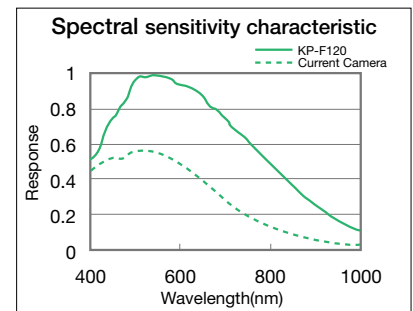


## High resolution progressive scan monochrome CCD camera

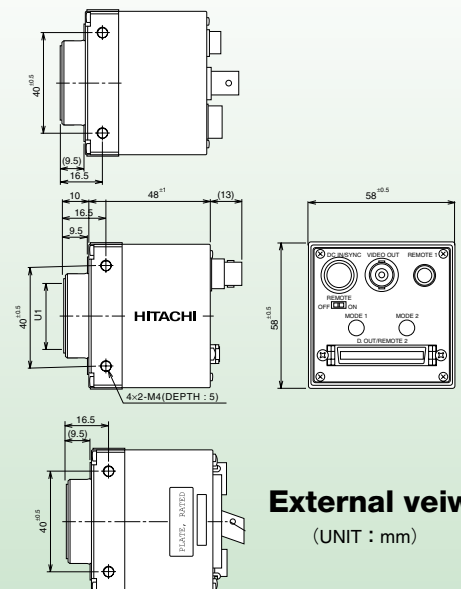
# KP-F120



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

### Features

- **Hi 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 optionally
- **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.



**External view**

(UNIT : mm)

## Specifications

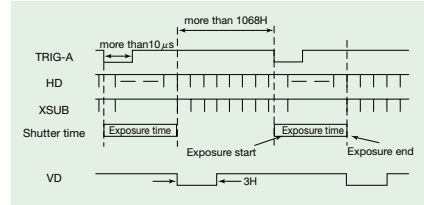
<b>Pickup element</b>	2/3-inch interline CCD
<b>Effective pixels</b>	1392(H)x1040(V)
<b>Pixel pitch</b>	6.45 μm(H)×6.45 μm(V) (square lattice)
<b>Imaging area</b>	8.98 mm(H)×6.71 mm(V)
<b>Scanning system</b>	Progressive
<b>Aspect ratio</b>	4 : 3
<b>Frame rate</b>	30frames/second (full pixel readout) to 190 frames/second (partial scan)
<b>Horizontal scanning frequency</b>	32.18 kHz
<b>Synchronization</b>	Internal/external (automatic switching)
<b>Lens mount</b>	C mount
<b>Flange focal distance</b>	17.526 mm
<b>Video output</b>	Digital output or analog output for image checking Digital output EIA-644 dual channel 10 bits, 28.8 MHz
<b>External sync input</b>	HD/VD TTL level negativeinput impedance: 1 kΩ Frequency deviation:±0.0005%
<b>Electronic shutter speed</b>	Selectable by external switches: Off (frame rate), 1/30, 1/125, 1/250, 1/1000, 1/2000, 1/4000, 1/10000, 1/50000 second.
<b>Frame on demand</b>	External switch setting off, fixed shutter, two trigger and one trigger
<b>Power supply voltage</b>	12 ± 1 VDC
<b>Current consumption</b>	400 mA approx.
<b>Ambient, operating</b>	0 to + 40 °C(+32 to ; 104 F), less than 90 % RH
<b>Ambient, storage</b>	-10 to + 50 °C(+14 to +122 F), less than 70 % RH
<b>Vibration endurance</b>	29 m/s <sup>2</sup> , 10 to 55 Hz 30 minutes each on XYZ axes
<b>Shock endurance</b>	294 m/s <sup>2</sup> (vertical, horizontal, once each face)
<b>External dimensions</b>	58(W) × 58 (H) × 48 (D) mm
<b>Mass</b>	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.

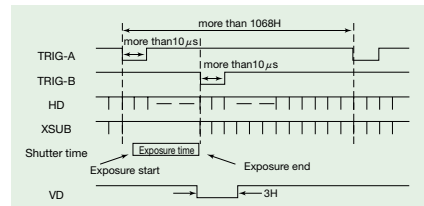
### ●Fixed shutter mode

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.



