

Hitachi Kokusai Electric Inc.

HITACHI

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 9001-1994
BS EN ISO 9001-1994
EN ISO 9001-1994
JIS Z 9901-1994

Remote Head 3CCD Color Camera

HV-D27A (1/2 inch CCD)

HV-D37A (1/3 inch CCD)



DIGITAL **3CCD**

The HV-D27A/D37A from Hitachi is a separate head 3 CCD type color camera with a compact and lightweight camera control unit (CCU). The HV-D27A features 1/2-inch format CCD's while the HV-D37A uses 1/3-inch CCD's. Each CCD contains 410,000 (470,000 PAL) picture elements (pixels). The C mount lens fitting provides convenient physical compatibility with a broad selection of readily available and specialized optical systems. For improved performance and reliability, the CCU circuitry from the processor to the encoder is contained in a single VLSI DSP semiconductor chip. The small and lightweight head makes this camera an excellent choice for medical systems, industrial automation, image processing, microscope equipment and a nearly unlimited range of other applications.

HV-D27A (1/2 inch CCD)

HV-D37A (1/3 inch CCD)

Main features

● One-Chip VLSI

Thanks to the state-of-the-art digital signal processing technology (0.18 micron processing), all signal processing from the processor section through the encoder section is accomplished within a single-chip VLSI (3,000,000-gates). In the development of this device careful consideration was given to lowering power consumption and minimizing the size of the device. The high signal-to-noise ratio and wide dynamic range of this device are complimented with a 12-bit A/D converter and 14-bit to 18-bit internal digital signal processing.



● Auto Shading

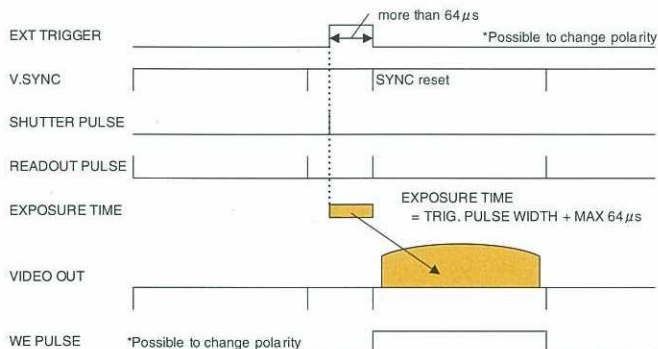
Automatic shading corrects for chromatic aberrations (color fringing at the top and bottom of the screen) that result between interactions of the lens and the camera optics.

● Multiple Shutter Operation

A standard electronic shutter mode can be selected in ten steps from 1/100 to 1/100,000 seconds. A lock scan mode used for imaging computer monitors allows a variable selection of shutter speeds from 1/60.38 to 1/2,039 in 1H steps. For use in medical or microscope applications, the camera can be set to a long term integration mode. In this mode the integration period can be selected in one frame increments from 1/30 to 8 seconds. Field or frame integration time can be controlled by an external trigger signal. An external memory or frame grabber is required.

● Field on demand

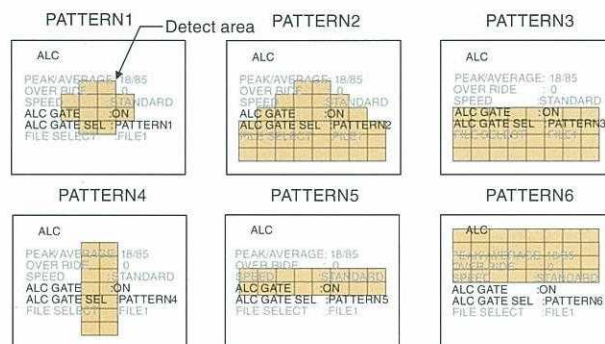
An external trigger signal can be used to obtain a field image at a desired timing and exposure time. When the camera equipped with this function is used for industrial automation systems or image processing systems, high resolution color images with superb color reproduction can be analyzed. (External memory is *required for continuous images.)



● Intelligent ALC

Automatic light control is done through a 64 segment (8 by 8) sensing area in conjunction with automatic gain control (AGC) and auto electronic shutter (AES). The digital system responds to wide variations of incident light.

The light sensing area can be selected in 6 preset patterns according to the scene. The ALC level and response can also be set for peak or average to enable optimum quality image reproduction.

