

# JVC

**For Customer Use:**  
Enter below the Serial No. which is located on the body.  
Retain this information for future reference.

Model No. \_\_\_\_\_  
Serial No. \_\_\_\_\_

## TK-C920/TK-C921

### (A)

These instructions are for TK-C920U, TK-C920E and TK-C921EG.  
These are general IMPORTANT SAFEGUARDS and certain items may not apply to all appliances.

### IMPORTANT SAFEGUARDS

1. Read all of these instructions.
2. Save these instructions for later use.
3. All warnings on the product and in the operating instructions should be adhered to.
4. Unplug this appliance system from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
5. Do not use attachments not recommended by the appliance manufacturer as they may cause hazards.
6. Do not use this appliance near water - for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.
7. Do not place this appliance on an unstable cart, stand, or table. The appliance may fall, causing serious injury to a child or adult, and serious damage to the appliance may fall, causing serious injury to a child or adult, and serious damage to the appliance. Use only with a cart or stand recommended by the manufacturer, or sold with the appliance. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
8. Slots and openings in the cabinet and the back or bottom are provided for ventilation, and to insure reliable operation of the appliance and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the appliance on a bed, sofa, rug, or other similar surface. This appliance should never be placed near or over a radiator or heat register. This appliance should not be placed in a built-in installation such as a bookcase unless proper ventilation is provided.
9. This appliance should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company. For appliance designed to operate from battery power, refer to the operating instructions.
10. This appliance system is equipped with a 3-wire grounding type plug (a plug having a third (grounding) pin). This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding plug.
11. For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.
12. Do not allow anything to rest on the power cord. Do not locate this appliance where the cord will be abused by persons walking on it.
13. Follow all warnings and instructions marked on the appliance.
14. Do not overload wall outlets and extension cords as this can result in fire or electric shock.
15. Never push objects of any kind into his appliance through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the appliance.
16. Do not attempt to service this appliance yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
17. Unplug his appliance from the wall outlet and refer servicing to qualified service personnel under following conditions:
  - a. When the power cord or plug is damaged or frayed.
  - b. If liquid has been spilled into the appliance.
  - c. If the appliance has been exposed to rain or water.
  - d. If the appliance does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the appliance to normal operation.
  - e. If the appliance has been dropped or the cabinet has been damaged.
  - f. When the appliance exhibits a distinct change in performance - this indicates a need for service.
18. When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
19. Upon completion of any service or repairs to this appliance, ask the service technician to perform routine safety checks to determine that the appliance is in safe operating condition.



