



3CCD progressive digital camera

HV-F31F/F22F/F31CL/F22CL/F31CL-S1/F22CL-S1

IEEE
1394

camera
link



● Digital Interface

- IEEE1394

HV-F31F/F22F

- CameraLink

HV-F31CL/F22CL (medium configuration)

HV-F31CL-S1/F22CL-S1 (base configuration)

● High resolution

HV-F31 : 1024 × 768

HV-F22 : 1360 × 1024



Feature

◆ Independent 6 colors masking

Colors are freely changeable by Changing each of R,G,B(primary color), Ye,Mg, and Cy (secondly color) for independent numeric value.

◆ Auto shading correction

Color shading (uneven color) due to lens and lighting can be automatically corrected.

◆ High resolution

HV-F31 : 1024 × 768 HV-F22 : 1360 × 1024

◆ Frame on-demand function

An image can be acquired at a desired timing by external input of a trigger signal.

◆ The latest digital interface

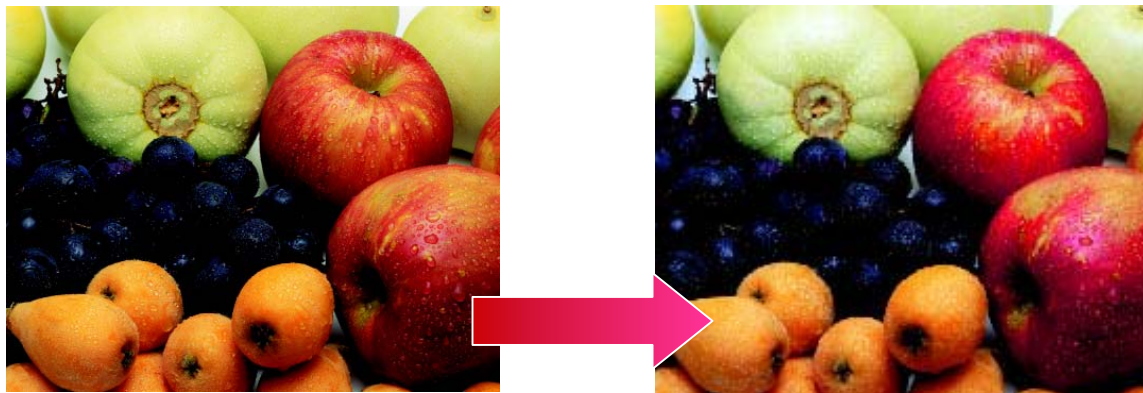
- IEEE1394 : Direct PC connection without using a frame grabber board
- Camera Link : Transmission of video signal with RGB(3x10bits) available by medium configuration



◆ Main Function Independent 6 colors masking

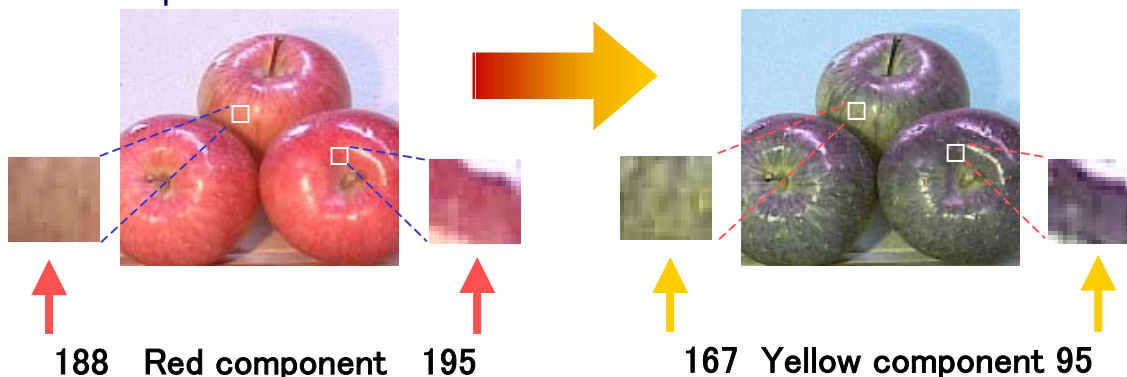
Because of each color R, G, B (primary color) and Ye, Mg, Cy (secondary color) can be changed hue and saturation **as an independent other color**, color fidelity can be improved.