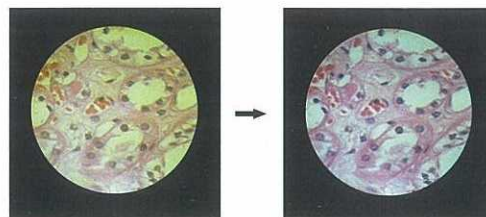


● White Balance

Three modes of white balance can be selected. The auto mode enables the auto tracking white balance to maintain proper white balance with changing color temperature. The memory mode will automatically adjust white balance when the AWB button is pushed. A preset mode is factory set for 3200 K.

● Color correction (Masking)

A six vector color corrector can be selected allowing the user to independently adjust the hue and saturation of the three primary and three complimentary colors. This feature can be used to precisely match cameras, or to paint individual scene objects.



● Negative/Positive selection

Nega/Posi reversal change is possible. When photographing nega-film, it is effective.

Pin arrangement

MULTI connector (SDEB-9S)

Pin No.	Signal name
1	GND
2	WE
3	R/R-Y/C OUT
4	G/Y OUT
5	B/B-Y OUT
6	VBS OUT
7	SYNC OUT
8	HD OUT
9	VD OUT

TRIG connector (HR-10A-10R-12PB)

Pin No.	Signal name
1	GND
2	NC
3	NC
4	NC
5	GND
6	HD IN
7	VD IN EXT TRIG IN
8	NC
9	NC
10	GND
11	NC
12	GND

● REMOTE connector (HR10A-7R-4S)

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

● Y/C connector (TCS-7547-01-401)

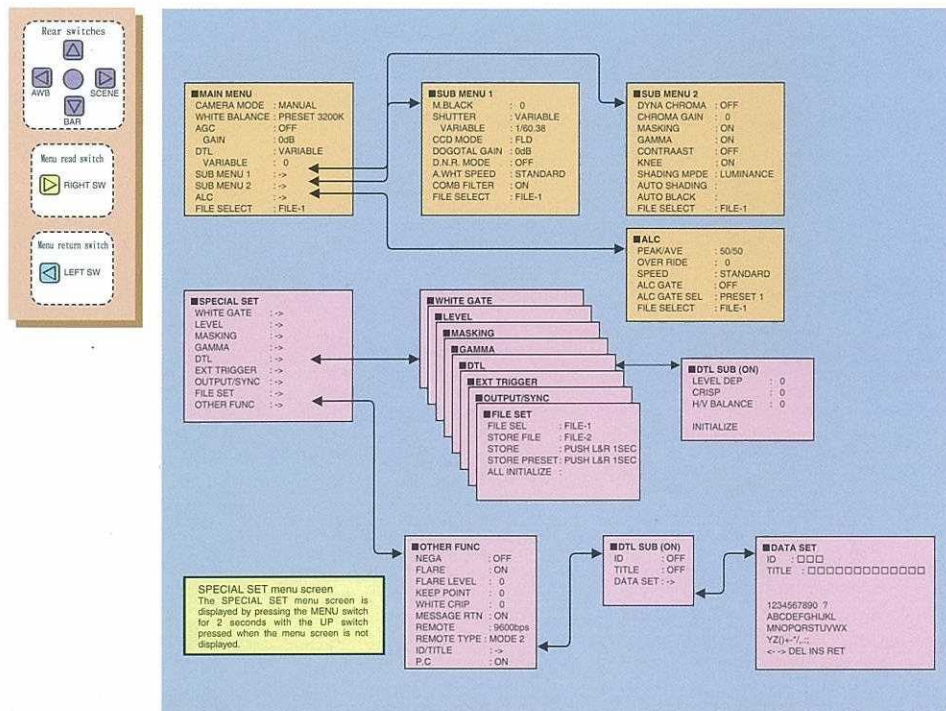
Pin No.	Signal
1	Y GND
2	C GND
3	Y output
4	C output

● 12V IN connector (Plug:R03-P3F)

