



CBC Co.,Ltd.

Tokyo, Japan

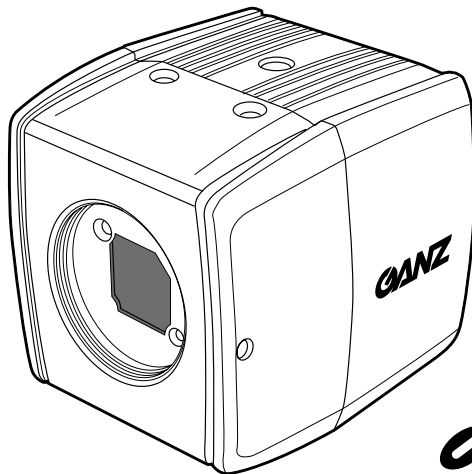
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**052-1.0**  
1304512015

CS MOUNT COLOR CCD CAMERA

# ZC-YHW701N

INSTRUCTION MANUAL



**GANZ**<sup>®</sup>

ENGLISH

**WARNING– TO PREVENT RISK OF FIRE OR SHOCK, DO NOT EXPOSE THIS CAMERA TO RAIN OR MOISTURE.**

**PRECAUTION:**

- DO NOT REMOVE ANY COVER WHILE THE CAMERA IS OPERATING. USE ONLY RECOMMENDED POWER SUPPLY, 24 VAC (21.6 to 26.4 VAC) 60 Hz or 12VDC(10.8 to 13.2VDC).

**CAUTION:**

- LENS MOUNT OF THE CAMERA IS “CS” MOUNT.
- CAMERA LENS MOUNT IS SHALLOW, SOME CAMERA LENSES MAY BOTTOM OUT AND DAMAGE TO THE CCD IMAGER.
- DO NOT TOUCH THE CCD GLASS SURFACE.
- THE CAMERA MUST BE INSTALLED NEAR A SOCKET-OUTLET WHICH COULD BE EASILY ACCESSIBLE.



**CAUTION**  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN



**CAUTION:** TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

**GRAPHIC SYMBOL EXPLANATION**

The lighting flash with an arrow-head symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



## IMPORTANT SAFEGUARDS

1. **Read Instructions**—All the safety and operating instructions should be read before the camera is operated.
  2. **Retain Instructions**—The safety and operating instructions should be retained for future reference.
  3. **Heed Warnings**—All warnings on the camera and in the operating instructions should be adhered to.
  4. **Follow Instructions**—All operating and use instructions should be followed.
  5. **Cleaning**—Unplug the power unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
  6. **Attachments**—Do not use attachments not recommended by your appliance dealer, as they may cause hazards.
  7. **Water and Moisture**—Do not use the camera in any location in which it may be exposed to water or moisture.
  8. **Accessories**—Do not place the camera on an unstable cart, stand, tripod, bracket, or table. The camera may fall, causing serious injury to a child or adult, and serious damage to the camera. Use only with mounting accessories recommended by your appliance dealer or sold with the camera. Any mounting of the camera should follow your appliance dealer's instructions.
- 8A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to over turn.

PORTABLE CART WARNING  
(Symbol provided by RETAC)



S3125A

9. **Ventilation**—The camera should never be placed near or over a radiator or heat register.  
The camera should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or your appliance dealer's instructions have been adhered to.
10. **Power Sources**—The camera should be operated only from the type of power source indicated on the rating plate. If you are not sure of the type of power supply to your installation site, consult your appliance dealer or local power company. For cameras intended to operate from battery power, or other sources, refer to the operating instructions.
11. **Power-Cord Protection**—Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the camera.
12. **Lightning**—For added protection for the camera during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the cable system. This will prevent damage to the camera due to lightning and power-line surges.
13. **Overloading**—Do not overload wall outlet and extension cord, as this can result in a risk of fire or electric shock.
14. **Object and Liquid Entry**—Never push objects of any kind into the camera through openings, as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the camera.
15. **Servicing**—Do not attempt to service the camera yourself as opening or removing covers may expose you to dangerous voltage or other hazards.  
Refer all servicing to qualified service personnel.

16. **Damage Requiring Service**—Unplug the power unit from the wall outlet.