For microscope, printing check and image capture system, subtle color differences are detectable.



Example: Fruit check

Ripening level detection accuracy improved after subtraction of a red component and emphasis of a yellow component





◆ Major Feature Auto white shading correction

The ASC function can automatically compensate for color shading errors caused by interaction between the lens and prism assembly in C-Mount optical systems.

Auto white Shading Correction function(**ASC**) provide two mode for correction shading automatically.

- 1) **COLOR/LUMINANCE mode**: Color shading on screen upper and lower side can be automatically corrected
- 2) **FLAT mode** : It is available to correct the white shading even if the picture has unevenness.



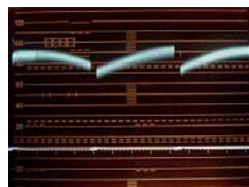
After White Shading correction



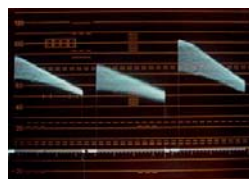
ASC



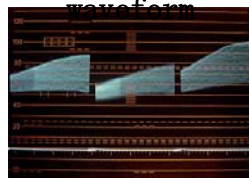
White shading Image



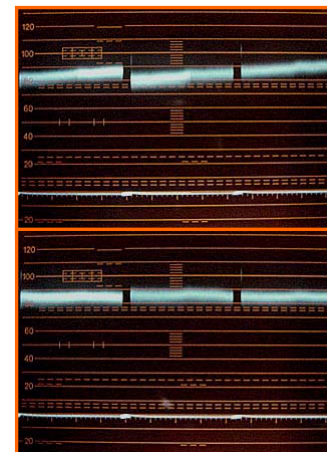
Vertical video waveform



Horizontal video waveform

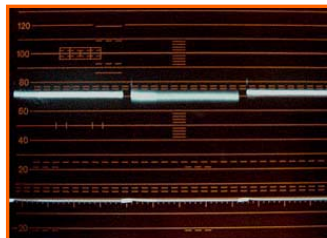


Vertical video waveform



● **COLOR mode**
Waveform after White Shading correction

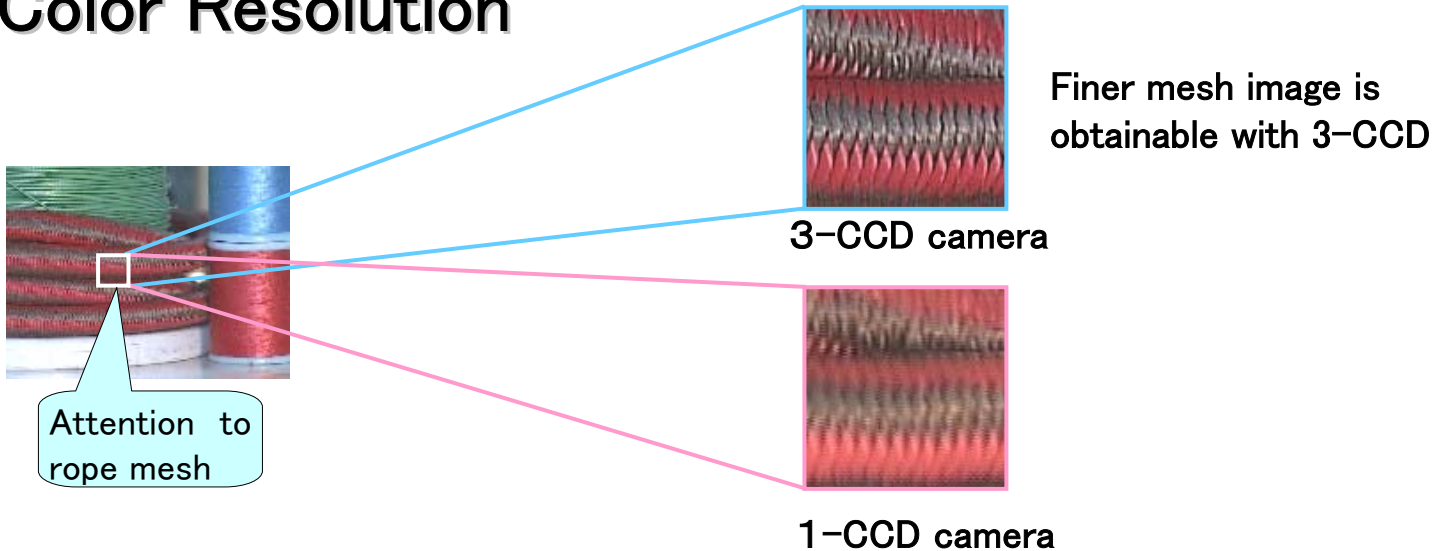
● **LUMINANCE mode**
Waveform after White Shading correction



