

TOSHIBA

INSTRUCTION MANUAL

CCD COLOR CAMERA

IK-M48PK

For Customer Use

Enter below the Serial No. which is located on the bottom of the cabinet. Retain this information for future reference.

Model No. IK-M48PK

Serial No.

TABLE OF CONTENTS

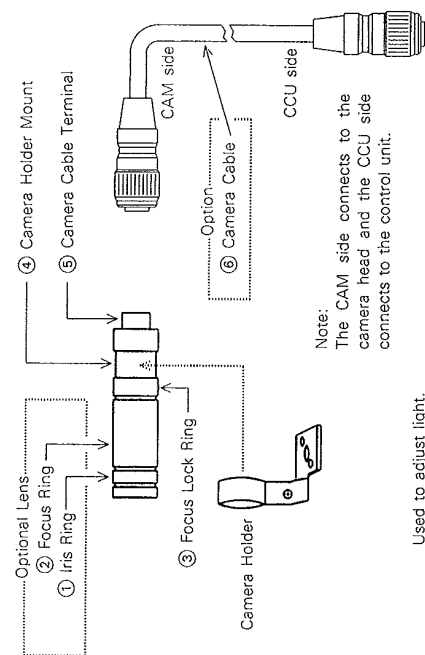
| | |
|---|------------|
| 1. Camera Parts and Functions | 1 |
| 2. Connection | 3 |
| 3. Operation | 3 |
| 4. Securing the Camera Control Unit | 4 |
| 5. Electronic Shutter | 4 |
| 6. White Balance | 4 |
| 7. AGC (Auto Gain Control) | 5 |
| 8. External Synchronization | 5 |
| 8. Output | 6 |
| 10. DC Power Connection | 7 |
| 11. Notes on Use and Installation | 8 |
| 12. Troubleshooting | 8 |
| 13. Configuration | 9 |
| 14. Options | 9 |
| 15. Specifications | 10 |
| 16. Exterior View | back cover |

CAUTION

- Do not use any power supply other than specified.

1. CAMERA PARTS AND FUNCTIONS

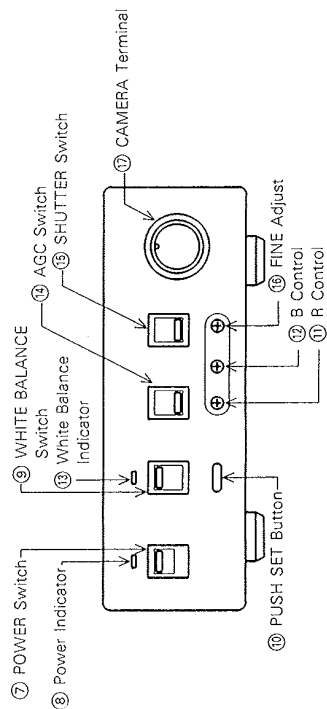
Camera Head



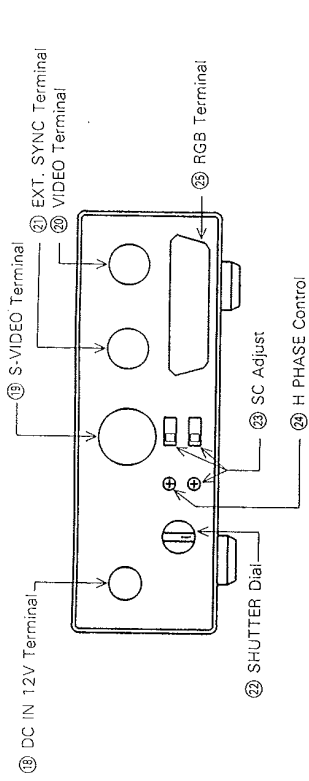
- ① Iris Ring
Used to adjust light.
- ② Focus Ring
Used to focus. Turning this ring as far as possible in the N direction to enable close-up shots at the minimum distance.
- ③ Focus Lock Ring
Used to lock the focus ring.¹⁾
- ④ Camera Holder Mount
Used to attach the camera holder and attach the holder to the tripod.
- ⑤ Camera Cable Terminal
Connects to camera cable.
- ⑥ Camera Cable
Connects the camera head to the camera control unit.

