

This Operation Manual covers safety, camera functions, installation and the correct operating procedure for the WAT-660E. First, we ask you to read this Operation Manual thoroughly, then install and operate the WAT-660E as advised. In addition, for future reference, we also advise safekeeping of this manual.

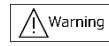
Please contact the distributor or dealer from which the WAT-660E was purchased, if you do not understand the installation, operation or safety instructions laid out in this manual. Not understanding the contents of the Operation Manual sufficiently may cause damage to the camera.

## Guide to the Safety Symbols

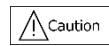
The definitions of the symbols used in this operation manual are:



When you do not adhere to or take notice of the "Danger" sign it may lead to a serious accident such as death or injury caused by fire or electric shock.



When you do not adhere to or take notice of the "Warning" sign, it may cause severe damage such as a physical injury.



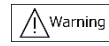
When you do not adhere to or take notice of the "Caution" sign, it may incur injury and cause damage to peripheral objects in the immediate surroundings.

## Cautions for Safety

The WAT-660E is designed to be used safely; however, if not used safely, it may lead to a physical accident caused by fire and electric shock. Therefore, please keep and read the "Cautions for safety" below for protection against accidents.



- Do not disassemble and/or modify the WAT-660E.
- Do not operate the WAT-660E with wet hands.

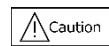


- Use a stabilized power adaptor designed for DC+4.6 - +14V, with a current capacity of more than 250mA for the WAT-660E.  
The recommended voltage is DC+5 - +12V

- Do not expose the WAT-660E to wetness or high moisture conditions.  
The WAT-660E is designed and approved for indoor use only. The WAT-660E is not water-resistant or waterproof. If the location of the camera is outdoors or in an outdoor like environment, we recommend that you use an outdoor camera housing.

- Protect the WAT-660E from condensation.  
Keep the WAT-660E dry at all times during storage and operation.

- Should the camera not work properly, switch off the power immediately. Then check the camera according to the "Problems and Trouble shooting" section.



- Avoid the striking of hard objects or dropping the WAT-660E.  
The WAT-660E uses high quality electrical parts and precision components.

- Do not connect any power supply directly to the video out terminal of the unit.

Do not connect the WAT-660E with any monitor using a video/power single transmission terminal. The WAT-660E is not designed for use with this type of equipment. We also advise you to read the operation manual of the monitor you plan to use before any connections are made.

- Do not install the WAT-660E in a position subject to direct sunlight.

Sunlight shining directly onto the WAT-660E lens can cause damage to the CCD.

- Select a stable place for installation of the WAT-660E.

Use a support of durable strength around an installation position on a ceiling or wall when a camera stand or tripod is used.

- Do not move the WAT-660E with the cables connected.

Before moving the WAT-660E, always remove the video cable and power cable from the rear of the camera first.

- Avoid using the WAT-660E near any strong electromagnetic field.

After installing into main equipment, if the WAT-660E is exposed to electromagnetic waves causing the monitored image to become distorted, we recommend the camera be shielded by appropriate protective casing.

## Problems and Trouble Shooting

If any of the following problems occur when using the WAT-660E,

- An optimal picture cannot be obtained, after checking that all the cables and connections are correctly in place
- Smoke or any unusual odor emerges from the WAT-660E
- An object becomes embedded or a quantity of liquid seeps into the camera housing
- More than the recommended voltage or/and amperage has been applied to the WAT-660E by mistake
- Anything unusual occurring to any equipment connected to the WAT-660E

Disconnect the camera immediately according to the following procedures:

- ① Switch off the main power supply to the camera.
- ② Remove the power and video cables connected to the WAT-660E.
- ③ Contact the distributor or dealer from which the WAT-660E was purchased.

## About EMC

The WAT-660E is in conformity with EMC test standards carried out by authorized organizations in Japan.

EIA FCC Part15 class B

CCIR EN61000-6-3/EN50130-4

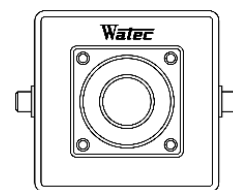
- ※ Please use an auxiliary power supply (eg: UPS) to this camera to comply with EN50130-4 of EMC standards.



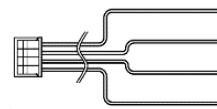
Do not modify the WAT-660E. A modified camera may not conform to EMC test standards.

## Contents

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



WAT-660E



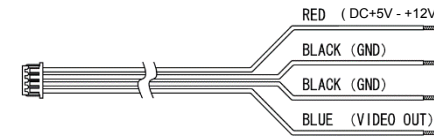
4P cable

## Power Supply

Use a stabilized power adaptor designed for DC+5V - +12V, with a current capacity of more than 250mA.

The wiring on the connector must be exact.

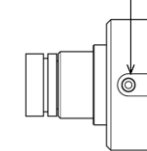
Be careful not to touch the other terminals while wiring. Protect the wired portion by using insulation tape after wiring. If the above care and attention is not adhered to, damage to the WAT-660E and power adaptor may occur and may also cause fire.



## Mounting

The WAT-660E has two bosses on both sides featuring M2 thread and screws. Use these if the camera is to be mounted to the B001 bracket.

M2 bosses with thread and screw



## Set-up and Operation

- ① Refer to the [Power Supply] and the wiring must be exact.
- ② Join the video out cable with the video in cable of the monitor or peripheral equipment.
- ③ Join the power supply using the correct procedure.
- ④ Make sure that a picture can be seen on the monitor
- ⑤ To focus, turn the lens clockwise or counterclockwise while observing the picture on the monitor. (Take care when focusing not to scratch or damage the lens.)

## Options

To purchase these options, please contact the distributor or dealer from which you purchased the WAT-660E.



Cable with BNC, Socket and connector

The cable with BNC/DC socket.  
(Cable Length: 1m)

## Specifications

Model	WAT-660E (EIA)	WAT-660E (CCIR)
Pick-up Element	1/4 inch C-MOS CCD image sensor	
Number of Total Pixels	652(H)×504(V)	
Number of Effective Pixels	648(H)×488(V)	
Unit Cell Size	5.6um(H)×5.6um(V)	
Imaging system	RGB primary color Bayer arrangement mosaic filters on chip	
Sync. System	Internal	
Scanning System	Progressive	
Video Output	Composite video, 1.0 V(p-p), 75Ω(Unbalanced)	
Resolution (H)	More than 480TVL (Center)	
Minimum Illumination	0.002 lx F2.0 (AGC ON=42dB, Shutter=OFF)	
S/N	More than 52dB (AGC OFF=0dB, γ=1.0)	
AE Mode	EI	1/60 - 1/100000 sec.   1/50 - 1/100000 sec.
AGC	0 - 42dB	
Gamma Characteristics	γ=0.45	
Back Light Compensation	BLC	
Power Supply	DC+5 - +12V	
Power Consumption	0.45W/90mA (DC+5V)	
Operating Temperature	-10 - +50°C	
Operating Humidity	Less than 95% RH (Without condensation)	
Storage Temperature	-30 - +70°C	
Storage Humidity	Less than 95% RH (Without condensation)	
Lens mount	M12 P=0.5	
Standard Lenses	3820BC-12 (f3.8 F2.0)	
Size	35.4(W)×29.4(H)×29.5(D) (mm)	
Weight	Approx. 23g	

- Design and specifications are subject to change without notice.
- Watec is not responsible for any inconvenience or the attendant damages to the video and monitoring recording equipment caused by misuse, mis-operation or improper wiring of our equipment.
- If for any reason the WAT-660E 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

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