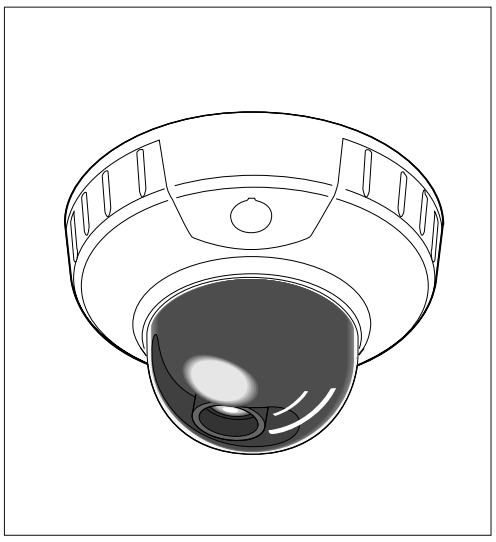


Panasonic

Color CCTV Camera
Operating Instructions

Model No. WV-CF224

Before attempting to connect or operate this product,
please read these instructions carefully and save this manual for future use.

N0503-1103 3TR001728BAA Printed in Japan

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

SA 1965

The lightning flash with arrowhead symbol, within an equilateral triangle, is interned to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

SA 1966

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For U.S.A

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Caution: To assure continued compliance, (example - use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

The serial number of this product may be found on the top of the unit.
You should note the serial number of this unit in the space provided and retain this instruction as a permanent record of your purchase to aid identification in the event of theft.

Model No. WV-CF224

Serial No. _____

WARNING: To prevent fire or electric shock hazard, do not expose this appliance to rain or moisture.
The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.

PREFACE

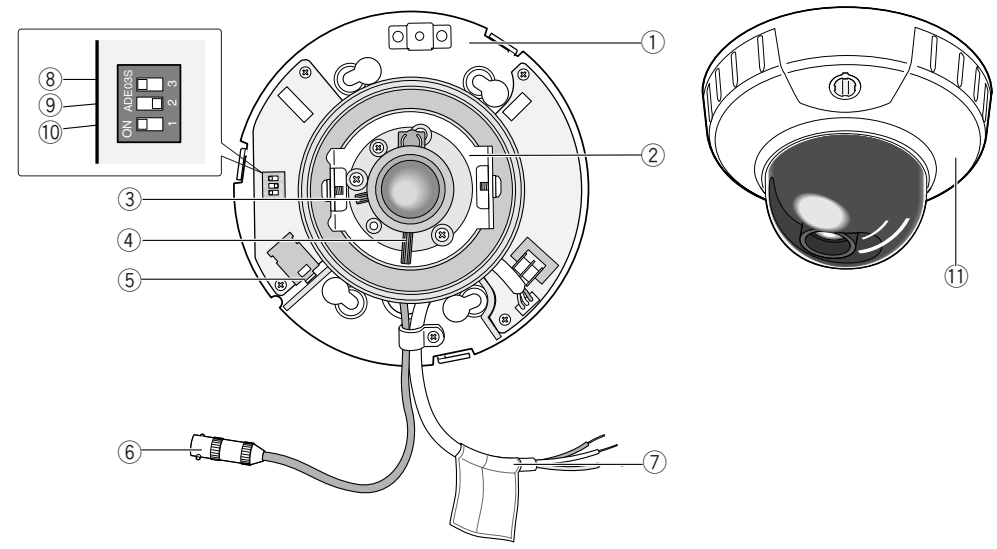
The WV-CF224 is a 1/4-inch CCD color camera designed for use in video surveillance systems.

The camera features a high picture quality thanks to the use of digital signal processing LSIs, and easy mounting on the ceiling or wall.