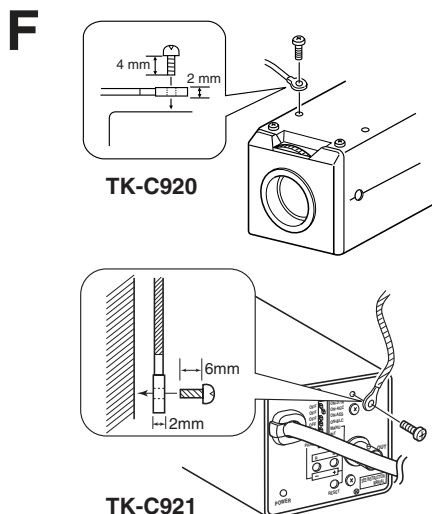
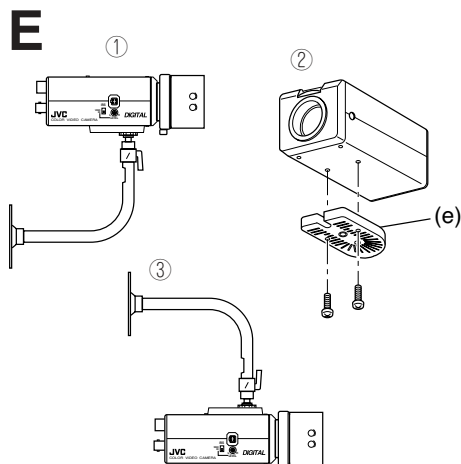
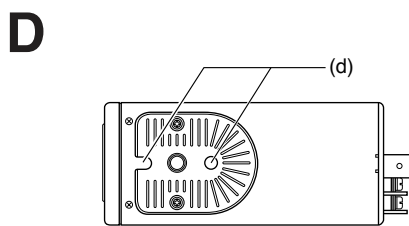
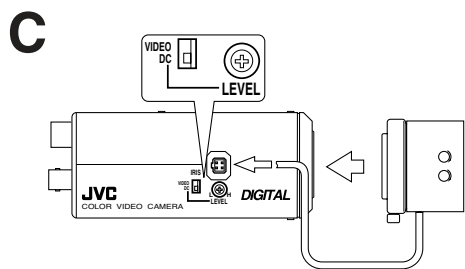
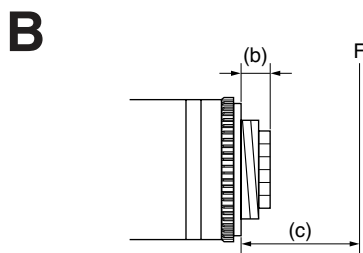
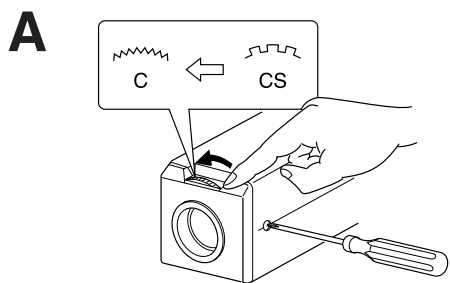
#### For USA and CANADA

**CAUTION**  
RISK OF ELECTRIC SHOCK  
DO NOT OPEN

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended 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.

**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.**

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.



## COLOR VIDEO CAMERA

## Instructions

Thank you for purchasing the JVC color video camera. To obtain the best results from your new camera, read these instructions carefully before use; retain the manual for future reference.

**WARNING:**  
**TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.**

**Information for USA**  
This device complies with Part 15 of the FCC Rules. Changes or modifications not approved by JVC could void the user's authority to operate the equipment.

**INFORMATION (FOR CANADA) RENSEIGNEMENT (POUR LE CANADA)**  
This Class [B] digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe [B] est conforme à la norme NMB-003 du Canada.

Due to design modification, data given in this instruction book are subject to possible change without prior notice.

### PRECAUTIONS

- Picture may not appear correctly if white-spot correction is performed incorrectly. Follow the steps listed in the instructions. (Reference: White-spot correction → I) Do not perform this operation when there are no white spots.
- If the AGC switch is turned on, the sensitivity increases automatically in dark places. It is not a failure when the image looks grainy.
- If the D/N switch is turned on, the mode changes automatically to black and white in dark places. As the sensitivity increases, the image may look grainy and white spots may appear. When changing modes, bright portions of image may be emphasized but this is not a failure of the camera.
- If a zoom lens is used, check the back focus before mounting the camera. This also applies to lens ALC and LEVEL. (See the instructions on lenses for details.)
- If a high-intensity object (such as a lamp) is shot, the image on the screen may have vertical lines (smear) or blur (blooming) at its periphery (especially in AES mode). This is a characteristic of the CCD, and is not a defect.
- If an EE lens is used, set the automatic electronic shutter switch (AES) to OFF. If set to ON, flickering may occur. If a manual iris lens is used, set the AES to ON.
- When used in hot places, vertical lines may appear on the screen of this camera. This is a characteristic of the CCD and not a failure of the camera.
- The automatic tracking system may not function properly when shooting with non-standard lighting or lighting with a color temperature which exceeds the capability of the camera. In such a case, set to the "MANU" position.
- If the camera subject is a single solid color (other than white), the auto white circuit will normally attempt to change this color to white. In the case of this camera, if it cannot make a correct prediction, the previous white balance setting will be maintained until the subject colors become more varied.
- Noise may appear in the picture and/or the colors may be incorrect if the camera is used near a radio or television transmitting antenna, in places where strong electromagnetic waves are generated by transformers, motors, etc., or near devices emitting radio waves, such as transceivers or cellular phones.
- To save energy, be sure to turn off the system when not in use.