Camera Control Unit

Front view



Rear view



⑦ POWER Switch

Turns power to the camera control unit on and off.

⑧ Power Indicator

Lights when the power is on.

⑨ WHITE BALANCE Switch

Used to adjust white balance. Select auto, push-set or manual.

⑩ PUSH SET Button

To use the push-set white balance, set the WHITE BALANCE Switch ⑨ to the PUSH SET side, and press the PUSH SET Button. When this button is pushed, white balance will be adjusted.

⑪ R Control

Used when the white balance is to be adjusted manually. Turn on the WHITE BALANCE switch to MANU and adjust the red (R) level.

⑫ B Control

Used as in ⑪, adjust the blue (B) level.

⑬ White Balance Indicator

Lights when white balance is taken in the PUSH SET mode. Otherwise it blinks. This indicator lights for the automatic mode and goes off for the manual mode.

⑭ AGC Switch

Turn off this switch when sufficient light is available. Turn on this switch when light is insufficient. Turn this switch to SENS UP if the sensitivity must be further increased.

⑮ SHUTTER Switch

Select AUTO, MANU or OFF (1/50 sec.) When MANU is selected, use shutter dial ⑳.

⑯ FINE Adjust

Establishes the image level when the camera is used in AUTO shutter mode.

⑰ CAMERA Terminal

Connects to camera cable.

⑱ DC IN 12V Terminal

Connects the DC output from the DC Power Supply.

⑲ S-VIDEO Terminal

Outputs a YC (luminance/color) separate video signal. Can be connected to devices having an S-VIDEO input terminal.

⑳ VIDEO Terminal

Used to connect to a monitor or VTR. (BNC connector)

㉑ EXT. SYNC Terminal

Used to input external synchronizing signal. (BNC connector)

㉒ SHUTTER Dial

Sets a shutter speed. 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000 or 1/10000. This dial is activated when SHUTTER Switch ⑮ is MANU position.

㉓ SC Adjust

Matches the hues of the camera's video signal when used with external synchronization.

㉔ H PHASE Control

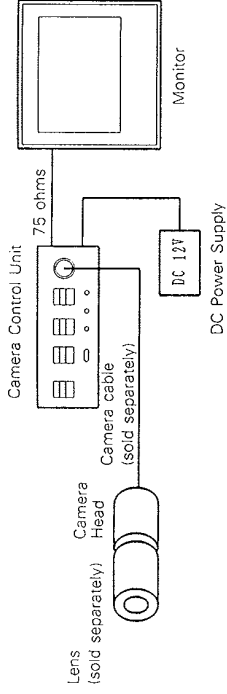
Adjusts the horizontal phase of this Camera's video signal with the external synchronizing signal when used with external synchronization.

㉕ RGB Terminal

Outputs for RGB signal.

2. CONNECTION

<Example of standard connection>



Notes:

- Be sure to set the **POWER switch of the camera control unit to OFF** before connecting or disconnecting the camera cable. **Otherwise the camera head may be damaged.**
- When connecting, make sure to turn off the camera and other equipment to be connected.

1. Remove the protective cover of the camera head and attach the lens (sold separately).
2. Connect the camera cable to the terminal of the camera head and the terminal of the camera control unit.
3. Connect the VIDEO Output terminal of the camera control unit and the video input terminal of the monitor by using a video cable.
4. Connect the DC power supply to the DC IN 12V terminal of the camera control unit.

Requirement for a DC Power Supply

This camera has to be connected to a DC Power Supply specified as follows:

| | |
|-----------|---|
| Voltage | : 11.5V DC to 12.5V DC |
| Current | : 800mA or more |
| Ripple | : less than 50mVp-p |
| Connector | : Type HR10A-7P-4S of HIROSE ELECTRIC CO., LTD. Pin assignment: Pins 1, 2 ⊕ Pins 3, 4 ⊖ |

IMPORTANT

Do not connect/disconnect the Camera Cable while power is ON.
Otherwise, the camera head and/or camera control unit may be damaged.