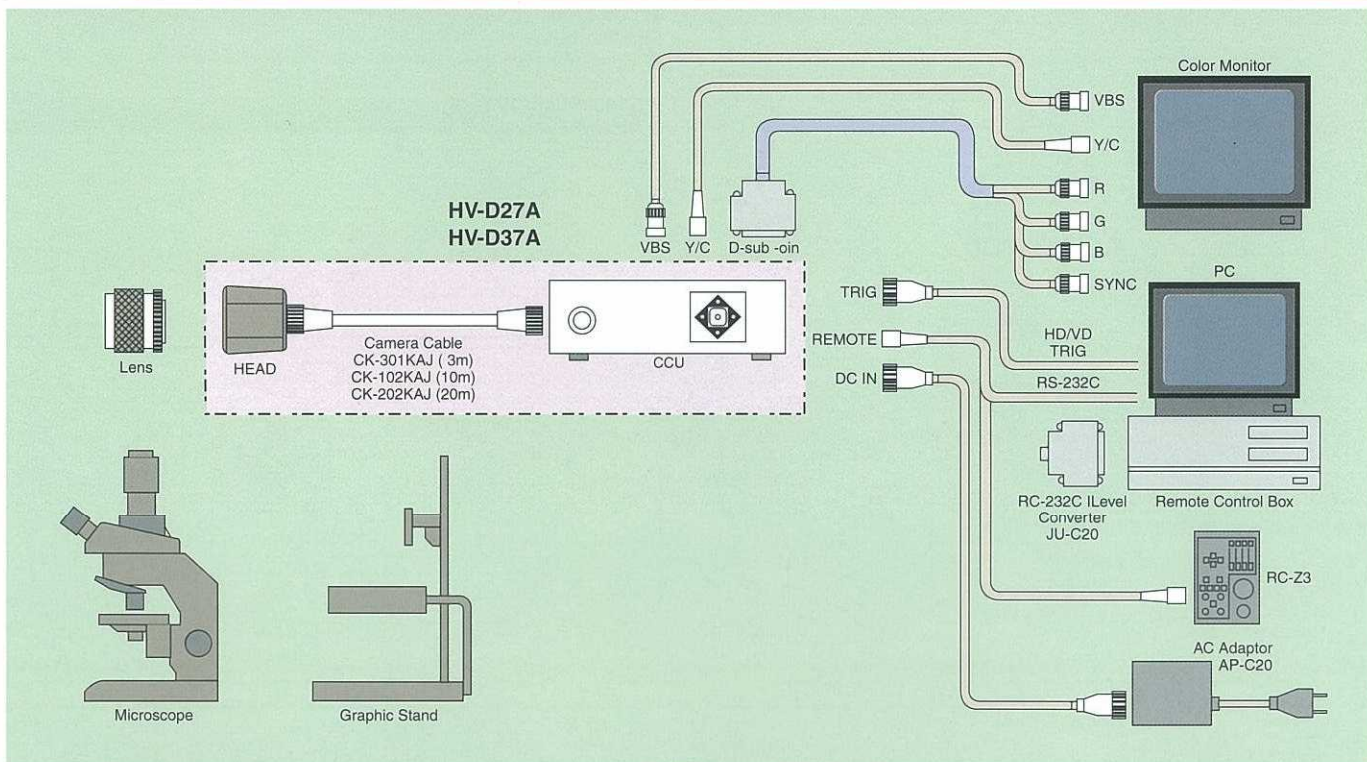
Pin No.	Signal
A	GND
B	UNREG +12
C	NC

Functions menu

Digital process functions can be set on each menu screen



System configuration



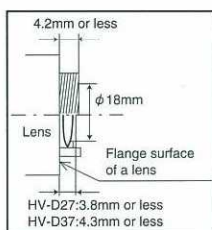
Accessories



Specifications

Color system	NTSC, PAL
Optical system	HV-D27A:1/2-inch f1.6 prism HV-D37A:1/3-inch f2.2 prism
Imaging system	R, G, B 3CCD
Picture elements	HV-D27A:1/2-inch interline CCD (with microlenses) HV-D37A:1/3-inch interline CCD (with microlenses)
Effective pixels	NTSC:768(H)×494(V) PAL:752(H)×582(V)
Effective image area	HV-D27A:NTSC:6.34(H)×4.76(V)mm PAL:6.35(H)×4.78(V)mm HV-D37A:NTSC:4.79(H)×3.60(V)mm PAL:4.80(H)×3.60(V)mm
Scanning system	2:1 interlace
Sync system	Internal/external (VBS, BBS or HD/VD)
Horizontal resolution	HV-D27A:800 TV lines HV-D37A:750 TV lines (Y signal center, Y OUT and DTL off)
Signal to noise ratio	HV-D27A:62dB(NTSC), 59dB(PAL) HV-D37A:60dB(NTSC), 57dB(PAL) (DNR:ON), (Y OUT, $\gamma=1$, DTL off, Gain 0 dB)
Standard sensitivity	2000 lx, F11
Minimum illumination	HV-D27A:0.5 lx (50 IRE, F1.6, Gain:+24dB, DIGITAL GAIN:+12dB) HV-D37A:0.9 lx (50 IRE, F2.2, Gain:+24dB, DIGITAL GAIN:+12dB)
Gamma correction	0.45/1.00 (on/off)
Geometric distortion	Full screen 0% (not including lens characteristics)
Registration	Full screen 0.05% (not including lens characteristics)
Lens mount	C mount (frangeback: 17.526mm in air)
Sensitivity selection	AGC (0 to +24dB), GAIN (0 to +24dB step 1dB on remote control menu)
Scene files	4 scene files
CCD drive function	
Preset	1/100(PAL1/60), 1/250, 1/500, 1/1,000, 1/2,000 1/4,000, 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 1/100,000 second
Long 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	(Residual image response deterioration)