PRECAUTIONS

1. This product should be installed and connected by qualified service personnel or system installers in conformity with NEC.
2. Use a class 2 power source supplying 12 V DC or 24 V AC.
3. To prevent fire or electric shock hazard, use a UL listed cable (VW-1, style 1007) to connect the power supply to the camera.
4. Be sure to use a ceiling board/wall having enough strength to support this camera.
5. **Do not attempt to disassemble the camera.**
   To prevent electric shock, do not remove screws or covers.
   There are no user-serviceable parts inside. Ask qualified service personnel for servicing.
6. **Handle the camera with care.**
   Do not abuse the camera. Avoid striking, shaking, etc. The camera could be damaged by improper handling or storage.
7. **Do not use strong or abrasive detergents.**
   Use a dry cloth to clean the camera body when dirty.
   In case the dirt is hard to remove, use a mild detergent and wipe gently. Afterwards, wipe off the remaining detergent with a dry cloth.
8. **Clean the lens faceplate with care.**
   Do not clean the lens with strong or abrasive detergents. Use lens tissue or a cotton tipped applicator and ethanol.
9. **Never face the camera towards the sun.**
   Do not aim the camera at bright objects. Whether the camera is in use or not, never aim it at the sun or other extremely bright objects. Otherwise, blooming or smear may be caused.
10. **Do not operate the camera beyond its specifications.**
    Use the camera under conditions where temperature is between –10 °C to +50 °C (14 °F to 122 °F), and humidity is below 90%. The input power source is 24 V AC or 12 V DC.
11. Use a monitor whose resolution is at least equal to that of the camera.

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS



① **Camera Panel**

② **Pan/Tilt/Azimuth Table**
Adjusts the panning/tilting and azimuth angle of the camera.

③ **Focus Lever**
Fixes the focus position after adjusting.

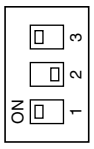
④ **Zoom Lever**
Fixes the zoom position after adjusting.

⑤ **Video Jack (3.5-diam. mini jack)**
For connecting an LCD monitor to adjust the camera images. Use an L-type plug to save space.

⑥ **Video Output Connector**
Supplies the video output signals. The signals will be interrupted when the video jack is connected to an LCD monitor.

⑦ **Power Cable**
Supplies 24 V AC or 12 V DC from an external power source.

	ON	OFF
AP	SHARP*	SOFT
BLC	ON	OFF*
SYNC	INT*	LL



⑧ **Aperture Level Selector**
SHARP: Sharpens the image outline.
SOFT: Softens the image outline.
The default setting is SHARP.

⑨ **Back Light Compensation Selector**
ON: Compensates the background if it is brighter than the object.
OFF: Does not compensate.
The default setting is OFF.

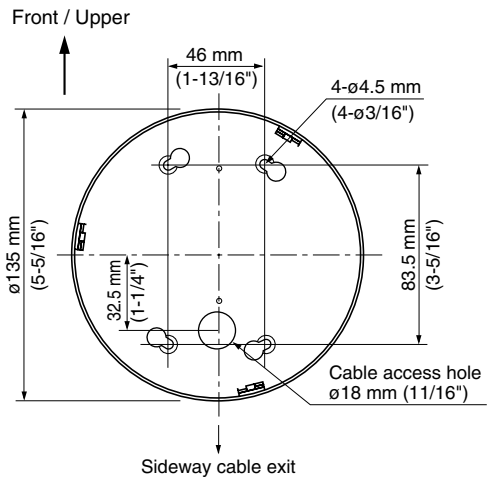
⑩ **Synchronization Mode Selector**
Specifies a source for synchronization.
INT: Internal 2:1 interlace.
LL: Line-lock mode driven by 24 V AC.
The default setting is INT.
Note: Do not set the switch to LL (Line-Lock) position when supplying 12 V DC to avoid synchronization error.

⑪ **Panel Cover**

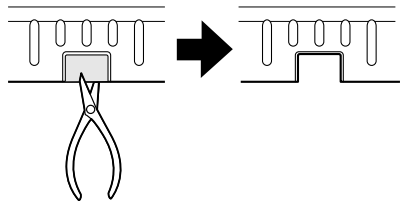
INSTALLATION

■ Installation Plans & Preparations

The camera can be installed on a junction box or directly on the wall/ceiling.



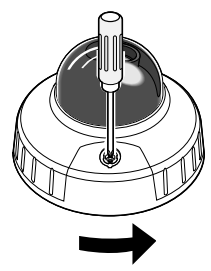
1. Locally procure four camera-mounting screws suitable for the installation surface and structure of the wall/ceiling or junction box. There are four 4.5 mm (3/16") diameter screw holes and a guide hole on the camera panel.
2. Preparations
   - When planning to use a junction box, procure one locally that meets the dimensions in the figure.
   - When directly mounting on the wall/ceiling, prepare a space which is ø135 mm or larger.
3. Cable route
   - When using a junction box, cables will go behind the junction box via the cable access hole on the camera panel.
   - When directly mounting on the wall/ceiling, you need to cut out the panel cover to make a sideway exit for cables.