3. OPERATION

Turn on the POWER switch of the camera control unit and adjust the lens iris or focus while watching the monitor to get the best image.

4. SECURING THE CAMERA CONTROL UNIT

The camera control unit can be fastened using M3 screws. Remove the four rubber feet on the base and fasten with M3 screws. Take care not to use screws that will extend more than 3 mm into the control unit. Otherwise, it may cause a short circuit. For the positions of the M3 screw holes, refer to the exterior view of the camera control unit.

5. ELECTRONIC SHUTTER

Select AUTO, MANU or OFF by the SHUTTER Switch of the camera control unit.

- **AUTO (used with the FINE adjust)**
During AUTO, the camera automatically controls exposure time within the range of 1/50 to 1/50000 (sec.), so that the image level established with the FINE Adjust can be maintained despite a change in the light quantity.

- **MANU**
By setting to MANU, and switching the rear SHUTTER Dial, any of the seven speeds (1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 sec.) can be selected.

Note:
The faster the shutter speed the less sensitivity. Also, flicker may increase under electric discharge lamps such as fluorescent lighting.

- **OFF**
The standard shutter speed (1/50 sec.) is in effect.

6. WHITE BALANCE

White balance has to be adjusted to obtain a picture with the proper tones. With this camera, white balance can be selected by automatic, push-set and manual modes. In the automatic mode, the camera adjusts white balance automatically. Most shooting can be done in the automatic mode. By switching the WHITE BALANCE switch on the front of the camera control unit, the push-set mode or manual mode can be selected.

| | AUTO | PUSH SET | MANU |
|-------------|---|---|---|
| Description | The camera automatically measures the color temperature and checks white balance. | While the camera is shooting a white object, white balance can be adjusted by pushing the PUSH SET button on the camera control unit for a few seconds. | Adjust the red (R) and blue (B) levels while the camera is shooting a white object. |
| Features | Variety of illumination conditions are automatically traced. | More precise than the AUTO mode. After the power is turned off, this mode remains in effect for approx. 2 hours. | The precision is higher than the AUTO or PUSH SET mode. |
| Remarks | Under adverse illumination conditions, white balance cannot be controlled. | When the source of light is changed or the white balance indicator blinks, reset it. | Adjustment should be made while the image is being monitored. |

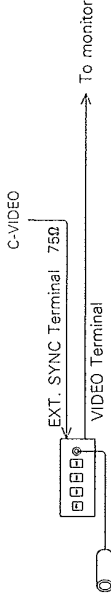
7. AGC (Auto Gain Control)

The AGC Switch is usually turned OFF. Turn the switch ON when light is insufficient, and turn it to SENS UP when light is still insufficient. The sensitivity is doubled by turning the switch ON, and is doubled again by turning it to SENS UP. However, increasing the sensitivity also increases noise. Increase light as much as possible to obtain a fine image.

8. EXTERNAL SYNCHRONIZATION

To externally synchronize this camera, input a composite video (C-VIDEO) signal to the EXT. SYNC Terminal on the rear of the camera control unit. When an external synchronizing signal is input, the synchronization is automatically switched to external synchronization.

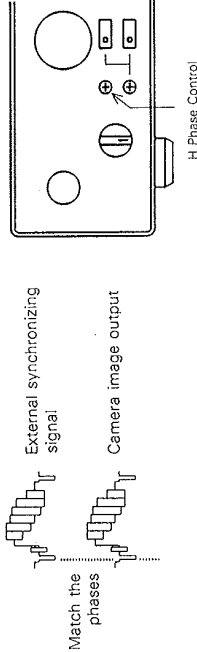
- External synchronizing signal input conditions
C-VIDEO (SYNC) $0.3 \pm 0.1V$
(75 ohms unbalanced) (BURST) $0.3 \pm 0.1V$
- External synchronization pull-in frequency range
 ± 50 ppm for the PAL standard frequency
(horizontal frequency: 15623.4 Hz to 15625.8 Hz)



When two cameras or more are used simultaneously through external synchronization, adjust them so that switching from one camera to another does not make any difference in picture tones. Adjust the H (horizontal) phase and the SC (sub carrier) phase.