● **FLAT mode**
Waveform after White Shading correction

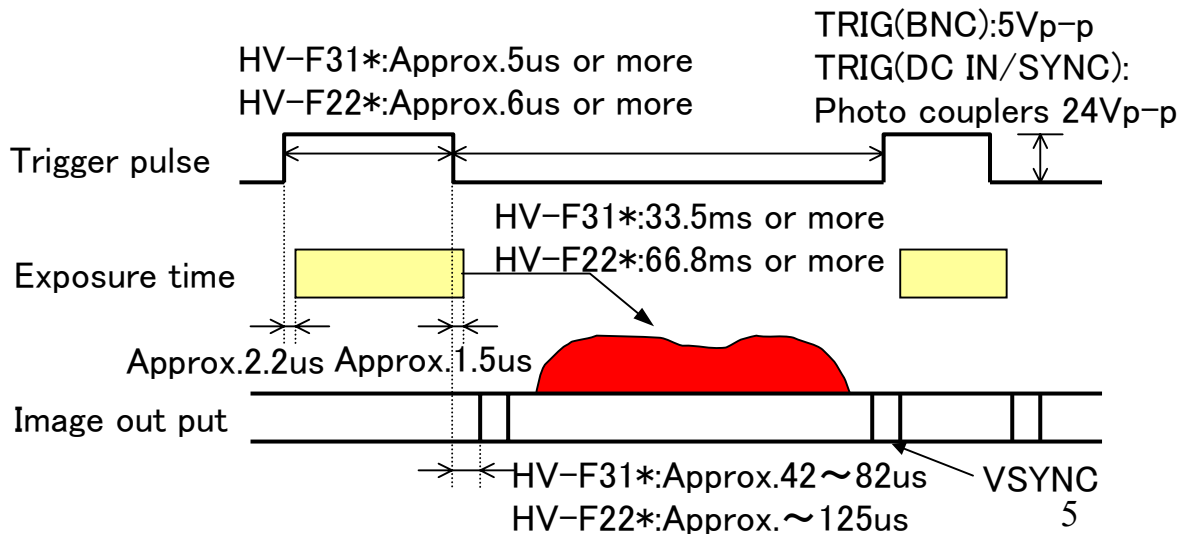


◆ Color Resolution



◆ Frame on-demand function

An image can be acquired at a desired timing by external input of a trigger signal.





◆ IEEE1394 Transmission Format

The HV-F31F/F22F provide higher frame rate of an image with size changed by remote operation.

HV-F31F

Camera mode		Frame Rate	bit/pixel	bit/ch
XGA(1024x768)	YUV	15	16	8
	RGB	7.5	24	8
SVGA(800x600)	YUV	30	16	8
	RGB	15	24	8
XGA(1024x768)	RGB	3.75	48	10

1024



768

Data transfer by extraction of center area with 800x600



Able to shorten a tact time by using high frame rate.



