

INDUSTRIAL

VIDEO CAMERA

HITACHI

**INDUSTRIAL
VIDEO CAMERAS**

Hitachi Kokusai Electric Inc.

Industrial Video Camera

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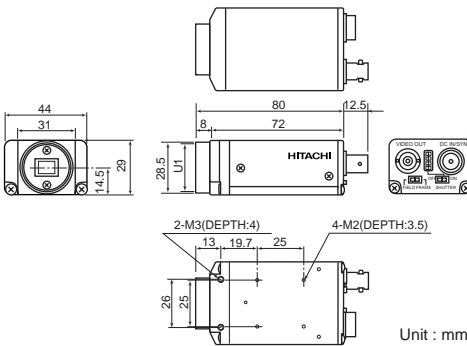
Black-and-White CCD Camera

KP-M1A / M2A / M2R / M3A / M3R



Black-and-white CCD camera featuring high sensitivity, high resolution and high performance. A variety of functions are provided. KP-M series are provided with a variety of functions including multi-step electronic shutter, HD/VD external sync. KP-M2R/M3R have Infra-red sensitivity.

Dimensions



Main Specifications

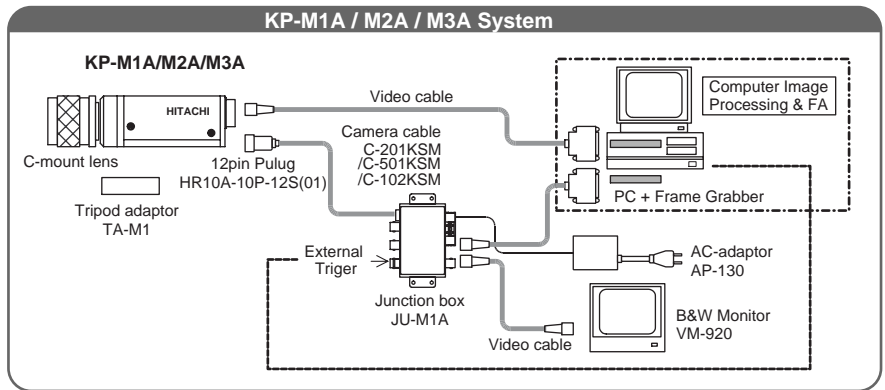
- Imaging device :
 - KP-M1A : 2/3-inch Inter-line CCD
 - KP-M2A : 1/2-inch Inter-line CCD
 - KP-M2R : 1/2-inch Infra-red CCD
 - KP-M3A : 1/3-inch Inter-line CCD
 - KP-M3R : 1/3-inch Infra-red CCD
- No. of effective pixels : EIA : 768(H)X494(V)
CCIR : 752(H)X582(V)
- Sync system : Int./Ext. (Automatically switched)
- Sensitivity switching : FIX, AGC or MANUAL
- Gamma correction : 1 or correction
- Electronic shutter modes from 1/120(CCIR), 1/100(EIA), to 1/10,000
- External trigger : Field on demand , Restart and reset operation optionally.
- Lens mount : C-mount
- Power supply : 12 VDC
- Dimensions : 44(W)X44(H)X72(D) mm
- Mass : 120 g approx.

Standard composition

- (1) Camera body
- (2) Operation manual

Optional accessories

- (1) Tripod adaptor.....TA-M1
- (2) 12-pin plug.....HR10A-10P-12S(01)
- (3) Junction box.....JU-M1A
- (4) Dummy glass (AR-coated).....ARC1214
- (5) Camera cable (molded type)
 - 2m C-201KSM
 - 5m C-501KSM
 - 10m C-102KSM
- (6) AC adaptor.....AP-130



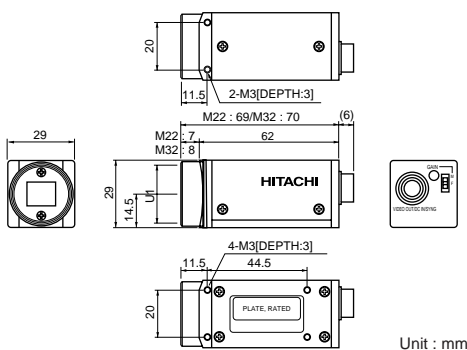
Ultra Compact Black-and-White CCD Camera

KP-M22A / M22R / M32A / M32R



Ultra compact black-and-white CCD camera of 29mm square type body featuring high sensitivity, high resolution and high performance and a variety of functions. KP-M22R/M32R have Infra-red sensitivity. KP-MC22A/MC32A is side lens type.

Dimensions



Main Specifications

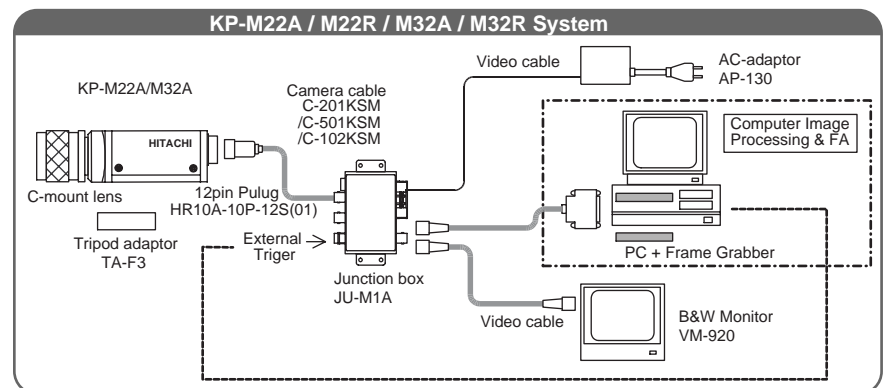
- Imaging device :
 - KP-M22A : 1/2-inch Inter-line CCD
 - KP-M22R : 1/2-inch Infra-red CCD
 - KP-M32A : 1/3-inch Inter-line CCD
 - KP-M32R : 1/3-inch Infra-red CCD
- No. of effective pixels : EIA : 768(H)X494(V)
CCIR : 752(H)X582(V)
- Sync system : Int./Ext. (Automatically switched)
- Sensitivity switching : FIX, AGC or MANUAL
- Gamma correction : 1 or correction
- Electronic shutter modes from 1/120(CCIR), 1/100(EIA), to 1/10,000
- External trigger : Field on demand
- Lens mount : C-mount
- Power supply : 12 VDC
- Dimensions : 29(W)X29(H)X62(D) mm
- Mass : 100 g approx.

Standard composition

- (1) Camera body
- (2) Operation manual

Optional accessories

- (1) Tripod adaptor.....TA-F3
- (2) 12-pin plug.....HR10A-10P-12S(01)
- (3) Junction box.....JU-M1A
- (4) Dummy glass (AR-coated).....ARC1214
- (5) Camera cable (molded type)
 - 2m C-201KSM
 - 5m C-501KSM
 - 10m C-102KSM
- (6) AC adaptor.....AP-130

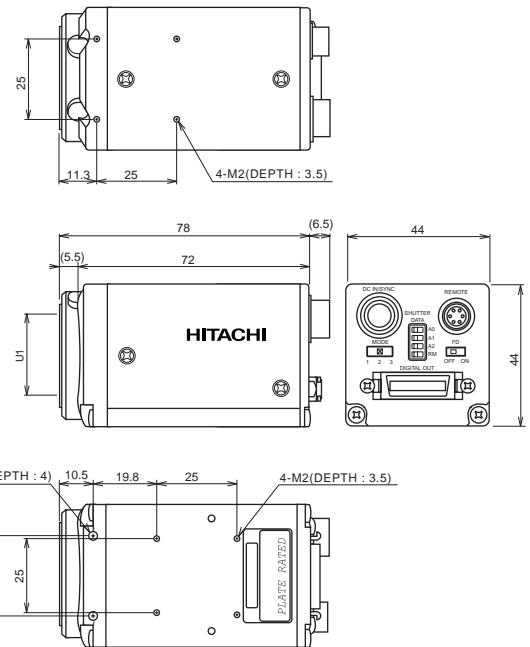


KP-F100A / F100ACL / F100UV

RS-232C control, Effective picture elements number 1.3 million,
Progressive scan with full pixel independent readout



Dimensions



Unit : mm

High resolution :

High grade CCD with 1300(H)X1030(V) effective square lattice pixels.
UV : from 240 nm approx. ~to 930 nm approx. sensitivity CCD with 1392(H)X1040(V) effective square lattice pixels

Digital output and analog output :

An EIA-644 digital output is provided. Camera-Link (KP-F100ACL)

Frame on demand :

An external trigger signal input can be used to capture an image at a desired timing for instant view or processing. The capture time can be adjusted by the trigger and shutter.

RS-232C Control :

The self-contained CPU permits using RS-232C control for setting each function, Frame on demand, Trigger input pulse invert, etc. The functions can also be set from rear panel switches.

Multi step electronic shutter up to 1/50000 second

Specifications

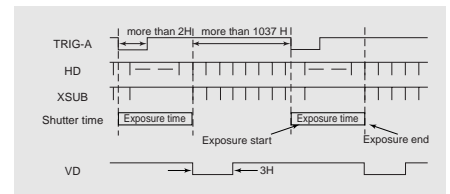
	KP-F100A/F100ACL	KP-F100UV
Pickup element	2/3-inch interline CCD	1/2-inch interline CCD
Effective pixels	1300(H)X1030(V)	1392(H)X1040(V)
Pixel pitch	6.7(H)X6.7(V) μm (square lattice)	4.65(H)X4.65(V) μm
Imaging area	8.71(H)X6.90(V) mm	6.47(H)X4.84(V) mm
Scanning system	Progressive	
Aspect ratio	5 : 4	4 : 3
Frame rate	12 frames/second (full pixel readout) 24 fps (2 V pixels simultaneous readout)	7.5 fps 30 fps (quad speed mode)
Horizontal scanning frequency	12.528 kHz	7.98 kHz
Synchronization	Internal/external (automatic switching)	
Lens mount	C-mount	
Flange focal distance	17.526 mm	
Video output	Digital output or analog output for image checking Digital output Camera-Link or EIA-644 single channel 10 bits, 20.2 MHz	
External sync input	HD/VD TTL level negative Input impedance: 1 kΩ Frequency deviation: ±1 %	
Electronic shutter speed	Off (frame rate), 1/30, 1/125, 1/250, 1/1000, 1/2000, 1/4000, 1/10000, 1/50000 second.	
Frame on demand	External switch setting off, fixed shutter, two trigger and one trigger	
Sensitivity	400 lx F4 3200 K	
Power supply voltage	12 ± 1 VDC	
Current consumption	290 mA Approx.	
Ambient, operating	0 to + 40 °C (+32 to ; 104 F), less than 90 % RH	
Ambient, storage	-10 to + 50°C (+14 to +122 F), less than 70 % RH	
Vibration endurance	29 m/s ² , 10 to 55 Hz 30 minutes each on XYZ axes	
Shock endurance	294 m/s ² (vertical, horizontal, once each face)	
External dimensions	44(W)X44(H)X78(D) mm	
Mass	180 g (6.3 oz) Approx.	

Frame-on-demand Function

With the Frame-on-demand function, moving objects can be captured at an optional or fixed exposure time by supplying a trigger pulse at an optional timing.

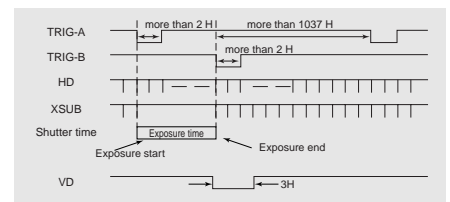
Fixed shutter mode

When one trigger pulse (TRIG A) is supplied, exposure starts at the rising edge of the inputs pulse. Exposure time is fixed, and set by the electrical shutter switches on the camera.



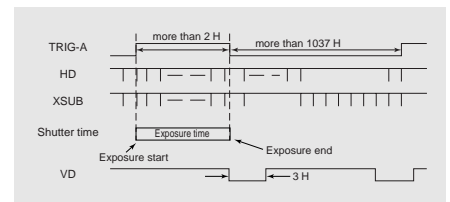
Two trigger mode

When two trigger pulses (TRIG A and TRIG B) are supplied, exposure starts at the rising edge of the TRIG A pulse, and ends at the falling edge of TRIG B pulse. The period between the two pulses is exposure time.



One trigger mode

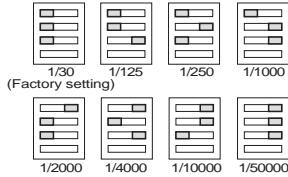
When one trigger pulse (TRIG A) is supplied, exposure starts at the rising edge of the inputs pulse, and ends at the falling edge of the inputs pulse. Then, the V-SYNC pulse is reset and picture are delivered immediately. The pulses width is the exposure time.



Rear panel switches

The rear panel includes switches for electronic shutter data, readout rate, and field on demand on/off and mode switches.