### MOUNTING A LENS

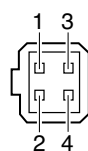
1. Before mounting a lens, check whether it is a C-mount or CS-mount lens. If a C-Mount lens is used, loosen the back-focus locking screw (M 2.6) using a Phillips head screwdriver, turn the back-focus adjusting ring with your fingers or the screwdriver and change the mounting method. → A
2. Dimension (b) of the lens shown in the illustration must be as shown in the table below. If (b) exceeds the value in the table, it may damage the inside of the camera or correct mounting may be impossible; never use such lenses. Do not attach the C-mount lens when using a CS-mount. → B

Lens	Flange back (c)	Dimension (b)
C mount lens	17.526mm	10mm or less
CS mount lens	12.5mm	5.5mm or less

The F mark indicates a focal point.

3. Mount the lens on the camera by turning the lens clockwise. Adjust its position. → C
4. When using an auto-iris lens with an EE amplifier, turn the switch to the "VIDEO" side. When no EE amplifier is equipped, turn the switch to the "DC" side.
5. If the lens has an auto-iris mechanism, Connect the lens cable after checking the pin arrangement.

Pin No.	Lens	DC IRIS (does not contain EE amplifier)	VIDEO IRIS (contain EE amplifier)
1		Brake ⊖	9.5V [Max. 50 mA]
2		Brake ⊕	NC
3		Drive ⊕	VIDEO
4		Drive ⊖	GND

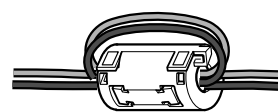


\* 4 pin plug, service part number: SCV2859-001  
For details, please consult your JVC dealer.

### CONNECTION

1. When the camera is powered, the POWER LED lights up.

CAMERA type	power
TK-C920U	AC 24V ~ (class 2 only) or DC 12V ---
TK-C920E	AC 24V ~ (isolated power only) or DC12V ---
TK-C921EG	AC 220V to 240V ~ (The power cable is 2500mm in length.)



#### U/E only: Installing the ferrite core

To retain electromagnetic compatibility, use the ferrite core provided when connecting to the power source. \* Install the ferrite cores within 50 mm of the camera-side connectors.

- Never connect the DC 12V and AC 24V power inputs simultaneously.
- Be sure to observe the correct +, - polarity when connecting a DC 12V power input.

**EG only:** When you use this camera, the socket - outlet must be installed near the equipment to make disconnect on easily.

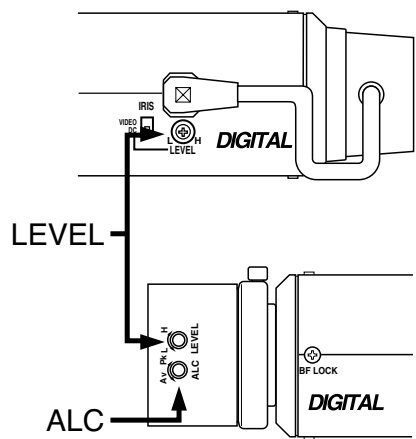
2. Connect to a video monitor, etc. (75Ω)
3. To install the camera onto a tripod, fixing unit, or pan/tilt unit, use the fall-preventive socket (d) shown in the illustration. Special precautions must be taken for mounting the camera on a wall or a ceiling. We are not liable for any damage caused by improper installation. → D

4. Installation of camera → E
  - Mounting from the bottom  
This camera is originally designed to be mounted from the bottom, as shown ①. The hole is standard photographic pan-head screw size (1/4-20 UNC). Example the Fixing unit or Pan/Tilt unit.
  - Mounting from the top  
Remove the CAMERA MOUNTING BRACKET (e) from the bottom of the camera by removing two fixing screws as shown ②. Attach the CAMERA MOUNTING BRACKET (e) to the top, then mount the camera on the Fixing Unit as shown ③. Make sure that two original screws are used when mounting the CAMERA MOUNTING BRACKET (e); longer type screws (over 5mm) may damage inner components. (This camera is used indoor and under similar conditions.)

