

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

Please contact the distributor or dealer from which the WAT-230 VIVID 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 meanings 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-230 VIVID is designed to be used safely; however, electrical goods may lead to a physical accident caused by fire and electric shock if not used correctly. Therefore, please keep and read the "Cautions for safety" for protection against accidents.

- **Do not disassemble and/or modify the WAT-230 VIVID.**
  - **Do not operate the WAT-230 VIVID with wet hands.**
- **Use a stabilized power adaptor designed for DC+6V±10%, with a current capacity of more than 300mA for the WAT-230 VIVID.**  
The recommended voltage is DC+6V±10%
  - **Do not expose the WAT-230 VIVID to wetness or high moisture conditions.**  
The WAT-230 VIVID is designed and approved for indoor use only. The WAT-230 VIVID is not water-resistance 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-230 VIVID from condensation.**  
Keep the WAT-230 VIVID 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-230 VIVID.**  
The WAT-230 VIVID uses high quality electrical parts and precision components.
  - **Do not wire the WAT-230 VIVID with any monitor using a video/power single transmission terminal. The WAT-230 VIVID 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-230 VIVID in a position subject to direct sunlight.**  
Sunlight shining directly onto the WAT-230 VIVID lens can cause damage to the CCD.

- **Select a stable place for installation of the WAT-230 VIVID.**  
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-230 VIVID with the cables connected.**  
Before moving the WAT-230 VIVID, always remove the video cable and power cable from the rear of the camera first.
- **Avoid using the WAT-230 VIVID near any strong electromagnetic field.**  
Avoid emission sources of electromagnetic waves when the WAT-230 VIVID is installed into main equipment.

## About EMC

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

NTSC FCC Part15 class B  
P A L EN61000-6-3 / EN50130-4

Do not modify the WAT-230 VIVID. A Modified camera may not conform to EMC test standards.

## Problems and Trouble Shooting

**If any of the following problems occur when using the WAT-230 VIVID,**

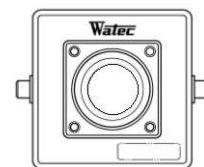
- An optimal picture cannot be obtained, after checking that all the cables and connections are correctly in place
- Smoke or any unusual odor emerges from the WAT-230 VIVID.
- An object becomes embedded or a quantity of liquid seeps into the camera housing
- More than the recommended voltage or/and amperage has been applied to the WAT-230 VIVID by mistake
- Anything unusual occurring to any equipment connected to the WAT-230 VIVID.

**Disconnect the camera immediately according to the following procedures:**

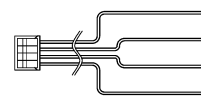
- ① Switch off the main power supply to the camera.
- ② Remove the power and video cables connected to the WAT-230 VIVID.
- ③ Contact the distributor or dealer from which the WAT-230 VIVID was purchased.

## Contents

Check to make sure all parts are present before use.



WAT-230 VIVID

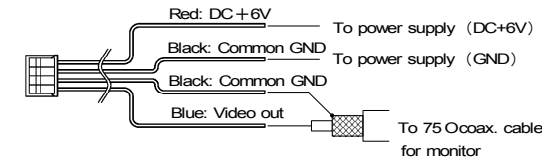


Connector with cables

## Power Supply

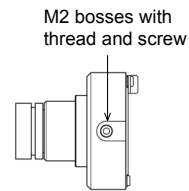
Use a stabilized power adaptor designed for DC+6V±10%, with a current capacity of more than 300mA. Use the optional DC plug if the shape or polarity of the DC plug of the power adaptor to be used is not compatible with the camera. The wiring on the connector must be exact.

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-230 VIVID and power adaptor may occur and may also cause fire.



## Mounting

The WAT-230 VIVID 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.)

### Pinhole lenses

Focusing of the pinhole lens (type P3.7) can be done by turning the lens clockwise or counterclockwise while placing a pair of tweezers in the focusing adjustment dents as shown in the figure on the right.



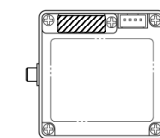
## Option 1 [AVM-USB] (Parameter Controller)

AVM-USB is a compact controller with USB connection for the WAT-230 VIVID. Function settings can be changed by the user according to the environment from the PC.

- Shutter speed: EI / ES
- Gain: AGC / Manual
- BLC: 5 selectable area settings
- White balance: Fixed / Precise control
- Outline enhancer: 4 steps
- Gamma: 0.45 / 0.6 / 1.0
- Video level: 50 - 100 IRE
- Other: Mirror image, Setup level control, Color/Monochrome picture, and Data save, File Load



The rear of the WAT-230 VIVID has a cover protecting the connection terminal for the AVM-USB (see the figure on the right). Do not open the cover unless using the AVM-USB. Damage may occur if tampered with.



## Option 2 [B001] (Mounting Bracket)

B001 is used for mounting the WAT-230 VIVID to stands and surfaces. The base has a U1/4" thread for mounting on stands, and through holes on both sides.



## Specifications

Model	WAT-230 VIVID (NTSC)	WAT-230 VIVID (PAL)
Pick-up Element	1/4 inch interline transfer CCD image sensor	
Number of Total Pixels	811(H)×507(V)	795(H)×595(V)
Number of Effective Pixels	768(H)×494(V)	752(H)×582(V)
Unit Cell Size	4.9 μm(H)×5.6 μm(V)	5.0 μm(H)×4.7 μm(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 450TVL (Center)	
Minimum Illumination	1.6 lx. F2.0	
S/N	More than 50dB (AGC=6dB, γ=1.0)	
AE (Auto-exposure)	1/60-1/100000 sec.	1/50-1/100000 sec.
White Balance	ATW	
AGC	6 - 30dB	
Gamma Characteristics	γ ≈ 0.45	
Back Light Compensation	ON	
Power Supply	DC+6V±10%	
Power Consumption	1.02W (170mA)	
Operating Temperature	-10 - +40°C (Without condensation)	
Operating Humidity	Less than 95% RH	
Storage Temperature	-30 - +70°C (Without condensation)	
Storage Humidity	Less than 95% RH	
Lens mount	M13 P=1.0	
Standard Lenses	G3.8 (Glass f3.8 F2.0) / P3.7 (Pinhole f3.7 F4.5)	
Cable Length	300mm	
Size	G3.8: 35.5(W)×29.5(H)×32.5(D) (mm) P3.7: 35.5(W)×29.5(H)×16.5(D) (mm)	
Weight	Approx. 38g (G3.8)	

- 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-230 VIVID 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

**Watec Watec Co., Ltd.**

Addr.: 254-2 Nihonkoku, Daihoji, Tsuruoka- Shi,  
Yamagata-Ken, 997-0017 Japan  
TEL: +81-235-23-4400 FAX: +81-235-23-4409  
Email: info-o@watec.co.jp  
URL: http://www.watec.net