(1) Electronic shutter switches



(2) Trigger input pulse invert switch

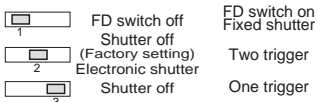
(Factory setting)



(3) Frame on demand (FD) ON/OFF switch



(4) Frame on demand mode switch



Pin connections

● Connections to DC IN and SYNC (12 pin)

Pin No.	Int. sync	Ext. sync			
		HD/VD	Frame on demand		
			Fixed shutter	Two trigger	One trigger
1	GND	GND	-	GND	GND
2	+12 V	+12 V	GND	+12 V	+12 V
3	GND	GND	+12 V	GND	GND
4	VIDEO	VIDEO	GND	VIDEO	VIDEO
5	GND	EXTHD (GND)	VIDEO	GND	GND
6	-	EXTHD (SIGNAL)	GND	-	-
7	-	EXTVD (SIGNAL)	TRIG-A (SIGNAL)	TRIG-A (SIGNAL)	TRIG-A (SIGNAL)
8	GND	GND	GND	TRIG-B (GND)	GND
9	-	-	-	TRIG-B (SIGNAL)	-
10	-	GND	GND	GND	GND
11	GND	+12 V	GND	+12 V	+12 V
12	+12 V	EXTVD (GND)	TRIG-A (GND)	TRIG-A (GND)	TRIG-A (GND)

Not connect EXT. input signals in KP-100ACL

● Signal connections to D. OUT (26 pin)

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	DATA0-H	10	DATA4-L	19	DATA9-H
2	DATA0-L	11	DATA5-H	20	DATA9-L
3	DATA1-H	12	DATA5-L	21	VD-H
4	DATA1-L	13	DATA6-H	22	VD-L
5	DATA2-H	14	DATA6-L	23	HD-H
6	DATA2-L	15	DATA7-H	24	HD-L
7	DATA3-H	16	DATA7-L	25	CLK-H
8	DATA3-L	17	DATA8-H	26	CLK-L
9	DATA4-H	18	DATA8-L	Shield	GND

● Remote (RS-232C control) cable pin connections (6pin)

Pin No.	Signal name
1	-
2	RD
3	TD
4	Manual/remote
5	Ground
6	-

Standard Composition

- (1) Camera (with infrared blocking filter)
- (2) Operating instructions

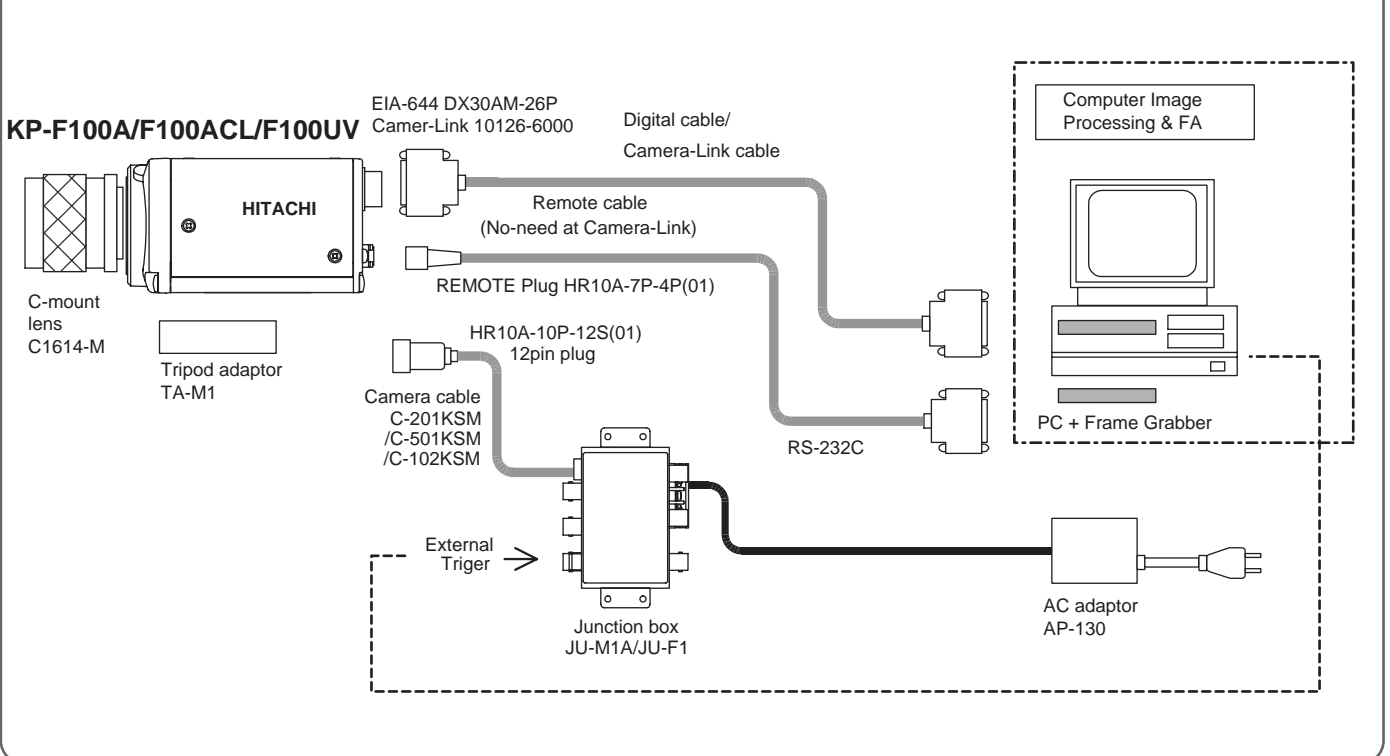
Optional accessories

- (1) Tripod adaptor TA-M1(23855AX)
- (2) 6 pin Remote plug HR10A-7P-6P
- (3) 12 pin plug HR10A-10P-12S(01) (23810AX)
- (4) D.OUT connector (26 pins) EIA-644 DX30AM-26P Camera-Link 10126-6000
- (5) Junction box JU-M1A (23831AX) JU-F1 (23832AX)
- (6) Dummy glass (AR coated) ARC1214(XMD0009)
- (7) Camera cable (Molded type) 2 m C-201KSM 5 m C-501KSM 10 m C-102KSM (Assembly type) 2 m C-201KS 5 m C-501KS 10 m C-102KS
- (8) AC adaptor 117 V:AP-130(23805UX) 230 V:AP-130E(23805EX)

Camera-Link Digital out connector (KP-F100ACL)

Pin No.	Signal	Pin No.	Signal
1	GND	14	GND
2	TXOUT 0 (-)	15	TXOUT 0 (+)
3	TXOUT 1 (-)	16	TXOUT 1 (+)
4	TXOUT 2 (-)	17	TXOUT 2 (+)
5	TXCLKOUT (-)	18	TXCLKOUT (+)
6	TXOUT 3 (-)	19	TXOUT 3(+)
7	RX (+)	20	RX (-)
8	TX (-)	21	TX (+)
9	TRIG/EA/VD (-)[CC1 (-)]	22	TRIG/EA/VD (+)[CC1 (+)]
10	TRIG/EB (+)[CC2 (+)]	23	TRIG/EB (-)[CC2 (-)]
11	EXT/EHD (-)[CC3 (-)]	24	EXT/EHD(+)[CC3(+)]
12	NC [CC4 (+)]	25	NC [CC4 (-)]
13	GND	26	GND

KP-F100A / F100ACL / F100UV System



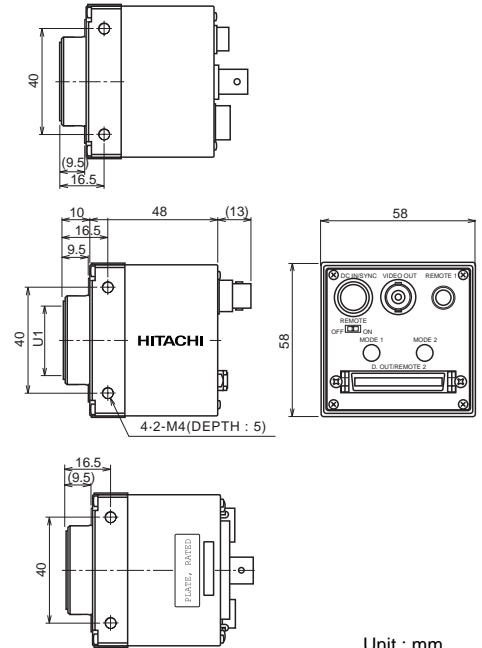
KP-F120 / F120CL

Near infrared sensitivity, Effective picture elements number 1.45 million, Progressive scan with full pixel independent readout



- **High speed read out :**
Full pixel independent readout :30 frames/second
Partial Scan : Read out up to over 190 frames/second max
- **High resolution :**
High grade CCD with 1392(H)X1040(V) effective square lattice pixels.
- **Digital output and Analog output :**
An EIA-644 digital output is provided.
Camera-Link (KP-F120CL)
- **Frame on demand :**
An external trigger signal input can be used to capture an image at a desired timing for instant view or processing.
- **RS-232C Control :**
Frame on demand, Partial Scan, Trigger input pulse invert, etc by RS-232C control or rear panel switch.

Dimensions



Unit : mm

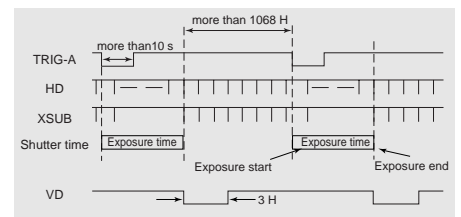
Main Specifications

Pickup element	2/3-inch interline CCD
Effective pixels	1392(H)X1040(V)
Pixel pitch	6.45 m(H)X6.45 m(V) (square lattice)
Imaging area	8.98 mm(H)X6.71 mm(V)
Scanning system	Progressive
Aspect ratio	4 : 3
Frame rate	30frames/second (full pixel readout) to 190 frames/second (partial scan)
Horizontal scanning frequency	32.07 kHz
Synchronization	Internal/external (automatic switching)
Lens mount	C-mount
Flange focal distance	17.526 mm
Video output	Digital output or analog output for image checking Digital output Camera-Link or EIA-644 dual channel 10 bits, 28.8 MHz
External sync input	HD/VD TTL level negativeInput impedance: 10 k Ω Frequency deviation:-0.0005%
Electronic shutter speed	Selectable by external switches: Off (frame rate), 1/30, 1/60, 1/125, 1/250, 1/1000, 1/2000, 1/10000, 1/50000 second.
Frame on demand	External switch setting off ,fixed shutter ,two trigger and one trigger
Sensitivity	400 lx F4 3200 K
Power supply voltage	12 - 1 VDC
Current consumption	400 mA approx.
Ambient, operating	0 to +40 $^{\circ}$ C(+32 to ; 104 F), less than 90 % RH
Ambient, storage	-10 to +50 $^{\circ}$ C(+14 to +122 F), less than 70 % RH
Vibration endurance	29 m/s ² , 10 to 55 Hz 30 minutes each on XYZ axes
Shock endurance	294 m/s ² (vertical, horizontal, once each face)
External dimensions	58(W)X58(H)X48(D) mm
Mass	220 g (7.8 oz) approx

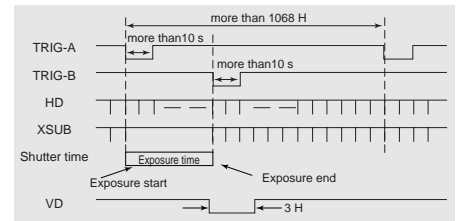
Frame-on-demand Function

With the Frame-on-demand function, moving objects can be captured at an optional or fixed exposure time by supplying a trigger pulse at an optional timing.

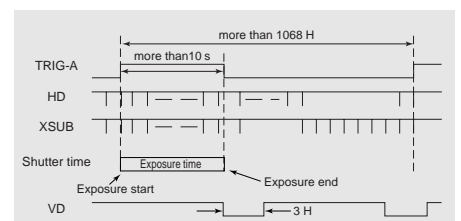
- **Fixed shutter mode**
When one trigger pulse (TRIG A) is supplied, exposure starts at the rising edge of the inputs pulse. Exposure time is fixed, and set by the electrical shutter switches on the camera.



- **Two trigger mode**
When two trigger pulses (TRIG A and TRIG B) are supplied, exposure starts at the rising edge of the TRIG A pulse, and ends at the falling edge of TRIG B pulse. The period between the two pulses is exposure time.



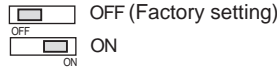
- **One trigger mode**
When one trigger pulse (TRIG A) is supplied, exposure starts at the rising edge of the inputs pulse, and ends at the falling edge of the inputs pulse. Then, the V-SYNC pulse is reset and picture are delivered immediately. The pulses width is the exposure time.



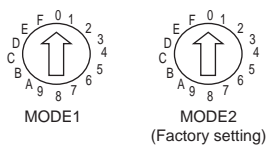
Rear panel switches

The rear panel includes switches for electronic shutter data, readout rate, and field on demand on/off and mode switches.

● REMOTE ON/OFF switch



● MODE ON/OFF switch



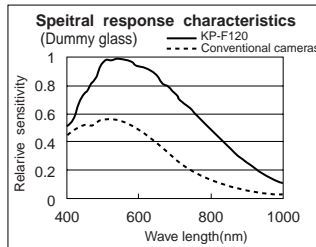
MODE1, MODE2 position select

SW POS.	MODE1	MODE2	SW POS.	(1)	(2)	(3)
0	Normal mode	0	0	0 dB	1/30	16H
1	One trigger mode	1	1	1 dB	1/60	32H
2	Two trigger mode	2	2	2 dB	1/125	64H
3	Quad speed mode	3	3	3 dB	1/250	128H
4	Quad speed mode+One trigger mode	4	4	4 dB	1/1000	256H
5	Smear reduction mode + one trigger mode	5	5	5 dB	1/2000	512H
6	Smear reduction mode + two trigger mode	6	6	6 dB	1/10000	512H
7	Smear reduction mode Quad speed mode+ One trigger mode	7	7	7 dB	1/50000	512H
8	Normal shutter mode	8	8	8 dB	1/50000	512H
9	Fixed shutter mode	9	9	9 dB	1/50000	512H
A	Smear reduction mode fixed shutter mode	A	10	10 dB	1/50000	512H
B	Partial scan (Normal mode) (READ POS. : CENTER)	B	11	11 dB	1/50000	512H
C	Partial scan (Normal mode) (READ POS. : UPPER)	C	12	12 dB	1/50000	512H
D	Partial scan (One trigger mode) (READ POS. : CENTER)	D	13	13 dB	1/50000	512H
E	Partial scan (One trigger mode) (READ POS. : UPPER)	E	14	14 dB	1/50000	512H
F	Twice speed mode	F	15	15 dB	1/50000	512H

● Kamera-Link Digital out connector

10226-5202JL(3M)

Pin No.	Signal name	Pin No.	Signal name
1	GND	14	GND
2	TXOUT 0 (-)	15	TXOUT 0 (+)
3	TXOUT 1 (-)	16	TXOUT 1 (+)
4	TXOUT 2 (-)	17	TXOUT 2 (+)
5	TXCLKOUT (-)	18	TXCLKOUT (+)
6	TXOUT 3 (-)	19	TXOUT 3 (+)
7	RX (+)	20	RX (-)
8	TX (-)	21	TX (+)
9	TRIG-A/VD (-) [CC1 (-)]	22	TRIG-A/VD (+) [CC1 (+)]
10	TRIG-B (+) [CC2 (+)]	23	TRIG-B (-) [CC2 (-)]
11	EXT-HD (-) [CC3 (-)]	24	EXT-HD (+) [CC3 (+)]
12	NC [CC4 (+)]	25	NC [CC4 (-)]
13	GND	26	GND



Standard Composition

- (1) Camera (with infrared blocking filter)
- (2) Operating instructions

DC input and sync connections

●Connections to DC IN and SYNC (12 pin)

Pin No.	Int.sync	Ext. sync			
		Ext. HD/VD	Frame on demand		
			Fixed shutter	Two trigger	One trigger
1	GND	GND	GND	GND	GND
2	+12 V	+12 V	+12 V	+12 V	+12 V
3	GND	GND	GND	GND	GND
4	VIDEO	VIDEO	VIDEO	VIDEO	VIDEO
5	GND	EXTHD (GND)	GND	GND	GND
6	-	EXTHD (SIGNAL)	-	-	-
7	-	EXTVD (SIGNAL)	TRIG-A (SIGNAL)	TRIG-A (SIGNAL)	TRIG-A (SIGNAL)
8	GND	GND	GND	TRIG-B (GND)	GND
9	-	-	WEN	TRIG-B (SIGNAL)	WEN
10	GND	GND	GND	GND	GND
11	+12 V	+12 V	+12 V	+12 V	+12 V
12	GND	EXTVD (GND)	TRIG-A (GND)	TRIG-A (GND)	TRIG-A (GND)