Data transfer by extraction of center area with 640x480

1280



960

HV-F22F

Camera mode		Frame Rate	bit/pixel	bit/ch
SXGA(1280x960)	YUV	7.5	16	8
	RGB	7.5	24	8
VGA(640x480)	YUV	30	16	8
	RGB	30	24	8
SXGA(1060x1024)	YUV	7.5	16	8
	RGB	7.5	24	8
	RGB	1.875	48	10



◆ Camera Link type

- RGB 30bit video waveform can be transmitted by **Medium configuration connection**
- High frame rate is possible

● HV-F31CL

Camera mode		Frame Rate	bit/pixel	bit/ch
XGA(1024x768)	RGB	30	30	10

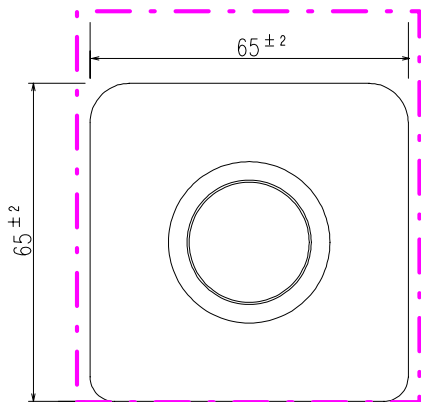
● HV-F22CL

Camera mode		Frame Rate	bit/pixel	bit/ch
SXGA(1360x1040)	RGB	15	30	10

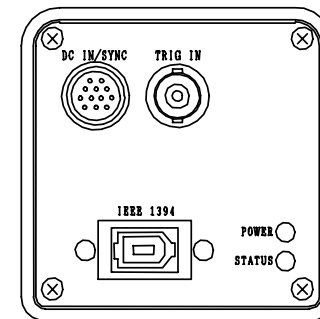
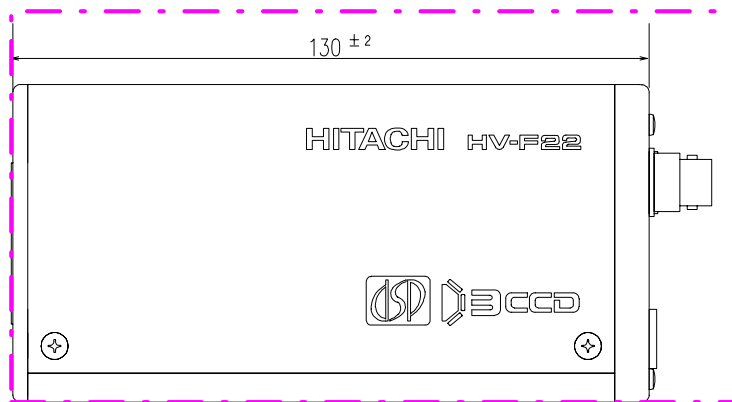


Downsizing

HV-F31F/F22F



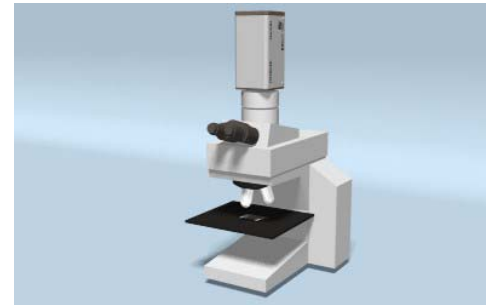
KY-F75 (JVC)





Market-Example Applications

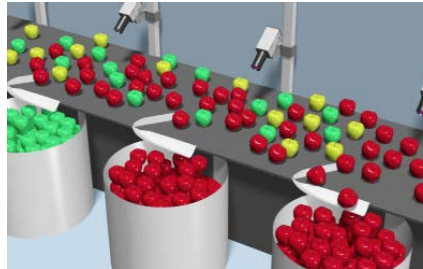
- ①. Optical microscope device
Pathological research image



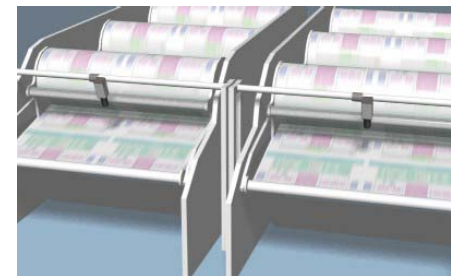
- ②. FA-Image-processing



Car body coating



Fruit check

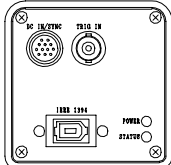
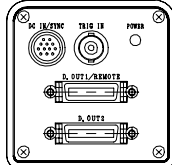


