

Progressive scan CCD camera HV-F202SCL (Camera Link)/ HV-F202GV (GigE Vision)



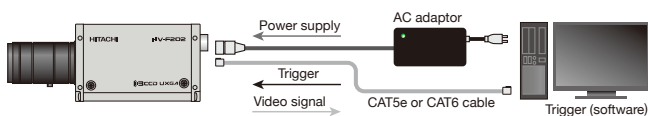
Main Features

- GeniCam support (HV-F202GV)
Development of camera control system is easy because industrial camera control API .
- PoE support (HV-F202GV only)
Power supply can be input via Ethernet cable (Power over Ethernet).
When not connected to PoE, the power supply can be input from the DC IN/SYNC connector.
- CameraLink support (HV-F202SCL)
The SCL version in Medium configuration can operate at 30fps at Maximum pixel clock rate, full resolution and maintain 36bit output.
- Digital processing for various picture quality enhancements
- Auto shading correction (ASC)

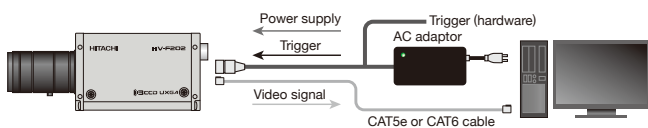
System configuration

HV-F202GV

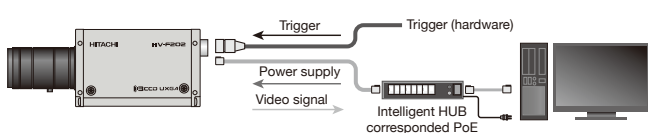
Direct connection to PC and triggered via Ethernet (Software trigger)



Direct connection to PC and triggered via multi-connector (Hardware trigger)

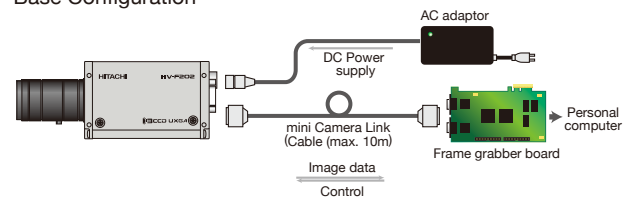


Connection via HUB/switcher to PC and power supply via the Ethernet (PoE)