*Not connect EXT. input signals in KP-F120CL

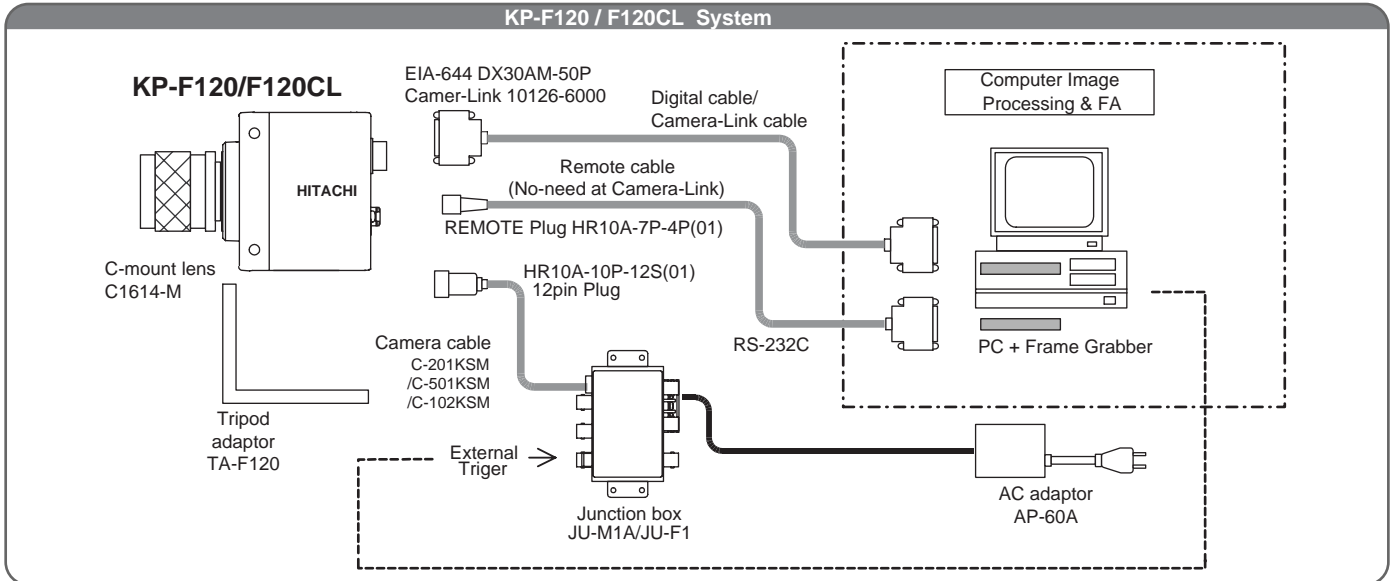
●Digital out connector EIA-644(50pins) DX10G1M-50S

PIN No.	Signal name	PIN No.	Signal name	PIN No.	Signal name	PIN No.	Signal name
1	DATA DB-D0(+)	2	DATA DB-D0(-)	26	DATA DA-D0(+)	27	DATA DA-D0(-)
3	DATA DB-D1(+)	4	DATA DB-D1(-)	28	DATA DA-D1(+)	29	DATA DA-D1(-)
5	DATA DB-D2(+)	6	DATA DB-D2(-)	30	DATA DA-D2(+)	31	DATA DA-D2(-)
7	DATA DB-D3(+)	8	DATA DB-D3(-)	32	DATA DA-D3(+)	33	DATA DA-D3(-)
9	DATA DB-D4(+)	10	DATA DB-D4(-)	34	DATA DA-D4(+)	35	DATA DA-D4(-)
11	DATA DB-D5(+)	12	DATA DB-D5(-)	36	DATA DA-D5(+)	37	DATA DA-D5(-)
13	DATA DB-D6(+)	14	DATA DB-D6(-)	38	DATA DA-D6(+)	39	DATA DA-D6(-)
15	DATA DB-D7(+)	16	DATA DB-D7(-)	40	DATA DA-D7(+)	41	DATA DA-D7(-)
17	DATA DB-D8(+)	18	DATA DB-D8(-)	42	DATA DA-D8(+)	43	DATA DA-D8(-)
19	DATA DB-D9(+)	20	DATA DB-D9(-)	44	DATA DA-D9(+)	45	DATA DA-D9(-)
21	TX2	22	RX2	46	CLK OUT(+)	47	CLK OUT(-)
23	GND	24	GND	48	VD OUT(+)	49	VD OUT(-)
25	HD OUT(+)			50	HD OUT(-)	Shield	GND

Optional accessories

- (1) 6 pin Remote plug.....HR10A-7P-6P
- (2) 12 pin plug.....HR10A-10P-12S(01)
(23810AX)
- (3) D.OUT connector (50 pins)...EIA-644 DX30AM-50P (HIROSE)
Camera-Link (26pins) 10126-5202JL(3M)
- (4) Junction box.....JU-M1A (23831AX)
JU-F1 (23832AX)
- (5) Dummy glass (AR coated)...ARC1214(XMD0009)
- (6) Camera cable(Molded type)
2 m C-201KSM
5 m C-501KSM
10 m C-102KSM
- (7) Tripod adaptorTA-F120

KP-F120 / F120CL System



Progressive scan Black-and-White CCD Camera

KP-F1A



KP-F1A is progressive scan Black-and-White Camera with full pixel independent readout 1/2-inch CCD.

Main Specifications

- Imaging device : 1/2-inch Inter-line CCD square shape pixels
- No. of effective pixels : EIA:659(H)X494(V)
CCIR:782(H)X582(V)
- 1 line frame output
- Sync system : Int./Ext.
- External trigger : Field/frame on demand
- Lens mount : C-mount
- Power supply : 12 VDC
- Dimensions : 44(W)X44(H)X67(D) mm
- Mass : 150 g approx.

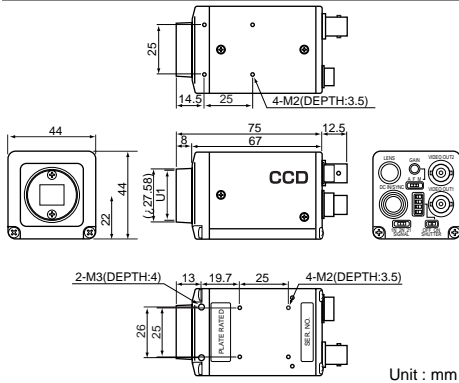
Standard composition

- (1) Camera body (with infrared blocking filter)
- (2) Operation manual

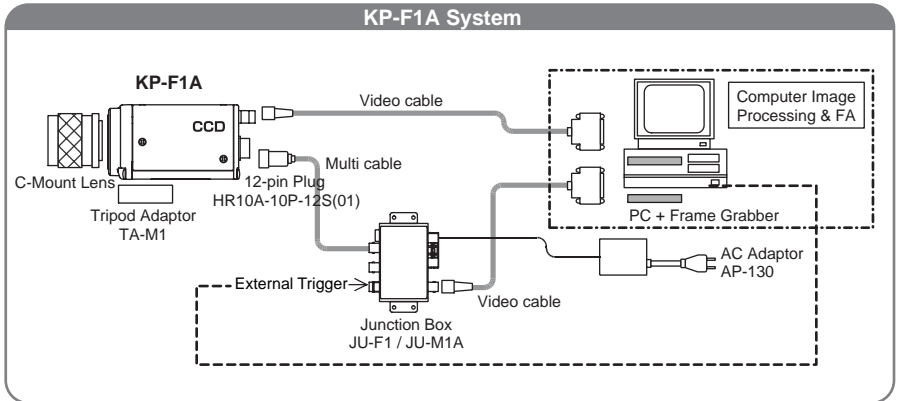
Optional accessories

- (1) Tripod adaptor TA-M1
- (2) 6-pin plug HR10A-7P-6P
- (3) 12-pin plug HR10A-10P-12S(01)
- (4) Junction box JU-F1 or JU-M1A
- (5) Dummy glass (AR-coated) ARC1214
- (6) Camera cable (molded type)
 - 2m C-201KSM
 - 5m C-501KSM
 - 10m C-102KSM
- (7) AC adaptor AP-130

Dimensions



KP-F1A System



7

Separate progressive scan Black-and-White CCD Camera

KP-FB30W



KP-FB30W is progressive scan Black-and-White Camera with full pixel independent readout 1/3-inch CCD.
KP-FB30W is 1/60S progressive scan camera.

Main Specifications

- Imaging device : 1/3-inch Inter-line CCD
- No. of effective pixels : EIA 647(H)X485(V)
- Pixel pitch (square lattice) : 7.4X7.4 μm
- Vertical scanning frequency :
(progressive scan) : 59.94 KHz
(interlace scan) : 119.88 KHz
- Horizontal scanning frequency : 31.468 KHz
- Sync system : Int./Ext. (Automatically switched)
- Sensitivity switching : FIX, AGC or MANUAL
- Gamma correction : 1 or correction
- External trigger : Field/frame on demand
- Lens mount : Special mount
- Power supply : 12 VDC
- Dimensions : Camera head : 20(W)X20(H)X35(D) mm
CCU : 135(W)X30(H)X70(D) mm
- Mass : Camera head : 70 g approx.
CCU : 350 g approx.

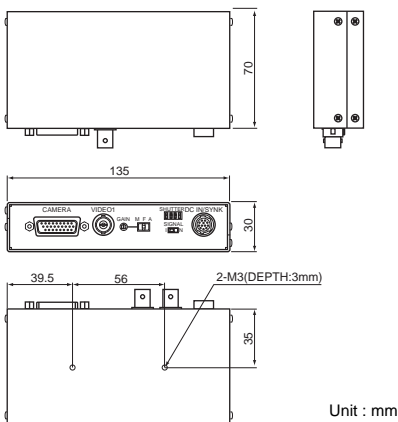
Standard composition

- (1) Camera body (with infrared blocking filter)
- (2) Operation manual

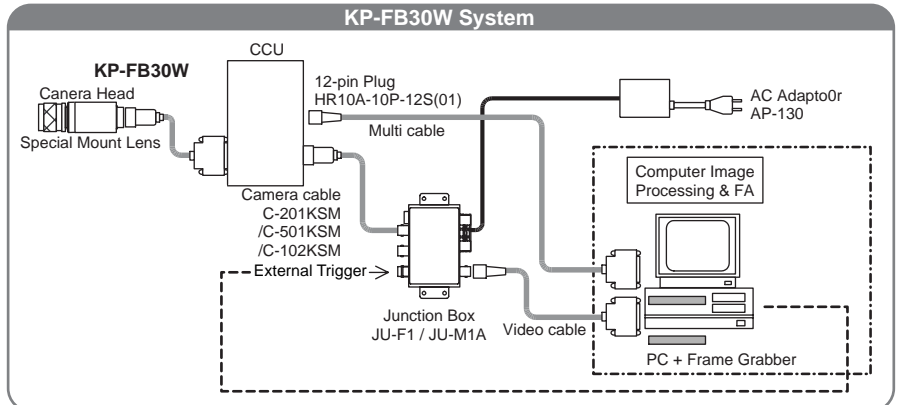
Optional accessories

- (1) 12-pin plug HR10A-10P-12S(01)
- (2) Junction box JU-F1 or JU-M1A
- (3) Dummy glass (AR-coated) ARC1214
- (4) Camera cable (molded type)
 - 2m C-201KSM
 - 5m C-501KSM
 - 10m C-102KSM
- (5) AC adaptor AP-130
- (6) C-mount adaptor LA-D8

Dimensions



KP-FB30W System



Ultra Compact progressive scan

KP-F3 / KP-F3W



KP-F3 is progressive scan Black-and-White Camera with full pixel independent readout 1/3-inch CCD.
 KP-F3W is 1/60s progressive scan camera. KP-FC3/FC3W is side lens type.

Main Specifications

- Imaging device : 1/3-inch Inter-line CCD
- No. of effective pixels : EIA : 647(H)X485(V)
- Pixel pitch(square lattice) : 7.4X7.4 μm
- Vertical scanning frequency :
 - (progressive scan) KP-F3 : 29.97 Hz
 - KP-F3W : 59.94 Hz
 - (interlace scan) KP-F3 : 59.94 Hz
 - KPF3W : 119.88 Hz
- Horizontal scanning frequency : KP-F3 : 15.734 kHz
- KP-F3W : 31.468 kHz
- Sync system : Int./Ext. (Automatically switched)
- Sensitivity switching : FIX, AGC or MANUAL
- Gamma : correction 1 or correction
- External trigger : Field/frame on demand
- Lens mount : C-mount
- Power supply : 12 VDC
- Dimensions : 29(W)X29(H)X62(D) mm
- Mass : 100 g approx.

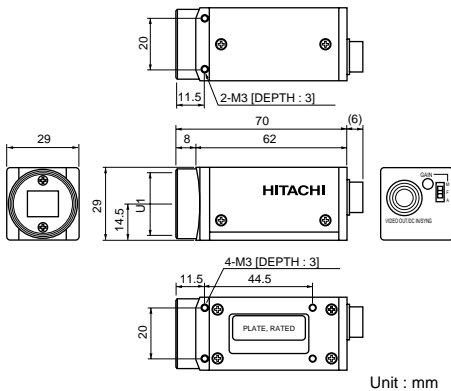
Standard composition

- (1) Camera body (with infrared blocking filter)
- (2) Operation manual

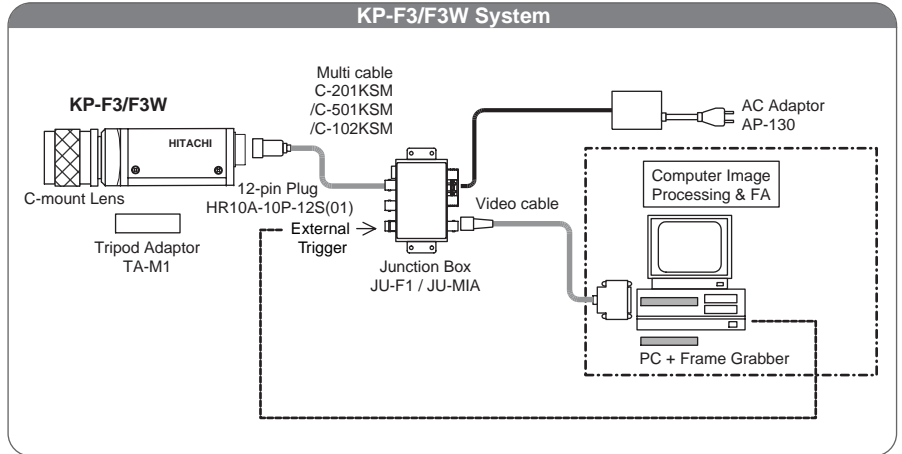
Optional accessories

- (1) Tripod adaptor.....TA-F3
- (2) 12-pin plug.....HR10A-10P-12S(01)
- (3) Junction box.....JU-F1 or JU-M1A
- (4) Dummy glass (AR-coated).....ARC1214
- (5) Camera cable (molded type)
 - 2m C-201KSM
 - 5m C-501KSM
 - 10m C-102KSM
- (6) AC adaptor.....AP-130

Dimensions



KP-F3/F3W System



Rear Panel / Switches and Input/Output Connector

Manual gain control	Switch position		Gain mode
	M	Manual	
	F	Fixed	
	A	Automation control	



Pin Arrangement of VIDEO OUT/DC IN/SYNC Connector(12-pin)

PIN NO.	Internal sync	External sync		
		HD/VD	Frame/Field-On-Demand	ONE trigger
1	GND	GND	GND	GND
2	+12 V	+12 V	+12 V	+12 V
3	VIDEO GND	VIDEO GND	VIDEO GND	VIDEO GND
4	VIDEO out put (signal)	VIDEO out put (signal)	VIDEO out put (signal)	VIDEO out put (signal)
5	-	HD GND	-	-
6	-	HD input (signal)	-	-
7	-	VD input (signal)	TRIG input (signal)	TRIG input (signal)
8	GND	GND	GND	GND
9	NC	NC	NC	NC
10	GND	GND	GND	GND
11	+12 V	+12 V	+12 V	+12 V
12	-	VD GND	VD GND	VD GND

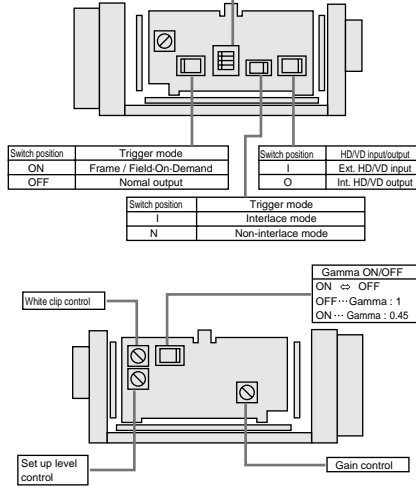
Note: Supply 12VDC in the range between 11 and 13 V.