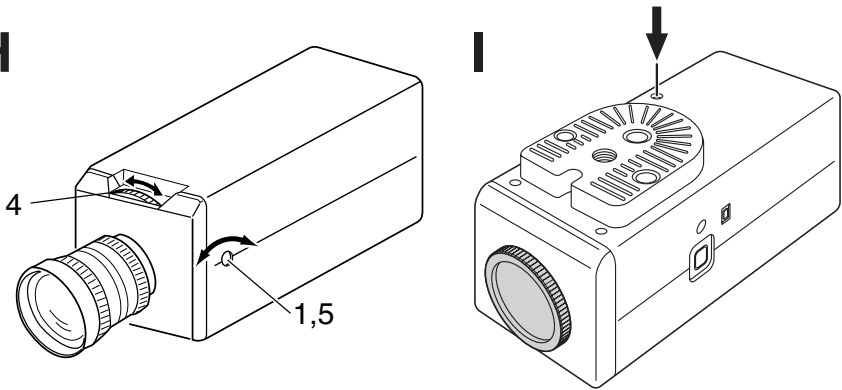
#### Fall Prevention

- Exercise maximum caution when installing the unit to the wall or ceiling. You should not engage in the installation work yourself. Ask a professional to do the job, since the fall of the unit can result in injuries and accidents. → F
- When installing the unit on a fixer, turn table, etc., make sure to install it firmly using a rotation-preventing hole provided to prevent fall.
- As a failsafe against falling, attach the unit by chain, wire cable or other safety restraint to an appropriate anchor point. Attach the fall prevention wire using the black screw on the upper surface of the camera as shown in figure F. When changing the side at which CAMERA MOUNTING BRACKET is installed, be sure to change the attachment side of the fall prevention wire also to the appropriate side.
- Specified screw (TK-C920: M2.6 × 4 mm, TK-C921: M3 × 6 mm)  
Never use any screw longer than the specified length as the inside can be damaged.