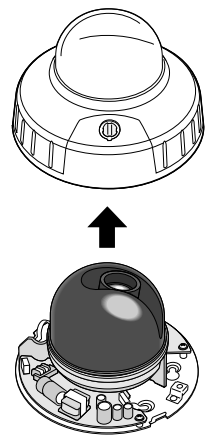
■ Mounting the Camera

Disassembly of the camera

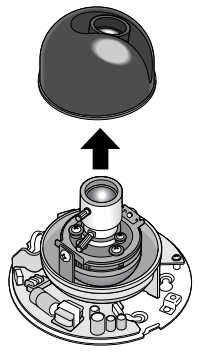
1. Remove the panel cover with a Phillips screwdriver.
2. Turn the panel cover counter-clockwise.



3. Remove the panel cover.



4. Remove the inner dome.

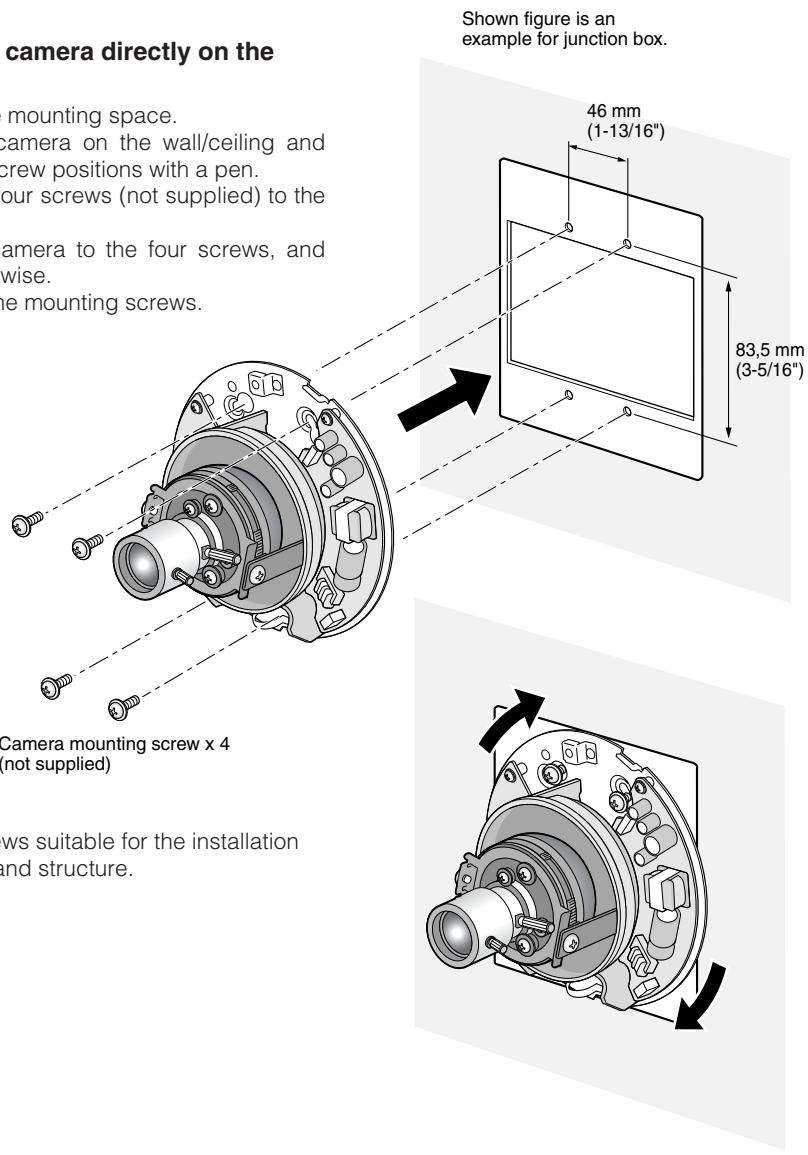


To mount the camera on a junction box

1. Install the junction box on the wall/ceiling.
2. Attach the four screws to the junction box.
3. Hook the camera to the four screws, and turn it clockwise.
4. Fasten all the mounting screws.

