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EM-CCD Monochrome Camera

KP-E500 (R1)

Specifications

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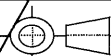
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—	Feb. 10. 07	(first edition)	<i>A. Fukushima</i>			
SYMBOL	DATE	DESCRIPTION	(DRAWN)	DESIGNED	CHECKED	APPROVED

MODEL	KP-E500			TOLERANCE	Prod. Code - Order No.	
DESIGNED	DATE	APPROVED	DATE	UNIT	TITLE	REV.
<i>A. Fukushima</i>	Feb. 10. 07	<i>K. Agorashi</i>	Feb. 13. 07			
CHECKED	DATE	STORED	DATE	SCALE	SPECIFICATIONS	SHEET
<i>A. Fukushima</i>	Feb. 10. 07	<i>H. Fujimura</i>	Feb. 14. 07			
Hitachi Kokusai Electric					DWG. NO	E400054862

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1. General

The KP-E500 is ultra high sensitivity color camera that installed the electron multiplication type CCD (EM-CCD) image sensor.

2. Principal features

1) Ultra high sensitivity

It has materialized ultra high sensitivity because it is doing multiply charge directly in the charge domain before conversion to voltage.

Image is not fuzzy like a picture picked up a moving objects and walking person at very dark condition.

2) New digital signal processor (DSP)

The clear picture of a high signal to noise ratio (S/N) is obtained by the new digital signal processor (DSP) adoption which has improved luminance signal processing, such as 5H enhancer processing.

3) Electronic shutter

The electronic shutter can be set in 7 steps from standard 1/60 second to 1/2000 second. Auto electronic shutter (AES) operates to 1/2000 second: Even with a fixed iris lens, the shutter speed responds to the amount of light to keep the signal output at optimum level.

4) Picture quality menus

A wide variety of modes and parameters can be selected from menus and adjusted by using rear panel key buttons.

5) Others.....

a) Video signal polarity (Selectable negative/positive)

b) Text display

c) Remote control (Via RS-232C)

3. Specifications

- | | | | |
|---|--|---|---|
| A | 1) Imaging device | : 1/2-inch progressive scan frame interline CCD
(with on-chip microlenses) | A |
| | Total number of pixels | : 680(H) x 500(V) | |
| | No. of effective pixels | : 658(H) x 489(V) | |
| | Scanning area | : 6.58(H) x 4.89(V) mm | |
| | Unit cell size | : 10.0(H) x 10.0(V) μ m (Square pixel) | |
| | 2) Scanning system | : 2:1 interlace scan | B |
| | 3) Frequency | Horizontal : 15.734 kHz | |
| | | Vertical : 59.94 Hz | |
| B | 4) Sync system | : Internal | |
| | 5) Video signal output | : Composite video : 1.0 Vp-p/75 Ω unbalanced | |
| | | Video : 0.7 Vp-p positive or negative
(negative picture) | |
| | | Sync : 0.3 Vp-p negative | |
| | | Connector : BNC type | C |
| | 6) Video signal processing | : Digital processing (input 10 bits) | |
| C | 7) S/N | : More than 50dB (AGC, enhancer and gamma off) | |
| | 8) Resolution (At center) | | |
| | Horizontal | : 480 TV lines | |
| | Vertical | : 350 TV lines | |
| | 9) Minimum illumination | : 0.00003 lx (F1.4, AGC ON, SENS UP OFF, 50IRE) | D |
| | 10) Sensitivity selection | : AGC OFF / ON (Factory setting is ON) | |
| | | Manual Gain Adjustable at AGC OFF | |
| D | | Limit Gain Adjustable at AGC ON | |
| | 11) Electric shutter speed | : Selectable in 7 steps & AES (Factory setting is 1/60) | |
| | | 1/60, 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000 | |
| | | AES: From 1/60 second to 1/2000 second | |
| | 12) Integration multiple [SENS UP] setting | : Automatic or Manual (fixed) (Factory setting is OFF) | E |
| | | Automatic : 2, 4, 6, 8, 10, 12, 16, 32, 64 times | |
| E | | Manual : 2, 4, 6, 8, 10, 12, 16, 32, 64, 88, 128 times | |
| | Note: When the SENS UP scale factor increased, white spot and fixed pattern noise increase and picture quality may fall off. | | |

13) Light control mode

(The auto level control system of AES, lens iris[DC], AGC and SESN UP.)