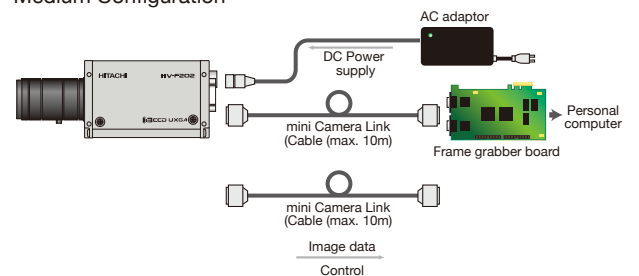


HV-F202SCL

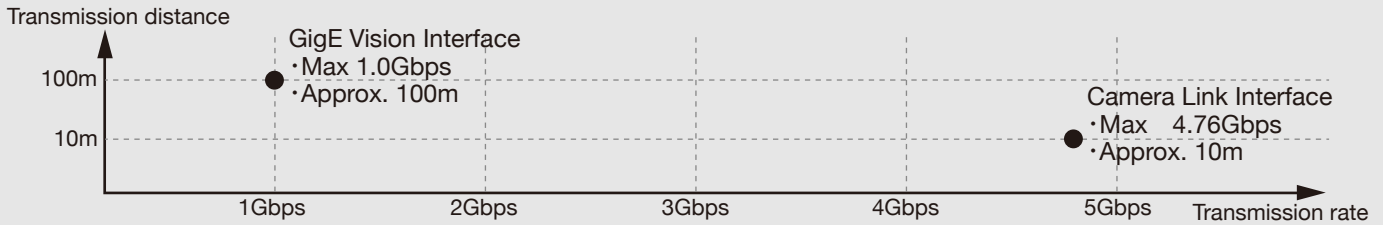
Base Configuration



Medium Configuration



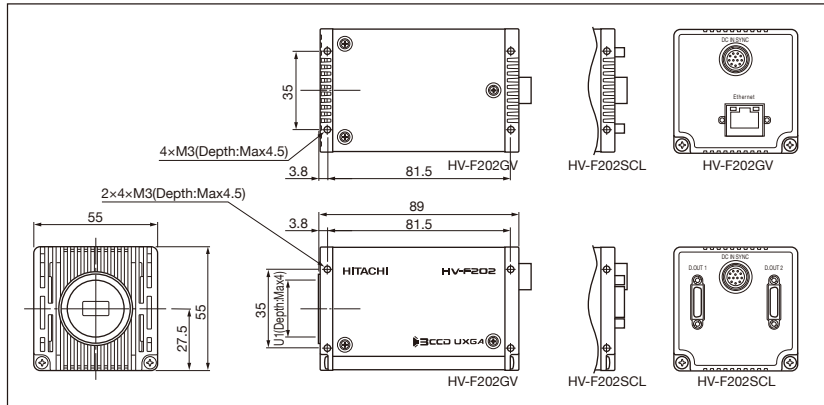
Interface comparison



Main Specifications

		HV-F202GV		HV-F202SCL	
Imaging device	Effective pixels	1/1.8-inch progressive scan interline CCD (R, G, B 3 CCD)			
	Pixel size	1600(H) x 1200(V)			
	Pixel size	4.4 μm(H) x 4.4 μm(V) (Square pixel)			
	Optical system	1/1.8-inch F1.8 prism			
Scanning area		7.04 mm(H) x 5.28 mm(V)			
Lens mount		C mount			
Video output	Gigabit Ethernet IEEE802.3ab (1000BASE-T)		Camera Link support		
	GigaE Vision Support		Base Configuration /		
	Gen<->Cam Support		Medium Configuration		
	RGB (24 bit/30 bit/ 36 bit), MONO (8 bit/10 bit/12 bit)		Base Configuration: RGB 24bit		
Frame rate	YUV (24 bit/30 bit/ 36 bit)		Medium Configuration: RGB 30bit / RGB 36bit		
	Frame rate (frames per second)		30 frames per second		
		24bit	30bit	36bit	
	RGB	18	12	9	
	YUV	28	18	18	
Sensitivity		2000 lx, F5.6, 3200K (at 1/30 second shutter)			
Electric shutter speed	OFF / Auto (AES) / Manual (Variable)				
	Variable	1/30 to 1/100,000 second			
	AES	1/30 to 1/100,000 second			
	Long time integration	1/30 to approx. 10 second (1 frame step)			
External trigger shutter	Mode	Fixed shutter, One trigger, VD sync reset			
	Input	Via Gigabit Ethernet cable or DC IN/SYNC connector		Via CameraLink cable (CC1) or DC IN/SYNC connector	
	Input level	5 Vp-p ±0.5 V			
External sync signal (Strobe out)		VD output, Flash out			
White balance		Manual / One-push auto / Continuous auto			
Gain		Manual: 0 to +12 dB, AGC: 0 to +12 dB (with limit setting)			
Gamma		0.45 / 1.0 / LUT (Look up table: user customizable)			
Color masking		OFF/ON (6 color independent masking)			
Sharpness		Sharpness (DTL) level, Sharpness (DTL) width			
Power supply		DC+12 V ±1 V (from DC IN / SYNC connector), 48V (PoE)		DC+12 V ±1 V (from DC IN / SYNC connector)	
Power consumption		Approx. 8.2 W (DC+12 V)		Approx. 7.2 W (DC+12 V)	
Ambient temperature	Performance	0 °C to +40 °C			
	Operating	-10 °C to +40 °C (without dew condensation)			
	Storage	-20 °C to +60 °C			
Vibration endurance		10 to 200 Hz 24.5 m/s ²			
Shock endurance		392 m/s ²			
External dimensions		55(W) x 55(H) x 89(D) mm (not including lens and protrusions)			
Mass		Approx. 350 g (without lens)			