Horizontal (H) phase matching

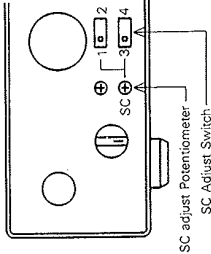
Monitor the waveforms of the external synchronizing signal and the video signal output of the camera using a dual-trace oscilloscope, and turn the H Phase Control to match H phases.



Adjusting the SC (Sub Carrier) phase

For use with external synchronization, the tones of the video signal output by this camera can be matched. This is done by switching the SC Adjust Switch, and then fine tuning with the SC Adjust Potentiometer. Higher precision can be obtained by using a vector scope for phase matching.

| SC phase | 0° | 90° | 180° | 270° |
|------------------|-------------------|---------------------|-------------------|---------------------|
| Switch positions | 1 0 2 1 0 2 1 0 2 | 2 1 0 2 1 0 2 1 0 2 | 3 0 4 3 0 4 3 0 4 | 4 3 0 4 3 0 4 3 0 4 |

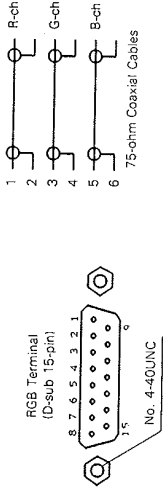


9. OUTPUT

| Terminal | Output | Remarks |
|----------|--|------------------------------|
| VIDEO | Video (VBS) 1.0 Vp-p | 75-ohm BNC terminal |
| S-VIDEO | Y: 1.0 Vp-p C: 0.3 Vp-p | 75-ohm 4-pin S terminal |
| RGB | 0.7 Vp-p / 1.0 Vp-p (with sync 0.3 Vp-p) | 75-ohm D-sub 15-pin terminal |

RGB

- Connection

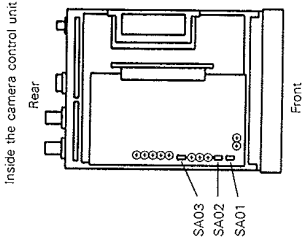


- Auxiliary function

| Auxiliary function | Control | Factory Preset |
|--------------------|-------------|----------------|
| DETAIL | on/off SA03 | on |
| GAMMA | 1/0.45 SA02 | 0.45 |
| SYNC | on/off SA01 | on |

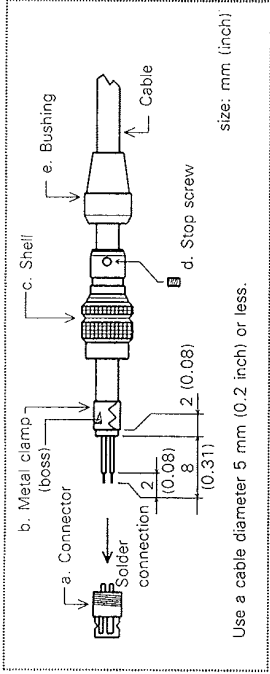
Caution:
Do not touch internal parts other than specified. Otherwise, the camera function or performance may be degraded.

- Color frequency band
1MHz — 3dB



10. DC POWER CONNECTION

Use the supplied connector HR10A-7P-4S (of HIROSE). The connector consists of the following five parts a through e.



Procedures

1. Insert the cable into the bushing and the shell, as shown. (To avoid losing the stop screw, remove it beforehand.)
2. Solder the cable to the connector. (Check for continuity to avoid short circuit between terminals.)

Pin assignment: Pins 1, 2 ⊕ Pins 3, 4 ⊖

3. Secure the metal clamp by clinching. Use the application tool HR10A-TC-02 of HIROSE. (Apply with 5.3 side.)
4. Screw the shell onto the connector until tight. (Make sure not to turn the connector and the cable. Otherwise, the cable will be twisted.)
5. Tighten the stop screw so that it fits securely into the boss. Use a 0.05 inch (1.27 mm) hexagon wrench.
6. Slide the bushing up until it fits securely against the shell, covering the connections.