Internal Switch Setting

Electronic shutter speed setting

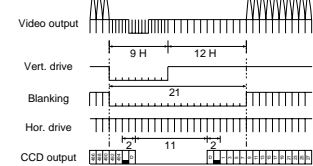
Speed	F3	OFF	1/100	1/250	1/500
	F3W		1/200	1/500	1/1000
Switch position					
Speed	F3	1/1000	1/2000	1/4000	1/8000
	F3W	1/2000	1/4000	1/8000	1/16000
Switch position					

The faster the shutter speed, the more the effect. However, sensitivity is lowered. In the case, it is needed to adjust the lens iris or to increase the illumination. When the shutter is used, the flicker of the objects can be enhanced. In this case, use flickerless illumination like DC lamp.

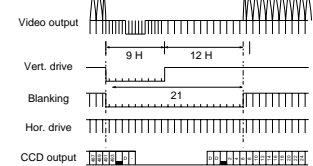


Timing Chart

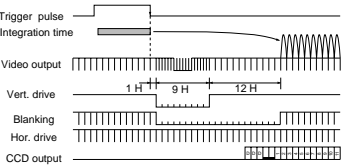
Odd fields



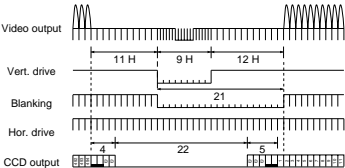
Even fields



0 / Field-On-Demand



Progressive scan



Black-and-White CCD Camera

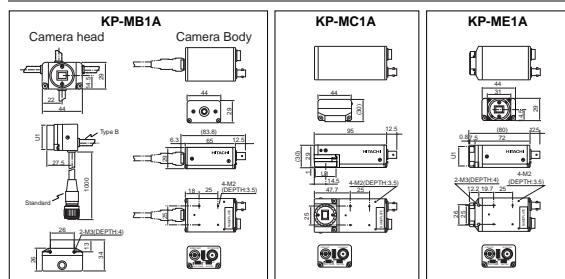
KP-MB1A/MC1A/MC2A/MC2R/MC3A/MC3R/ME1A/ME2A/ME2R/ME3A/ME3R



Black-and-white CCD camera featuring high sensitivity, high resolution and high performance and a variety of functions.

- KP-M2R/M3R have Infra-red sensitivity.
- KP-MB1A is separate head type
- KP-MC2A/MC3A is side lens type
- KP-ME1A/ME2A/ME2R/ME3A/ME3R provided with back focus control

Dimensions



Unit : mm

Main Specifications

- Imaging device :
 KP-M1A : 2/3-inch Inter-line CCD
 KP-M2A : 1/2-inch Inter-line CCD
 KP-M2R : 1/2-inch Infra-red
 KP-M3A : 1/3-inch Inter-line CCD
 KP-M3R : 1/3-inch Infra-red
- No. of effective pixels : EIA:768(H)X494(V)
 CCIR:752(H)X582(V)
- Sync system : Int./Ext. (Automatically switched)
- Sensitivity switching : FIX, AGC or MANUAL
- Gamma correction : 1 or correction
- Electronic shutter modes from
 1/120(CAIR), 1/100(EIA), to 1/10,000
- External trigger : Field on demand, Restart
 and reset operation optionally.
- Lens mount : C-mount
- Power supply : 12 VDC

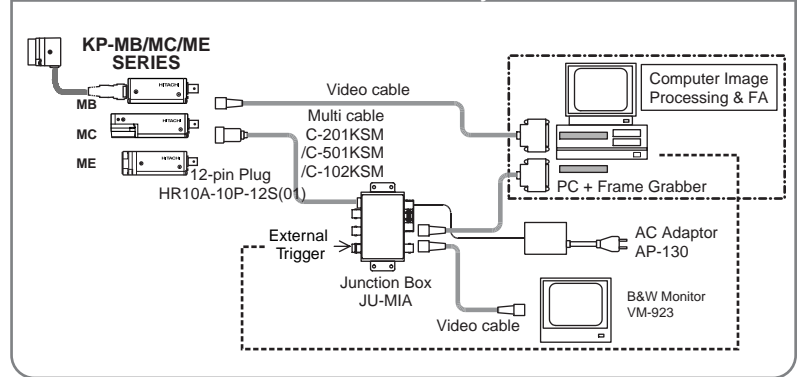
Standard composition

- (1) Camera body
- (2) Operation manual

Optional accessories

- (1) Tripod adaptor.....TA-M1
- (2) 12-pin plug.....HR10A-10P-12S(01)
- (3) Junction box.....JU-M1A
- (4) Dummy glass (AR-coated).....ARC1214
- (5) Camera cable(molded typ)
 - 2m C-201KSM
 - 5m C-501KSM
 - 10m C-102KSM
- (6) AC adaptor.....AP-130

KP-MB / MC / ME Series System



9

Separate type black-and-White CCD Camera

KP-MB30



Capable of installing a camera head in a limited space on a driving section. Suitable for use with factory automation system due to built-in external trigger system. Maximum cable length of 30 m (optionally). Camera cable connectable to any side on camera head.

- KP-MB30 : Standard type (Special mount) 1/3-inch CCD

Main Specifications

- Imaging device : 1/3-inch Inter-line CCD
- No. of effective pixels : EIA : 768(H)X494(V)
- Horizontal resolution : EIA 570 TVlines
- Pixell size :
 KP-MB30 EIA : 6.35(H)X7.40(V) μ m
- S/N : 50 dB

- Sync system : Int./Ext. (Automatically switched)
- Sensitivity switching : FIX, AGC or MANUAL
- Gamma correction : 1 or correction
- Electronic shutter modes from
 1/100(EIA), to 1/10,000
- External trigger : Field on demand
- Power supply : 12 V DC
- Cable length : 3 m standard 30 m MAX (optionally)
- Dimensions :
 Camera head KP-MB30 : ϕ 12.6X35(D) mm
 CCU(common) 135(W)X30(H)X70(D)mm
- Mass :
 Camera head KP-MB30 : 8 g approx.
 CCU(common) 395 g approx.

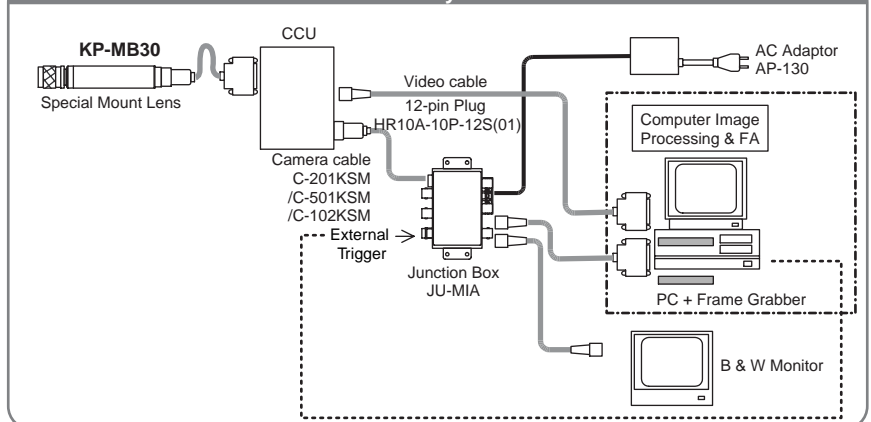
Standard composition

- (1) Camera body (with infrared blocking filter)
- (2) Operation manual

Optional accessories

- (1) 12-pin plug.....HR10A-10P-12S(01)
- (2) Junction box.....JU-M1A
- (3) Dummy glass (AR-coated).....ARC1214
- (4) Camera cable (molded typ)
 - 2m C-201KSM
 - 5m C-501KSM
 - 10m C-102KSM
- (5) AC adaptor.....AP-130

KP-MB30 System



KP-D20A / B

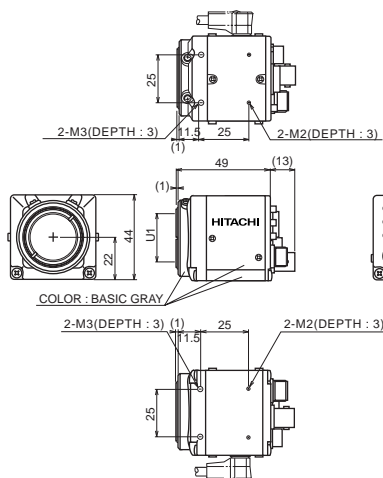


KP-D20A/B is Very small CCD Color camera of 44(W)x44(H)x49(D) mm cubic body featuring high sensitivity, high quality image and multi purpose. Picture control can also be adjusted with the aid of on-screen menus, thus enabling optimum adjustments to match the applications.

Main Specifications

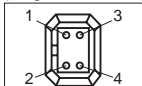
- Imaging device :
 KP-D20A: 1/3-inch Inter-line CCD
 KP-D20B: 1/2-inch Inter-line CCD
- No. of effective pixels :
 EIA : 768(H)X494(V)
 CCIR : 752(H)X582(V)
- Horizontal resolution : 480 TVlines
- S/N : over 50 dB
- Minimum illumination : KP-D20A : 0.8 lx
 KP-D20B : 0.3 lx
- Video signal output : VBS, Y/C
- RS232C control
- Text display
- Electronic shutter modes : AES and from standard to 1/30,000
- AGC(from 0 to 31dB)
- Digital zoom : Enlarged 4 times smoothly
- Backlight compensation : Sensing areas electable from 9 areas
- Lens mount : C/CS-mount
 C/CS-mount adaptor optionally
- Power supply : 12 VDC 220 mA approx.
- Dimensions : 44(W)x44(H)x49(D) mm
- Mass : 130 g approx.

Dimensions



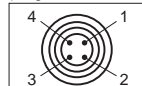
Pin arrangement

LENS connector (Plug:E4-191J-100)



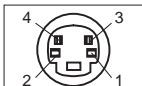
Pin No.	Signal
1	+12V Out/Damp ⊖
2	NC/Damp ⊕
3	VIDEO/Drive ⊕
4	GND/Drive ⊖

REMOTE connector (Plug:HR 10A-7P-4P)



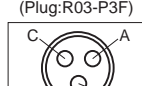
Pin No.	Signal
1	NC
2	IN SD IN
3	OUT SD OUT
4	GND

Y/C connector



Pin No.	Signal
1	Y GND
2	C GND
3	Y OUT
4	C OUT

12V IN connector (Plug:R03-P3F)



Pin No.	Signal
A	GND
B	+12 V IN
C	NC

Standard composition

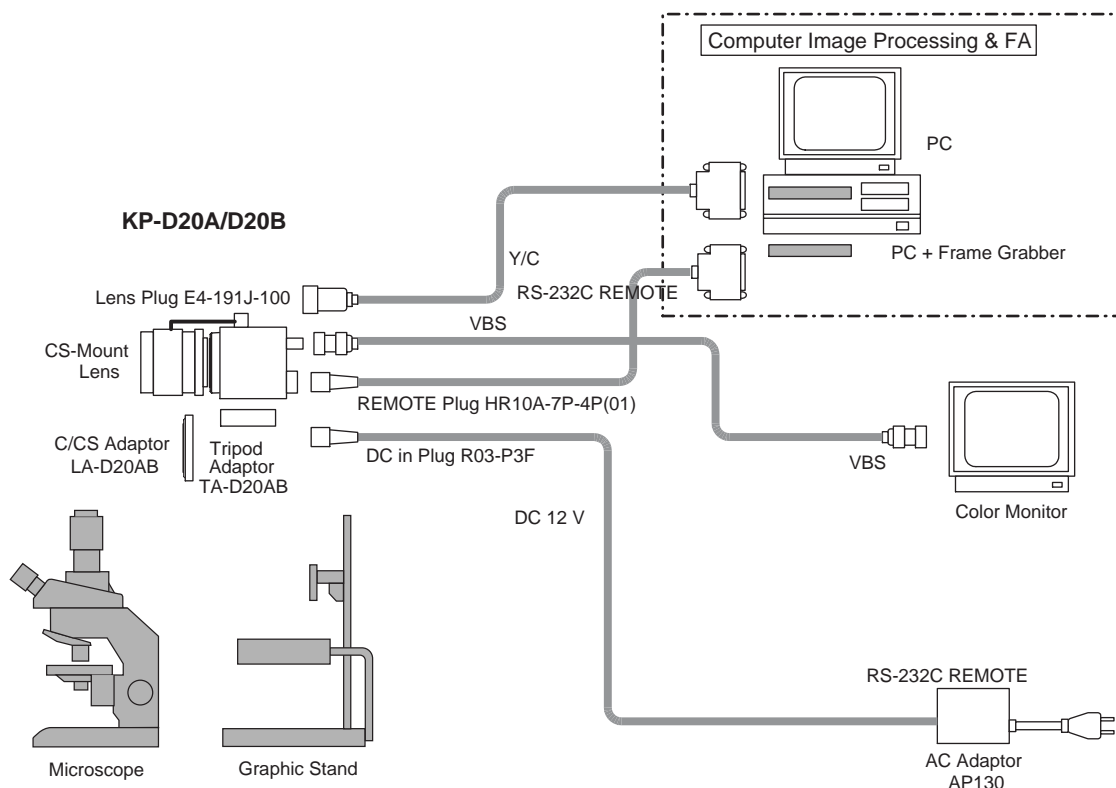
- (1) Camera body
- (2) Operation instructions

Optional accessories

- (1) Tripod adaptor..... TA-D20AB
- (2) C/CS-mount adaptor..... LA-D20AB
- (3) Remote plug..... HR10A-7P-6P
- (4) Lens plug..... E4-191J-100
- (5) DC in plug..... R03-P3F
- (6) AC adaptor..... AP-130

Unit : mm

KPD20A/B System



KP-D50 / D51A



KP-D50



KP-D51A

KP-D50 is single CCD Color CCD camera with R/G/B video signal output. KP-D50/D51 have 1/2-inch CCD featuring high quality image. Picture control can also be adjusted with the RS232C control, thus enabling optimum adjustments to match the machine vision and CCTV applications.

