

## HITACHI CCD CAMERAS KP-M2A/M3A

**Model KP-M2A CCD Camera :**  
The 1/2-inch CCD sensor, developed using the state-of-the-art technology

**Model KP-M3A CCD Camera :**  
The 1/3-inch CCD sensor, developed using the state-of-the-art technology



*These high-performance CCD cameras are designed to offer excellent sensitivity and superb resolution. Equipped with a diversity of functions such as multiple step electronic shutter, field on demand, integration mode selection, external HD/VD synchronization, non-interlace scanning, etc., these CCD cameras can be used with Machine vision or IC bonder.*

### Features

● **Compact, lightweight**

The KP-M2A/M3A are CCD cameras which provide versatile functions and superb performance. They can deliver video signals only by supplying 12 V DC voltage.

● **High resolution**

Horizontal resolution...EIA : 570 TV lines  
(CCIR : 560 TV lines)  
Vertical resolution...EIA : 485 TV lines  
(CCIR : 575 TV lines)

● **Multiple-step electronic shutter function**

Provided with the multiple-step electronic shutter function. Eight electronic shutter speeds are selectable in a range of 1/100 sec (CCIR : 1/120 sec) to 1/10,000 sec.

● **Internal/external synchronization and inter laced/non-interlaced**

A synchronization mode and scanning mode are

automatically selected in the camera circuit by the kind of supplied sync signal.

● **Field-on-demand function**

A picture acquired at an optional timing using an external trigger signal be displayed. Also, a picture acquisition time adjustable through use of external trigger signal and shutter function.

● **Frame/field integration mode selectable**

The frame or field integration mode can be selected. In combination with scanning system and electronic shutter speed selection, the desired video signal is obtained.

● **Vibration-proof**

The die-cast aluminum is used to ensure vibration-proof performance.

## Major specifications

<b>Imaging device</b>	Interline CCD sensor
<b>Total number of pixels</b>	EIA : 811 (H) × 508 (V) CCIR : 795 (H) × 596 (V)
<b>Pixel pitch</b>	KP-M2A EIA : 8.4 (H) × 9.8 (V) μm KP-M3A EIA : 6.35 (H) × 7.4 (V) μm KP-M2A CCIR : 8.6 (H) × 8.3 (V) μm KP-M3A CCIR : 6.5 (H) × 6.25 (V) μm
<b>Number of effective pixels</b>	EIA : 768 (H) × 494 (V) CCIR : 752 (H) × 582 (V)
<b>Imaging area</b>	KP-M2A EIA : 6.45 mm × 4.84 mm (1/2-inch) KP-M2A CCIR : 6.47 mm × 4.83 mm (1/2-inch) KP-M3A EIA : 4.88 mm × 3.66 mm (1/3-inch) KP-M3A CCIR : 4.89 mm × 3.64 mm (1/3-inch)
<b>Signal system</b>	Conforming to EIA/CCIR signal format (at normal operation)
<b>Lens mounting</b>	C mount
<b>Flange focal distance</b>	17.526 mm (not an adjustable)
<b>Horizontal scanning frequency</b>	EIA : 15.734 kHz CCIR : 15.625 kHz
<b>Vertical scanning frequency</b>	EIA : 59.94 Hz CCIR : 50 Hz
<b>Synchronization</b>	Automatic changeover of internal/external synchronization
<b>Internal sync scanning</b>	2:1 interlaced, 525 horizontal lines (CCIR : 625 lines) fv = 2 fh/525 (CCIR : lines)
<b>External sync input</b>	HD/VD, 2 to 6 Vp-p, negative polarity Input impedance : 1 kΩ, Frequency deviation : ± 1 %
<b>Number of horizontal lines</b>	2:1 interlaced
<b>Allowable for external synchronization</b>	EIA : 521 to 2047 lines/2FLD, 1FLD : (61 to 15 Hz) CCIR : 621 to 2047 lines/2FLD, 1FLD : (51 to 15 Hz) Non-interlaced EIA : 260 to 1023 lines/1FLD, 1FLD : (61 to 15 Hz) CCIR : 310 to 1023 lines/1FLD, 1FLD : (51 to 15 Hz)

<b>Video output</b>	1.0 Vp-p 75 Ω unbalanced Video component : 0.7 Vp-p Sync component : 0.3 Vp-p negative polarity
<b>Horizontal/vertical resolution</b>	EIA : 570 TV lines (H) /485 TV lines (V) CCIR : 560 TV lines (H) /575 TV lines (V)
<b>Sensitivity</b>	Under illumination of 400 lx, F8, 3200 K
<b>Minimum illumination</b>	0.3 lx, F1.4 AGC:ON, Gamma:ON, without IR filter
<b>SN ratio</b>	56 dB
<b>Electronic shutter</b>	1/10000, 1/4000, 1/2000, 1/1000, 1/500, 1/250, 1/125, 1/120 (CCIR), 1/100 (EIA) sec In OFF state : Normal exposure Selectable external switch mode
<b>Integration mode</b>	Field/frame integration mode, Selectable by external switch setting
<b>Gamma correction</b>	Gamma = 1.0 or correction, Selectable by internal switch
<b>AGC</b>	Pixed gain or AGC, Selectable by internal switch setting
<b>Field-on-demand function</b>	Turned on/off with internal switch
<b>Restart/reset function</b>	Turned on/off with chip component switching
<b>Power requirement</b>	12 V DC ±1 V, 180 mA approx
<b>Ambient temperature and humidity</b>	Operating : -10 to +60 °C, Less than 90 % RH Storage : -20 to +60 °C, Less than 70 % RH
<b>Vibration resistance</b>	68.6 m/s <sup>2</sup> max (10 to 60 Hz, amplitude : constant at 0.98 mm) (60 to 200 Hz, amplitude : variable) (10 to 200 Hz, sweeping for one minute, Each of X, Y and Z directions for 30 minutes)
<b>Dimensions and mass</b>	44 (W) × 29 (H) × 72 (D) mm 120 g approx

