



# KP-M1A CCD Camera Specifications

## 1. General

The KP-M1A is a black and white camera using the latest high grade CCD having a 2/3-inch image size .

The KP-M1A features high sensitivity, high resolution and high performance.

The KP-M1A is provided with various functions including the multiple step electronic shutter function, field-on-demand function, integration mode switching function, HD/VD pulse switching function and non-interlaced scanning function.

The KP-M1A is most suitable for use with a microscope or an image processing system.

The KP-M1A is compatible with the KP-M1/M2/M3.

KP-M1A : EIA  
KP-M1A : CCIR

## 2. Major features

### (1) Small size and lightweight

Though the KP-M1A is small in size and light in weight, it offers high performance.

A video signal is obtained only by supplying 12V DC.

### (2) High resolution

The latest high grade CCD is used. The horizontal resolution is 570TVL (560TVL CCIR), and the vertical resolution is 485TVL (575TVL CCIR).

### (3) Multiple-step electronic shutter function

The multiple-step electronic shutter function is provided.

The eight-step shutter speeds can be selected from 1/100 (1/120 for CCIR) to 1/10000.

### (4) Internal or external synchronization, and interlaced or non-interlaced operation

The synchronization system and the scanning system are automatically switched by the kind of an external sync signal.

### (5) Field-on-demand function

The image captured at an optional timing by an external trigger signal can be displayed instantly.

The capture time can be adjusted by an external trigger signal and the shutter.

### (6) Frame or field integration mode

As the integration mode can be switched, the image according to applications can be obtained by combining with the scanning system and the electronic shutter function.

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DSGN	S.kanomata	AUG *10 *00			
CHK	M.Suzuki	AUG *10 *00			
APPD	N.Fujimura	AUG *10 *00			



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3. Specifications

(1) Imaging device

No. of total pixels

Pixel size

No. of effective pixels

(2) Sensing area

(3) TV format

(4) Lens mount

(5) Flange focal distance

(6) Hor. Scanning freq.

(7) Vert. Scanning freq.

(8) Sync system

(9) Int. sync scanning system

(10) Ext. sync input

(11) No. of hor. Lines within ext. sync range

2:1 interlaced

Non-interlaced

(12) Video output

(13) Resolution

(14) Sensitivity



interline CCD

EIA : 811(H) x 508(V)

CCIR: 759(H) x 596(V)

EIA : 11.6(H) x 13.5(V) μm

CCIR: 11.6(H) x 11.2(V) μm

EIA : 768(H) x 494(V)

CCIR: 752(H) x 582(V)

EIA : 8.91 x 6.67mm (2/3 inch size)

CCIR: 8.72 x 6.52mm (2/3 inch size)

EIA/CCIR

C-mount

17.526mm (Not adjustable)

EIA: 15.734kHz CCIR: 15.625kHz

EIA: 59.94Hz CCIR: 50Hz

Internal/external (automatic switching)

2:1 interlaced

No. of Hor. lines: 525 (625 CCIR)

$f_v = 2f_H / 525$  (625 CCIR)

HD/VD : 2 to 6Vp-p, negative

Input impedance : 1kΩ

Frequency deviation : ±1%

EIA : 521 to 2047 lines / 2FLD

1FLD; (61 to 15 Hz)

CCIR: 621 to 2047 lines / 2FLD

1FLD; (51 to 15Hz)

EIA : 260 to 1023 lines / 1FLD

1FLD; (61 to 15Hz)

CCIR: 310 to 1023 lines / 1FLD

1FLD; (51 to 15Hz)

1.0Vp-p / 75Ω, unbalanced

Video: 0.7Vp-p

Sync: 0.3Vp-p, negative

EIA : 570TVL(H) / 485TVL(V)

CCIR: 560TVL(H) / 575TVL(V)

400Lx, #4, 3200K

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DWN		..	KP-M1A Specifications	Hitachi Kokusai Electric Inc. Tokyo Japan	7494769
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- (15)Min. illumination 0.3Lx, F1.4, AGC:ON, GAMMA:ON,  
W/O IR cut filter
- (16)Signal-to-noise ratio 56dB
- (17)Electronic shutter 1/10000, 1/4000, 1/2000, 1/1000, 1/500,  
1/250, 1/125, 1/120(CCIR), 1/100(EIA),  
1/60(EIA), 1/50(CCIR)sec  
OFF :Normal exposure  
Settable from external switch.  
Set to OFF at factory.
- (18)Integration mode Field or frame  
(Settable by external switch.)  
Set to frame integration mode at factory.
- (19)Gamma correction Gamma = 1.0 or correction  
(Settable by internal switch.)  
Set to 1.0 at factory.
- (20)AGC Fixed or AGC  
(Settable by internal switch.)  
Set to fixed gain at factory.
- (21)Field-on-demand ON or OFF  
(Settable by internal switch.)  
Set to OFF at factory.
- (22)Restart · Reset ON or OFF (Option)  
(Settable by chip components)  
Set to OFF at factory.
- (23)Supply voltage 12V DC ± 1V
- (24)Power consumption 220mA approx.
- (25)Ambient conditions Operating:-10 to 50°C, 90%RH or less  
Storage :-20 to 60°C, 70%RH or less
- (26)Anti-vibration 98 m/s<sup>2</sup> (10 to 60Hz, amplitude:0.98mm constant  
60 to 200Hz amplitude, variable)  
(10 to 200Hz, sweep:1 min, XYZ, duration:30mm.)
- (27)Anti-vibration 686 m/s<sup>2</sup>  
(Once each, top/bottom/left side/right side)
- (28)Dimensions 44(W)×29(H)×72(D)mm
- (29)Mass 120g approx.

