

High precision digital processing
3CCD progressive scan color camera

HV-F31/F22

IEEE 1394

Camera Link

GigE
VISION



HV-F22GV

Outline

Camera Link

HV-F31CL/CL-S1 : 1/3" XGA (1024×768)

30 frame/second

HV-F22CL/CL-S1 : 1/2" SXGA (1360×1024)

15 frame/second

IEEE1394

HV-31F : 1/3" XGA (1024×768)

7.5 frame/second (RGB)

HV-22F : 1/2" SXGA (1360×1024)

7.5 frame/second (RGB)

GigE Vision

HV-F22GV : 1/2" SXGA (1360×1024)

15 frame/second

Features

- Excellent color in image capture
- High resolution
- Auto shading correction
- Independent six color adjustment
- IEEE1394 IIDC(Ver. 1.30), Camera Link or GigE Vision

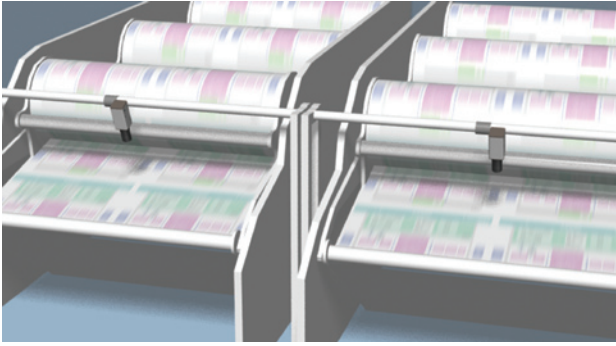
GigE
VISION

Example Applications

HV-F31 and HV-F22 are designed for a wide range of applications.

■ Printing Check

Detection of uneven printing



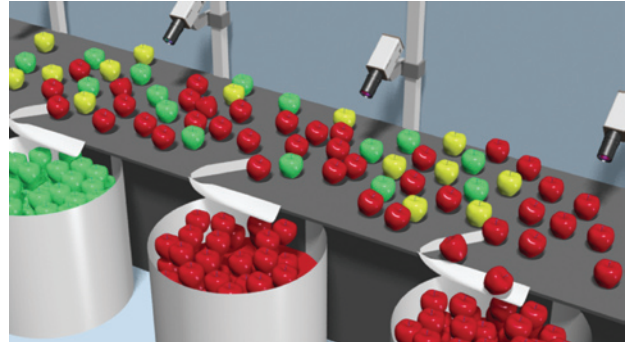
■ Car Body Coating

Check on uneven coating and scratches



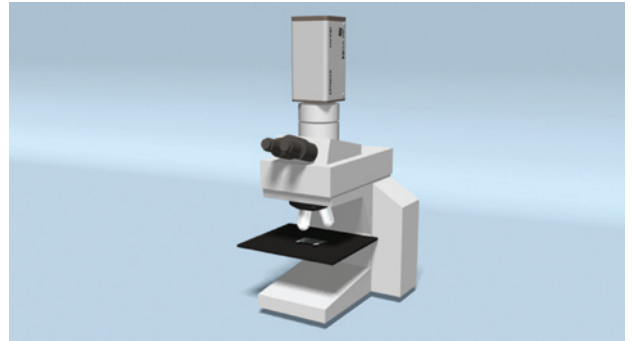
■ Fruit Check

Check on fruit damage and ripening



■ Biological Microscope

Observation of cells



Merits of 3-CCD Camera

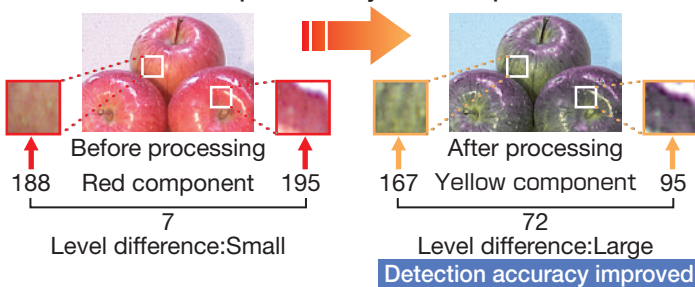
Color Detection

(optimum for check on uneven printing and fruits)

Subtle color differences are detectable by processing (emphasis or subtraction) of a specific color using 6-color independent masking.

