

# Watec CCD CAMERA WAT-127LH/137LH OPERATION MANUAL

## INTRODUCTION:

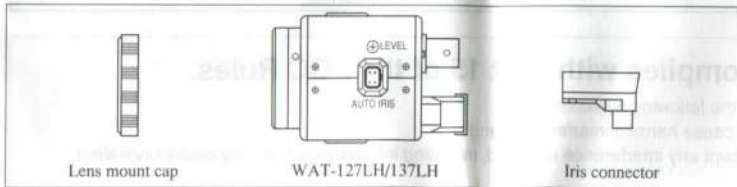
Thank you for choosing the WAT-127LH/137LH, B/W CCD camera. Watec hopes that both the quality and design satisfy your requirements. Before proceeding to install or operate the WAT-127LH/137LH, please read and understand thoroughly the contents of this Operation Manual. For future reference we also advise safe keeping of this manual.

## CAUTIONS:

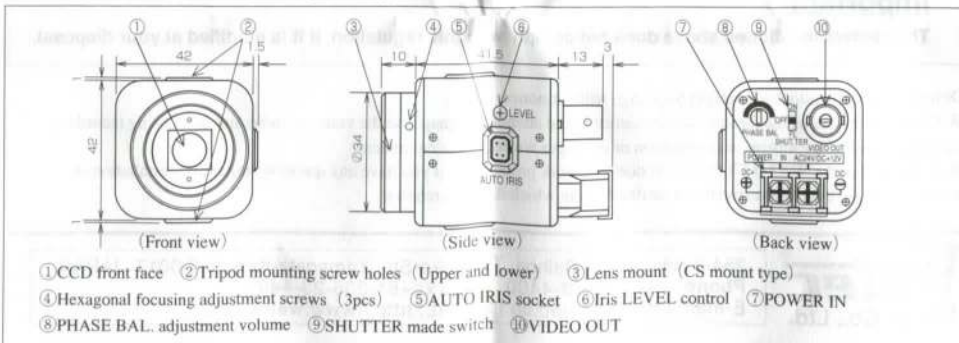
- Power supplied without voltage stabilization and/or the voltage range is not maintained at  $\pm 10\%$  24V AC or  $\pm 10\%$  12V DC may cause damage to the WAT-127LH/137LH.
- Do not expose the WAT-127LH/137LH to wetness or high moisture conditions. The WAT-127LH/137LH is designed and approved for indoor use only.  
If the location of the WAT-127LH/137LH is outdoors or in an outdoor like environment, we recommend that you use an OUTDOOR CAMERA HOUSING.
- Avoid the striking of hard objects or dropping the unit.
- Do not disassemble and/or modify the WAT-127LH/137LH or the component parts or accessories. Watec can not be held responsible for equipment failure or any damage or trouble caused by such action.
- Do not install the WAT-127LH/137LH 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.
- When the WAT-127LH/137LH is used under fluorescent or mercury lighting conditions, a flickering phenomenon may occur on the monitor screen. This does not mean that the WAT-127LH/137LH is damaged.
- When installing the WAT-127LH/137LH 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.
- Check and protect the WAT-127LH/137LH from any source generating a strong electromagnetic field from your equipment, when the WAT-127LH/137LH is fitted near or inside the unit.
- Do not connect any power supply directly to the VIDEO OUT terminal of the unit. This may cause damage.
- 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-127LH/137LH.
- Do not make connections and/or operate the WAT-127LH/137LH with wet hands.
- Should the WAT-127LH/137LH not work properly, switch off the power and then, check that power and video terminals are properly connected.  
\* Sunlight shining 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.