Main Specifications

- Imaging device : 1/2-inch Inter-line CCD
- No. of effective pixels : EIA : 768(H)X494(V)
- Horizontal resolution : 470 TVlines
- S/N : over 50 dB
- Minimum illumination : 2 lx
- Video signal output : KP-D51 : VBS
KP-D50 : VBS, Y/C, R/G/BV
- RS232C control
- Text display
- Electronic shutter modes : AES and from standard to 1/10,000
- AGC (from 0 to 18dB)
- Digital zoom : Enlarged 4 times smoothly
- Backlight compensation : Sensing areas electable from 9 areas
- Lens mount : C/CS-mount
- Power supply : KP-D50 : 12 VDC 5 W approx.
KP-D51 : 100 VAC 6 W approx.
- Dimensions : KP-D50 : 64(W)X64(H)X122(D) mm
KP-D51 : 64(W)X64(H)X178(D) mm
- Mass : KP-D50 : 400 g approx.
KP-D51 : 600 g approx.

Standard composition

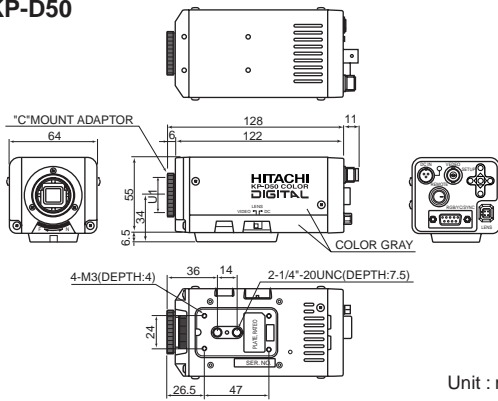
- (1) Camera body
- (2) Operation instructions
- (3) C/CS-mount adaptor

Optional accessories

- (1) Remote plug.....HR10A-7P-6P
- (2) Lens plug.....E4-191J-100
- (3) DC in plug.....R03-P3F for KP-D50
- (4) AC adaptor.....AP-130 for KP-D50

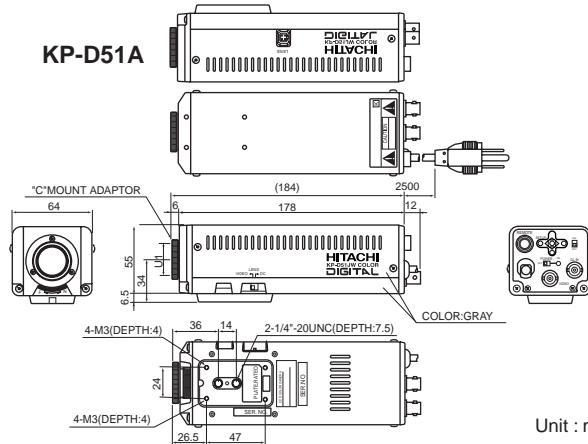
Dimensions

KP-D50



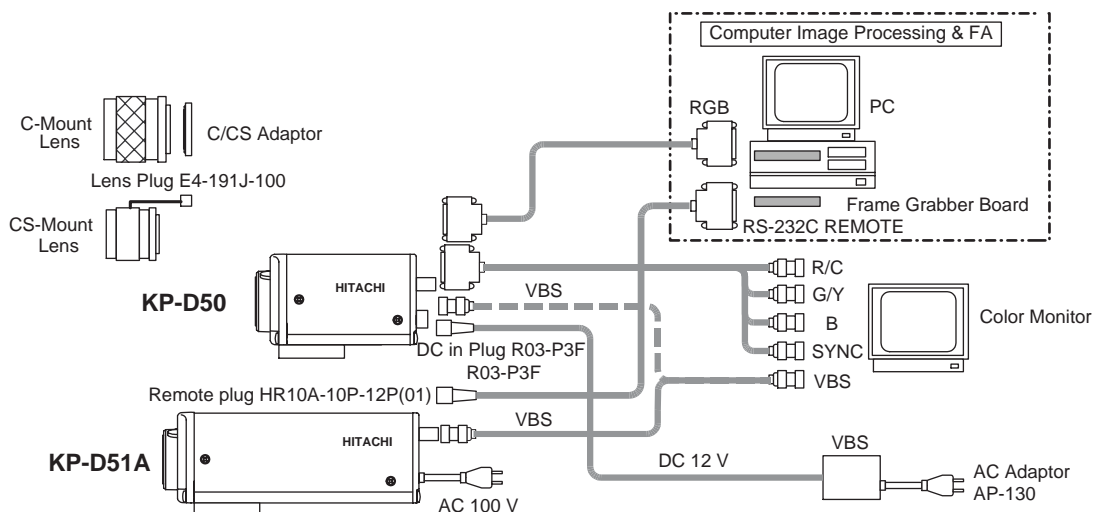
Unit : mm

KP-D51A



Unit : mm

KP-D50/D51A System



High Sensitivity CCD Color Camera

KP-D20-S1 / D21-S1 / D25



KP-D20-S1/D21-S1/D22/D25 is CCD Color camera of 1/3-inch Inter-line CCD featuring high sensitivity, high quality image and multi purpose.

Main Specifications

- Imaging device : 1/3-inch Inter-line CCD
- No. of effective pixels : EIA : 768(H)X494(V)
CCIR : 752(H)X582(V)
- Horizontal resolution : 480 TVlines
- S/N : 50 dB
- Minimum illumination : 0.8 lx (F1.2 AGC MAX)
- RS232C control
- Lens mount : C/CS-mount

- Power supply : KP-D20-S1 : 12 VDC
KP-D21-S1 : 100 VAC
KP-D25 : Special
- Dimensions : 64(W)X63(H)X122(D) mm
- Mass : KP-D20-S1/D25 : 400 g approx.
KP-D21-S1 : 600 g approx.

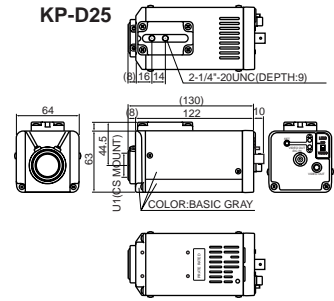
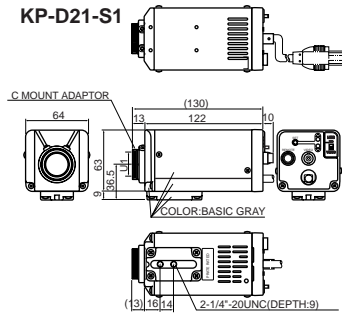
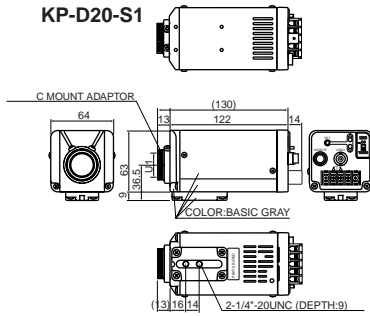
Standard composition

- (1) Camera body
- (2) Operation instructions
- (3) C/CS-mount adaptor

Optional accessories

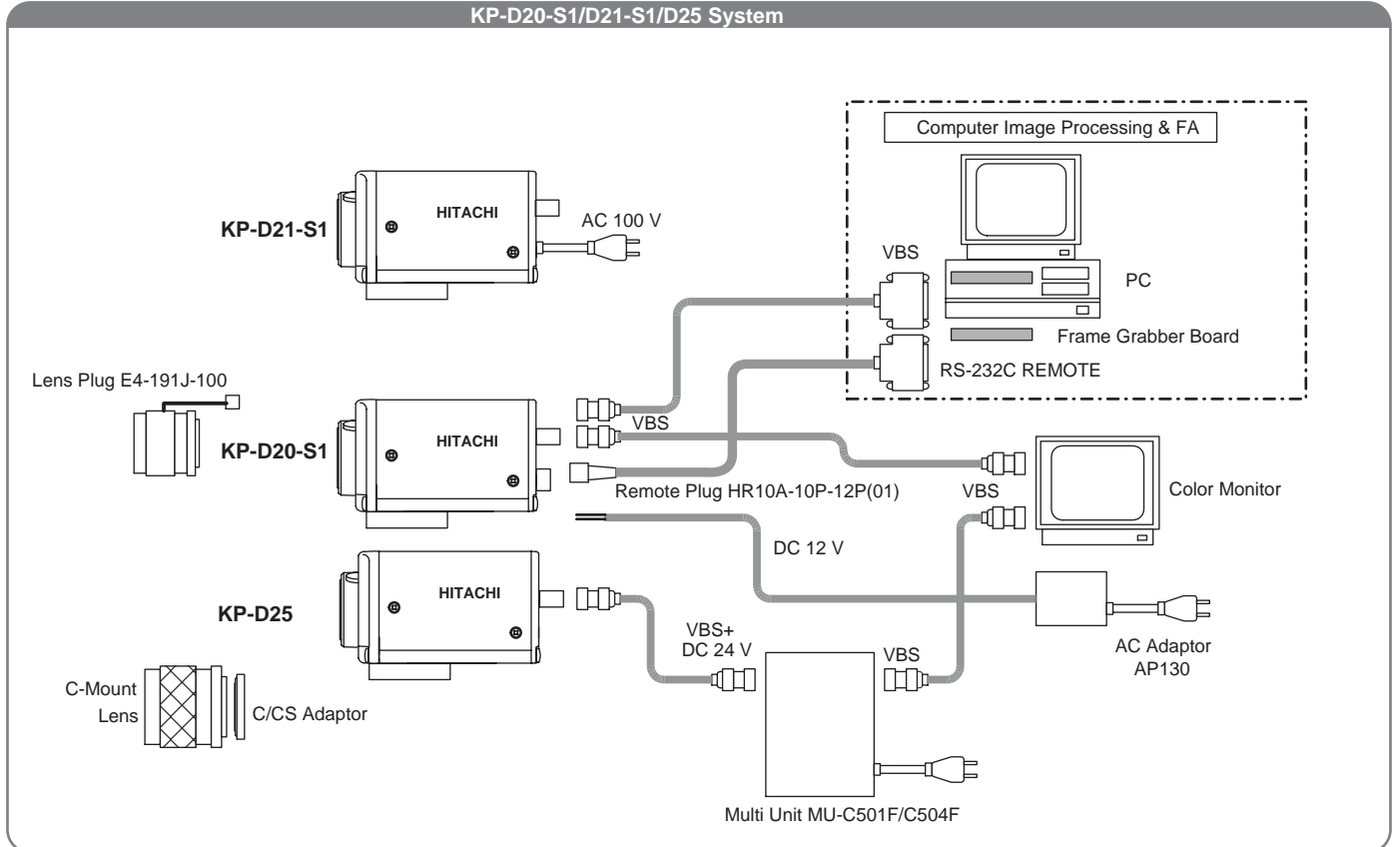
- (1) Remote plug.....HR10A-7P-6P for KP-D20-S1
- (2) Lens plug.....E4-191J-100
- (3) DC in plug.....R03-P3F for KP-D20-S1
- (4) AC adaptor.....AP-130 for KP-D20-S1

Dimensions



Unit : mm

KP-D20-S1/D21-S1/D25 System



Wide dynamic range CCD Color Camera

KP-D70 / D71 / D75



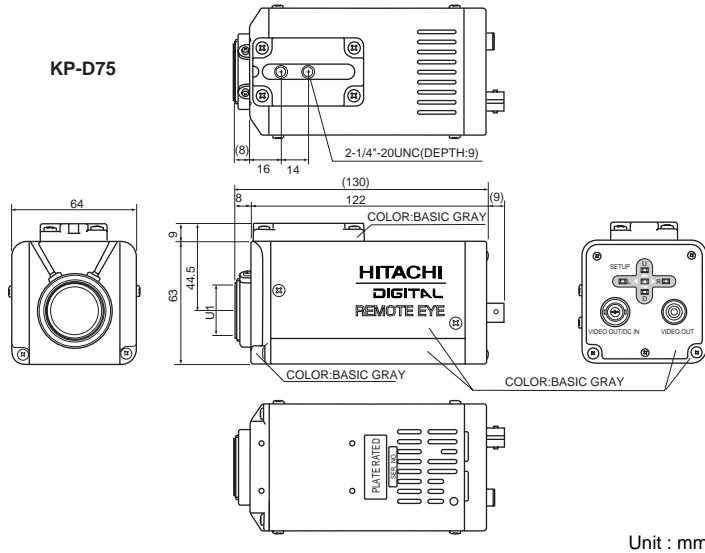
KP-D70/D75



KP-D71

KP-D70/D71/D75 are Color camera using digital signal processing that achieves 120 times the dynamic range of standard types camera, Emplied dual auto white balance function to balance white tracking, independently, such as indoors lighting and outdoor simultaneously.

Dimensions



Main Specifications

- Imaging device : 1/3-inch Inter-line CCD
- No. of effective pixels : 768(H)X494(V)
- Resolution : Normal mode H : 480 TVlines /V:350 TVlines
Integration mode H : 460 TVlines /V:260 TVlines
- S/N : over 50 dB
- Dynamic range : 50 dB approx.
- Minimum illumination(F1.2) :
Normal mode AGC 32 dB : 1.5 lx
Integration mode 64 times : 0.02 lx
- RS232C control
- Lens mount : C/CS-mount
- Power supply : KP-D70 : 12 VDC 410 mA approx.
KP-D71 : 117 VAC 6.5 W approx.
KP-D75 : Special
- Dimensions : KP-D70/D75 : 64(W)X63(H)X123(D) mm
KP-D71 : 64(W)X68(H)X161(D) mm
- Mass : KP-D70 : 400 g approx.
KP-D71 : 740 g approx.
KP-D75 : 450 g approx.