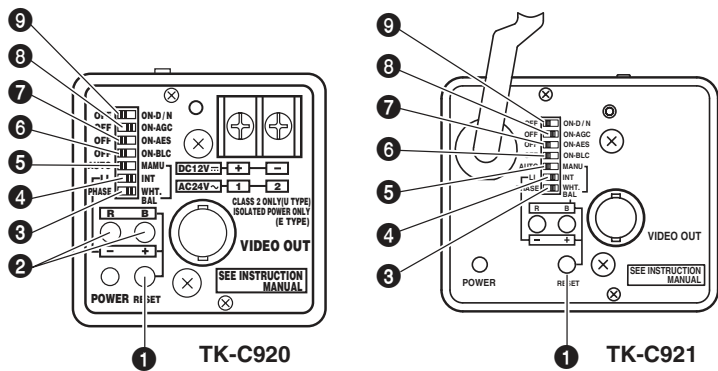
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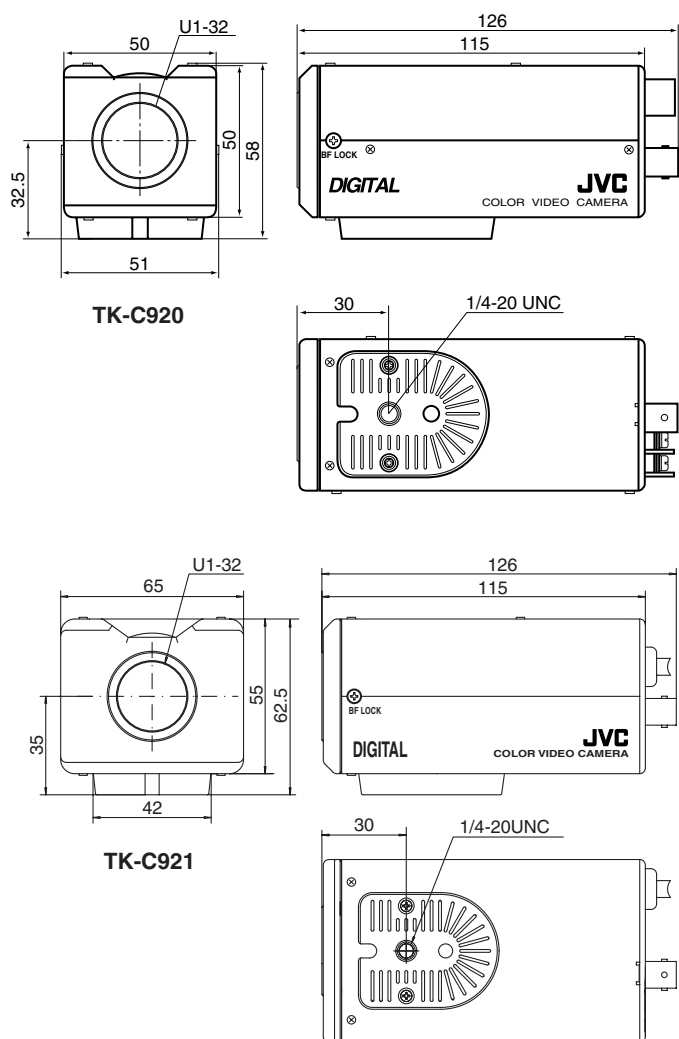
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## LENS ADJUSTMENT

### Video adjust

Connect the camera according to the connection method, turn it on, display an image on the monitor, and check the image. The camera has been factory-adjusted to the best position, but it may need to be adjusted according to the object conditions or combination of lenses. If the image is unnatural, adjust it as follows:

#### • LEVEL adjustment

Monitor screen	LEVEL turning direction
Too bright	Counterclockwise (Toward L)
Too dark	Clockwise (Toward H)

#### • ALC adjustment

Monitor screen	ALC turning direction
Part (high-intensity part) of the screen halates.	Clockwise (Toward Pk)
Other part of screen (except high-intensity part) darkens.	Counterclockwise (Toward Av)

\* If the sensitivity adjustment LEVEL is turned excessively to L, the sensitivity increases because of the AGC function of the camera, and the image looks grainy.

\* If the video iris lens is set to too low a level, malfunction such as the hunting phenomenon, in which the iris opens or closes unintentionally, may occur.

In such a case, first set LEVEL potentiometer on the lens to the H (iris open) position then adjust it to the optimum level.

### Back focus adjustment

The back focus has been factory-adjusted to the best point for CS-mount lens, but it may need to be re-adjusted if the mount is changed to the C-mount or if a different lens is used. If required, adjust it as follows:

If the focus can not be adjusted correctly by rotating the lens focus ring, adjust the back focus as follows.

1. Loosen the back focus locking screw by turning it counterclockwise (↺) with a screwdriver.
2. Shoot a pattern closely.
3. Turn the lens focus ring to ∞.
4. Turn the back focus adjustment ring to focus at the best point.
5. Tighten the back focus locking screw by turning it clockwise (↻).

\* When using a zoom lens, adjust the focus for telephoto wide-angle and maximum wide-angle.

## SETTING SWITCH

### White-spot correction

As a general characteristic unique to CCD, white spots may appear on the screen. Take the following steps in order to reduce the number of white spots.

1. Attach the lens cap, switch on the camera power supply and wait for 30 minutes.
2. Remove the sticker and press and hold the switch for more than 2 seconds using a thin rod.
- \* Do not use a metal rod.

\* The white-spot correction feature of this unit does not guarantee the correction of all white spots.