11. NOTES ON USE AND INSTALLATION

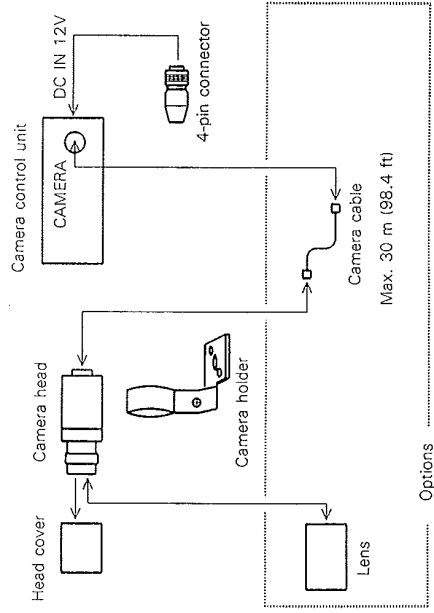
- **Treat the camera cable with care.** Otherwise, the cable can be damaged.
- **Do not aim the camera at the sun**
Do not aim the camera at the sun or point it at the sun even if you are not shooting.
- **Do not shoot intense light**
Framing intense light such as a spotlight may cause a bloom or smear. A vertical stripe may appear on the screen. However, this is not a malfunction.
- **Treat the camera with care**
Do not drop the camera or subject it to strong shock or vibration. Otherwise, the camera may malfunction.
- **Never touch internal parts**
Do not touch the internal parts of the camera other than the parts specified. Otherwise, the camera may malfunction.
- **Do not splash water on the camera**
Install the camera where the camera can be kept dry. If the camera gets wet, turn off the power and contact your dealer.
- **Install the camera where no video noise appears**
If cables are wired near electric lighting wires or a TV set, noise may appear in images. In this event, relocate cables or reinstall equipment.
- **When you do not intend to use the camera for a long time**
Set the camera POWER switch to the OFF side and stop supplying power to the camera.
- **Check the ambient temperature and humidity**
Avoid using the camera where the temperature is hotter or colder than specified. Otherwise, the quality of images may deteriorate or internal parts may be affected. Special care is required to use the camera at high temperature and humidity.
- **Should you notice any trouble**
If any trouble occurs while you are using the camera, turn off the power and contact your dealer. If you continue to use the camera when there is something wrong with it, the trouble may worsen and an accident may occur.

12. TROUBLESHOOTING

| Condition | Check points |
|-----------------|--|
| No image | <ul style="list-style-type: none"> • Are the camera and connected equipments turned on? • Is the iris of the lens adjusted properly? • Are cables connected correctly? |
| Unnatural color | <ul style="list-style-type: none"> • Is the monitor adjusted correctly? • Was the white balance of the camera adjusted (when not switched to auto-adjustment)? • Is the lighting sufficient? • Was the SC phase adjusted (external synchronization)? |

13. CONFIGURATION

- | | |
|--|---|
| (1) Camera head (attached to head cover) | 1 |
| (2) Camera control unit | 1 |
| (3) Accessories | |
| (a) Camera holder | 1 |
| (b) 4-pin Connector (HR10A-7P-4S) | 1 |
| (c) Instruction manual | 1 |



14. OPTIONS

Lens

| Model | Focal length mm (in) |
|----------|----------------------|
| JK-L03M | 3 (0.12) |
| JK-L04M2 | 4 (0.16) |
| JK-L75M | 7.5 (0.3) |
| JK-L15M2 | 15 (0.6) |
| JK-L24M2 | 24 (0.94) |

Camera Cable

| Model | Length m (ft) | Diameter mm (in) |
|----------|---------------|------------------|
| EXC-401M | 1 (3.3) | 5.0 (0.2) |
| EXC-402M | 2 (6.5) | 5.0 (0.2) |
| EXC-403M | 3 (9.8) | 5.0 (0.2) |
| EXC-405M | 5 (16.4) | 5.0 (0.2) |
| EXC-410M | 10 (32.8) | 7.0 (0.28) |
| EXC-415M | 15 (49.2) | 7.0 (0.28) |
| EXC-420M | 20 (65.6) | 7.0 (0.28) |
| EXC-430M | 30 (98.4) | 7.0 (0.28) |