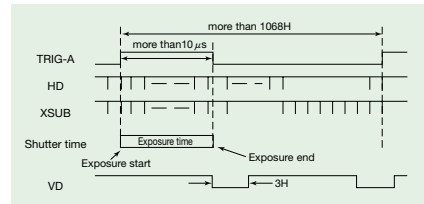
### ●Two trigger mode

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

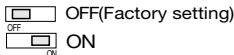
When one trigger pulse (TRIG A) is supplied, exposure starts at the rising edge of the inputs pulse, and ends at the falling edge of the inputs pulse. Then, the V-SYNC pulse is reset and picture are delivered immediately. The pulses width is the exposure time.



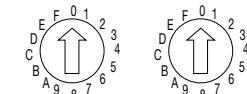
## Rear panel switches

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 switch



MODE1, MODE2 position select

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

## Pin connections

### ●DC input and sync connections Connections to DC IN and SYNC

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

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

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

### ●Digital out connector Connector Hirose DX10G1M-50S

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

## Composition

- Camera (with infrared blocking filter)
- Operating instructions

## Optional accessories

- Tripod adaptor TA-F120
- 6 pin Remote plug HR10A-7P-6P
- 12 pin plug HR10A-10P-12S(01) (23810AX)
- D. OUT connector (50pins) DX30AM-50P
- Junction box \*JU-F1(23832AX)  
\* Note : Assembly type made to order JU-M1(23831AX)
- Dummy glass(ARCOated) ARC1214(XMD0009)
- Camera cable

	Molded type	Assembly type
2 m	C-201-KSM	C-201KS
5 m	C-501KSM	C-501KS
10 m	C-102KSM	C-102KS

## Hitachi Kokusai Electric Inc.

Head Office : 14-20, Higashi-Nakano 3-choume, Nakano-ku, Tokyo 164-8511, Japan  
Phone : (03) 3368-6111, Fax : (03) 3365-9119 http://www.h-kokusai.com

### International Sales Operator's Division

1, Kanda izumi-cho Chiyoda-ku Tokyo 101-0024, Japan  
Phone : (03)5821-5311, Fax : (03) 5821-5394

### Beijing Office

Beijing Fortune Building 5, Dong San Huan Bei-lu, Chao Yang District, Beijing, 100029 China  
Phone : (10) 6590-8755/8756, Fax : (10) 6590-8757

### Hitachi Denahi America, Ltd.

Headquarters and Northeast Office : 150 Crossways Park Drive, Woodbury, New York 11797, U. S. A.  
Phone : (516) 921-7200, Fax : (516) 496-3718

### West Office

: 371 Van Ness Way, Suite 120 Torrance, CA, 90501, U. S. A.  
Phone : (310) 328-6116, Fax : (310) 328-6252

### Midwest Sales

: Phone : (877) 326-9104, Fax : (516) 496-3718  
Service (734) 721-6180

### South Sales

: Phone : (877) 326-8105, Fax : (516) 496-3718  
Service (678) 937-0001

### Parts Center

: Phone : (516) 682-4435, Fax : (516) 921-0993

### Latin Sales

: Phone : (516) 682-4420, Fax : (516) 496-3718

### Hitachi Denahi Canada, Ltd.

Head Office : 1 Select Avenue Unit#14 Scarborough, Ontario M1V 5J3, Canada.  
Phone : (416) 299-5900, Fax : (416) 299-0450

### Eastern Office

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

### Ottawa Office

: 9 Antares Drive, Nepean, Ontario, K2E 7V5, Canada  
Phone : (613) 727-3800, Fax : (613) 825-4253

### Hitachi Denahi (Europa) GmbH

Head Office : Wesikircher Straße 88, Jügesheim D-63110 Rodgau, Germany  
Phone : (6106) 6992-0, Fax : (6106) 1690-6

### Hitachi Denahi (U. K.) Ltd.

Head Office : 14 Garrick Industrial Centre, Irving Way, Hendon, London, NW96 AQ, United Kingdom  
Phone : (208) 202-4311, Fax : (208) 202-2451

### Leeds Office

: Brookfield House, Selby Road, Garforth, Leeds LS25 1NB United Kingdom  
Phone : (113) 287-4400, Fax : (113) 287-4260

Specification are subject to change without notice.