## DESCRIPTION OF CAMERA PARTS (UNIT:MM)



- CCD front face : light receiving face of the CCD camera  
Note: 1. Handle the CCD and lens with special care.  
2. Always attach the lens mount 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. Scratches will cause permanent damage.
- Tripod mounting screw holes (Upper and lower) : Thread size and depth are the same as those for the standard camera tripods.(U1/4")
- Lens mount(CS mount type) :  
Note: Any standard model C mount lens can be attached to the WAT-127LH/137LH using the optional C mount ring, 34CMA-R.
- Hexagonal focusing adjustment screws (for fine focusing adjustment using the lens mount ring.) :  
There are three hexagonal focusing adjustment screws each placed at intervals of 120° around the lens mount ring allowing for the forward and backward motion of the lens mount.
- AUTO IRIS socket : Power and control signals are supplied to the auto iris can be adjusted using this function.
- Iris LEVEL control : Auto Iris volume level adjustment.  
When using a DC driven iris lens, the volume level of the Auto iris can be adjusted using this function.
- POWER IN : The power input terminal  
For 24VAC or 12VDC power supply.
- PHASE BAL. adjustment volume : for the line-lock  
A range of  $0 \pm 90^\circ$  is available for adjustment.
- SHUTTER mode switch : The electronic shutter speed conversion switch  
The electronic shutter function is set to OFF upon shipment.

Symbol Shutter mode selection chart		
ON	EIA:1/60~1/100000	CCIR:1/50~1/100000
FL	EIA:1/100	CCIR:1/120
OFF	EIA:1/60	CCIR:1/50

⑩ VIDEO OUT : The BNC terminal for video signal output.

NOTE: RG-58/U or RG-6/U coaxial cable with 75  $\Omega$  impedance must be used with the WAT-127LH/137LH.

## Operation

Note: Ensure that the power to the WAT-127LH/137LH and the monitor are set to OFF before making any connections.

- Remove the Lens mount cap from the WAT-127LH/137LH and attach the lens.  
Use the optional C-mount adaptor (34CMA-R), when a C-mount model lens is used.

NOTE: Confirm the specifications of the lens being used, when it can not be mounted onto the WAT-127LH/137LH smoothly.

- Connect the iris control cable to ⑤ AUTO IRIS socket on the WAT-127LH/137LH, when an Auto-iris lens is being used.

NOTE: Confirm the version of the Auto iris lens to be used as shown below;

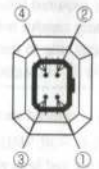
- Video iris lens.
- DC driven iris lens.

1) Video iris lens

The pin configuration is subject to EIAJ configuration.

The differences in configuration are as follows:

Pin No.	EIAJ configuration	Watec configuration
①	Power	Power
②	Unused (NC)	Control (iris) signal
③	Control (iris) signal	GND
④	GND	GND
WAT-127LH/137LH	✓	× (re-wiring required)



NOTE: No electronic damage occurs to the WAT-127LH/137LH, even when the Auto iris lens is wired to the Watec configuration instead of the EIAJ configuration, but the Auto iris lens will not work correctly.

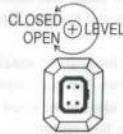
When an Auto iris lens which has already been used with other Watec models is used for the WAT-127LH/137LH, wire the attached iris connector as shown in the above EIAJ configuration.



2) DC driven iris lens

The pin configuration of a DC driven iris lens is standardized to EIAJ specifications.  
If the DC driven iris lens does not work, check the wiring configuration, referring to the table below:

Pin No.	DC driven iris lens arrangement (EIAJ)
①	Control - (DUMP -)
②	Control + (DUMP +)
③	Drive + (DRIVE +)
④	Drive - (DRIVE -)



NOTE: Check the configuration of the iris plug before it is connected to ⑤/AUTO IRIS socket on the WAT-127LH/137LH.  
After connection, adjust ⑥/Iris LEVEL control (for auto iris) placed above the iris connector by turning clockwise or anti-clockwise as show below on the right.

\*The WAT-127LH/137LH is compatible with both a Video iris lens and a DC driven iris lens.  
(Patent pending)

3. Connect the power cables to ⑦/POWER IN on the rear panel of the WAT-127LH/137LH.

NOTE: Ensure that the power is not in the ON position before any connections are made to the WAT-127LH/137LH.