: AVERAGE / PEAK&AVERAGE / BLC

(Factory setting is AVERAGE)

BLC : Scanning area is selectable from 9 area.

14) Auto-iris lens outputs

: DC / VIDEO (Factory setting is DC)

Iris control voltage input (galvanometer) type lens [DC]

Coupling coil impedance

Damper : $1,150\ \Omega \pm 10\%$, Drive : $190\ \Omega \pm 10\%$

Video signal input type lens [VIDEO]

Luminance signal : 1.0 Vp-p/high impedance

Power supply : 12 VDC 60 mA

15) DNR (Noise reduction)

: Selectable in 3 modes (Factory setting is AUTO(LO))

OFF / AUTO / ON

16) Text display

: 22 alpha-numeric characters in one line

17) Picture adjustment

: Modes and settings can be selected and adjusted from on-screen menu

18) Remote control

: Modes and settings can be selected and adjusted from PC. RS-232C level, Connector: 12pin

19) Power supply

: 12 VDC $\pm 10\%$

20) Power consumption

: Approx. 1.5A (Omitting 60mA for auto-iris lens)

21) Lens mount

: C/CS mount (Flange-back adjustment)

22) Ambient temperature

Operating : -10 to +50 °C, 30 to 80 %RH

Storage : -20 to +60 °C, 20 to 90 %RH

Note : If operated continuously, be sure to use at less than +40 °C(104F) for long term stable performance.

23) Vibration endurance

: 24.5 m/s² (0 to 200Hz, 30 minutes each on XYZ axes)

Note : Do not subject to strong vibration for long periods of time.

24) External dimensions

: 78(W) x 63(H) x 170(D)

(not including lens and protrusions)

25) Mass

: Approx. 610g (without lens)