To mount the camera directly on the wall/ceiling

1. Prepare the mounting space.
2. Place the camera on the wall/ceiling and mark four screw positions with a pen.
3. Attach the four screws (not supplied) to the wall/ceiling.
4. Hook the camera to the four screws, and turn it clockwise.
5. Fasten all the mounting screws.



Use screws suitable for the installation surface and structure.

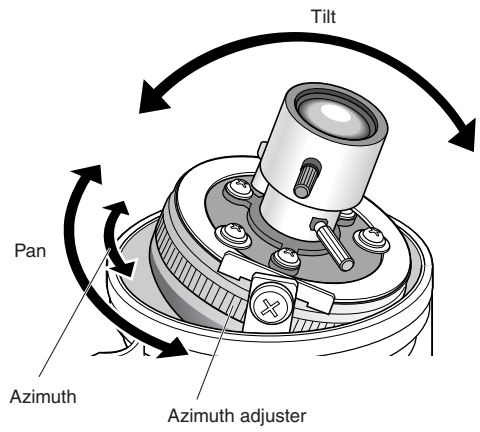
IMAGE ADJUSTMENT

You can manually adjust the pan/tilt/azimuth angles, focus, and zoom while observing the connected monitor.

Notes:
- Do not hold the camera by the lens unit when adjusting panning, tilting, or azimuth.
- The video output to the BNC will be interrupted while an LCD monitor is connected to the video jack.

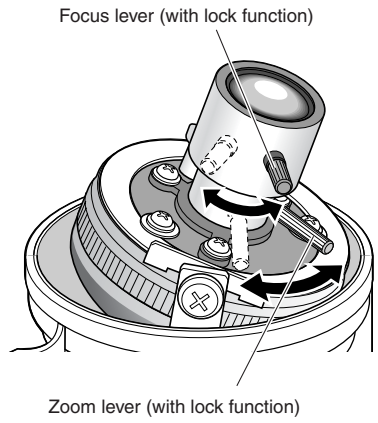
1. Connect an LCD monitor to the video jack.

2. Pan/tilt/azimuth adjustment
- Pan and tilt the table to aim the camera at what you need to watch.
- Turn the azimuth adjuster to obtain a level image.



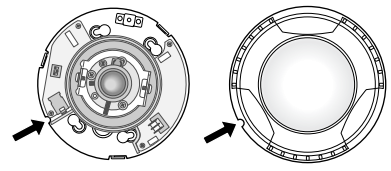
3. Zoom
- Unlock the zoom lever.
- Move the lever to adjust the zoom.
- Lock the lever.

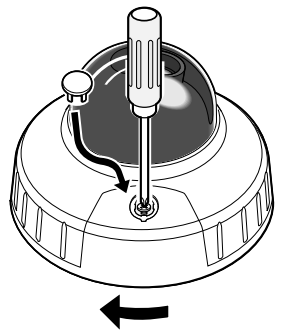
4. Focus
- Unlock the focus lever.
- Move the lever to adjust the focus.
- Lock the lever.



5. Assemble the camera in the opposite order of "Disassembly of the camera" described earlier.
- Attach the inner dome to the camera.
- Attach the panel cover to the camera so that the two position marks overlap.
- Fasten the panel screw.

6. Fill the screw hole with the supplied rubber cap.





CONNECTIONS

■ Video Output Connection

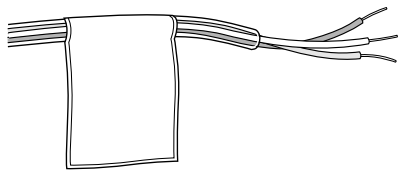
Connect the video output connector to the monitor or other system device with the procured coaxial cable. The maximum extensible length is shown in the table.

Type of coaxial cable		RG-59/U (3C-2V)	RG-6/U (5C-2V)	RG-11/U (7C-2V)	RG-15/U (10C-2V)
Recommended maximum cable length	(m)	250	500	600	800
	(ft)	825	1 650	1 980	2 640

■ Power Connection

Connect the power source to the 3-wire pigtail sticking out from the camera, using the procured power cable.