15. SPECIFICATIONS

| | | |
|------------------------------|--|---|
| Signaling system | PAL (Phase Alternation by Line) | |
| Power supply | 12±0.5V DC Input: HR10A-7R-4P (Applicable to HR10A-7P-4S) of HIROSE CO., LTD. or equivalence. Pins 1, 2: +, Pins 3, 4: - | |
| Power consumption | 5.8 W | |
| Image sensor | 1/2" CCD image sensor, effective pixels: 752 (H) x 582 (V) | |
| Image sensing area | 6.47 x 4.83 mm | |
| Scanning | 2:1 interlace scanning | |
| Scanning frequency | 15.625 kHz (H), 60 Hz (V) | |
| Synchronization | Internal/external synchronization (automatic switch) | |
| Resolution | Video/Y | 460 or more horizontal lines 420 or more vertical lines |
| | RGB | 400 or more horizontal lines 350 or more vertical lines (detail on) |
| Minimum subject illumination | 5 lux (F 1.6, 3000 K) | |
| S/N ratio | 48 dB or more | |
| Output | VBS 1.0 Vp-p (BNC pin), separate Y and C signals (S pin), and analog RGB (D-sub 15-pin) | |
| Output impedance | 75 ohms unbalanced | |
| External synchronizing | Input | VBS 1.0 Vp-p (BNC pin)/75 ohms unbalanced |
| | Adjust function | Subcarrier phase, horizontal phase |
| White balance | Automatic/push-set/manual | |
| AGC | SENS UP (+ 6 dB)/ON/OFF | |
| Electronic shutter | Automatic/manual/off | |
| | Automatic: 1/50 ~ 1/50000 sec. | |
| | Manual : 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 sec | |
| | Off : 1/50 sec. | |
| Camera cable (option) | Up to 30 m (98.4 ft) | |
| Utilization condition | Temperature: -10°C to +40°C (14°F to 104°F) | |
| | Humidity: less than 90% | |
| Weight | Camera head: 16 g (0.56 oz) | |
| | Camera control unit: 620 g (1.37 lb) | |

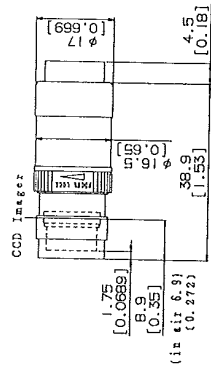
- Design and specifications may be changed without prior notice.

Note:

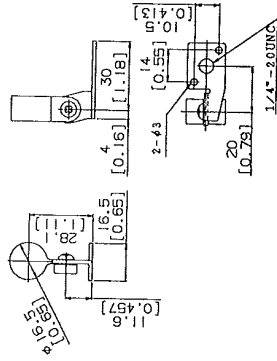
The camera head and the camera control unit must be used as a set. These parts cannot be used coupled with different model. (Matching numbers are provided on the camera head and the camera control unit.)

