



## Dome Type CCD Color Camera

**WAT-230CD** (Standard)  
**WAT-230CDB** (Ceiling type)  
**WAT-230CDWB** (Wall type)

### Operation Manual

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

Please contact the distributor or dealer from which the WAT-230CD/CDB/CDWB 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-230CD/CDB/CDWB is designed to be used safely; however, it 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-230CD/CDB/CDWB.**  
**Do not operate the WAT-230CD/CDB/CDWB with wet hands.**

**Use only the AD603-120/230 or equivalent power adaptor for the WAT-230CD/CDB/CDWB.**  
 The recommended voltage is DC+6V ± 10%  
**Do not expose the WAT-230CD/CDB/CDWB to wetness or high moisture conditions.**  
 The WAT-230CD/CDB/CDWB is designed and approved for indoor use only. The WAT-230CD/CDB/CDWB 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-230CD/CDB/CDWB from condensation.**  
 Keep the WAT-230CD/CDB/CDWB 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-230CD/CDB/CDWB.**  
 The WAT-230CD/CDB/CDWB 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 wire the WAT-230CD/CDB/CDWB with any monitor using a video/power single transmission terminal. The WAT-230CD/CDB/CDWB 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-230CD/CDB/CDWB in a position subject to direct sunlight.**  
 Sunlight shining directly onto the WAT-230CD/CDB/CDWB lens can cause damage to the CCD.  
**Select a stable place for installation of the WAT-230CD/CDB/CDWB.**  
 Use a support of durable strength around an installation position on a ceiling or wall.

- Do not move the WAT-230CD/CDB/CDWB with the cables connected.**  
 Before moving the WAT-230CD/CDB/CDWB, always remove the video cable and power cable from the rear of the camera first.
- Avoid using the WAT-230CD/CDB/CDWB near any strong electromagnetic field.**  
 Avoid emission sources of electromagnetic waves when the WAT-230CD/CDB/CDWB is installed into main equipment.

## Problems and Trouble Shooting

If any of the following problems occur when using the WAT-230CD/CDB/CDWB,

- 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-230CD/CDB/CDWB
- 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-230CD/CDB/CDWB by mistake
- Anything unusual occurring to any equipment connected to the WAT-230CD/CDB/CDWB

Disconnect the camera immediately according to the following procedures:

- Switch off the main power supply to the camera.
- Contact the distributor or dealer from which the WAT-230CD/CDB/CDWB was purchased.

## About EMC

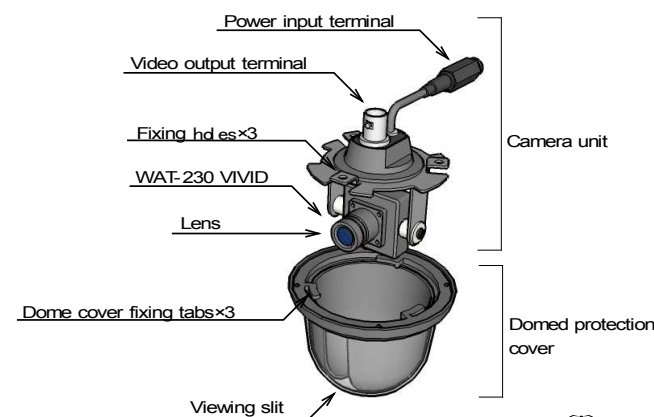
The WAT-230CD/CDB/CDWB is in conformity with EMC test standards carried out by authorized organizations in Japan.

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

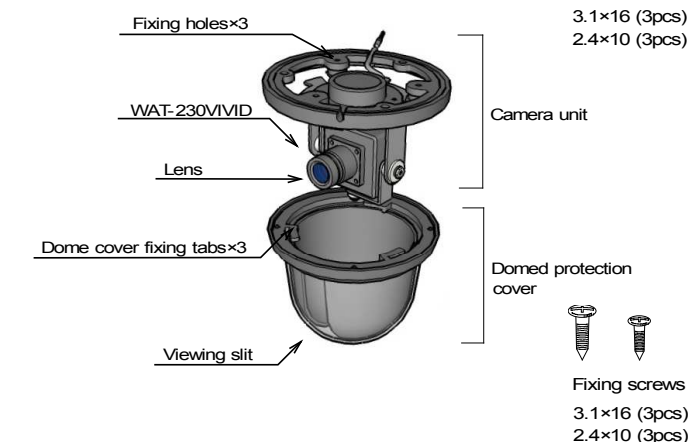
Do not modify the WAT-230CD/CDB/CDWB. A modified camera may not conform to EMC test standards.