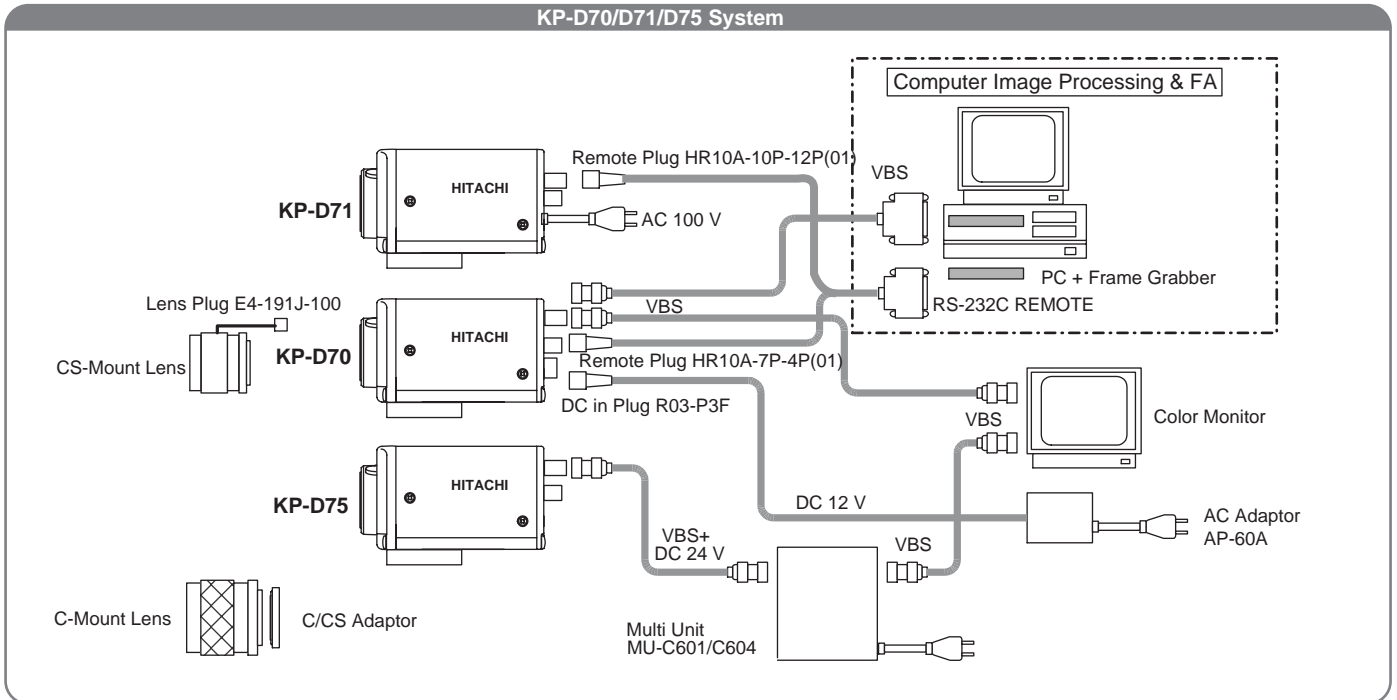
Standard composition

- (1) Camera body
- (2) Operation instructions
- (3) C/CS-mount adaptor (w/o KP-D75)

Optional accessories

- (1) Remote plug.....HR10A-7P-6P for KP-D70
- (2) Remote plug.....HR10A-12P-12P(01) for KP-D71
- (3) Lens plug.....E4-191J-100
- (4) DC in plug.....R03-P3F for KP-D70
- (5) AC adaptor.....AP-60A for KP-D70
- (6) C/CS-mount adaptor.....for KP-D75

KP-D70/D71/D75 System



High sensitivity Color CCD Camera

KP-D591 / D28



KP-D591/D28 take clear color picture under low illumination in night with Integration mode. Thanks to Noise-reduction, clear picture ensured under low illumination. Good color reproduction kept under Natrium-lump and amulgem-lump.

Main Specifications

- Imaging device : KP-D591 : 1/2-inch Inter-line CCD
KP-D28 : 1/3-inch Inter-line CCD
- No. of effective pixels : EIA : 768(H)X494(V)
CCIR : 752(H)X582(V)
- Horizontal resolution : EIA : 480 TVlines
CCIR : 470 TVlines
- S/N : over 50 dB
- Minimum illumination : (F1.2, AGC MAX)
KP-D591 : 0.2 lx
KP-D28 : 0.8 lx
(Integration mode up to 64 times automatically)
- CCD pelche cooling (KP-D591 only)
- Video output : VBS Y/C
- Text Display
- Electric shutter : AES and from 1/60 to 1/30,000 sec
- AGC (from 0 to 31 dB)
- Electric Zoom (Max 4 times)
- Back light collection with various photometric areas
- RS232C control
- Lens mount : C/CS-mount

- Power consumption : AC117 V/AC230 V
KP-D591 : 6 W approx.
KP-D28 : 4.5 W approx.
- Dimensions : 64(W)X63(H)X122(D) mm
- Mass : 600 g approx.

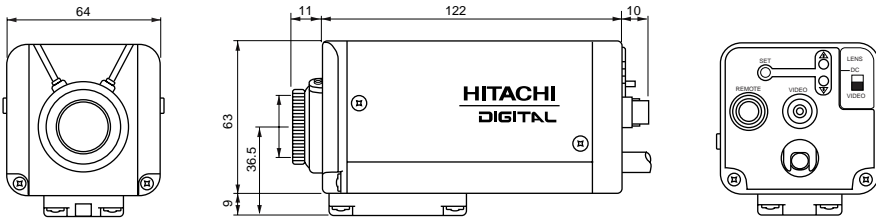
Standard composition

- (1) Camera body (with infrared blocking filter)
- (2) Operation instructions
- (3) C/CS-mount adaptor

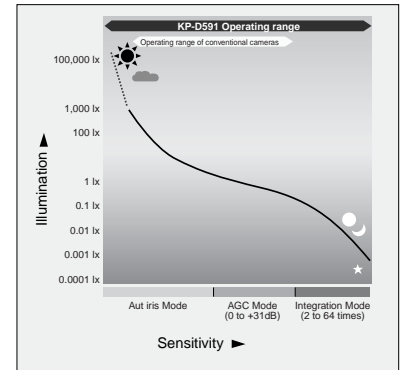
Optional accessories

- (1) Remote plug.....HR10A-7P-6P
- (2) Lens plug.....E4-191J-100

Dimensions



Unit : mm



Very small one-piece 1/3-inch CCD Color Camera

KP-D8



KP-D8 is Very small CCD Color camera of featuring high picture quality and multi purpose with high density parts mounting technology. Operation mode and picture quality controllable via RS-232C (operation junction box JU-D8 needed)

Main Specifications

- Imaging device : 1/3-inch Inter-line CCD
- No. of effective pixels : EIA : 768(H)X494(V)
CCIR : 752(H)X582(V)
- Horizontal resolution : 470 TVlines
- S/N : 48 dB
- Minimum illumination : 4 lx (F1.2)
- Auto electronic shutter from standard to 1/180,000
- Auto white balance
- Video signal output : VBS or Y/C selectable
- Power supply : 12 VDC 150 mA approx.
- Dimensions : 22(W)X22(W)X86(D) mm
- Mass : 80 g approx.
- Lens mount : Special mount
(Diameter 17 mm metric screw,
frange focal distance 12 mm)

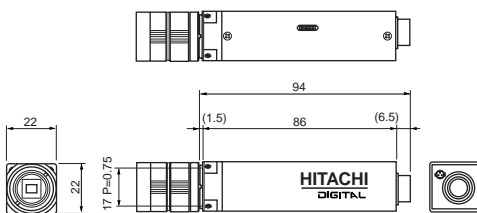
Standard composition

- (1) Camera body
- (2) Operation instructions
- (3) C-mount adaptor, LA-D8
- (4) Wrench for lens mount fixing screw

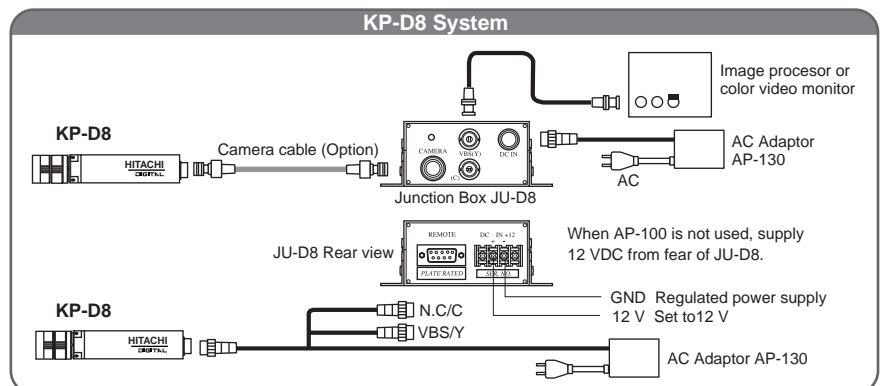
Optional accessories

- (1) Junction box.....JU-D8
- (2) Camera cable (molded type)
 - 2m C-201KSM
 - 5m C-501KSM
 - 10m C-102KSM
- (3) Special Lens.....TF812
- (4) Tripod adaptor.....TA-D8
- (5) Plug for auto iris lens.....SR38-4P-3P
- (6) Software for remote control.....RS-D8
- (7) AC adaptor.....AP-130

Dimensions



Unit : mm



High sensitivity Color CCD Camera

KP-D531



Main Specifications

- Imaging device : 1/2-inch Inter-line CCD
- No. of effective pixels : 768(H)X494(V)
- Horizontal resolution : 480 TVlines
- S/N : over 50 dB
- Minimum illumination(F1.4, AGC MAX)
Color mode : 0.2 lx
Monochrome mode : 0.02 lx (tungsten light)
(Integration mode up to 32 times automatically,
64 times at manual.)
- RS232C control
- Lens mount : C/CS-mount
- Power supply : 100 VAC 6.7W approx.
- Dimensions : 64(W)X63(H)X123(D) mm
- Mass : 600 g approx.

KP-D531 is most suitable Color CCD Camera for surveillance on 24h all days. Because, KP-D531 take color picture with lighting, and take high sensitive mono-chrome picture automatically under low illumination. Thanks to Auto-change Integration mode, clear picture ensured without lighting even in night.

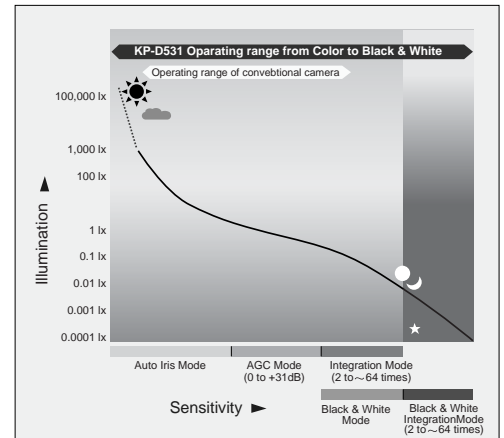
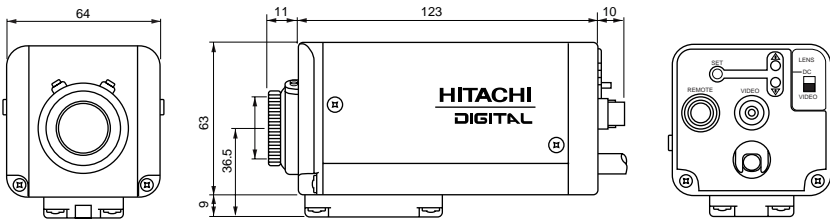
Standard composition

- (1) Camera body (with infrared blocking filter)
- (2) Operation instructions
- (3) C/CS-mount adaptor

Optional accessories

- (1) Remote plug HR10A-7P-6P
- (2) Lens plug E4-191J-100

Dimensions



High sensitivity Infrad-red monochrome CCD Camera

KP-200 / 201



Main Specifications

- Imaging device : 1/2-inch Inter-line CCD
- No. of effective pixels : EIA : 768(H)X494(V)
CCIR : 752(H)X582(V)
- Horizontal resolution : EIA : 570 TVlines
CCIR : 560 TVlines
- S/N : over 50 dB
- Minimum illumination (F1.4, AGC MAX) : 0.0002 lx (tungsten lamp)
- Auto Iris : AGC, auto Electric shutter
- Lens mount : C/CS-mount
- Power supply : KP-200 : DC12V 260 mA approx.
KP-201 : 100 VAC 3 W approx.
- Dimensions : 64(W)X55(H)X122(D) mm
- Mass : KP-200 : 400 g approx.
KP-201 : 500 g approx.

KP-200/201 is most suitable monochrome CCD Camera for surveillance under Infrad-redlighting with Infrad-red sensitive CCD. Not used Integration mode, moving picture ensured under low illumination.

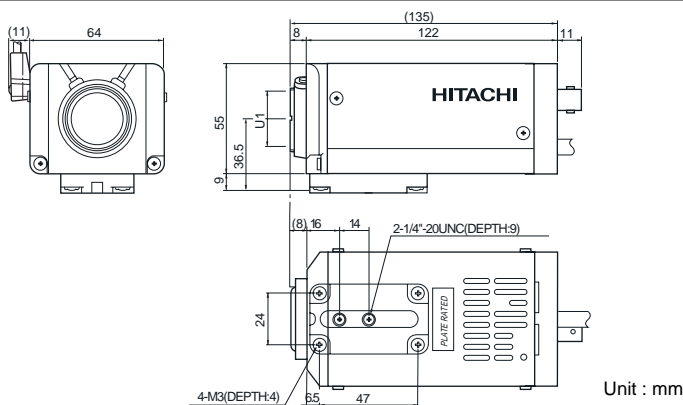
Standard composition

- (1) Camera body
- (2) Operation instructions
- (3) C/CS-mount adaptor

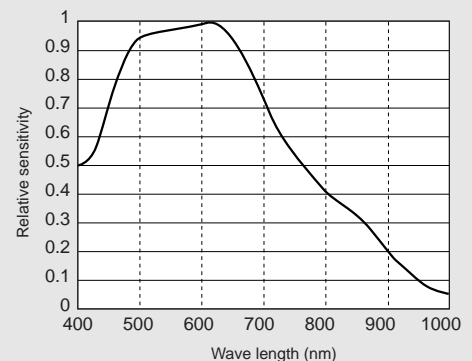
Optional accessories

- (1) Lens plug E4-191J-100

Dimensions



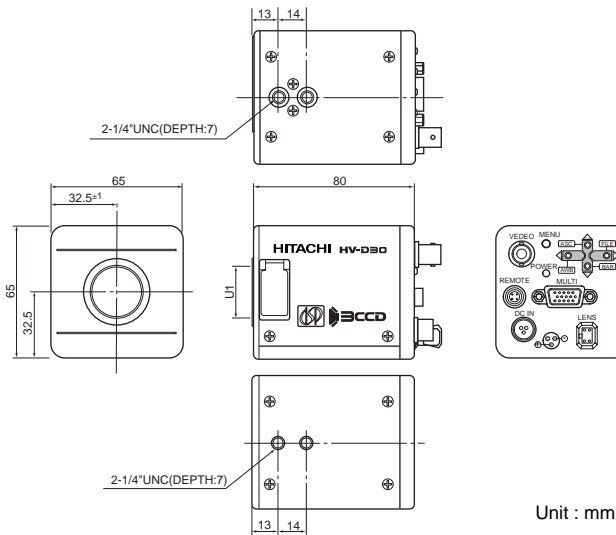
Spectral response characteristics



HV-D30



Dimensions



Input and output signals

Input signal conditions	
Genlock input (MULTI connector)	<ul style="list-style-type: none"> ● VBS 1.0 Vp-p ± 3 dB or black burst/75 Ω or high (BNC) (sync 0.3 ± 0.1 Vp-p, burst 0.3 ± 0.1 Vp-p) ● HD/VD 2 to 5 Vp-p, negative (D-sub connector) Note: Genlock input and Sync output are selected by internal input/output switch.
External trigger input (MULTI connector)	Ext Trig Low 0 VDC, High 2 to 5 VDC
Serial data (REMOTE connector)	1.5 Vp-p ± 3 dB/High (when connected to RC-Z3, JU-C20, JU-Z2) RS-232C level (when connected to personal computer) Note: Set internal switches according to connected equipment.) A level converter JU-C20 is required if controlling the camera from a personal computer via RS-232C interface over a distance more than approx.15 meter.
Output signal ratings	
Component video output (VIDEO, MULTI connector)	VBS 1.0 Vp-p/75 Ω
Y/C output (MULTI connector)	Y: 1.0 Vp-p/75 Ω C: NTSC 0.286 Vp-p (burst)/75 Ω PAL 0.3 Vp-p (burst)/75 Ω
Component output (MULTI connector)	Y: 1.0 Vp-p/75 Ω R-Y: 0.7 Vp-p/75 Ω B-Y: 0.7 Vp-p/75 Ω
RGB output (MULTI connector)	R: 0.7 Vp-p/75 Ω G: 0.7 Vp-p/75 Ω B: 0.7 Vp-p/75 Ω Note: YC/VBS, component and RGB MULTI connector outputs are selected by menu.
Sync outputs (MULTI connector)	HD: 2 Vp-p/75 Ω VD: 2 Vp-p/75 Ω Sync: 2 Vp-p/75 Ω Note: Genlock input and Sync output are selected by internal input/output switch. Serial data
output (REMOTE connector)	1.5 Vp-p/Low (when connected to RC-Z3, JU-C2-, JU-Z2) RS-232C level (when connected to personal computer) Note: Set internal switches according to connected equipment.)
Lens iris control output (Lens connector, manual override)	IRIS CONT : 1.5 V (closed) to 5.5 V (open) or 2.5 V (closed) to 7.5 V (open) Selectable