Power supply voltage	12 V DC rated (Stable operation at 10.5 to 15V DC)
Power consumption	Approx. 6.5 W
Dimensions	HEAD:38.5(W)×46(H)×42(D)mm CCU:150(W)×45(H)×170(D)mm
Mass	HEAD: Approx. 90g (not including lens) CCU: Approx. 930g
Ambient temperature (operation)	0 to 45 °C
Ambient temperature (storage)	-20 to 60 °C

Caution : Observe the dimensions of the lens mounting section as illustrated at the left. If the dimensions are not observed, do not use such a lens, because the lens and the camera will be damaged.



Input and output signals

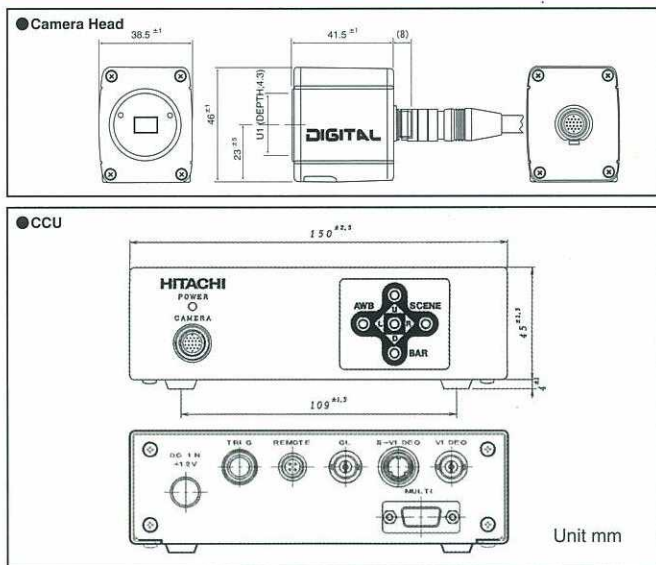
Input signal conditions	
Genlock input (MULTI connector)	VBS 1.0 Vp-p±3 dB or black burst/75 Ω HD/VD 2 to 5 Vp-p, negative (MULTI connector)
External trigger input (TRIG connector)	Low 0 VDC, High 2 to 5 VDC
Serial data input (REMOTE connector) *1	1.5 Vp-p±3dB/High (when connected to RC-Z3, JU-C20, JU-Z2) RS-232C level (when connected to personal computer)
Output signal ratings	
Component video output (BNC, MULTI connector)	VBS 1.0 Vp-p/75 Ω
Y/C output (MULTI, Y/C connector)	Y : 1.0 Vp-p/75 Ω C : NTSC 0.286 Vp-p (burst)/75 Ω PAL 0.3 Vp-p/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
Sync outputs (MULTI connector)	HD/VD : 2 Vp-p/75 Ω Sync : 2 Vp-p/75 Ω
Serial data output (REMOTE connector) *1	1.5 Vp-p/Low (when connected to RC-Z3, JU-C20, JU-Z2) RS-232C level (when connected to personal computer)

*1: Set internal switch according to connected equipment.

Standard composition

- Camera head, CCU (HV-D27A/D37A).....1
- Supplied accessories.....1
- Lens mount sheet.....1
- Power supply plug (R03-P3F).....1
- Operation Manual.....1

Dimensions



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

These Specifications are subject to change without notice.

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