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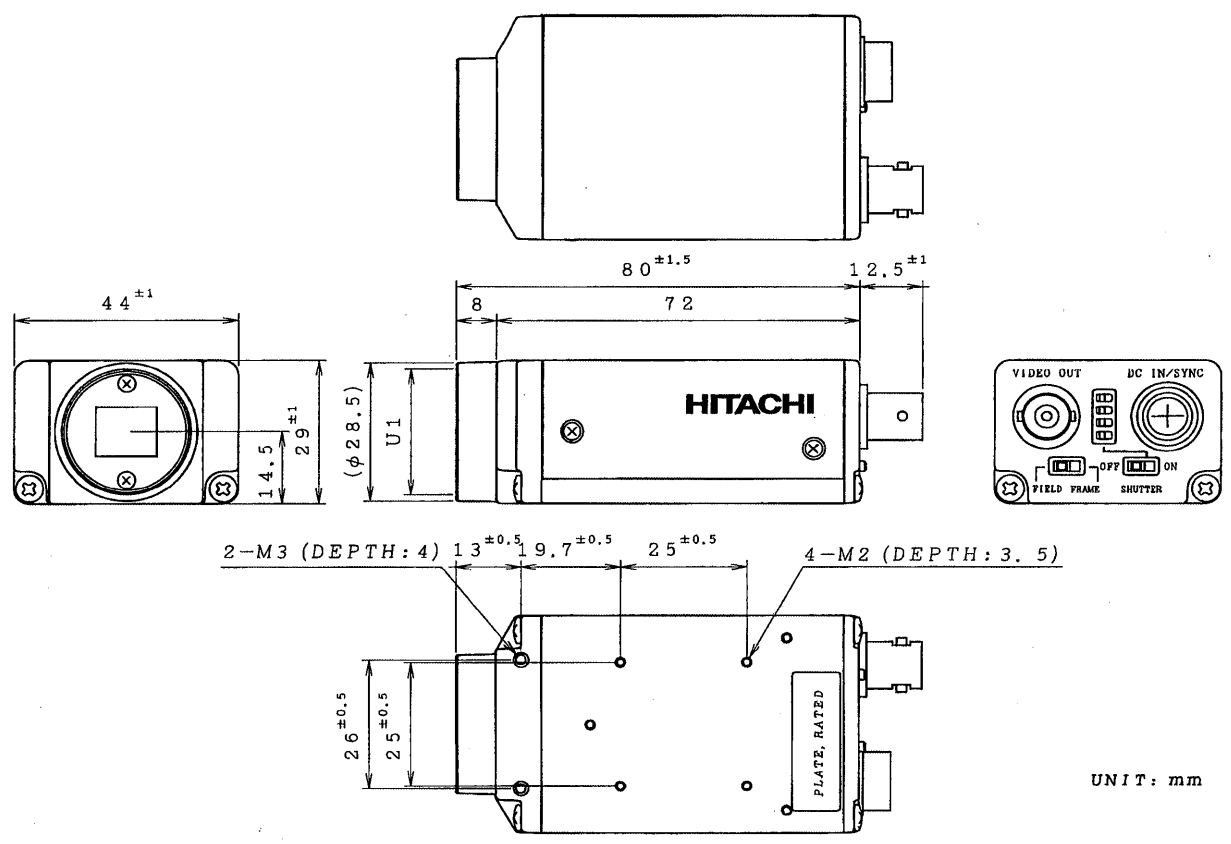
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4. Composition

1) Camera (With dummy glass, AR coated)

5. External view

2) Operation manual



6. Optional accessories

- 1) Tripod adapter, TA-M1
- 2) 12-pin plug, HR10A-10P-12S(01)
- 3) AC adaptor, AP-130
- 4) Junction box, JU-M1A
- 5) Camera cables

	Mould Type	Assembly Type	Shield Type
2m	C-201KSM	C-201KS	C-201KSS
5m	C-501KSM	C-501KS	C-501KSS
10m	C-102KSM	C-102KS	C-102KSS

\*Specify assembly or shielded type at time of order.

6) Dummy glass ARC1214



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Caution

This specification is subject to change without notice for improvement, etc. When placing an order, make sure that this specification is the latest. Hitachi Kokusai Electric's standard warranty conditions for shipment, and carry out inspection and quality control within the range necessary for providing the guarantee.

Warranty and After-sales Service

- 1) The guarantee period is one year after the date of purchase. However , the defects due to erroneous use or intentional act are excluded.
- 2) As the defect after expiration of the guarantee period , Hitachi Kokusai Electric will repair the equipment if the intended function is restored by the repair work , and the cost is charged to a customer.
- 3) Hitachi Kokusai Electric is not liable for the losses caused when the equipment is used in a system used for business trades , production process , medical fields , crime prevention applications , etc.
- 4) 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.

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