



Color CCD Camera

# WAT-230V2

## Operation Manual

This Operation Manual covers safety, camera functions, installation and the correct operating procedure for the WAT-230V2. First, we ask you to read this Operation Manual thoroughly, then install and operate the WAT-230V2 as advised. In addition, for future reference, we also advise safekeeping of this manual.

Please contact the distributor or dealer from which the WAT-230V2 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:

**Danger** 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.

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

**Caution** 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-230V2 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.

**Danger** • Do not disassemble and/or modify the WAT-230V2.  
• Do not operate the WAT-230V2 with wet hands.

**Warning** • Use a stabilized power adaptor designed for DC+4.6 - +14V, with a current capacity of more than 250mA for the WAT-230V2.  
The recommended voltage is DC+4.6 - +14V  
• Do not expose the WAT-230V2 to wetness or high moisture conditions.  
The WAT-230V2 is designed and approved for indoor use only. The WAT-230V2 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-230V2 from condensation.  
Keep the WAT-230V2 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.

**Caution** • Avoid the striking of hard objects or dropping the WAT-230V2.  
The WAT-230V2 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-230V2 with any monitor using a video/power single transmission terminal. The WAT-230V2 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-230V2 in a position subject to direct sunlight.  
Sunlight shinning directly onto the WAT-230V2 lens can cause damage to the CCD.  
• Select a stable place for installation of the WAT-230V2.  
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-230V2 with the cables connected. Before moving the WAT-230V2, always remove the video cable and power cable from the rear of the camera first.
- Avoid using the WAT-230V2 near any strong electro-magnetic field. After installing into main equipment, if the WAT-230V2 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-230V2,

- 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-230V2
- 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-230V2 by mistake
- Anything unusual occurring to any equipment connected to the WAT-230V2

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-230V2.
- ③ Contact the distributor or dealer from which the WAT-230V2 was purchased.

### About EMC

The WAT-230V2 is in conformity with EMC test standards carried out by authorized organizations in Japan.

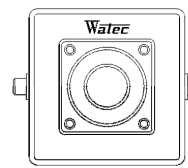
NTSC FCC Part15 class B  
PAL EN61000-6-3/EN50130-4

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

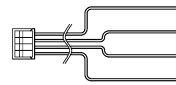
**Danger** Do not modify the WAT-230V2. A modified camera may not conform to EMC test standards.

### Contents

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



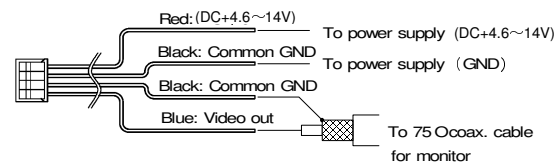
WAT-230V2



Connector with cables

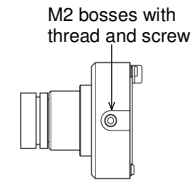
### Power Supply

Use a stabilized power adaptor designed for DC+4.6 - +14V, 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-230V2 and power adaptor may occur and may also cause fire.



### Mounting

The WAT-230V2 has two bosses on both sides featuring M2 thread and screws. Use these if the camera is to be mounted to the B001 bracket.



### 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-230V2.



Remote Controller (RC-01)

Remote control for controlling the On Screen Display menu to change camera settings.



Cable with BNC, Socket and connector

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



Cable with connector

The cable with connector for Motion Detection.

### 关于电子信息产品污染控制标识

环境使用期限	名称	有害物质或元素					
		铅	镉	汞	六价铬	PBB	PBDE
	外壳	○	○	○	○	○	○
	电子零部件	○	○	○	○	○	○
	电路板	○	○	○	○	○	○
	附件	○	○	○	○	○	○
	其它金属	×	○	○	○	○	○

○:表示该有害物质在该部件所有均质材料中的含量的在SJ/T 11363-2006规定的限量要求以下。  
×:表示该有害物质在该部件的某一均质材料中的含量超出SJ/T 11363-2006规定的限量要求。  
电焊输入端子的铜合金中含有4%以下的铅。属无制造代用品的技术。

08	04	04	05
瓦楞纸板	LDPE	LDPE	PP
外包装箱	包装袋	气帽	附件袋

※生产日期位于包装的上面

A	A	年	记号	月	记号
		2011	A	1	1
年	月	2012	B	10	A

### Specifications

Model	WAT-230V2 (NTSC)	WAT-230V2 (PAL)
Pick-up Element	1/4 inch interline transfer CCD image sensor	
Number of Total Pixels	1020(H)×508(V)	1020(H)×596(V)
Number of Effective Pixels	976(H)×494(V)	976(H)×582(V)
Unit Cell Size	3.75μm(H)×5.56μm(V)	3.75μm(H)×4.69μm(V)
Imaging system	Ye, Cy, Mg, and G complementary color mosaic filters on chip	
Sync. System	Internal	
Scanning System	2:1 interlaced	
Video Output	Composite video, 1.0 V(p-p), 75Ω (Unbalanced)	
Resolution (H)	More than 650TVL (Center)	
Minimum Illumination	0.1 lx F1.8	
S/N	More than 50dB	
Function settings	OSD(On Screen Display) operated by optional remote controller	
AE Mode	Fixed	1/60, 1/100 sec. 1/50, 1/120 sec.
	EI	1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 sec. 1/60 - 1/100000 sec. 1/50 - 1/100000 sec.
AGC	0 - 45dB	
MGC	8steps (Selectable)	
Gamma Characteristics	γ≈0.45	
Video Level	0 - 255 (BRIGHTNESS)	
White Balance	ATW/PUSH/USER1/USER2/ ANTI CR/MANUAL/PUSH LOCK	
Noise Reduction	2DNR ON(Level selectable) / OFF	
Back Light Compensation	OFF/BLC/HLC	
Privacy Mask	8masks	
Mirror Image	OFF / ON(H-FLIP)	
Motion Detection	ON(Area/Sensitivity) / OFF	
White Blemish Correction	Max 64 dots	
Output switching	AUTO/COLOR/BW	
Sharpness	0 - 255(SHARPNESS)	
Power Supply	DC+4.6 - +14V	
Power Consumption	0.78W/155mA (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	f=3.7mm F1.8 57.0°(H)×42.3°(V)	
Cable Length	300mm	
Size	35.5(W)×29.5(H)×32.5(D) (mm)	
Weight	Approx. 35g	

- 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-230V2 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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URL: http://www.watec.co.jp