Printing check

- ③. Image contents edit
advertisement • poster edit • print

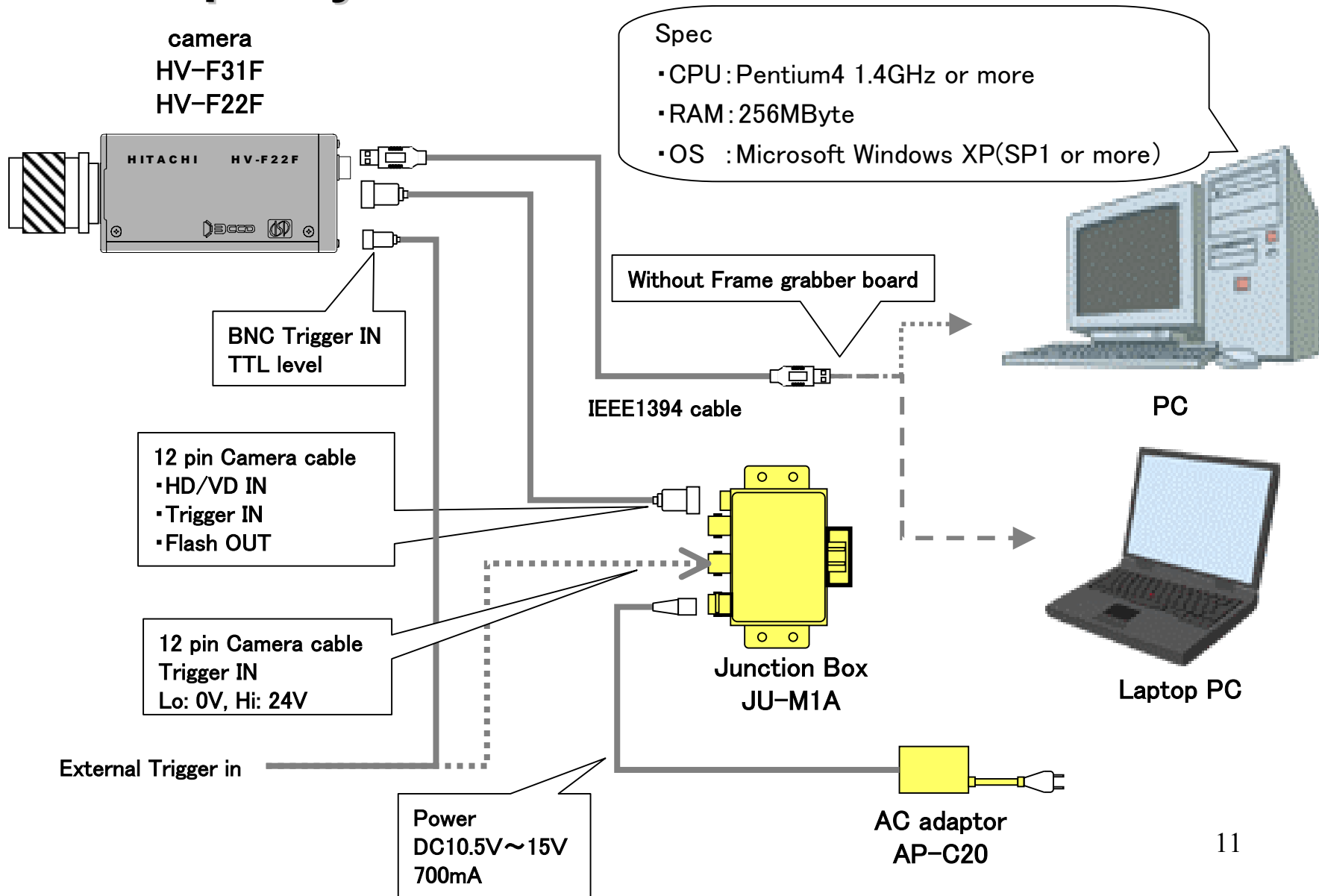


Comparison of each type of cameras

	HV-F31F	HV-F22F	HV-F31CL HV-F31CL-S1	HV-F22CL HV-F22CL-S1
Frame rate	15f/s	7.5f/s	30f/s	15f/s
Resolution	1024x768	1360x1040	1024x768	1360x1040
Interface	IEEE1394		Camera Link	
Cable length	4.5m		10m	
Connector	6pin(with lock)		HV-F31CL/F22CL : 26Px2(medium configuration) HV-F31CL-S1/F22CL-S1 : 26Px1(base configuration)	
Transmissible Data volume	400Mbps		HV-F31CL/F22CL : 900Mbps(medium configuration) HV-F31CL-S1/F22CL-S1 : 700Mbps(base configuration)	
Rear view				