Refer servicing to qualified service personnel under the following conditions.

- a. When the power-supply cord or plug is damaged.
- b. If liquid has been spilled, or objects have fallen into the camera.
- c. If the camera has been exposed to rain or water.
- d. If the camera does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the camera to its normal operation.
- e. If the camera has been dropped or the cabinet has been damaged.
- f. When the camera exhibits a distinct change in performance. This indicates a need for service.

17. **Replacement Parts**—When replacement parts are required, be sure the service technician has used replacement parts specified by qualified dealer or that have the same characteristics as the original part.

Unauthorized substitutions may result in fire, electric shock or other hazards.

18. **Safety Check**—Upon completion of any service or repairs to the camera, ask the service technician to perform safety checks to determine that the camera is in proper operating condition.

## INTRODUCTION

Thank you for your purchasing this color camera. Read this installation and instruction manual thoroughly before using, and operate the camera properly.

This color camera has functions which employ a high density image sensor and ensure a sharp and clear picture even with dark and bright portions in a scene by improving dynamic range.

It can be used in the wide range of CCTV systems as it is provided with various functions such as wide dynamic range function, automatic sensitivity adjustment, real time auto white balance, and auto iris lens output.

Outstanding features are as follows,

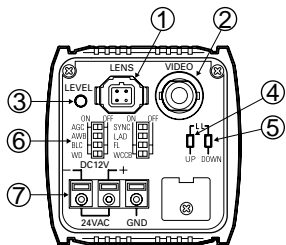
1. This camera provides clear image under even bright and dark scenes by increasing dynamic range of image signal comparing with conventional camera.
2. Even the back light is strong, we can get a good image without extremely white or blacked out portions of images by applying a technology which composes with dark image and bright image.
3. Compact size is accomplished by our high density design and mounting technologies.
4. 380K pixels and 1/3 inch CCD accompanies with high resolution imaging.

## CAUTIONS FOR OPERATION

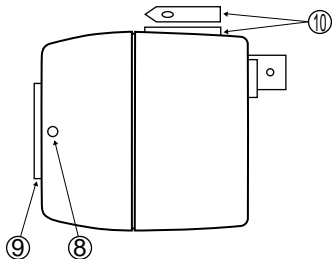
- \* Do not touch the photoconductive surface of the CCD imager element. Scratches may occur.  
If dust sticks on the surface, wipe it off softly with a lens cleaning paper.
- \* Do not use this camera outdoors.  
Avoid places where an inflammable gas or a corrosive atmosphere exists.
- \* If the camera case becomes dirty, wipe off with a soft dry cloth. For the large dirt on the case, wipe it off using a soft cloth moistened a neutral detergent diluted with water and wipe again with the dry cloth. Never use alcohol, benzine or other volatile solutions.
- \* Don't image excessive light sources (sunlight etc.) for many hours.  
If CCD imager element is exposed to ultraviolet rays for many hours, the color filter on the surface of CCD imager element fades. Don't image sunlight or illumination directly, when a camera is left as it is.  
Don't image sunlight or illumination directly, even if the power is turned off.
- \* White spots may appear on the screen. However this is not a failure.

## EXTERNAL CONTROLS AND CONNECTIONS

### REAR VIEW



### BOTTOM VIEW



- ① Lens Connector (Small 4 pin)
- ② Video Output Connector (BNC)
- ③ Level adjuster (No Use)
- ④ LL ADJ. Switch:UP
- ⑤ LL ADJ. Switch:DOWN
- ⑥ DIP Switch
- ⑦ Power Input Terminal
- ⑧ Back Focus Lock Screw
- ⑨ Lens Mount
- ⑩ Camera Mount (1/4"-20 tapped hole)

## CAMERA MOUNT

Mountable on top or bottom of the camera.

### CAUTION:

Improper installation may cause the camera to fall, resulting in injury. Please ask qualified service personnel for installations.

To reduce the risk of electric shock and other injuries, please lay out cables where there is no danger of damage or where people can not touch by accident.



## LENS

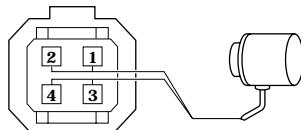
The camera can accommodate only DC drive auto-iris lens.

