

INTRODUCTION:

Thank you for choosing the WAT-902H, B/W CCD Camera.

WATEC hopes that both the quality and design satisfy your requirements.

Before proceeding to install or operate the WAT-902H, please read and understand thoroughly the contents of this Operation Manual.

For future reference we also advise safe keeping of this manual.

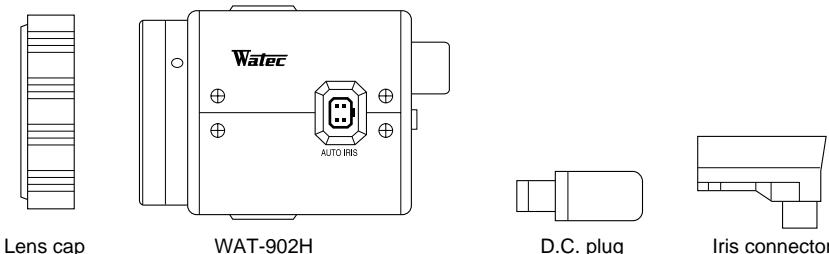
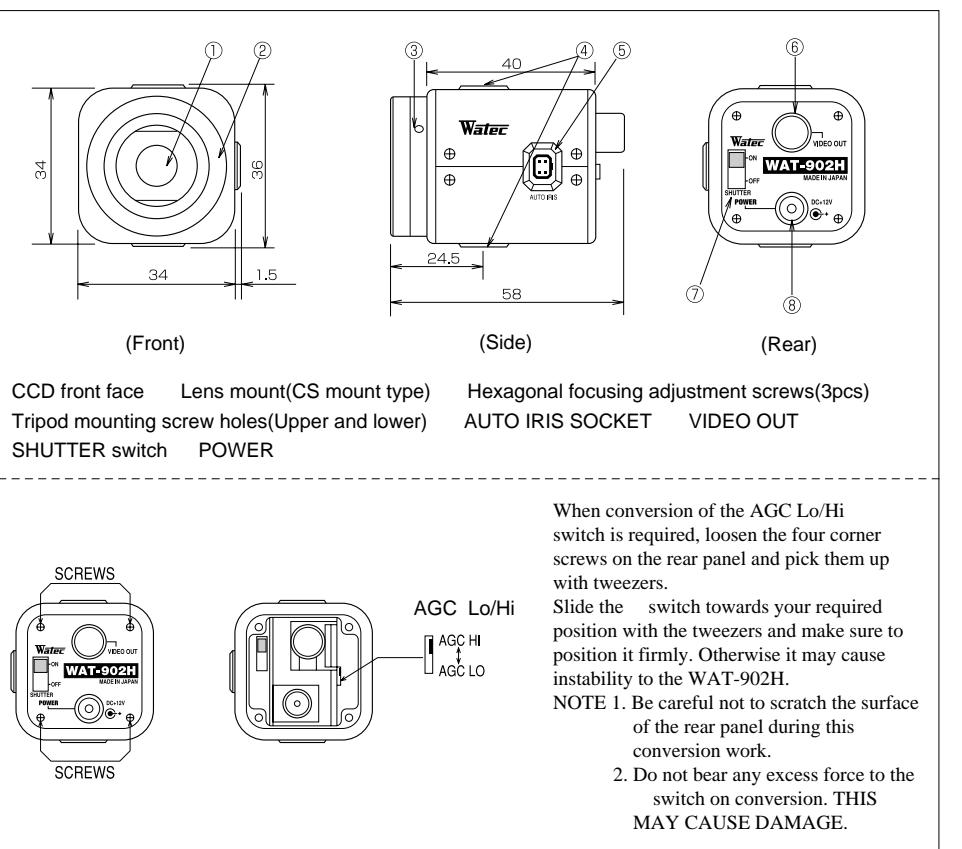
CAUTIONS:

1. Use only the AD-901 or equivalent power adaptor for the WAT-902H. Power supplied without voltage stabilization and/or the voltage range is not maintained at $\pm 10\%$ 12V. C. may cause damage to the WAT-902H.
2. Do not expose the WAT-902H to wetness or high moisture conditions. The WAT-902H is designed and approved for indoor use only.
If the location of the WAT-902H is outdoors or in an outdoor like environment, we recommend that you use an OUTDOOR CAMERA HOUSING.
3. Avoid the striking of hard objects or dropping the unit.
4. Do not disassemble and/or modify the WAT-902H or the component parts or accessories. WATEC can not be held responsible for equipment failure or any damage or trouble caused by such action.
5. Do not install the WAT-902H near a heat source, such as radiators or heating air ducts, or in a position subject to direct sunlight, excessive dust, mechanical vibration or shock.
6. When the WAT-902H is used under fluorescent or mercury lighting conditions, a flickering phenomenon may occur on the monitor screen. This does not mean that the WAT-902H is damaged.
7. A white dot affected by cosmic rays may casually appear on the monitor screen. This is a characteristics which the CCD cell unit has and is not considered abnormal.
8. When installing the WAT-902H in an industrial or commercial environment (i. e. within equipment housing, near other electronic device, etc.) make sure to avoid any strong electromagnetic field. Otherwise the video output may be distorted and monitor sharpness compromised.
9. Check and protect the WAT-902H from any source generating a strong electromagnetic field from your equipment, when the WAT-902H is fitted near or inside that unit.
10. Do not connect any power supply directly to the VIDEO OUT terminal of the unit. This may cause damage.
11. When a cable operation system such as video/power multiplex transmission is being used, check the specifications or requirements of your monitor for proper connection to the video signal terminal of the WAT-902H.
12. Do not make connections and/or operate the WAT-902H with wet hands.
13. Should the WAT-902H not work properly, switch off the power and then check that power and video terminals are properly connected.
Sunlight shinning directly onto the camera lens can cause damage to the CCD.

CONTENTS:

Using the contents figures below, check to make sure all parts are present before use.

The WAT-902H parts (complete unit)

**DESCRIPTION OF CAMERA PARTS (Unit:mm)**

CCD front face (light receiving face of the CCD camera)

NOTE: 1. Handle the CCD and the lens with special care.

2. Always attach the lens cap so as to protect the lens and the CCD from contamination and damage.

3. Dirt, water or oil deposits on either will cause an unclear picture on the monitor and scratches will become permanent damage.

Lens mount (CS mount type)

NOTE: Any standard model C mount lens can be attached to the WAT-902H, if our optional C mount ring, 30CMA-R is fitted to the unit.

Hexagonal focusing adjustment screws (for fine focusing adjustment by the lens mount ring.)

There are three hexagonal focusing adjustment screws each placed at intervals of 120° around the lens mount ring for the forward and backward motions of the lens mount.

Tripod mounting screw holes (Upper and lower)

Thread size and depth are the same as those for the standard camera tripods.(U1/4")

AUTO IRIS SOCKET

Female connector for the auto-iris lens.

NOTE: When the BLC(back light compensation)switch is ON in conjunction with the auto iris lens, the iris control is shown within the restricted area on the monitor screen. See Sec. 9 of OPERATION in the operation manual for a more detailed explanation.

VIDEO OUT-The RCA terminal for video signal output.

NOTE: A 3C2V or 5C2V cable with 75 Ω impedance must be used for connection with the WAT-902H.

SHUTTER switch-The electronic shutter speed conversion switch

	Symbol	Shutter mode selection chart (second)
ON	EIA: 1/60~1/100000	CCIR: 1/50~1/100000
OFF	EIA: 1/60	CCIR: 1/50

POWER-The power input terminal

NOTE: The optional power adaptor, AD-901 (DC+12V, 250mA) is recommended for use with the WAT-902H. AGC Lo/Hi-AGC gain switch

The switch is set to Hi gain at the upper position and to Lo gain at the lower position.
The switch is set to Hi upon shipment.

OPERATION:

NOTE: Ensure that before any connections are made to the WAT-902H the power is switched OFF.

- 1) Remove the Lens Cap from the CCD front face and attach the lens.