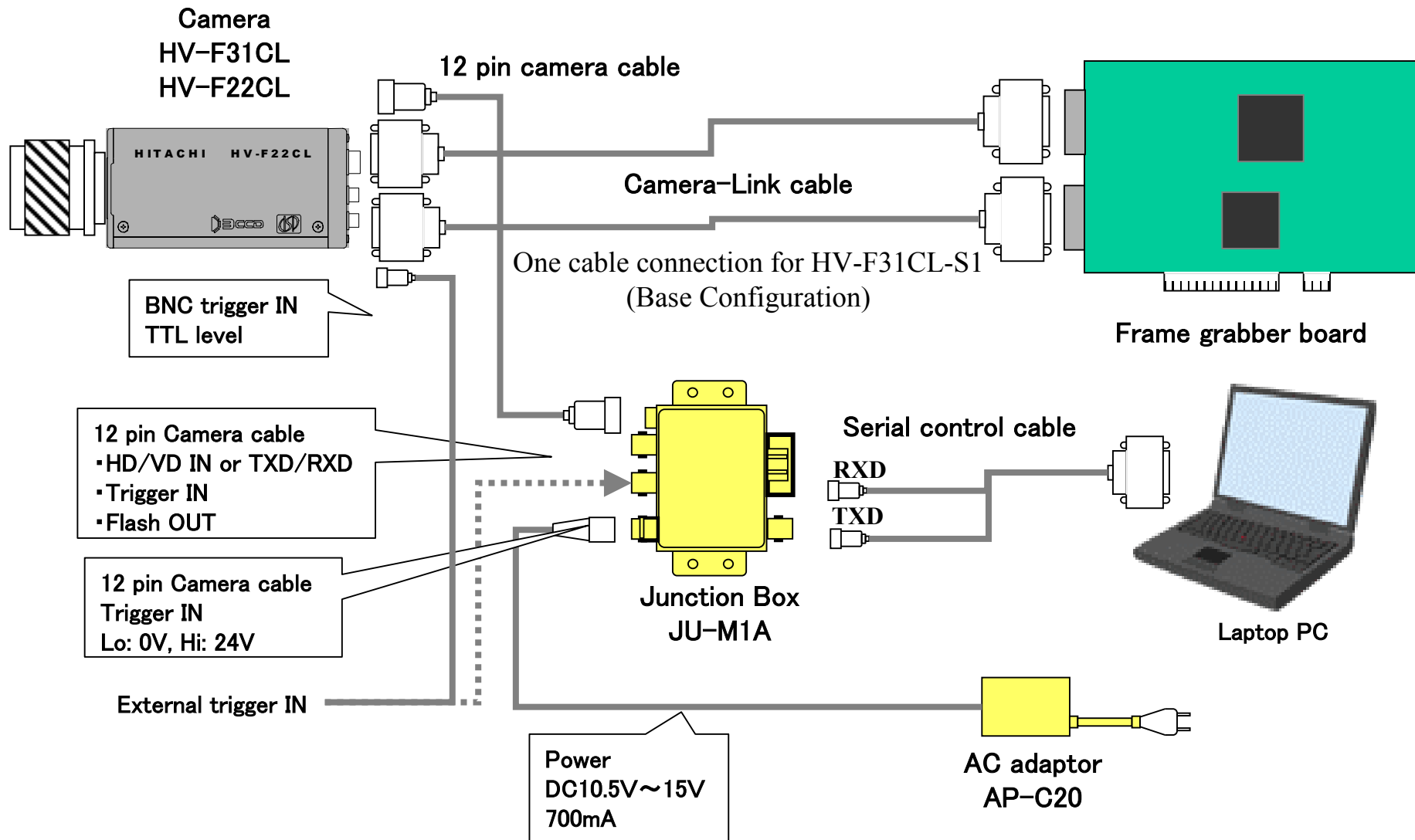


Example system IEEE1394 connection





Example system CameraLink connection





High resolution monochrome camera

KP-F200CL/F200



- 2.01M pixels 24frame/sec.
- Frame on demand function
- Partial scan function
- Remote control(RS-232C)
- Cube form
- Front attachment



Feature

◆ High speed readout

- progressive scan: 24frame/second
- when using partial scan function max 190 frame /second is possible

◆ High resolution

1/1.8-inch 1628(H)x1236(V)

◆ Full frame shutter

Higher resolution in the vertical direction is ensured for moving objects.