Dimensions



Rear view



Standard composition

- Camera
- DC IN / SYNC connector plug (HR10A-10P-12S)
- Instruction manual

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

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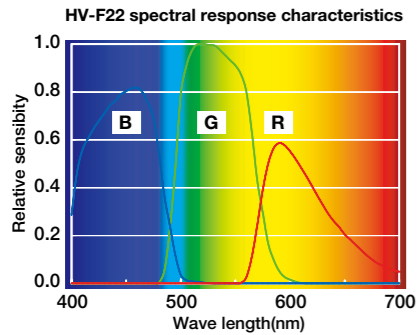
London office : Windsor House, Britannia Road, Waltham Cross,

Hertfordshire EN8 7NX, United Kingdom

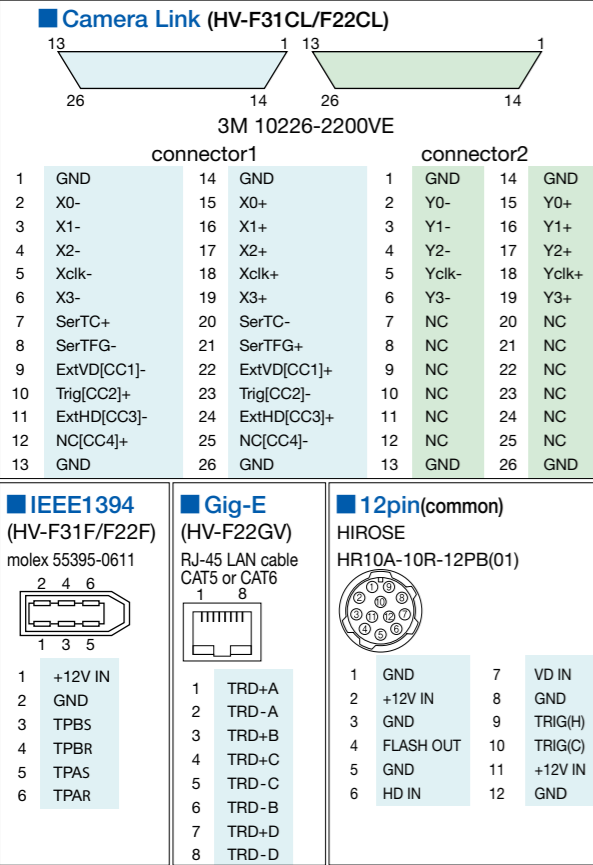
Phone : +44(0) 845-121-2177, Fax : +44(0) 845-121-2180