## Description of Parts

### WAT-230CD



### WAT-230CDB/CDWB

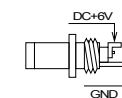


## Power Supply And Wiring

If any other power adaptor besides the AD603-120/230 is used, please use a stabilized power adaptor designed for DC+6V ± 10%, with a current capacity of more than 300mA.

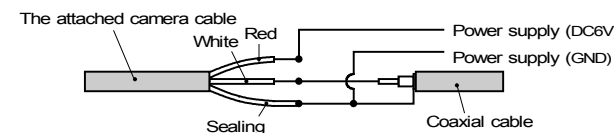
### WAT-230CD

When any equivalent power adaptor is used for the WAT-230CD, use the WPDC6 optional power plug. Wire the plug as shown, in the figure on the right. Furthermore, protect the soldered connection with tape or tubing etc.



### WAT-230CDB/CDWB

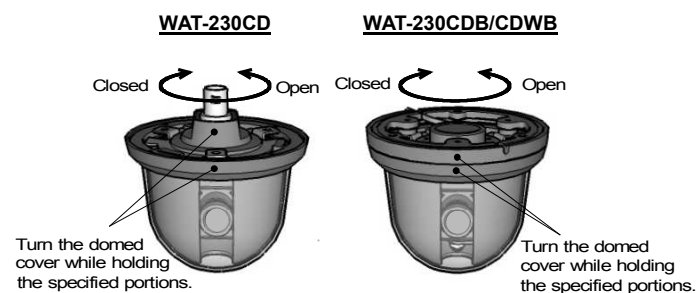
The wiring for the power input and outputs are required by you. Then, wire as shown in the under-mentioned figure. In addition protect the soldered connection with tape or tubing etc.



## Set-up and Operation

- Ensure that before any connections or fixings are made to the WAT-230CD/CDB/CDWB that the power is switched OFF.
  - Refer to the [Power Supply And Wiring] section above. The wiring must be exact, after the domed cover is removed from the WAT-230CDB/CDWB in the following procedure set out below.
  - The camera unit is fixed to the installation surface with screws. Make a hole with a diameter between 32 to 40mm when the WAT-230CD is installed for the power and video input.
  - Connect the video output terminal to peripheral equipment such as a monitor, using a coaxial cable with 75Ω impedance such as 3C-2V (RG5U) or 5C-2V (RG11U).
  - Connect the power supply to the WAT-230CD/CDB/CDWB.
  - Make sure that a picture can be seen on the monitor.
  - Set the required viewing angle. Then, make the focusing adjustment by turning the lens.
- ※When mounting the domed cover over the camera unit, you may feel that the focusing will become a little vague. In this case, repeat the focusing adjustment procedure.
- After mounting the domed cover over the camera unit in the under mentioned procedure, align the viewing slit of the domed cover to the lens of the camera.

### <Mounting and removing of the domed cover>



## Option

Contact the distributor or dealer of Watec Co., Ltd. when the following options are required.

### AC adaptor (AD603-120/230)

The recommended AC adaptor for the WAT-230CD/CDB/CDWB for a constant and stable power supply



### DC plug (WPDC6)

To be used when the power plug of your power supply in hand is different from the power input terminal of the WAT-230CD.



## Specifications

### NTSC

Model	WAT-230CD	WAT-230CDB	WAT-230CDWB
Number of Total Pixels	811(H) × 507(V)		
Number of Effective Pixels	768(H) × 494(V)		
Unit Cell Size	4.9 μm(H) × 5.6 μm(V)		
AE (Auto-exposure)	1/60-1/100000 sec.		

### PAL

Model	WAT-230CD	WAT-230CDB	WAT-230CDWB
Number of Total Pixels	795(H) × 595(V)		
Number of Effective Pixels	752(H) × 582(V)		
Unit Cell Size	5.0 μm(H) × 4.7 μm(V)		
AE (Auto-exposure)	1/50-1/100000 sec.		

### NTSC/PAL

Model	WAT-230CD	WAT-230CDB	WAT-230CDWB
Pick-up Element	1/4 inch interline transfer CCD image sensor		
Imaging system	Ye, Cy, Mg, and G complementary color mosaic filters on chip		
Sync. System	Internal		
Scanning System	2:1 interlace		
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)		
White Balance	ATW		
AGC	6-30dB		
Gamma Characteristics	γ ≈ 0.45		
Back Light Compensation	ON		
Power Supply	DC+6 ± 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		
Size (φ × H)	78 × 83 mm	79 × 65 mm	
Weight	Approx. 175g	Approx. 120g	Approx. 130g

- 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-230CD/CDB/CDWB 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 Co., Ltd.**

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