NOTE: When the C mount type lens is used, mount the optional 30CMA-R, C mount conversion ring before the lens is mounted.

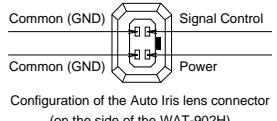
: Confirm the specifications of the lens to be used, when it can not be mounted onto the WAT-902H smoothly.
(Mounting a non standardized lens may cause damage to the threads of the lens and lens mount too.)

- 2) Using the Auto Iris lens

Connect the iris control cable to AUTO IRIS SOCKET on the WAT-902H, when the auto iris lens is used.

IMPORTANT NOTES FOR AUTO IRIS USAGE

: Ensure that the connector mentioned in the operation manual of the Auto-Iris lens can be applied to the one shown in the diagram on the right connect it firmly to the connector on the right side of the WAT-902H.



: Insert the pins as shown in the picture on the right. If the pin configuration is different from that shown, use the special adaptor supplied with this unit.

CAUTION: Do not touch the power pin or the signal control pin with the Common (GND) pins on the extra connector for the Auto Iris lens.

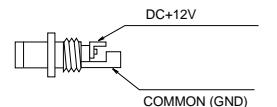
: The power (pin) in the drawing on the right must be used for connection with the auto iris lens only, otherwise this may cause damage to the WAT-902H.

- 3) Insert the DC plug of the power adaptor to POWER on the rear panel of the WAT-902H.

NOTE: Ensure that the power adaptor is not ON before insertion of the DC plug into POWER .

IMPORTANT NOTES FOR POWER ADAPTOR USAGE

: Use a stabilized power adaptor designed for DC+12V $\pm 10\%$ with a current capacity of 250mA.



: Use the optional DC plug when the shape or polarity of the DC plug of the DC power adaptor can not be fitted to POWER on the WAT-902H.

: Connect the cables to the DC adaptor using the drawing on the right.

CAUTION : Be careful not to touch any other terminal while wiring.

NOTE : This may cause damage to the WAT-902H and power adaptor or may cause fire if the above care and attention is not adhered to.

- 4) Connect VIDEO OUT on the WAT-902H to the monitor, using the coaxial cable with 75 Ω impedance such as 3C2V or 5C2V.

IMPORTANT NOTES ON THE MONITOR SPECIFICATIONS

: Select a monitor with the same transmission mode as the WAT-902H.

There are two versions, EIA and CCIR.

: A monitor with 700TV lines is recommended.

Caution: Do not use a monitor which uses a video signal/power multiplex transmission cable.

5) Switch on the WAT-902H, monitor and all other allied equipment.

NOTE: When the picture does not appear on the monitor screen, switch off all equipment and check that all connections to all the appliances are correct.

6) Focusing

Focusing the lens of the WAT-902H is achieved while looking at the monitor screen.

NOTE: In cases when the unit can not be focused manually, use the focusing adjustment method set out below.

IMPORTANT NOTES ON FOCUSING

: Attach the required lens on the WAT-902H and loosen the hexagonal screws . (3pcs.)

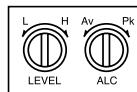
Be extremely careful not to drop the lens.

: Set the focus ring to the infinite () position, and while looking at the monitor screen, move the lens forwards or backwards to focus.

: Tighten the hexagonal focusing adjustment screws (3pcs.) when focusing is completed.

IMPORTANT NOTES FOR USAGE OF AUTO IRIS LENS

: An optimal picture may not be obtained on the monitor screen due to the different kinds of lenses used which give different angular views and different contrasts of objects. In this case adjustment must be made by reading through as shown below.



Check that the required auto iris lens has the adjustment control as shown in the drawing on the left.

Set the ALC(Automatic Level Control) adjustment control in the center between AV and PK on the lens using a small screw driver.

Point the lens towards the object while looking at the screen.

Turn the LEVEL adjustment control clockwise or anti-clockwise to obtain the optimal brightness of an object on the monitor screen.

Turn the ALC adjustment control towards PK when the contrast of the object needs to be stronger or towards AV when it needs to be weaker.