General email address : webmaster@hitachi-keu.com

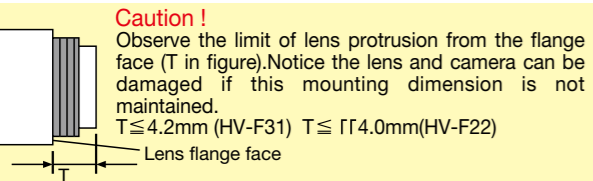
RGB spectral response characteristics



Pin arrangement



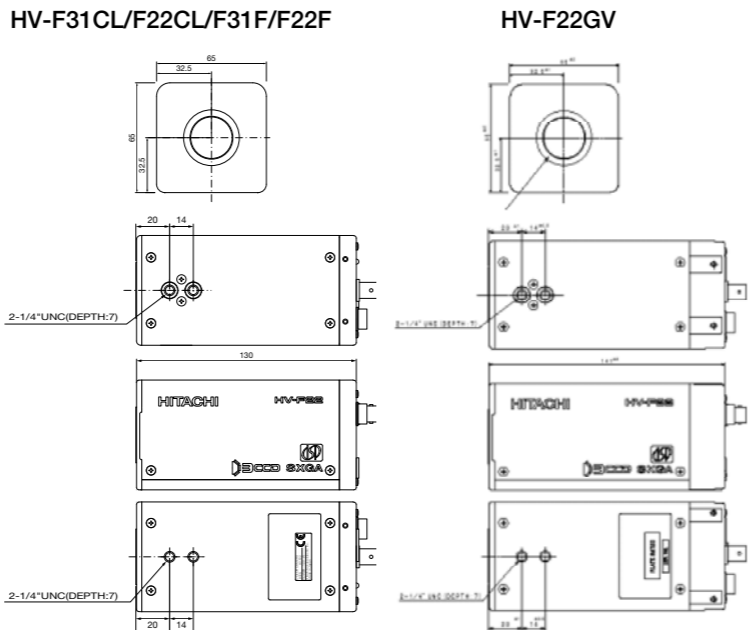
When using lens



Specifications

	HV-F31	HV-F22
Frame rate	30f/s(F31CL)15f/s(F31F)	15f/s(F22CL)7.5f/s(F22F)
Pixel Clock	28.8MHz	
CCD	1/3"	1/2"
Imaging area	4.76(H)×3.57(V) mm	6.32(H)×4.76(V) mm
Effective pixels	1024(H)×768(V)	1360(H)×1024(V)
Unit cell size	4.65(H)×4.65(V)µm 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 to +104° F)	
Vibration	29 m/s2 (3 G)	
Shock	490 m/s2 (50 G)	
Power supply	12V nominal Approx.9W	
Dimensions	65(W)×65(H)×130(D) mm	
Mass	Approx. 600 g (21 oz) (not including lens)	

Dimension



Standard Composition

Camera	1	IEEE1394Cable	1
Operation Manual	1	Junction Box	1
Sample Software	1	(JU-M1A)	

Optional Accessories

Hitachi Kokusai Electric Inc.

HITACHI

High precision digital processing
3CCD progressive scan color camera

HV-F31/F22

IEEE1394

Camera Link

Gig-E



Outline

Camera Link

HV-F31CL : 1/3" XGA (1024×768)
30 frame/second
HV-F22CL : 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)

Gig-E

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
Gig-E

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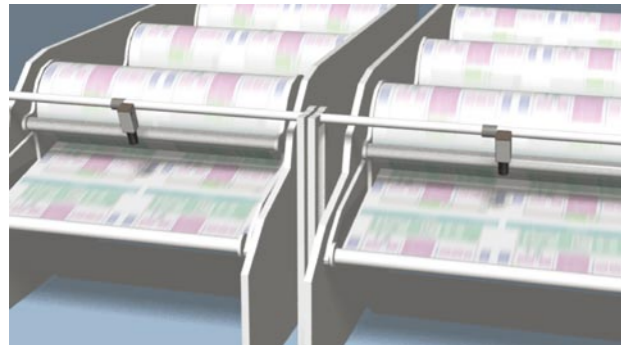
CERTIFICATE No.
JMI-0062
ISO 9001/BS 5750P1
EN 29001/JIS 29001