● Example of improved detection accuracy on apple ripening level

Comparison after subtraction of a red component and emphasis of a yellow component

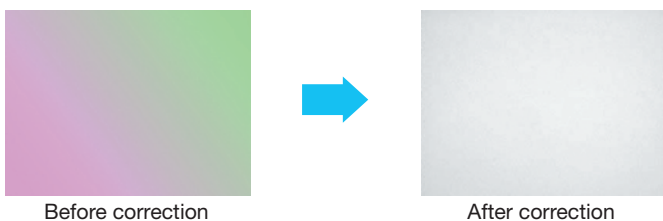


(Note) This camera is not used for output of the above numeral (resolution in 8bit). It is output of a processed image.

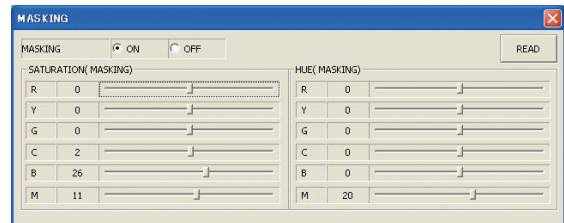
● Because arithmetic operation is performed inside the camera, it will not apply a load to the CPU of equipment, so high-speed image processing is ensured.

Auto Shading

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



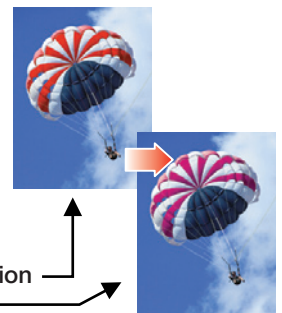
6 color Independent Masking



Each color of R,G,B,Ye,Mg and Cy can be represented and changed as an independent numeric value.

Colors are freely changeable and the following are available.

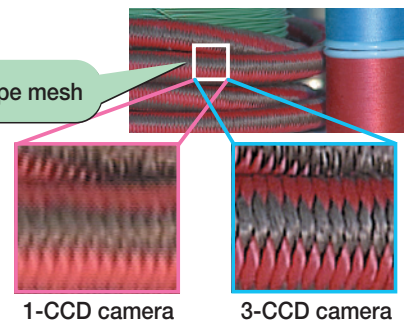
- Detection of a specific color
 - Natural color reproduction
 - Red alone changed



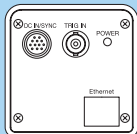
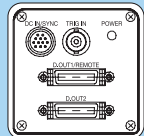
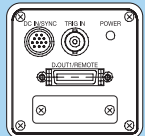
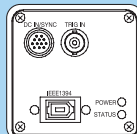
Color Resolution

Attention to rope mesh

Finer mesh image is obtainable with 3-CCD



Comparison of Interfaces

	HV-F22GV	HV-F31CL/CL-S1, HV-F22CL/CL-S1	HV-F31F/F22F
Interface	GigE Vision	Camera Link	IEEE1394
Cable length	Approx. 100m	10m	4.5m
Connector	RJ-45	26PT2 (medium configuration) *Base configuration applicable	6Pin (with lock)
Transmissible Data volume	Approx. 1Gbps	900Mbps (medium configuration) 700Mbps (base configuration)	400Mbps
Remote control	Ethernet API	CameraLink API	IIDC
Rear view		 	

*Caution For power supply from IEEE1394, contact the sales representative.

IEEE1394

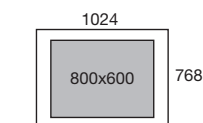
- Features**
 - Direct PC connection without using a frame grabber board
 - Small-diameter cable
 - Multiple cameras connectable by use of hub
- Specifications**
 - Compatible OHCI, 400Mbps
 - Non-compression
 - Conforming with IIDC1.3

Transmission Format

The HV-F31F/F22F cameras allow transmission of an image with its 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) *1	YUV	30	16	8
	RGB	15	24	8
XGA(1024x768)	RGB	3.75	48	10