### A. ELECTRICAL CONNECTIONS

Table 1 shows wiring scheme for the 4pin Auto-iris connector.

**Lens Connector**

**Auto-iris Lens**



(View from wiring side of plug)

**Fig. 2**

**Table 1**

Connector Pin No.	DC DRIVE AUTO-IRIS LENS
1	CONT. (-)
2	CONT. (+)
3	DRIVE (+)
4	DRIVE (-)

## B. MECHANICAL CONNECTION

Before mounting any lens onto this camera, check that the rear lens dimensions do not exceed the following maximum length, otherwise CCD imager could be damaged.

"X"  
CS = 0.2" (6 mm)  
C = 0.4" (10 mm)

The camera is shipped, ready to accept "CS" type lens. If standard "C" mount lens are to be used, it is necessary to install the "C-mount Adapter" ring first, then the lens.

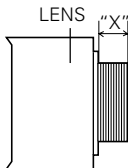


Fig. 3

## C. BACK FOCAL LENGTH ADJUSTMENT

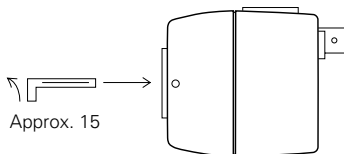
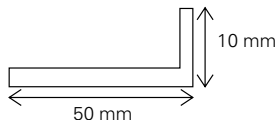
The camera has been factory-adjusted for the proper back focal length using a standard CS Mount lens. However, when the lens is mounted, it may be necessary to readjust back focal length to match the lens being used.

## CAUTION:

If the back focus locking screw is tightened too strong, the thread section of "Lens Mount" may be damaged. To tighten the back focus locking screw, use a 1.5 mm ALLEN WRENCH.

Hold the short side of the handle (as shown in Fig.4), and turn it clockwise **lightly** to the stop position. Turn a little more (approx. 15 degrees) from this position.

## ALLEN WRENCH



## CAMERA

Fig.4

For zoom lens:

- With the camera in operation, view an object at least 70 feet (25 m) away.
- Make sure the lens iris is wide open.
- Set LENS FOCUS to FAR position.
- Adjust lens ZOOM to WIDE angle. (Wide field of view)
- Loosen the back focus lock screw at the side of the camera using a 1.5 mm ALLEN WRENCH.

Turn the lens mount to obtain the sharpest image on the monitor.

Then tighten the back focus locking screw clockwise. (See Fig.1 for location.)

- Move lens ZOOM to TELEPHOTO. (Smallest field of view)
- Adjust LENS FOCUS (by the controller) for best picture.

## D. LENS ADJUSTMENT

Before using the DC drive auto-iris lens, do the following process (refer to Fig. 7).

1. Turn the #6 switch of DIP Switch (L. AD) to left, ON side.
2. Images the flickerless scene.
3. Turn the #6 switch of DIP Switch to right, OFF side. The camera tunes automatically flickering scene. It takes a few times to converge the flickering (within 30 seconds).
4. Confirm the convergence of the camera image and then turn the #6 switch of DIP Switch to left, ON side.
5. The adjusting of the lens is finished. (Factory setup is ON side.)

## POWER CONNECTION

This camera uses 24VAC or 12VDC power supply for the main supply.

### CAUTION:



Take care not to short-circuit the power line wire, when connecting the power-supply cord to the camera.

## A. AC POWER CONNECTION

A main supply of 24VAC (21.6 to 26.4 VAC) 60Hz is required.

This main supply must also have a minimum rating of 270mA.

Remove the sheath at the end of power cord in the length of 10mm.

Twist and straighten the wires, then insert the wires to three holes of the terminal.

If the insertion can not be made smoothly, try it again while pushing respective button above the hole.

### CAUTION:



Confirm that the cord is connected to the terminal securely by pulling the cord.

Confirm that there is no whisker of wires outside the holes of terminal.

Connect to 24VAC class 2 power supply only.

Make sure to connect the grounding lead to the GND terminal when the power is supplied from a 24VAC power source.

### CAUTION:



When two or more cameras are used by one transformer, use a transformer having the rated current more than the current

consumed with the number of cameras  $\times 24VAC$  270 mA.

