WITH MONITOR



Camera



POWER



Remote control is optional.



MONITOR

## 2.CONNECTION WITH MONITOR WHEN PANTILT IS INSTALLED



POWER

No1. Camera (video)

RS-485 BUS



PC/  
CONTROLLER



MONITOR 1



POWER

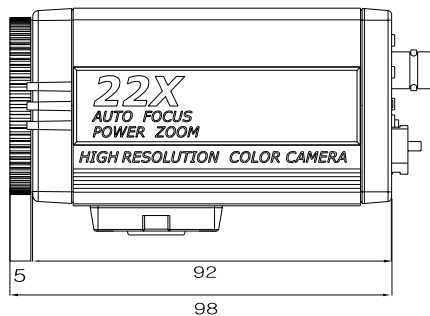
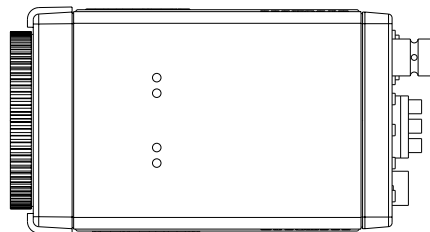
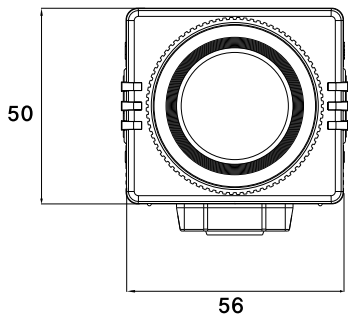
No2. Camera (video)

RS-485 BUS



MONITOR 2

# DIMENSION



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# SPECIFICATION

## NOTE FOLLOWING SPECIFICATION

- **TYPE** : AUTO FOCUS POWER ZOOM CAMERA
- **IMAGE SENSOR** : 1/4" SONY COLOR CCD
- **EFFECT PIXELS** : 768(H) X 494(V) PIXELS(NTSC)  
752(H) X 582(V) PIXELS(PAL)
- **RESOLUTION** : HORI 470 TV LINE
- **TV type** : NTSC, PAL
- **SYNC. TYPE** : INTERNAL
- **SCANNING SYSTEM** : 2:1 INTERLACE
- **POWER** : Regulated DC 12.0V MAX. 500mA
- **MIN. ILLUMINATION** : 3Lux F/1.6
- **S/N RATIO**: 46dB (AGC OFF,fsc trap)
- **LENS** : 22x zoom, F/1.6(W)~3.7(T) f=3.6(w)~79.2(T)mm
- **ZOOM** : Optical x22, Digital x10
- **OPERATING TEMPERATURE** : -10℃~+50℃
- **REMOTE CONTROL**: RS-485,TTL available



# SPECIFICATION

## PRODUCT SPECIFICATION

<b>Type</b>	ZOOM COLOR CAMERA	<b>Min. Illumination</b>	3 Lux (F/#1,6)
<b>Image Sensor</b>	1/4" Interlinetransfer CCD(SONY)	<b>S/N Ratio</b>	46dB(AGC OFF,fsc trap)
<b>Effective Pixels</b>	768(H) X 494(V) PIXEL(NTSC), 752(H) X 582(V) PIXEL(PAL)	<b>Gain Control</b>	AUTOMATIC / MANUAL
<b>Cell Size</b>	4,75 $\mu$ m(H)X 5,55 $\mu$ m(V)(NTSC), 4,85 $\mu$ m (H)X 4,65 $\mu$ m (V)(PAL)	<b>Shutter</b>	1/60~1/100,000 second(NTSC) 1/50~ 1/100,000 second(PAL)
<b>Resolution</b>	HOR : 470 TV-Line	<b>Power Supply</b>	Regulated DC 12,0V
<b>TV Type</b>	NTSC, PAL	<b>Consumption Current</b>	DC Max. 500mA
<b>Sync. Type</b>	INTERNAL	<b>Lens</b>	Optical zoom x22, Digital zoom x10
<b>Scanning System</b>	2:1 INTERLACE	<b>Serial Communication</b>	Yes (TTL,RS485)
<b>Scanning Frequency (Horizontal)</b>	15,734 KHz(NTSC) , 15,625 KHz (PAL)	<b>Set-Key Control</b>	TELE,WIDE,NEAR,FAR,MENU,AF/MF
<b>Scanning Frequency (Vertical)</b>	59,94 Hz (NTSC) 49,95 Hz (PAL)	<b>Angle of View(H)</b>	47,9° (Wide end) 2,3° (Tele end)
<b>Video output</b>	1,0 Vp-p	<b>Operation Temp.</b>	-10°C~+50°C
<b>Gamma Characteristic</b>	$\gamma = 0,45$	<b>Preservation Temp.</b>	-30°C~+80°C
<b>White Balance</b>	AWB, 3100K, 5100k, MANUAL R/B		

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# ATTENTION FOR KEEPING

## PLEASE AVOID FOLLOWING PLACES

- Where is humid and dirty
- Where is hot such as car inside
- Where is very cold
- Where camera might be shocked physically
- Vicinities of magnetic material
- Vicinities of rubber, plastic or chemical products
- such as an insecticide

## DO NOT PUT THE CAMERA ON THE SAND

- Please use housing or seal it up when using at the seashore or the desert

## BEADS OF WATER

- When It is moved from cold place to warm or hot place suddenly, beads of water might be formed inside camera.