Example Applications

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

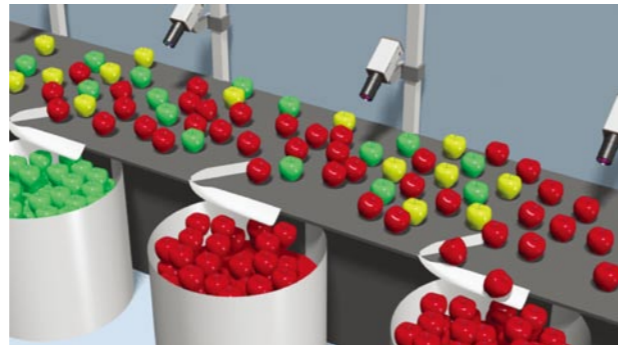
■ Printing Check

Detection of uneven printing



■ Fruit Check

Check on fruit damage and ripening



■ Car Body Coating

Check on uneven coating and scratches



■ Biological Microscope

Observation of cells



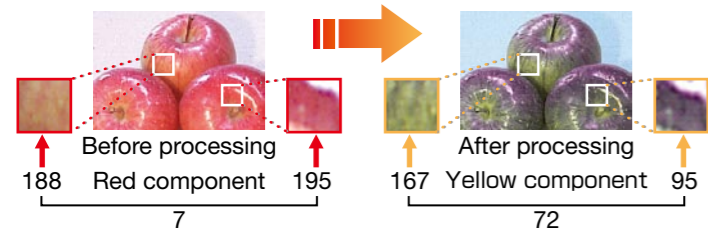
Merits of 3-CCD Camera

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

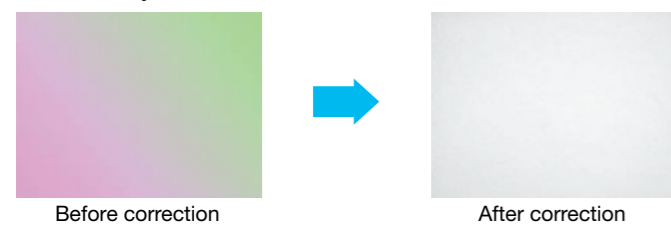


(Note) This camera is not used for output of the above numeral (resolution in 8bit). It is output of a processed image.

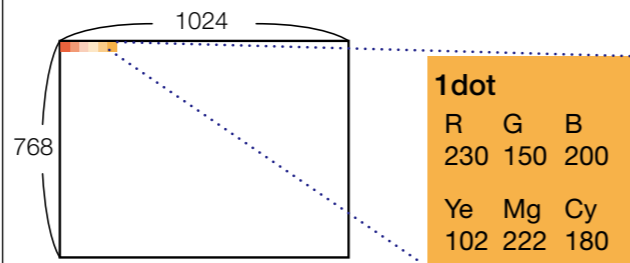
●Because arithmetic operation is performed inside the camera, it will not apply a load to the CPU of equipment, so high-speed image processing is ensured.

Auto Shading

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



6color Independent Masking

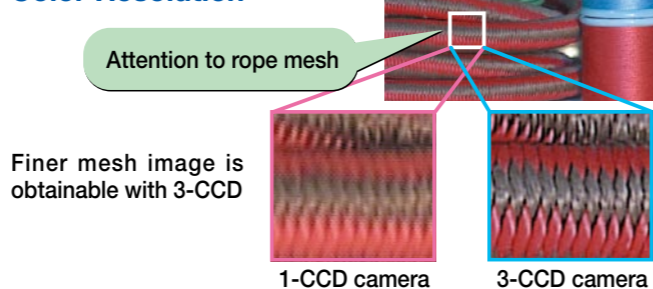


Each color of R,G,B,Ye,Mg and Cy can be represented and changed as an independent numeric value.

Colors are freely changeable and the following are available.

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

Color Resolution



Comparison of Interfaces

	HV-F22GV	HV-F31CL/F22CL	HV-F31F/F22F
Interface	Gig-EVision	Camera Link	IEEE1394
Cable length	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

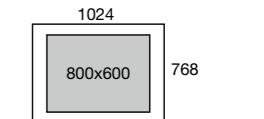
- Features
 - Direct PC connection without using a frame grabber board
 - Small-diameter cable
 - Multiple cameras connectable by use of hub
- Specifications
 - Compatible OHCI, 400Mbps
 - Non-compression
 - Conforming with IIDC1.3

Transmission Format

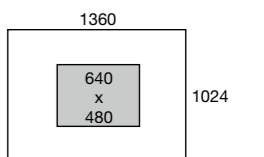
The HV-F31F/F22F cameras allow transmission of an image with its size changed by remote operation.

HV-F31F					HV-F22F				
Camera mode	Frame Rate	bit/pixel	bit/ch		Camera mode	Frame Rate	bit/pixel	bit/ch	
XGA(1024x768)	YUV	15	16	8	SXGA(1280x960)	YUV	7.5	16	8
	RGB	7.5	24	8		RGB	7.5	24	8
SVGA(800x600) *1	YUV	30	16	8	VGA(640x480)	YUV	30	16	8
	RGB	15	24	8		RGB	30	24	8
XGA(1024x768)	RGB	3.75	48	10	SXGA(1360x1024)	YUV	7.5	16	8
						RGB	1.875	48	10

HV-F31CL					HV-F22GV / F22CL				
Camera mode	Frame Rate	bit/pixel	bit/ch		Camera mode	Frame Rate	bit/pixel	bit/ch	
XGA(1024x768)	RGB	30	30	10	SXGA(1360x1024)	RGB	15	30	10