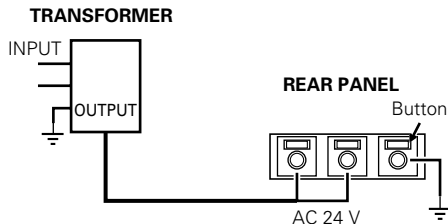


Fig.5

## B. DC POWER CONNECTION

### CAUTION:

DC power supply conformed safety standards must be used.

### CAUTION:



If the power-supply cord is short-circuited, excessive current flows and is extremely dangerous. The line fuse must be required. (see Fig.6).

The rated power supply voltage of this camera is +12VDC (+10.8 to +13.2VDC).

Be sure to use the camera within this range of voltage.

Power supply connections are shown in Fig.6. If a fuse is required, use a slow blow fuse connected to the + terminal of the power supply within 10cm (4inch) of the terminal.

### CAUTION:



- Be sure to wire the power plug polarity correctly.
- Current consumption 390mA per camera is required.

When selecting and connecting the power-supply cord, take care concerning the following:

- ① Current allowance of the power-supply cord.
- ② Power supply voltage drop due to excessive length or size of wire.

### DC POWER SUPPLY

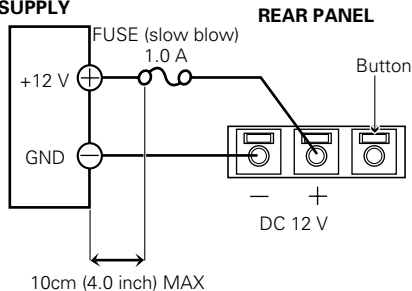


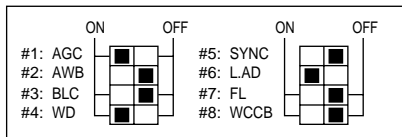
Fig.6

## VIDEO OUTPUT

### BNC OUTPUT

The output of this connector is a composite Video Signal. Use a high quality 75  $\Omega$  coaxial cable between the camera and other video equipment. At the "Video Equipment" end of the coaxial cable, terminate the signal with a 75  $\Omega$  resistor.

## DIP SWITCH



NOTE: ■ is factory setup.

Fig. 7

## AUTOMATIC GAIN CONTROL (AGC)

This function keeps the video output level of the camera by varying the gain control automatically.

The AGC function switch can be turned ON/OFF by moving #1 switch of DIP Switch right and left.

(Factory setup is AGC ON.)

## AUTO WHITE BALANCE (AWB)

There are AUTO and HOLD in the white balance adjustment in this camera. The white balance is adjusted automatically to provide the optimum picture just by setting the white balance selection switch to the AUTO. When you do not obtain the optimum white balance in AUTO, HOLD is used. At #2 switch of DIP Switch.

ON side: HOLD

OFF side: AUTO

(Factory setup is OFF side.)

## **BACK LIGHT COMPENSATION (BLC)**

The Back Light Compensation function allows fine picture correction to prevent the subject from being extremely dark due to strong back-light.

The BLC function switch can be turned ON/OFF by moving #3 switch of DIP Switch right and left.

(Factory setup is BLC OFF.)

## **WIDE DYNAMIC RANGE (WD)**

When the camera images the scene with high contrast difference, the wide dynamic range function can automatically tune the brightness of the scene not so dark or bright that a part of the scene becomes. By automatic judgment of the contrast difference, the camera images darkly at too bright part or brightly at too dark part. That is to say, the camera has a wide dynamic range imaging ability.

The WDR function can be turned ON/OFF by moving #4 switch of DIP Switch right and left. (Factory setup is WD ON.)

## **SYNCHRONIZATION MODE (SYNC)**

### **LINE LOCK MODE**

(The camera using the 24VAC power supply)  
This mode allows the camera to use the phase of the AC power as the reference.

When attempting to phase a group of cameras together deviation from the AC power phase may be required.

This can be done with the phase adjustable Line Lock control.

(For the phase adjustment, refer to “L.L. ADJUSTER”.)

### **INTERNAL MODE**

(The camera using the 12VDC power supply)  
In this mode, an inside crystal oscillator is used as INT. Sync Generator.