16. EXTERIOR VIEW

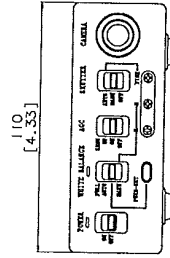
Camera Head



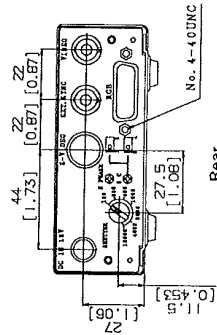
Camera Holder



Camera Control Unit

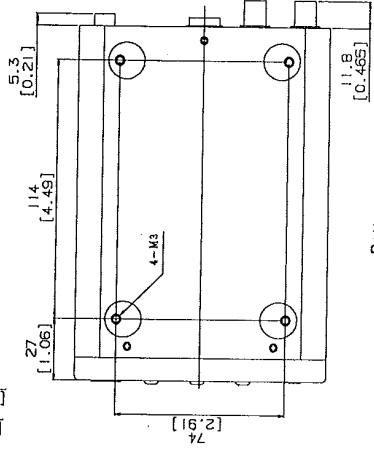


Front



Rear

Side



Bottom

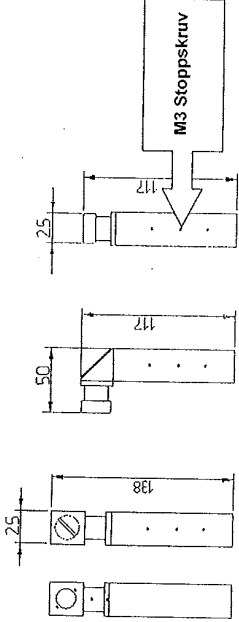
Dimensions: mm [inch]
φ: diameter

MANUFACTURED BY
TOSHIBA CORPORATION

| | |
|--|--|
| Kopplingsinstruktion för 15polig styringång: | Vid svetsning skall kontakten mellan stift 9 och höljet(jorden) i den 15poliga d-suben vara bruten. |
| Då svetsprocessen ej är igång skall anslutningen mellan stift 9 och höljet i den 15poliga d-suben vara sluten. | White Balance: Full Auto AGC: ON Shutter(fram): Manu Shutter(bak): 10 000 (Justera shutter ratten på baksida från 10000 ned till lämplig inställning.) |

| | |
|--|--|
| Inställningar på Weldcam svetskamera: | White Balance: Full Auto AGC: ON Shutter(fram): Manu Shutter(bak): 10 000 (Justera shutter ratten på baksida från 10000 ned till lämplig inställning.) |
| OBS! Koppla ej ifrån eller anslut aldrig kameran till kontroll enheten med spänningen tillkopplad. | |

För att justera fokus på kameran lossas M3 stoppskraven som sitter i något av de tre hålen på sidan av kamerahuset. Stoppskraven håller kamerahuvudet på plats i kamerahuset, och genom att flytta kamerahuvudet framåt eller bakåt kan fokuspunkten lätt ändras. Kameran är förinställd med fokus på ett avstånd av ca 10cm.



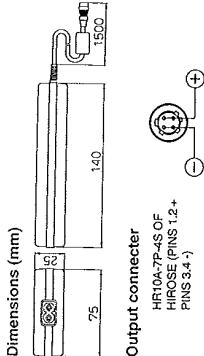
AC-E350P Instruction Manual

Thank you for purchasing the ELMO AC adaptor, AC-E350P. To avoid problems and obtain the best results, please read this instruction manual carefully before use.

Specifications

| | |
|------------------------|--|
| Input | : AC100 — 240V \wedge 50/60 Hz 0.55 A — 0.3 A |
| Output | : DC 12 V \pm 1.7 A |
| External dimensions | : 140 (W) x 25 (H) x 75 (D) mm (5.5 x 1 x 2.9 inch) |
| Weight | : 320 g (0.71 lb) |
| Utilizable temperature | : -10°C to +50°C (14°F to 122°F) |
| Utilizable humidity | : 90% or less |

- This unit is approved according to EN60950 (Class II DC power supply).
- This unit is a universal type for input AC100 to 240 V \wedge .
- This unit is not equipped with an AC cord.



| Applicable AC cord type name | Principal area | Supply voltage | Plug type |
|------------------------------|----------------|------------------|-----------|
| AC-E230 | Europe | 220-240 V \sim | |

Precautions

- To reduce the risk of electric shock, do not remove cover (or back).
- Do not disassemble or modify the unit.
- Do not apply shocks to the unit.
- Do not subject the unit to direct sunlight.
- Avoid using the unit in extremely hot or humid places.
- Avoid using the unit in places subject to vibrations.
- The socket outlet shall be installed near the unit and shall be easily accessible.

In case of abnormality

- In case of abnormality (fumes from the adaptor or malfunction), disconnect the power cord from the socket outlet and contact a shop from which you purchased the product.
- Specifications and appearance of the product may be changed without notice.