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## CLEANING

- When cleaning the camera do not disassemble the camera.
- Sweep away the dirt on the camera with soft brush.
- Clean the body with soft fabric using liquid cleaner
- When cleaning the lens, please use only fabric for spectacles or lens cleaning.
- Take serious care of lens since it plays very important role in creating excellent image

## KEEPING

- For long-term keeping, separate cables from the body and seal up the cables and body separately being away from all kinds of the chemicals and the inflammables.

# TROUBLE SHOOTING

Problem	Expected cause	Check point
<ul style="list-style-type: none"><li>No picture showing up</li></ul>	<ul style="list-style-type: none"><li>Power cable disconnection</li><li>Video cable disconnection</li><li>Color television system (NTSC/PAL) of monitor disaccord with that of camera</li></ul>	<ul style="list-style-type: none"><li>Connect the power cable tightly</li><li>Connect the video cable tightly</li><li>Accord the TV type of monitor with that of camera</li></ul>
<ul style="list-style-type: none"><li>Poor picture quality</li></ul>	<ul style="list-style-type: none"><li>Stain or dust on lens</li><li>Beads of water inside caused from sudden temperature change</li></ul>	<ul style="list-style-type: none"><li>Clean the camera lens</li><li>Stop using for a while and use it later</li></ul>
<ul style="list-style-type: none"><li>Shrinking picture</li></ul>	<ul style="list-style-type: none"><li>Shortage of power</li></ul>	<ul style="list-style-type: none"><li>Check for DC connector</li></ul>
<ul style="list-style-type: none"><li>Picture disorder</li></ul>	<ul style="list-style-type: none"><li>TV type(NTSC/PAL) of monitor disaccords with that of camera</li><li>High quality/Standard switch</li></ul>	<ul style="list-style-type: none"><li>Accord the TV type of monitor with that of camera</li><li>Find the High quality/Standard switch and Select standard (75Ω) mode</li></ul>

# WARRANTY

## WARRANTY CARD

<b>MODEL NAME</b>		<b>SERIAL NUMBER</b>	
<b>DATE OF PURCHASE</b>		<b>BOUGHT FROM</b>	
<b>CUSTOMER</b>	<b>NAME</b>		
	<b>ADDRESS</b>		

Free repair is provided for malfunction occurring in normal handling state for 2 years after delivery of product. Contact the service center for repair. At this time, inform of malfunction state in brief and remember the name of person in charge. The product model and circuit can be altered without notice for improvement of performance. This product will be under warranty for two years after the date of purchase.

## THE HISTORY OF AFTER SERVICE

<b>YEAR</b>	<b>PROBLEM</b>	<b>PERSON IN CHARGE</b>	<b>THE DATE OF RETURN</b>

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## SYMBOL EXPLANATION/GLOSSARY

The logo for the Federal Communications Commission (FCC), consisting of the letters 'F' and 'C' in a bold, sans-serif font, with a smaller 'C' inside a circle to the right.

### **Federal Communications Commission :**

The Act charges the Commission with establishing policies to govern interstate and international communications by television, radio, wire, satellite and cable. This Standard concerns EMI ( Electro Magnetic Interference), and only electronic products complying with FCC code are accepted for sales in U.S.A.

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The logo for the European Communities (CE), consisting of the letters 'C' and 'E' in a bold, sans-serif font, with the 'E' having a unique shape with a horizontal bar at the top.

### **European Communities :**

European Communities are running CE(Comformite European) Marking to insure the free transfer of commodities, services and capital. This Standard concerns EMI ( Electro Magnetic Interference), and only electronic products complying with CE code are accepted for sales in the European Community.

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The logo for Super Dynamic Range (SDR), consisting of the letters 'S', 'D', and 'R' in a bold, sans-serif font.

### **SDR (Super Dyamic Range) :**

Strong light from the back of the object makes the object dark in the screen, which happens occasionally. Former days' BLC(Back Light Compensation) function compensates this back light interaction in only some part of screen. But, SDR function covers full screen, which results in clear and distinguished image.

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## SYMBOL EXPLANATION/GLOSSARY

# NTSC

NTSC

[National Television System Committee method]

A committee that worked with the FCC in formulation standards for the present-day U.S. color television system. NTSC has 525 horizontal scan lines, 60 frames per second (525/60). Commonly used in the United States, Japan and Korea.

# PAL

PAL

[Phase Alternation Line system]

Phase Alternation Line system. A color television system in which the subcarrier derived from the color burst is inverted in phase from one line to the next in order to minimize errors in hue that may occur in color transmission. The PAL format is used in Western Europe, Australia, parts of Africa, and the Middle East. It has 625 horizontal scan lines and 25 frames per second.