HV-D30 is Compact, High Performance, Multi Purpose Camera with 12 bit A/D and 3 million gate DSP. A 3rd generation Digital Signal Processor(DSP) enables the camera to achieve its small size, low power consumption, and high stability.

[Main Features]

● Performance in a cube :

The multi-functional design is conducive to a wide range of industrial, medical, and other general purpose imaging applications.

● High picture quality :

High Sensitivity and High Resolution are achieved through the use of three 1/3 inch CCD's, each with 410,000 picture elements (470,000 PAL). Together with the 12-bit analog to digital (A/D) converter and 14-bit accelerated DSP a horizontal resolution of 800TV lines and a high signal to noise ratio (S/N) of 64 db (62 db PAL) is obtained with the use of dynamic noise reduction (DNR). Clear high quality low noise images are now possible even in a high gain mode.

● Auto Shading Compensation (ASC)

● External Trigger functions

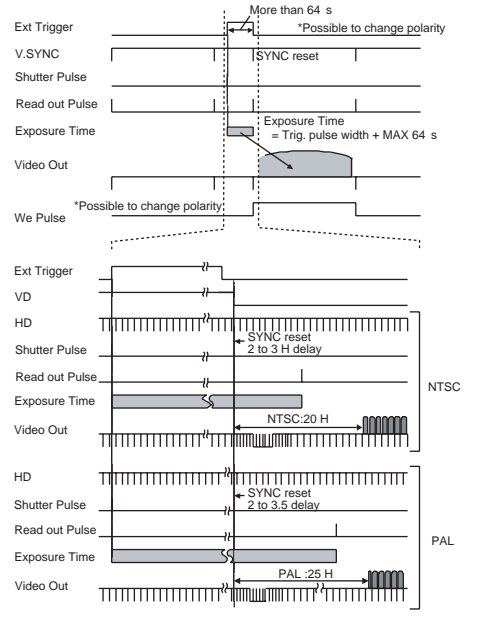
● RS-232C control

Main Features

Color system	NTSC, PAL
Optical system	1/3-inch, F2.2 prism
Imaging system	R, G, B 3 CCD
Picture elements	Corresponding to 1/3-inch interline transfer CCD
Total pixels	NTSC 811(H)X508(V) PAL 795(H)X596(V)
Effective pixels	NTSC 768(H)X494(V) PAL 752(H)X582(V)
Effective image area	NTSC 4.88(H)X3.66(V)mm PAL 4.89(H)X3.64(V)mm
Scanning system	2:1 interlace
Scanning frequency	NTSC 15.735 KHz(H), 59.94 Hz(V) PAL 15.624 KHz(H), 50.00 Hz(V)
Encoder system	R-Y / B-Y
Sync system	Internal/external (VBS, BBS or HD/VD auto selection)
Horizontal resolution	800 TV lines, luminance signal center (Y out and DTL off)
S / N	NTSC : 64 dB type (DNR on), 61 dB type (DNR off) PAL : 62 dB type (DNR on), 59 dB type (DNR off) (Y out, $\gamma=1$, DTL off, GAIN 0 dB)
Standard sensitivity	2000 lx, F9.5
Minimum illumination	0.9 lx (50 IRE, F2.2, GAIN +24 dB, DIGITAL GAIN +12 dB)
Gamma correction	0.45 / 1.0 (on/off)
Geometric distortion	Full screen 0% (not including lens characteristics)
Registration	Full screen 0.05% (not including lens characteristics)
Vertical contour compensation	2 H
Lens mount	C mount (flangeback 17.25 mm in air)
Sensitivity selection	AGC (0 to +24 dB) or GAIN (0 to +24 dB step 1dB or step 3 dB on remote control menu)
Detail control	DTL level and frequency.
Scene files	4 Files
Digital gain	+6 dB, +12 dB sensitivity increase by digital signal processing
CCD drive functions	Preset: 1/100(1/60(PAL)), 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10,000 1/20,000 1/40,000 1/100,000 second
Lockscan	NTSC 1/60.38 to 1/2039 second (step 1H), to 1/100,000 second (step approx. 10% video level) PAL 1/50.31 to 1/2024 second (step 1H) to 1/100,000 second (step approx. 10% video level)
AES	Off to approx. 1/100,000 second
Long term integration	Field/frame integration selectable
Field integration	NTSC 1/30 to approx. 4 seconds (1 frame steps) PAL 1/25 to approx. 4 seconds (1 frame steps) Frame integration : NTSC 1/30 to approx. 8 seconds (1 frame steps) PAL 1/25 to approx. 8 seconds (1 frame steps) (external image memory needed for continuous image)
Frame readout improves vertical resolution	(residual image response deterioration)
Color bar	NTSC: SMPTE / PAL: FULL
Power supply voltage	12 V rated (Stable operation at 10.5 to 15 VDC (ripple and noise absent))
Power consumption	Approx. 4.5 W
Dimensions	65(W)X65(H)X80(D)mm
Mass	Approx. 400 g (not including lens)
Ambient temperature Operating	-10 ~ +45 °C
Storage	-20 ~ +60 °C

External trigger signal timing

Pulse width control



Field on Demand

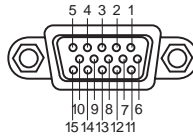
(SHUTTER : EXT TRIG, EXT TRIG : MODE1, CCD MODE : FIELD)

The exposure time is controlled by external trigger pulse width. One field of the picture is obtained after SYNC reset. However, the exposure time must not be below 1/1,000s, even the minimum trigger pulse width.

Pin arrangement

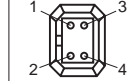
High-Density 15 pin connector plug : KEC-15p(Housing)

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	R/R-Y/C OUT	6	VIDEO GND	11	GND
2	G/Y/Y OUT	7	VIDEO GND	12	RXD
3	B/B-Y/VBS2	8	VIDEO GND	13	HD IN/HD OUT/SYNC OUT
4	WE OUT	9	UNREG +12 V IN	14	VD IN/VD OUT/GL IN
5	GND	10	TRIG IN	15	TXD



LENS connector

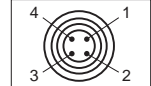
(Plug:E4-191J-100)



Pin No.	Signal
1	UNREG +12V OUT
2	NC
3	IRIS CONT/VIDEO
4	GND

REMOTE connector

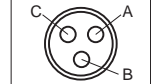
(Plug:HR 10A-7P-4P)



Pin No.	Signal
1	UNREG +12V OUT
2	RXD/SD IN
3	TXD/SD OUT
4	GND

12V IN connector

(Plug:R03-P3F)



Pin No.	Signal
A	GND
B	UNREG +12V IN
C	NC

When using lens

(1) Projection (T) from flange face to rear of lens

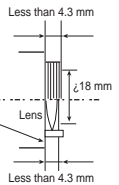
Observe the lens mount size limit indicated in the figure.

If too large, the lens and camera can be damaged

(2) Selecting lens

Overall camera lens make performance is largely affected by the lens. It is recommended to check the following points beforehand.

- Ghosting can occur by using a lens with a large image area (e.g. 2/3 or 1/2 inch). Use a 1/3 inch lens.
- Vertical color shading can occur if the lens has a short exit pupil length.
- If the lens is used at nearly fully open iris, resolution is sacrificed, while such problems as shading and flare can detract from the image quality.



Standard composition

- (1) Camera(HV-D30)
- (2) Accessories
 - ¥ Power plug (R03-P3F)
 - ¥ Operation manual

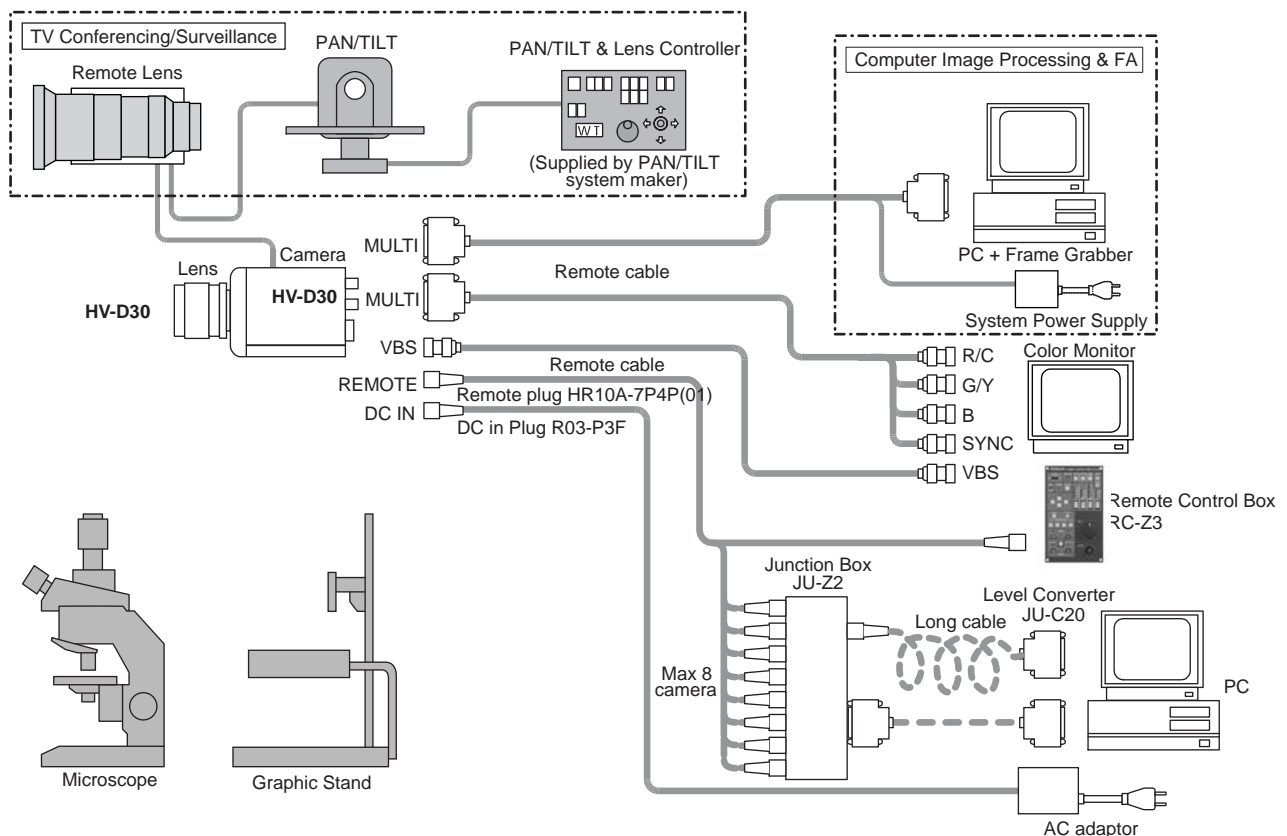
Optional Accessories

- (1) Camera control box RC-Z3
- (2) Junction box JU-Z2
- (3) Level converter JU-C20

Camera control box RC-Z3

Major specifications
 Serial data output : 1.5 Vp-p
 Maximum cable length : 200 m (cable equiv.to HC-5B2)
 Power supply : 9 to 15 VDC (supplied from camera)
 Power consumption : 0.5 W approx.
 Ambient temperature : 5 to 40 ℃C
 Dimensions : 116(W)X128(H)X60(D) mm
 Mass : 500 g approx

HV-D30 System



HV-D23 / D27 / D37



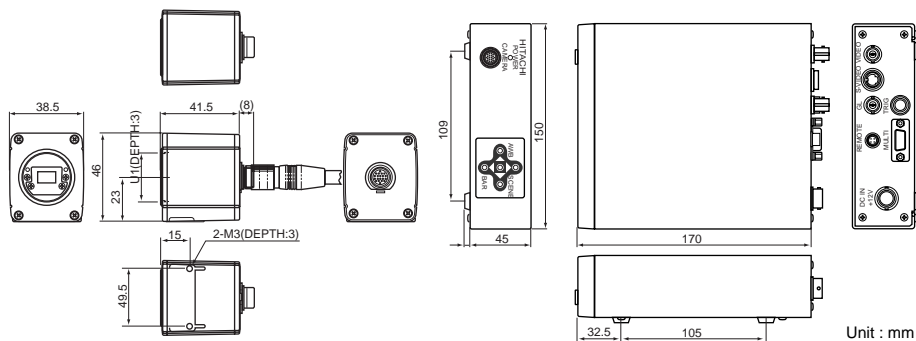
(Photo HV-D23)

One-chip digital circuit from processing section to encoder section.