IMPORTANT NOTES FOR POWER ADAPTOR USAGE

: Use a stabilized power supply designed for 24VAC ± 10% with a power capacity of 2W or a voltage range of 12V DC ± 10% and a current capacity of more than 250mA.

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

NOTE: This may cause damage to the WAT-127LH/137LH and power adaptor or may cause fire if the above care and attention are not adhered to.

4. Connect ⑩/VIDEO OUT on the WAT-127LH/137LH to the monitor, using the coaxial cable with 75Ω impedance such as RG-58/U or RG-6/U.

IMPORTANT NOTES ON THE MONITOR SPECIFICATIONS

: Select a monitor with the same transmission mode as the WAT-127LH/137LH.

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-127LH/137LH, monitor and all other allied equipment.

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

6. Focusing

Focusing the lens of the WAT-127LH/137LH 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-127LH/137LH and loosen the ④/Hexagonal focusing adjustment screws.(3pcs)

Be extremely careful not to drop the lens.

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

: Tighten the ④/Hexagonal focusing adjustment screws(3pcs) when focusing is completed.

7. Select any required shutter speed by changing ⑨/SHUTTER made switch.

EXAMPLE FOR SHUTTER SWITCH USE

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

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

FL: Flicker compensation

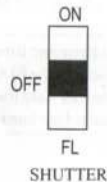
This function is used to reduce the flickering phenomena occurring on the monitor screen caused by fluorescent and mercury lamps. (This function is effective when used with normal commercial Power supplies and is 50Hz in NTSC and 60Hz when using PAL.)

OFF: When an auto iris lens is used.

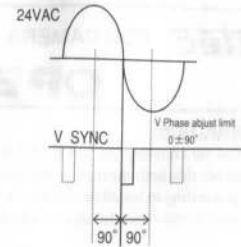
When an optimal picture can be obtained on the monitor screen in conditions that light is less variable such as indoors.

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 downwards) appears 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. Turn ⑥/PHASE BAL. adjustment volume clockwise or counter-clockwise when the change of the synchronization point of the line-lock is required.  
The phase adjustment is available in a range of 0 ± 90°



SPECIFICATIONS:

Model	WAT-127LH		WAT-137LH		
	EIA	CCIR	EIA	CCIR	
Pick-up element	1/2" Interline transfer CCD		1/3" Interline transfer CCD		
Number of total pixels	811(H) × 508(V)	795(H) × 596(V)	811(H) × 508(V)	795(H) × 596(V)	
Number of effective pixels	768(H) × 494(V)	752(H) × 582(V)	768(H) × 494(V)	752(H) × 582(V)	
Unit cell size	8.4 μm(H) × 9.8 μm(V)	8.6 μm(H) × 8.3 μm(V)	6.35 μm(H) × 7.4 μm(V)	6.5 μm(H) × 6.25 μm(V)	
Sync system	Line-Lock / Internal				
Scanning system	2:1 Interlace				
Video output	1Vp-p 75Ω (Unbalanced)				
Resolution	570TV lines (Center)				
Minimum illumination	0.0015Lux F1.4		0.002Lux F1.4		
S/N ratio	50dB (AGC off)				
Shutter	ON	1/60 ~ 1/100000sec.	1/50 ~ 1/100000sec.	1/60 ~ 1/100000sec.	1/50 ~ 1/100000sec.
	OFF	1/60sec.	1/50sec.	1/60sec.	1/50sec.
	FL	1/100sec.	1/120sec.	1/100sec.	1/120sec.
AGC	5 ~ 42dB				
Gamma characteristic	γ ≈ 0.45				
Iris Control	VIDEO IRIS / DC DRIVE				
Power supply	24VAC ± 10% or 12VDC ± 10%				
Current	85mA (24VAC) 200mA (12VDC)				
Storage temperature	-30°C + 70°C				
Operating temperature	-10°C + 40°C				
Weight	Approx. 140g				

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 or audio and monitoring recording equipment, caused by misuse, mis-operation or improper wiring of our equipment.

If for any reason the WAT-127LH/137LH 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.

**Watec**  
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