Continually repeat the procedures and to obtain an optimal picture.

7) Select any required shutter speed by changing SHUTTER .

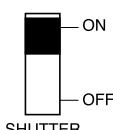
EXAMPLE FOR SHUTTER SWITCH USE

ON: When a fixed lens without auto iris function is used.

When brightness of an object is continually variable such as continuous monitoring of the outdoors through a 24 hour cycle.

OFF: When an auto iris lens is used.

When an optimal picture can be obtained on the monitor screen in conditions that light is less variable such as indoors.



NOTE: Select the most appropriate function out of the above three that correspond to your required monitoring.

: Smear phenomenon (a portion of an object with high brightness projecting bright trails up and down) appear on the monitor screen, when an object with high brightness is monitored. (especially in the ON position) This does not mean the camera is damaged. This is normal.

8) AGC Lo/Hi switch

It is recommended to set the switch to the Hi (upon shipment) position, when the WAT-902H is used in dark environments or through a 24 hour cycle.

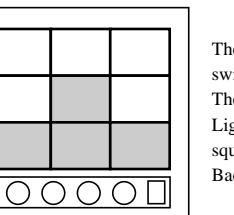
The switch must be set to the Lo position, when improvement of S/N (Signal/Noise level) is required. In this case, the AGC range corresponds to the lens set at three stops smaller.

9) Back Light Compensation

Back Light Compensation on the WAT-902H is in normal operation as a standard function.

The function is what the area measuring the light intensity of the field of view in the WAT-902H is restricted, when an auto-iris lens is used or the SHUTTER switch is ON.

In the field of view which corresponds to the monitor screen, when an object brighter in illumination such as sun or bright illumination is placed exceeding the slant area in the field of view, the auto-iris lens can select the brightness of the slant area in the field of view in priority to the light intensity of the brighter object exceeded in the slant area in the field of view.



The same operation as the above is carried out at the ON position of the SHUTTER switch even when an iris-fixed lens.

The left drawing shows the area where the light intensity can be measured by the Back Light Compensation function in the field of view. Namely the area indicated by the middle square and lower 3 squares in the drawing on the left applies the area operative by the Back Light Compensation function.

SPECIFICATIONS:

Model	WAT-902H (EIA)	WAT-902H (CCIR)
Pick-up element	1/2" Interline transfer CCD image sensor	
Number of total pixels	811(H) x 508(V)	795(H) x 596(V)
Number of effective pixels	768(H) x 494(V)	752(H) x 582(V)
Unit cell size	8.4 μ m(H) x 9.8 μ m(V)	8.6 μ m(H) x 8.3 μ m(V)
Sync system	Internal	
Scanning system	2:1 Interlace	
Video output	1Vp-p 75 (Unbalanced)	
Resolution	570TV Lines	
Minimum illumination	0.0003 Lux F1.4 (AGC Hi) 0.002 Lux F1.4 (AGC Lo)	
S/N ratio	46dB (AGC off)	
Shutter	ON(EI) OFF	1/60~1/100000 sec. 1/60 sec.
		1/50~1/100000 sec. 1/50 sec.
AGC		AGC Hi : 5~50dB, AGC Lo : 5~32dB
Gamma characteristic		0.45
Back light compensation		ON
Power supply		DC + 12V \pm 10%
Current		160mA
Storage temperature		- 30 ~ + 70
Operating temperature		- 10 ~ + 40
Weight		Approx. 90g

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.

Important:

The camera mentioned above does not comply with this regulation, if it is modified at your disposal.

Design and specifications are subject to change without notice.

WATEC is not responsible for any inconvenience or the attendant damages to the video, audio and monitoring recording equipment, caused by misuse, misoperation or improper wiring of our equipment.

If for any reason the WAT-902H does not work properly, or if you have any questions regarding installation or operation, please contact the distributor or dealer from which it was purchased.

Contact information

VARIOVISION

Pöttinger Straße 23

DE-82041 Oberhaching

info@variovision.tv

<https://www.variovision.tv>