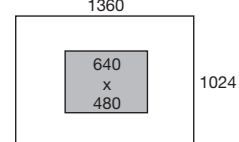
HV-F22F				
Camera mode		Frame Rate	bit/pixel	bit/ch
SXGA(1280x960)	YUV	7.5	16	8
	RGB	7.5	24	8
VGA(640x480) *2	YUV	30	16	8
	RGB	30	24	8
SXGA(1360x1024)	YUV	7.5	16	8
	RGB	7.5	24	8
	RGB	1.875	48	10



*1: The screen center shown above is effective for SVGA output

HV-F31CL/CL-S1				
Camera mode		Frame Rate	bit/pixel	bit/ch
XGA(1024x768)	RGB	30	30 [S1: 24]	10 [S1: 8]

HV-F22CL/CL-S1				
Camera mode		Frame Rate	bit/pixel	bit/ch
SXGA(1360x1024)	RGB	15	30 [S1: 24]	10 [S1: 8]



*2: The screen center shown above is effective for VGA output

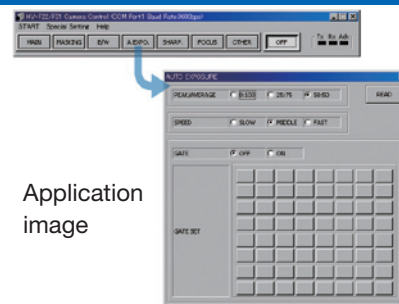
HV-F22GV				
Camera mode		Frame Rate	bit/pixel	bit/ch
SXGA(1360x1024)	RGB	15	24	8

Application

Various camera functions are available for adjustment through the easy to use GUI software which is included with the camera.

Application menu

- MAIN
 - BRIGHTNESS
 - SHARPNESS
 - WHITE BALANCE
 - GAIN
 - SHUTTER
 - AUTO EXPOSURE
 - SATURATION
 - GAMMA
 - TRIGGER
 - FLASH
 - AUTO SHADING
- MASKING
- B/W (BLACK BALANCE & WHITE GATE)
- AUTO EXPOSURE
- SHARPNESS
- OTHER FUNC
- Focus detection



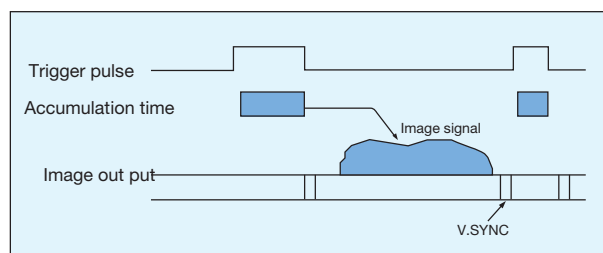
Application image

Frame On-demand function

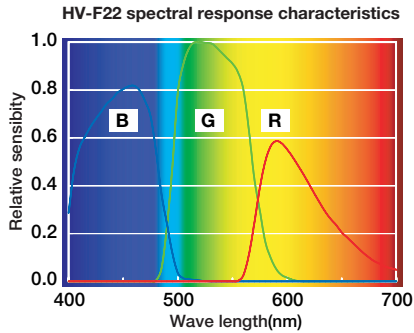
An image can be acquired at a desired timing by external input of a trigger signal.

•One-trigger mode

When a single trigger pulse is input, exposure will start at the rising edge of the pulse and will end at the falling edge. Then, V.SYNC will be reset immediately followed by output of the image. Pulse width corresponds to the exposure time



RGB spectral response characteristics

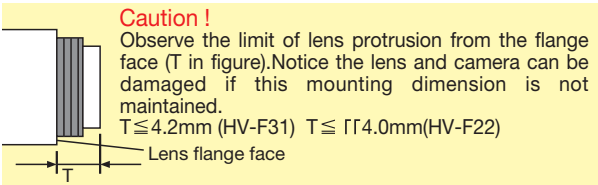


Pin arrangement

Camera Link (HV-F31CL/F31CL-S1/F22CL/F22CL-S1)			
connector1		connector2 (without for S1 type)	
1 GND	14 GND	1 GND	14 GND
2 X0-	15 X0+	2 Y0-	15 Y0+
3 X1-	16 X1+	3 Y1-	16 Y1+
4 X2-	17 X2+	4 Y2-	17 Y2+
5 Xclk-	18 Xclk+	5 Yclk-	18 Yclk+
6 X3-	19 X3+	6 Y3-	19 Y3+
7 SerTC+	20 SerTC-	7 NC	20 NC
8 SerTFG-	21 SerTFG+	8 NC	21 NC
9 ExtVD[CC1]-	22 ExtVD[CC1]+	9 NC	22 NC
10 Trig[CC2]+	23 Trig[CC2]-	10 NC	23 NC
11 ExtHD[CC3]-	24 ExtHD[CC3]+	11 NC	24 NC
12 NC[CC4]+	25 NC[CC4]-	12 NC	25 NC
13 GND	26 GND	13 GND	26 GND