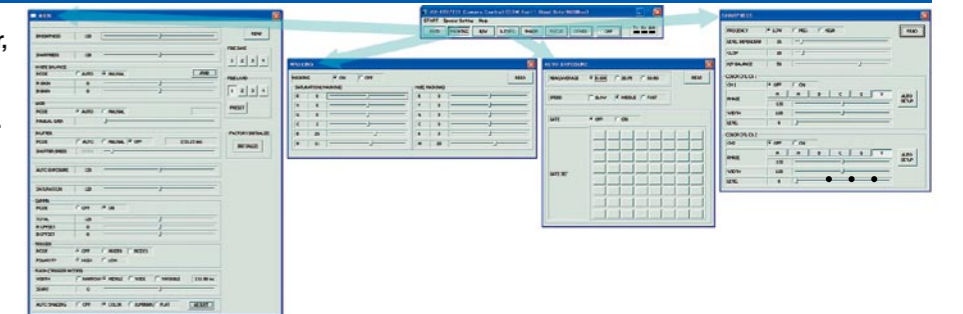
*1: The screen center shown above is effective for SVGA output



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

Application

Various camera functions, such as a Shutter, Gamma, Masking, etc. are available for adjustment through the easy to use GUI software which is included with the camera.

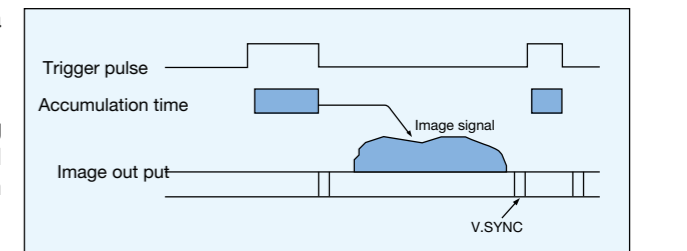


Frame On-demand function

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



3MOS Multi format HDTV camera HV-HD33

1 / 3inch type 1.3Mega-pixel 3MOS Multi format HDTV camera
Eight output formats for HDTV/SDTV operation.
Horizontal Image flip and negative video modes.
Six vector masking adjustments.



■ Feature

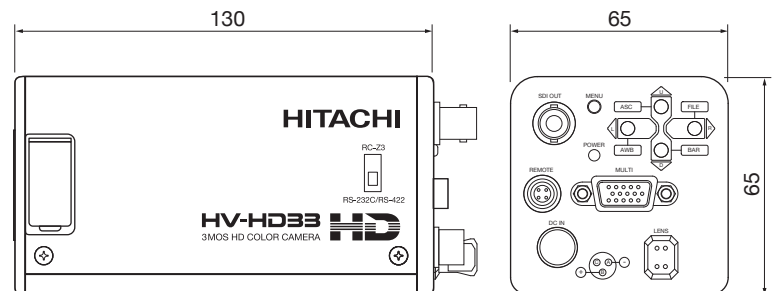
- New MOS sensors with improved sensitivity rise of 6dB.
- Multi format HDTV SDTV output
 - 1080i/59.94fps (16:9)
 - 1080i/50fps (16:9)
 - 720p/59.94fps (16:9)
 - 720p/50fps (16:9)
 - 480i/59.94fps (16:9)
 - 576i/50fps (16:9)
 - 480i/59.94fps (4:3)
 - 576i/50fps (4:3)
- Digital serial output
HD-SDI/SD-SDI 1output
- 6 color independent masking & Luminosity independent linear masking
- Negative positive conversion & Right and left reversing
- Camera control RS-232C/RS-422 remote controller RC-Z3

■ Main Specifications

Imaging device	1/3-inch MOS
Total pixels	1312 (H) x 1032 (V)
Video format *	720P (50/59.94 fps), 1080i (50/59.94 fps)/ 480i (59.94 fps), 576i (50 fps) switchable
Video output	HD-SDI/SD-SDI switchable
Analog output	RGB, YPbPr (D-sub 15pin)
Sensitivity	2000 lx / F8.0
S/N	53dB (1080i output)
Gain	0 ~ 15 dB
Lens mount	C mount
Power consumption	8W
External dimensions *	Approximately 65(W) x 65(H) x 130(D) mm

*It is a numerical value which is due to be developed.

■ External dimensions



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