◆ Multi-step electronic shutter

8 steps electronic shutter from 1/24 second to 1/50,000 second.

◆ Frame on demand

An image can be acquired at a desired timing by external input of a trigger signal.

- Fixed shutter mode
- TWO-trigger mode
- ONE-trigger mode

◆ Easy build-in

- Cube form
- 4 directions (top, bottom, left and right) and front attachment



Progress in cost performance

~Comparison with 1.45M/15fps camera~

	KP-F200	KP-F100B	Ratio
View (Resolution)	2.01M pixel	1.45M pixel	(A)1.39
Tact time (Frame rate)	24fps	15fps	(B)1.6
Cost (List price)	¥435,000	¥350,000	(C)1.29

Expansion of camera view

Speed up

KP-F200: cost performance value

$$\frac{(A) \times (B)}{(C)} = 1.72 \quad (\text{KP-F100B:1})$$

Progressive VGA color camera

KP-FD30/FD30CL



- ◆ High color fidelity, high definition
- ◆ 1/2-inch progressive scan CCD
VGA: 640x480 60frames/sec
- ◆ CCD drive functions
- ◆ Small and lightweight
- ◆ A new digital signal processor(DSP)

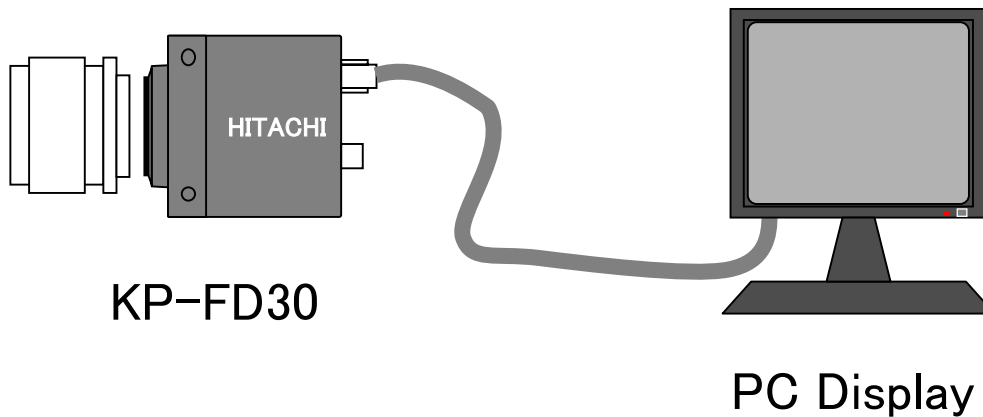


Feature

- ◆ Suitable for the image-processing equipment input.
Small lightweight size, since adoption of multi connector with one cable.
- ◆ High resolution and high color fidelity
By adoption of the progressive scan CCD image sensor and RGB primary color mosaic filters, the picture of high vertical resolution and high color fidelity can be acquired.
- ◆ CCD drive functions
Preset electronic shutter (settable 11 steps from 1/60 second to 1/50,000 second and 27 steps from 1/30 to 8 second)
Auto electric shutter (AES : from 1/60 to approx. 1/50,000 second)
Variable electric shutter (1H steps from 1/60 second to 1/10,000 second)
Frame/field on demand (one trigger and fixed shutter mode)
- ◆ A new digital signal processor (DSP)
The clear picture of a high signal to noise ratio (S/N) is obtained by the new DSP adoption which has improved luminance signal processing, such as 5H enhancer processing.