26) Supplied equipment

: Camera 1

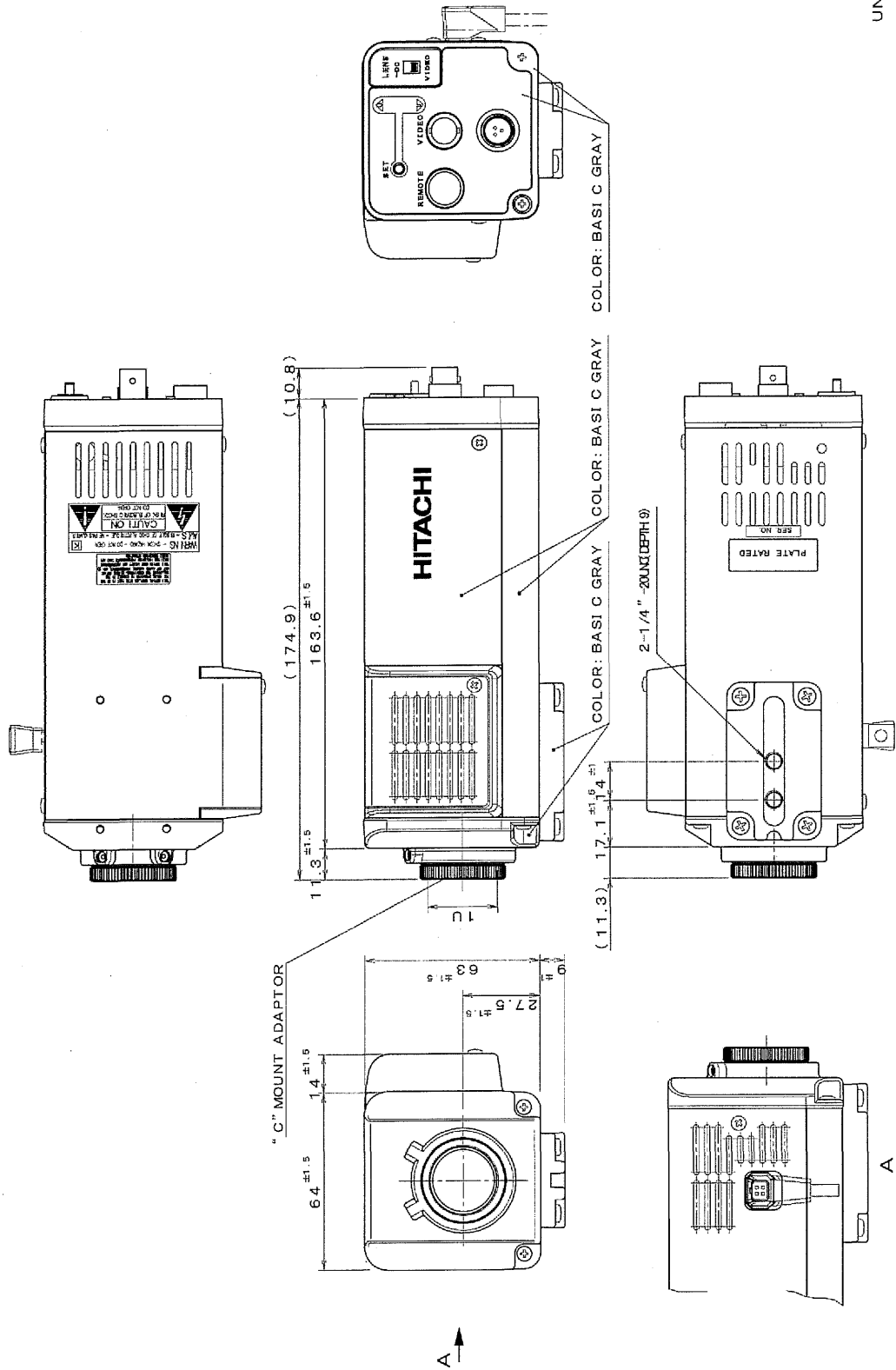
Operating instructions 1

DC input plug (R03-P3F) 1

27) External view

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Notice:

These specifications are subject to change without prior notice due to product improvement. Confirm the most recent specifications at time of order.

Hitachi Kokusai Electric certifies this product complies with the standard warranty conditions of Hitachi Kokusai Electric, and that quality control is implemented to the extent required to comply with these conditions.

Operating notice

The camera pays attention be sufficient that the followings handling notice of the camera handling will be maintained good picture quality.

- 1) The camera should not use in dusty place and/or where closes a fan, because it is cooling CCD with a peltier-element and fan.
- 2) When camera operating temperature goes up, the white spots of CCD and dark current increase and picture quality decrease noticeably.
In case of the camera is installed into camera housing, the inside temperature of the housing should be keep below 40°C and maintained with cooling FAN to prevent rise in temperature.
- 3) In case of the camera with housing continuously operates the long time, recommend the FAN of the camera housing is exchanged regularly every 3 years. If the FAN does not work properly, a white spot and fixed pattern noise increase then picture quality comes down.

Warranty and service:

- 1) The guarantee period is one year after the data purchase. However, the defects due to erroneous use or intentional act are excluded.
- 2) As the defect after expiration of the guarantee period, where product repair is possible, repair will be performed at charge.
- 3) The present Warranty pertains only to the camera unit. Secondary malfunctions attributable to camera failure as well as expenses incurred by disassembly and reassembly of the related system, are beyond the scope of this Warranty.
- 4) Compensation for loss of business, loss or damage to software, database and other contingent losses are beyond the scope of this Warranty.
- 5) Hitachi Kokusai Electric Inc. is not liable for the losses caused when the equipment is used in a system, use for business trades, production process, medical fields, crime prevention applications, etc.
- 6) The parts used in the equipment have their respective lives. The lives of such parts will be shortened under the environments of high temperature or high humidity. When the stable operation is required for a long time, it is recommended to perform periodical maintenance and inspection every year or every two years.