IEEE1394 (HV-F31F/F22F)	GigE Vision (HV-F22GV)	12pin(common)
molex 55395-0611	RJ-45 LAN cable CAT5 or CAT6	HIROSE HR10A-10R-12PB(01)
1 +12V IN	1 TRD+A	1 GND
2 GND	2 TRD-A	2 +12V IN
3 TPB -	3 TRD+B	3 GND
4 TPB +	4 TRD+C	4 FLASH OUT
5 TPA -	5 TRD-C	5 GND
6 TPA +	6 TRD-B	6 HD IN
	7 TRD+D	7 VD IN
	8 TRD-D	8 GND
		9 TRIG(H)
		10 TRIG(C)
		11 +12V IN
		12 GND

When using lens

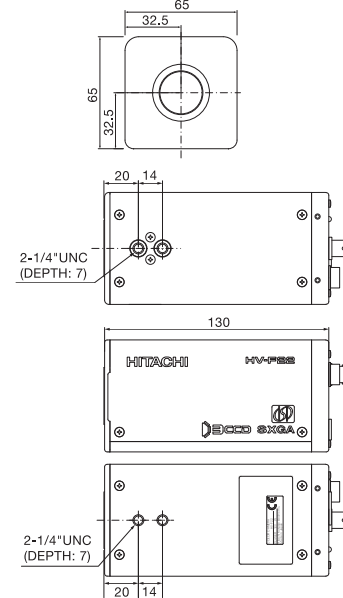


Specifications

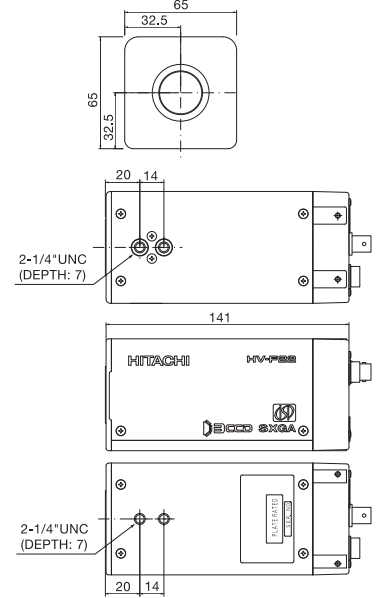
	HV-F31	HV-F22
Frame rate	30f/s(F31CL), 15f/s(F31F)	15f/s(F31CL/GV), 7.5f/s(F22F)
Pixel Clock	28.8MHz	
CCD	1/3"	1/2"
Imaging area	4.76(H) x 3.57(V) mm	6.32(H) x 4.76(V) mm
Effective pixels	1024(H) x 768(V)	1360(H) x 1024(V)
Unit cell size	4.65(H) x 4.65(V)um Square pixel	
Gain	AGC(0 ~ +12dB)	
Trigger	One trigger mode	
Shutter	1/100,000~1/30~4(seconds)	1/100,000~1/15~4(seconds)
Ambient	operating 0~+40°C(+32°F ~ +104°F)	
Vibration	29 m/s ² (3 G)	
Shock	490 m/s ² (50 G)	
Power supply	12V nominal Approx.9W	
Dimensions	65(W) x 65(H) x 130(D) mm (141(D)mm for HV-F22GV)	
Mass	Approx. 600 g (21 oz) (not including lens)	

Dimension

HV-F31CL/F22CL/F31F/F22F



HV-F22GV



Standard Composition

Camera	1
Operation Manual	1
Sample Software	1
(CD-ROM)	

Optional Accessories

IEEE1394Cable	1
Junction Box	1
(JU-M1A)	

CAUTION: To ensure safe operation, please read the instruction manual before using this product.

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These Specifications are subject to change without notice.

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