The synchronization mode can be selected by moving #5 switch of DIP Switch right, OFF side and left, ON side. The meaning of switch is as follows,

ON side: Internal mode  
OFF side: Auto mode(DC: Internal, AC: Line Lock)

(Factory setup is OFF side.)

## **FLICKERLESS (FL)**

### **CAUTION:**

This function is used under fluorescent light on the power supply area with different frequency from the camera scanning frequency.

Set the FL switch (#7 switch of DIP Switch) to “OFF”, otherwise the flicker may occur.

(Factory setup is FL OFF.)

## **WD COMPLEMENTARY COLOR BALANCE (WCCB)**

WCCB (WD Complementary Color Balance) function reduces the difference of color temperature between the high luminance area and the low luminance area of the scene.

The WCCB function can be turned ON/OFF by moving #8 switch of DIP Switch left and right. (Factory setup is WCCB OFF.)



## L. L. ADJUSTER

(The camera using LINE LOCK MODE)  
The power supply synchronizing phase of each camera is set to the same phase at the factory. Usually, the power supply synchronizing phase does not need readjustments.

The power supply synchronizing phase changes by pressing the LL ADJ. switch. The dimension from the zero cross point of the power supply voltage waveform to the deactivation point of Vsync of the odd field is  $0^\circ$  at presetting.

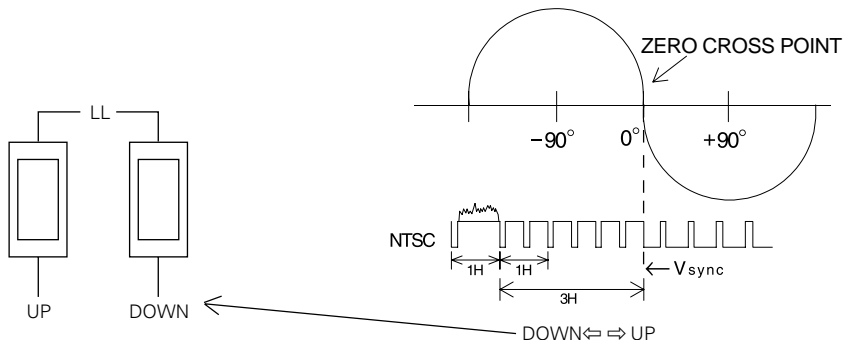


Fig. 8

## SPECIFICATIONS

<b>Model name</b>	<b>ZC-YHW701N</b>
TV System	NTSC
Power	DC12V ( $\pm 10\%$ )
	24VAC ( $\pm 10\%$ ), 60Hz
Power Consumption	Approx. 4.7W
Imager	1/3" Image interline transfer CCD (progressive)
Picture Elements (Active)	Approx. 380K pixels
Scanning System	2:1 Interlace
Scanning	525 Lines, 60Fields
Synchronization	Line-Locked Sync / Internal
Video Output	1.0Vp-p, 75 $\Omega$ Composite (VBS) / BNC Connector
Horizontal Resolution	480TV Lines
Signal to Noise Ratio	48dB (AGC off, weighting)
Minimum Scene Illumination	1.0Lux (F1.2)
Dynamic Range	60dB (WD on)
White Balance	Automatic tracing TTL (Through The Lens)
Lens Mount	"CS" mount (Flange Back Adjustable)
Usable Auto Iris Lens	DC Voltage Controlled Lens
Dimensions (Less lens)	53(W) x 55(H) x 56(D) mm
Ambient Temperature	-10 to +50°C (0 to +40°C; Performance guaranteed)
Weight (Excluding lens)	0.2 Kg

<b>Model name</b>	<b>ZC-YHW701N</b>
Connectors	<b>①</b> Video Output <b>②</b> Auto-Iris Lens Output <b>③</b> 3P-Connector
Controls	Adjustment (push switch ; UP and DOWN) Phase (Vertical Phase) Switch (DIP SW)      1) AGC 2) AWB 3) BLC 4) WD 5) SYNC 6) L. AD 7) FL 8) WCCB
Accessories (Supplied)	4 Pin plug (Small type) ..... 1 pc Instruction Manual ..... 1 pc ALLEN WRENCH ..... 1 pc CAMERA MOUNT ..... 1 pc

Design and specifications are subject to change without notice.