### Line Lock (U type : 60Hz power region only E/EG type : 50Hz power region only)

To set the camera in LL mode for synchronization with the power supply frequency, take the following steps:

1. Turn switch 4 to "LL";
2. Turn switch 3 to "PHASE";
3. Press the + or - button 2 to make the phase variable.  
Adjust with the button 2 so that the vertical phase of the camera matches the vertical phase of another camera (or system) with a multi-channel oscilloscope.  
For initial setting, press RESET button 1.

### White Balance

White balance can be adjusted within the scope of 2300K to 10000K color temperature. When switch 5 is at "AUTO", the white balance is adjusted automatically.

\* When Hunting Auto Tracking White Balance symptoms occur when using an Auto iris lens with switch positions of AGC is on, AES is on, Int-lock with AC24V Power source, turn switch 4 to "LL".

\* When Hunting Auto Tracking White Balance symptoms occur when using a Manual iris lens with switch positions of AGC is on, AES is on, Int-lock with DC12V Power source, please adjust or close iris ring on the lens.

For manual adjustment, take the following steps:

1. Turn switch 5 to "MANUAL";
2. Turn switch 3 to "WHT.BAL";
3. Pressing "R" button 2 increases redness while pressing "B" increases blueness. For initial setting, press RESET button 1.

There are cases sometimes when the white balance cannot be adjusted manually for artificial lights such as fluorescent lights, etc.

### BLC (Back Light Compensation)

The switch 6 improves an image that is darkened because of backlighting. Set this switch to ON for backlight subjects.

### AES (Automatic Electronic Shutter)

Turning this switch 7 "ON" when a lens with a manual iris diaphragm is used enables the automatic adjustment of image brightness. In this case the shutter speed changes according to the brightness of the subject.

\* Hunting may occur at a certain object brightness due to the mechanism of the AES circuit, but this is not a fault.

### AGC (Automatic Gain Control)

The switch 8 automatically increases the camera's sensitivity when the level of ambient light drops.

ON: AGC is activated.  
OFF: AGC is not activated.

### D/N (Easy Day/Night)

Turn the 9 switch on to shoot a subject with continually changing brightness (day/night). The camera uses color mode when the subject is bright, and black and white mode when it is dark. In this mode, AGC is always active regardless of the setting.

## SPECIFICATIONS

<b>Image pickup device</b>	: 1/3-inch interline-transfer CCD
<b>Number of effective pixels</b>	: TK-C920U : 768 (H) × 494 (V) TK-C920E/TK-C921EG : 752 (H) × 582 (V)
<b>Synchronization method</b>	: Internal Line lock (U type 60 Hz, E/EG type 50 Hz regions only)
<b>Scanning frequency</b>	: U type : (H) 15.734 kHz (V) 59.94 Hz E/EG type : (H) 15.625 kHz (V) 50 Hz
<b>Resolution</b>	: 535 TV line (H) Typ.
<b>Video output</b>	: Composite video signal 1 V (p-p), 75Ω, unbalanced
<b>Video S/N ratio</b>	: 50 dB (AGC OFF)
<b>Minimum required illumination</b>	: Color mode : 0.7 lx (Typ.) (F1.2 AGC ON, 25%) Black and white mode : 0.48 lx (Typ.) (F1.2 AGC ON, 25%)
<b>Lens mount</b>	: C/CS mount
<b>Power supply and power consumption</b>	: TK-C920U : AC24 V ~ 60 Hz DC12 V ~ 4.7 W TK-C920E : AC24 V ~ 50 Hz/60 Hz DC12 V ~ 380 mA TK-C921EG : AC220 V-240 V ~ 50 Hz/60 Hz, 57 mA
<b>Ambient temperature</b>	: -10°C to 50°C (14°F to 122°F) (operation) 0°C to 40°C (32°F to 104°F) (recommended)
<b>Mass</b>	: TK-C920: 370 g (0.82 lbs) TK-C921: 710 g
<b>DIMENSIONS (Unit: mm)</b>	

(Design and specifications are subject to change without notice.)

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