[Main Features]

- High resolution and high stability 3CCD
- External Trigger functions
- Continuous operation of AGC, Auto Electronic Shutter (AES) and auto lens iris with micro computer
- Bi-directional communication with personal computer
- HV-D23 : High sensitivity with Integration mode

Dimensions (HV-D27 / D37)



Unit : mm

Main Specifications

- Imaging device :
 - HV-D23/D27 : 1/2-inch Inter-line CCD
 - HV-D37 : 1/3-inch Inter-line CCD
- No. of effective pixels : NTSC : 768(H)X494(V)
PAL : 752(H)X582(V)
- Horizontal resolution : HV-D23/D27 750 TVlines
HV-D37 800 TVlines
- Standard Sensitivity : 2000 lx, F8
- S/N : (DNR ON) HV-D23/D27 NTSC : 62 dB
PAL : 60 dB
HV-D37 NTSC : 62 dB
PAL : 60 dB
- Lens mount : C-mount
- Power supply : 12 VDC
- Dimensions : Head 38.5(W)X46(H)X41.5(D) mm
- Mass : 90 g approx.

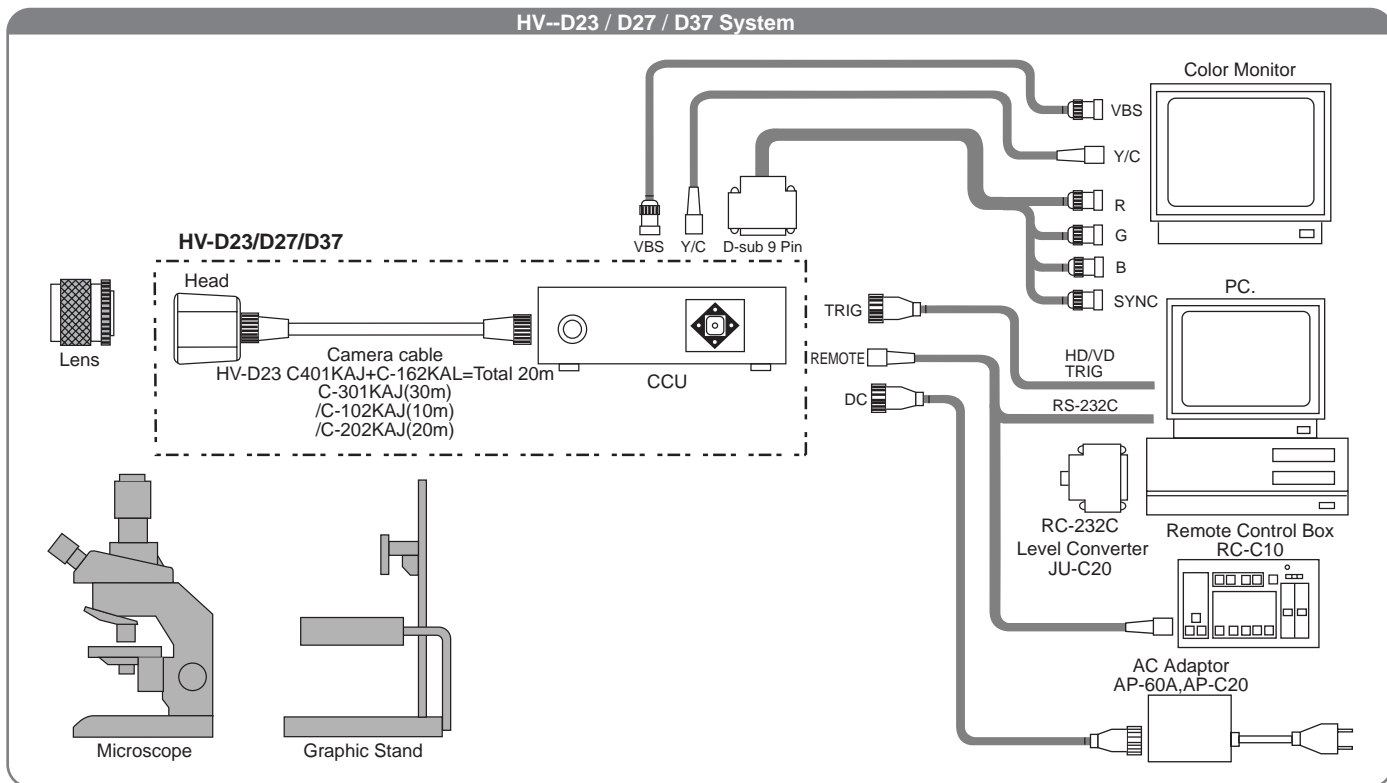
Standard composition

- (1) Camera head
- (2) CCU
- (3) Camera cable
- (4) Operation manual

Optional accessories

- (1) Camera cable
 - 3m C-301KAJ
 - 10m C-102KAJ
 - 20m C-202KAJ
 - 4m+16m C-401KAJC-162KAL
- (2) AC adaptor AP-60/AP-C20
- (3) Remote control box RC-C10
- (4) Junction box JU-Z2/JU-C20

HV-D23 / D27 / D37 System



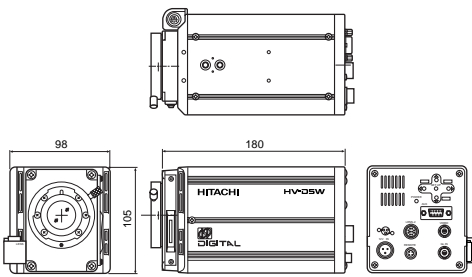
3CCD Color Camera

HV-D5W



HV-D5W is 3CCD Color Camera with 2/3-inch 16:9 wide aspect CCD, switchable between 16:9 and 4:3

Dimensions



Unit : mm

[Main Features]

- Image enhancements from digital processing
Switchable between 16:9 and 4:3
Dyna chroma and auto-knee
Flesh tone detail etc.
6 vector independently variable masking
and linear matrix masking four scene
file memories
- Serial digital output (SDI) DI-D5
(optional)
- Remote filter wheel FD-Z5 (optional)

■ Main Specifications

- Imaging device :
2/3-inch 510,000-pixel inter-line CCD
- Horizontal resolution : 750 TVlines
- S/N : 65 dB (DNR on)
- Standard sensitivity : 2000 lx / F11
- Minimum illumination : 1 lx (F1.4, +18 dB, ultra-gain)
- Power supply : 12 VDC 12.5 W approx.
- Dimensions : 98 (W)X105(H)X180(D) mm
- Mass : 1.5 kg approx.

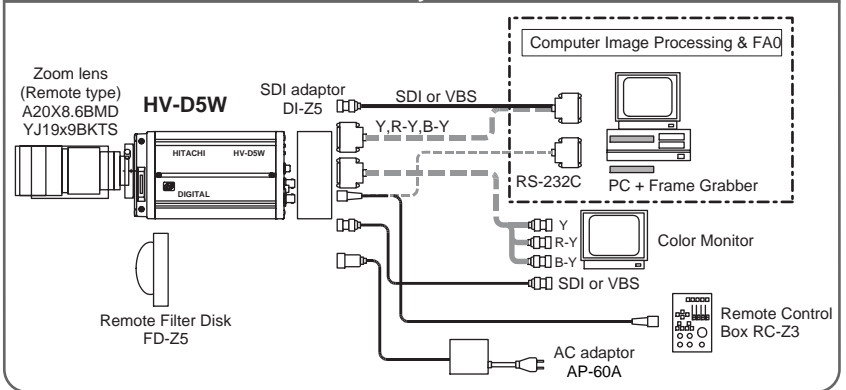
Standard composition

- (1) Camera Head HV-D5W
- (2) Operation Manual

Optional Accessories

- (1) Camera control panel.....RC-Z3
- (2) AC adaptor.....AP-60A

HV-D5W System



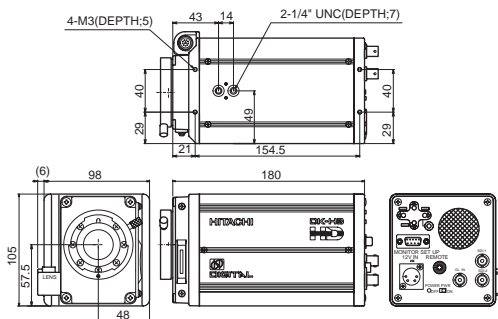
Box type HDTV Digital Color Camera

DK-H3A



The highest picture quality and stability are assured with the three 2/3" 2.2 million pixels CCDs and a 1.8 M gates single chip DSP. The DK-H3A is high S/N with HD-SDI output.

Dimensions



Unit : mm

■ Main Specifications

- Effective pixels : 1920(H)X1080(V)
- Scan format : 1080 59.94 i
- Horizontal resolution : 1000 TVlines
- S/N : 54 dB (HD-SDI)
- Standard sensitivity : 2000 lx / F8
- Minimum illumination : 16 lx (100 %, F1.4, +12 dB)
- Versatile CCD drive functions :
Five preset electronic shutter speeds,
Charge control (CC) frame mode improves
vertical resolution, etc
- Improved operational ease
Real-time auto white balance
Intelligent automatic level control (ALC)
- RS-232C remote control from a personal
computer

- Power supply : 12 VDC
- Dimensions : 98(W)X105(H)X180(D) mm
- Mass : 1.5 kg approx.

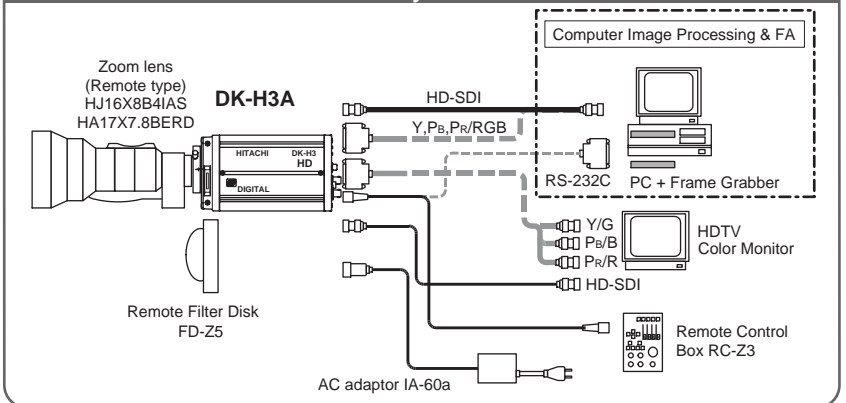
Standard composition

- (1) Camera Head DK-H3
- (2) Operation Manual

Optional Accessories

- (1) Camera control panel.....RC-Z3
- (2) AC adaptor.....IA-60a(I.D.X)
- (3) Remote filter wheel.....FD-Z5
- (4) Remote control 15X zoom lens (Fujinon)... HA17X7.8BERD
- (5) Remote control 15X zoom lens (Canon).....HJ16X8B4IAS

DK-H3 System



Monochrome Video Monitor

VM-1720 / 1220 / 920

VM-1720/1220/920 is Monochrome video monitor designed for high quality reproductuin of CCTV and other video signals.

■ Main features

- High resolution picture due to use of a wide bandwidth video amplifier.
- High reliable design due to extensive use of IC.
- High quality picture due to incorporation of a white suppress circuit.

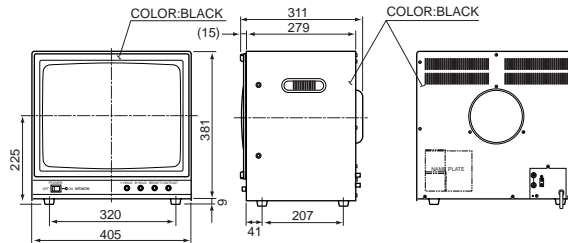
■ Main specifications

Pictuer tube : VM-1720 : 17-inch 114 degree deflection
 VM-1220 : 12-inch 90 degree deflection
 VM-920 : 9-inch 90 degree deflection
 Input video signal : VBS 1.0 Vp-p Sync negative
 Scan Standard : EIA (525 lines 60 Hz) J, U type
 CCIR (625 lines 50 Hz) E, K type
 Input inpedance : 75 Ω or High inpedance
 Resolution(center) : horizontal : over 800 TVlines
 Vertical : over 350 TVlines
 Deflection linearity : Less than 1 % of picture height at center
 Scan size : Over scan +5 %
 Power supply : U and C type 117 VAC ±10 %
 E and K type 230 VAC±10 %

VM-1720



Dimensions



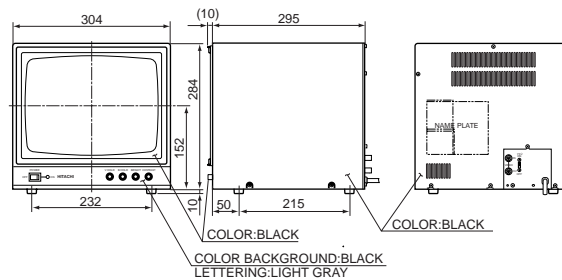
Power Consumption : 58 W approx.
 Dimensions : 405(W)X381(H)X294(D) mm
 Mass : 15 kg approx.

Unit : mm

VM-1220



Dimensions



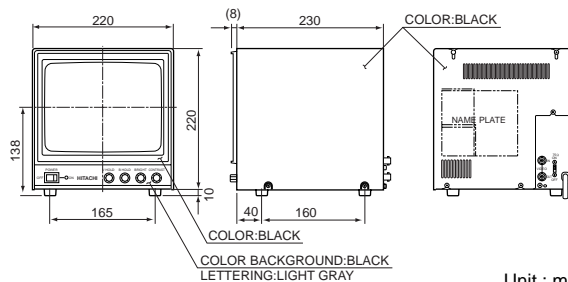
Power Consumption : 32 W approx.
 Dimensions : 304(W)X284(H)X305(D) mm
 Mass : 10 kg approx.

Unit : mm

VM-920



Dimensions



Power Consumption : 28 W approx.
 Dimensions : 220(W)X220(H)X238(D) mm
 Mass : 6.5 kg approx.

Unit : mm

List of Accessories for Industrial Video Camera

		HV-D23-D27/D37							
		HV-D30							
		BE-201C/BE-211C/BE-212C/BE-301C							
		KP-D20A/B							
		KP-D8							
		KP-F120							
		KP-F100A/F100UV							
		KP-F3/F3W							
		KP-F1A							
		KP-M22A/M32A							
		KP-M1A/M2A/M3A							
AC Adaptor	AP-130	●	●	●	●	●	●	●	●
	AP-C20						●*		●*
	AP-60A						●*		●*
Junction unit	J U-D8						●		
	J U-M1A	●	●	●	●	●	●		
	J U-F1			●	●	●	●		
	J U-Z2								● ●
C-mount Adaptor	LA-D8						●		
CS-mount Adaptor								●	
C/CS-mount Adaptor	LA-D20AB							● ●	
Tripod Adaptor	TA-D8						●		
	TA-M1	●		●		●			
	TA-F3		●		●				
	TA-120						●		
	TA-D20AB								●
Cable	C-201/C-501/ C-102KSM	●	●	●	●	●	●		
12pin plug	HR10A-10P-12S	●	●	●	●	●	●		
6pin plug	HR10A-9P-6P			●		●	●		
4pin plug	HR10A-7P-4P							●	● ●
Lens plug	E4-19IJ -100							●	●
DC plug	R03-P3F							●	●
Dummy glass	ARC1214	●	●	●	●	●	●		
Remote control	RC-Z3								●

* AP-C20 AP-60A need cable modify

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 5750Pt1
EN 29001/JIS Z9901

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