## Standard comption

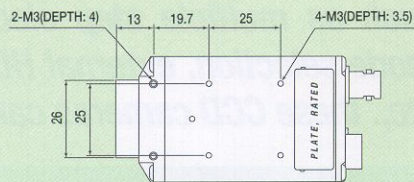
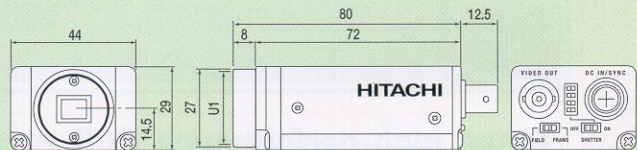
- Camera (with IR cut filter) .....1
- Operation manual .....1

## Optional accessories

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

	Mold type
2m	C-201KSM
5m	C-501KSM
10m	C-102KSM

## External view



unit : mm

## Hitachi Kokusai Electric Inc.

Head Office : 14-20, Higashi-Nakano 3-choume, Nakano-ku, Tokyo 164-8511, Japan  
Phone : +86 (0) 10-6590-8767/8766, Fax : +86 (0) 10-6590-8757  
URL : <http://www.h-kokusai.com>

**Beijing Office**  
Beijing Fortune Building 5, Dong San Huan Bei-lu, Chao Yang District, Beijing, 100004 China  
Phone : (+1) 516-921-7200, Fax : (+1) 516-496-3718

**Hitachi Denshi America Ltd.** URL : <http://www.hdal.com>  
Headquarters and Northeast Office : 150 Crossways Park Drive, Woodbury, New York 11797, U. S. A.  
Phone : (+1) 516-921-7200, Fax : (+1) 516-496-3718

**West Office** : 371 Van Ness Way, Suite 120 Torrance, CA, 90501, U. S. A.  
Phone : (+1) 310-328-9116, Fax : (+1) 310-328-6252

**Midwest Sales** : Service (+1) 234-721-6190  
Phone : (+1) 330-334-4115, Fax : (+1) 516-496-3718

**South Sales** : Service (+1) 678-957-0201  
Phone : (+1) 770-972-4724, Fax : (+1) 516-496-3718

**Parts Center** : Service (+1) 678-957-0201  
Phone : (+1) 516-682-4435, Fax : (+1) 516-921-0993

**Latin Sales** : Service (+1) 516-682-4420, Fax : (+1) 516-496-3718

**Hitachi Denshi Canada, Ltd.** URL : <http://www.hitachidenshi.ca>  
Head Office : 1 Select Avenue Unit#11 Scarborough, Ontario M1V 5J3, Canada.  
Phone : (+1) 416-299-5900, Fax : (+1) 416-299-0450

**Eastern Office** : 5795 Chemin St. Francois St. Laurent, Quebec H4S 1B6, Canada  
Phone : (+1) 514-332-6687, Fax : (+1) 514-335-1664

**Ottawa Office** : 9 Antares Drive, Nepean, Ontario, K2E 7V5, Canada  
Phone : (+1) 613-727-3930, Fax : (+1) 613-825-4253

**Hitachi Denshi (Europe) GmbH**  
Head Office : Wesikircher Straße 88, Jügesheim D-63110 Rodgau, Germany  
Phone : +49 (0) 6106-69920, Fax : +49 (0) 6106-16906  
URL : [www.hitachi-denshi.de](http://www.hitachi-denshi.de)  
General email address : [webmaster@hitachi-denshi.de](mailto:webmaster@hitachi-denshi.de)

**Hitachi Denshi (U. K.) Ltd.**  
Head Office : 14 Garrick Industrial Centre, Irving Way, Hendon, London, NW9 6AQ, United Kingdom  
Phone : +44 (0) 208-202-4311, Fax : +44 (0) 208-202-2451

**Leeds Office** : Brookfield House, Selby Road, Garforth, Leeds LS25 1NB United Kingdom  
Phone : +44 (0) 113-267-4400, Fax : +44 (0) 113-267-4260  
URL : [www.hitachi-denshi-uk.com](http://www.hitachi-denshi-uk.com)  
General email address : [sales@hitachi-denshi-uk.com](mailto:sales@hitachi-denshi-uk.com)

Specification are subject to change without notice.

These products are manufactured at a factory which has received quality control system certification in accordance with the ISO international standards.



CERTIFICATE No.  
**JMI-0062**  
ISO 9001/BS 5750P1  
EN 29001/JIS Z9901