● Wire Colors & Functions



Wire Color	24 V AC	12 V DC
Black	24 V AC (L)	Positive
White	24 V AC (N)	Negative
Green/Yellow	Ground	Not Used

Caution:
- Be sure to connect the GND (grounding) lead of the camera and grounding terminal of the power supply when using a 24 V AC power source.

● Cable Length and Wire Gauge

24 V AC

The recommended cable length and thickness are shown in the table for reference. The voltage supplied to the power terminals of the camera should be within 19.5 V AC and 28 V AC.

Recommended wire gauge for 24 V AC line.

Copper wire size (AWG)		#24 (0.22 mm²)	#22 (0.33 mm²)	#20 (0.52 mm²)	#18 (0.83 mm²)
Length of Cable (Approx.)	(m)	95	150	255	425
	(ft)	314	495	842	1 403

12 V DC

Use the formula below to calculate the power cable and power supply. The voltage supplied to the power terminals of the camera should be within 10.5 V DC and 16 V DC.

Resistance of copper wire [at 20 °C (68 °F)]

Copper wire size (AWG)	#24 (0.22 mm²)	#22 (0.33 mm²)	#20 (0.52 mm²)	#18 (0.83 mm²)
Resistance Ω/m	0.078	0.050	0.03	0.018
Resistance Ω/ft	0.026	0.017	0.010	0.006

$10.5\ V\ DC \leq V_A - 2(R \times I \times L) \leq 16\ V\ DC$

L : Cable length (m)
R : Resistance of copper wire (Ω/m)
V_A : DC output voltage of power supply unit
I : DC current consumption (A). See specifications.

SPECIFICATIONS

Pick-up device:	768 (H) x 492 (V) pixels, interline transfer CCD
Scanning area:	3.6 (H) x 2.7 (V) mm (equivalent to scanning area of 1/4" pick-up tube)
Synchronization:	Internal, Line-lock (24 V AC only) or multiplexed vertical drive (VD2), selectable
Scanning system:	2 : 1 interlace
Scanning:	525 lines / 60 fields / 30 frames
Horizontal:	15.734 kHz
Vertical:	59.94 Hz
Horizontal resolution:	480 lines
Video output:	1.0 V[p-p] NTSC composite 75 Ω
Automatic Gain Control (AGC):	+18 dB
Automatic Tracing White Balance (ATW):	ON only
Signal-to-noise ratio:	50 dB (equivalent to AGC Off, weight On)
Minimum illumination:	2.0 lx (0.2 foot-candle) at F1.4 (WIDE)
Back Light Compensation (BLC):	On or Off
Detail:	Sharp or Soft, selectable
Lens:	2x variable focal lens
Focal length:	f=2.8 - 6.0 mm
F number:	F1.4 - 1.8, close
Panning range:	±100°
Tilting range:	±75°
Azimuth range:	±100°
Ambient operating temperature:	–10 °C to +50 °C (14 °F to 122 °F)
Ambient operating humidity:	Less than 90 %
Power source and power consumption:	12 V DC, 235 mA 24 V AC 60 Hz, 2.8 W
Dimensions:	ø135 mm x 90 mm (H) ø 5-5/16" x 3-9/16" (H)
Weights:	0.46 kg (1.01 lbs.)

Weights and dimensions indicated are approximate.
Specifications are subject to change without notice.

STANDARD ACCESSORIES

Operating Instructions (this book) ..... 1 pc

The following is for installation.
Rubber cap ..... 1 pc

Panasonic Digital Communications & Security Company
Unit of Matsushita Electric Corporation of America
Security Systems Group
www.panasonic.com/cctv
Executive Office: One Panasonic Way 3E-7, Secaucus, New Jersey 07094
Zone Office
Eastern: One Panasonic Way, Secaucus, NJ 07094 (201) 348-7303
Central: 1707 N.Randal Road, Elgin, IL 60123 (847) 468-5205
Western: 6550 Katella Ave., Cypress, CA 90630 (714) 373-7840

PANASONIC CANADA INC.
5770 Ambler Drive, Mississauga,
Ontario, L4W 2T3 Canada (905)624-5010
PANASONIC SALES COMPANY
DIVISION OF MATSUSHITA ELECTRIC OF PUERTO RICO INC.
San Gabriel Industrial Park 65th Infantry Ave. KM. 9.5 Carolina,
P.R. 00985 (809)750-4300