Direct PC Display connection system integration

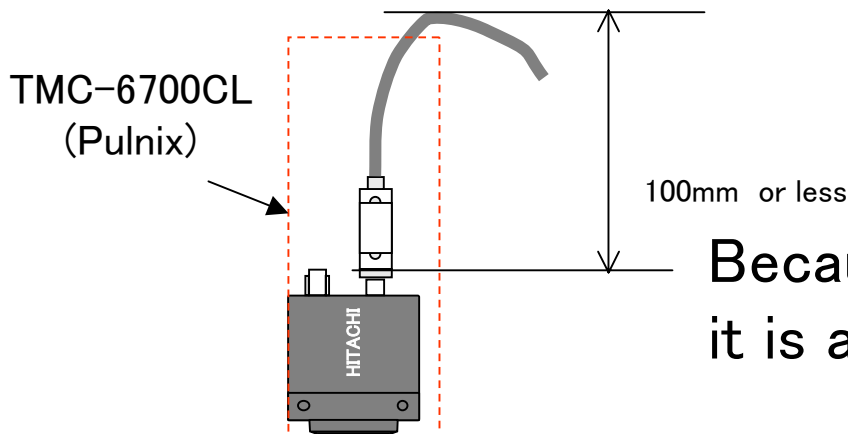


Spec for display

- VGA or more
- Horizontal 31.468kHz
Vertical 59.94Hz
- Video waveform RGB 75 Ω
- Sync: separate HD/VD or composite (G on sync)

Connecting KP-FD30 and PC display directly, image can be grabbed.

Short depth dimension



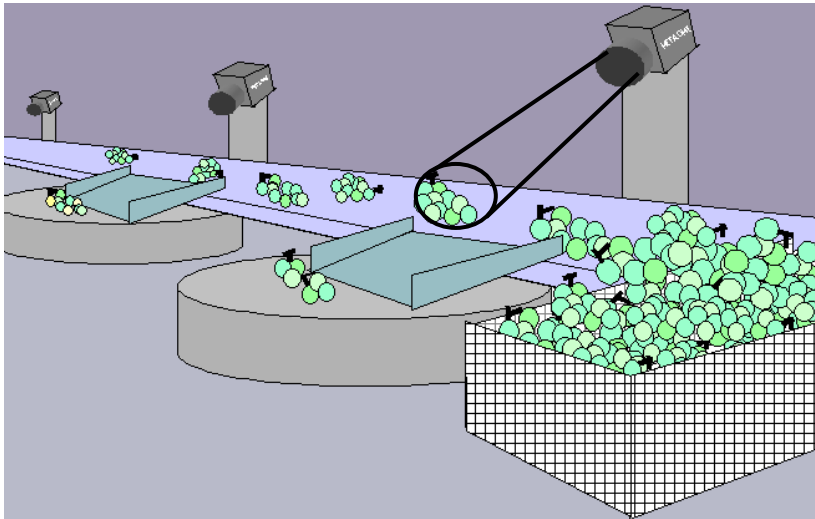
Because of a short depth dimension,
it is advantage for system employment



KP-FD30 Example applications

- Color distinction

- Use for : Fruit check
Print check
Check on uneven color of housing
- Customer : System Integrator
- Major feature
 1. Image Processing
 2. External trigger



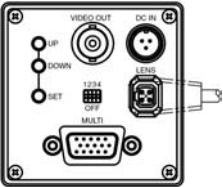
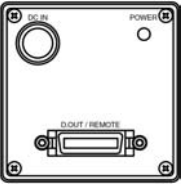
Fruit check



Check on freshness and shapes



Comparison chart by interface

	Standard	Optionally
Model	KP-FD30	KP-FD30CL
Output format	Analog RGB	Camera Link
Frame rate	60 frame per sec.	
Resolution	659(H)x494(V)	
Scanning system	Progressive scan 2:1 interlace scan	Progressive scan
Auto Iris	DC	-
Rear view		

	For OEM	
Model	KP-FD30F	KP-FD30USB
Output format	IEEE1394	USB2.0
Frame rate	30 frame per sec.	



Very small monochrome camera

KP-F30/33 · KP-M20/30



- Very small housing
29(W)x29(H)x38(D)mm
- Scanning system
F30/F33 : VGA progressive
M20/M30 : 2:1 interlace
- Applications
Wire-Bonder Die-Bonder etc.