HITACHI

# HV-D30

## High Resolution C-Mount 3 CCD Color Camera
## Compact, High Performance, Multi Purpose Camera with 12 bit A/D and 3 million gate DSP


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/BS 5750Pt1
EN 29001/JIS Z9901

3CCD DIGITAL

# HV-D30 Performance

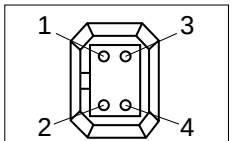
1. Digital Signal Processor:
   A 3rd generation Digital Signal Processor (DSP) chip utilizing Hitachi's most recent processing technology (0.18µm, internal core, 1.8V drive, and 3 million gates) is contained on a single newly developed ultra LSI (large scale integration) chip. The new DSP enables the camera to achieve its small size, low power consumption, and high stability.
2. Performance in a cube:
   The camera is built into a compact cube with a short depth dimension for easy incorporation into systems where space is critical. The multi-functional design is conducive to a wide range of industrial, medical, and other general purpose imaging applications.
3. High picture quality:
   High Sensitivity and High Resolution are achieved through the use of three 1/3 inch CCD's, each with 410,000 picture elements (470,000 PAL). Together with the 12-bit analog to digital (A/D) converter and 14-bit accelerated DSP a horizontal resolution of 800TV lines and a high signal to noise ratio (S/N) of 64 db (62 db PAL) is obtained with the use of dynamic noise reduction (DNR). Clear high quality low noise images are now possible even in a high gain mode.
4. Adjustable Flange back:
   A built-in flange back adjustment allows the cameras optical focus to be optimized with the selected optical system.
5. Auto Shading Compensation (ASC):
   The ASC function can automatically compensate for color shading errors caused by interaction between the lens and prism assembly in C-Mount optical systems. Two modes of shading are provided and can be selected according to the cameras application, a color shading mode or a two-dimensional luminance-shading mode.

## HV-D30 Features

1. Four scene files are provided for the setup, storage and recall of all camera functions.
   The camera configuration can be easily changed through the selection of a scene file.
2. A six-vector color corrector allows independent adjustment of the hue and saturation of the primary and secondary colors so that optimum color fidelity can be maintained.
3. A versatile color detail adjustment circuit enables the selection and independent adjustment of detail in two separate colors. This function can be used as a "flesh tone detail" circuit for smoothing human complexion, or for enhancing a color contour for increased visibility.
4. Dynamic Chroma Compensation is provided to maintain proper color saturation in scenes with high luminous levels. Dynamic range is expanded allowing high quality reproduction of outdoor and other difficult scenes.
5. Intelligent Auto Level Control (ALC) can be selected to allow unattended operation over a wide range of light levels. Digital light metering, CPU controlled automatic gain control (AGC), lens iris, and an auto electronic shutter (AES) operate under continuous control to compensate for varying light levels. Auto Tracking White Balance (ATW) can also be selected to maintain proper color temperature with changing light levels. Note: AES functions continuously only with a manual override lens.
6. Flare Compensation can be adjusted to compensate for color changes in dark areas, improving color fidelity, when a zoom lens is used on the camera.
7. Picture polarity can be selected as normal (positive) or negative, to suit the imaging requirements.
8. A full complement of video outputs is provided on the camera. Outputs include composite, Y/C, RGB, or Y/ R-Y/ B-Y. Simultaneous output of composite, Y/C and an additional component signal is possible, utilizing two separate output connectors.
9. The camera can be synchronized with external devices using the genlock input or by use of external HD and VD signals. Composite sync, HD and VD signals can be output for use with other equipment.
10. An External Trigger Signal can be used in the field-on-demand mode of operation to provide the capture of an image at a desired timing and exposure. Several trigger modes are available to suit the intended application. A long term integration mode of up to 8 seconds can be used to capture images at extremely low light levels.
11. An RS-232C port is provided for bi-directional communications with an external device, allowing complete control, setup and operation of all camera functions.

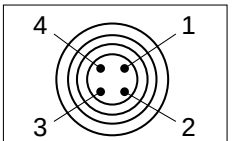
## Pin arrangement

LENS connector
(Plug:E4-191J-100)



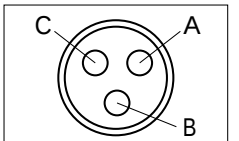

| Pin No. | Signal |
|---|---|
| 1 | UNREG +12V OUT |
| 2 | NC |
| 3 | IRIS CONT/VIDEO |
| 4 | GND |

REMOTE connector
(Plug:HR 10A-7P-4P)



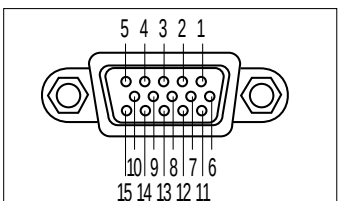

| Pin No. | Signal |
|---|---|
| 1 | UNREG +12V OUT |
| 2 | RXD/SD IN |
| 3 | TXD/SD OUT |
| 4 | GND |

12V IN connector
(Plug:R03-P3F)




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

D-Sub 15-pin connector
(Plug:KEC-15P (Heujing))
(Plug:JK-SP2140 (Pin contact))
(Plug:JK-C151C (Cover, inch))
(Plug:JK-C152C (Cover, miri))

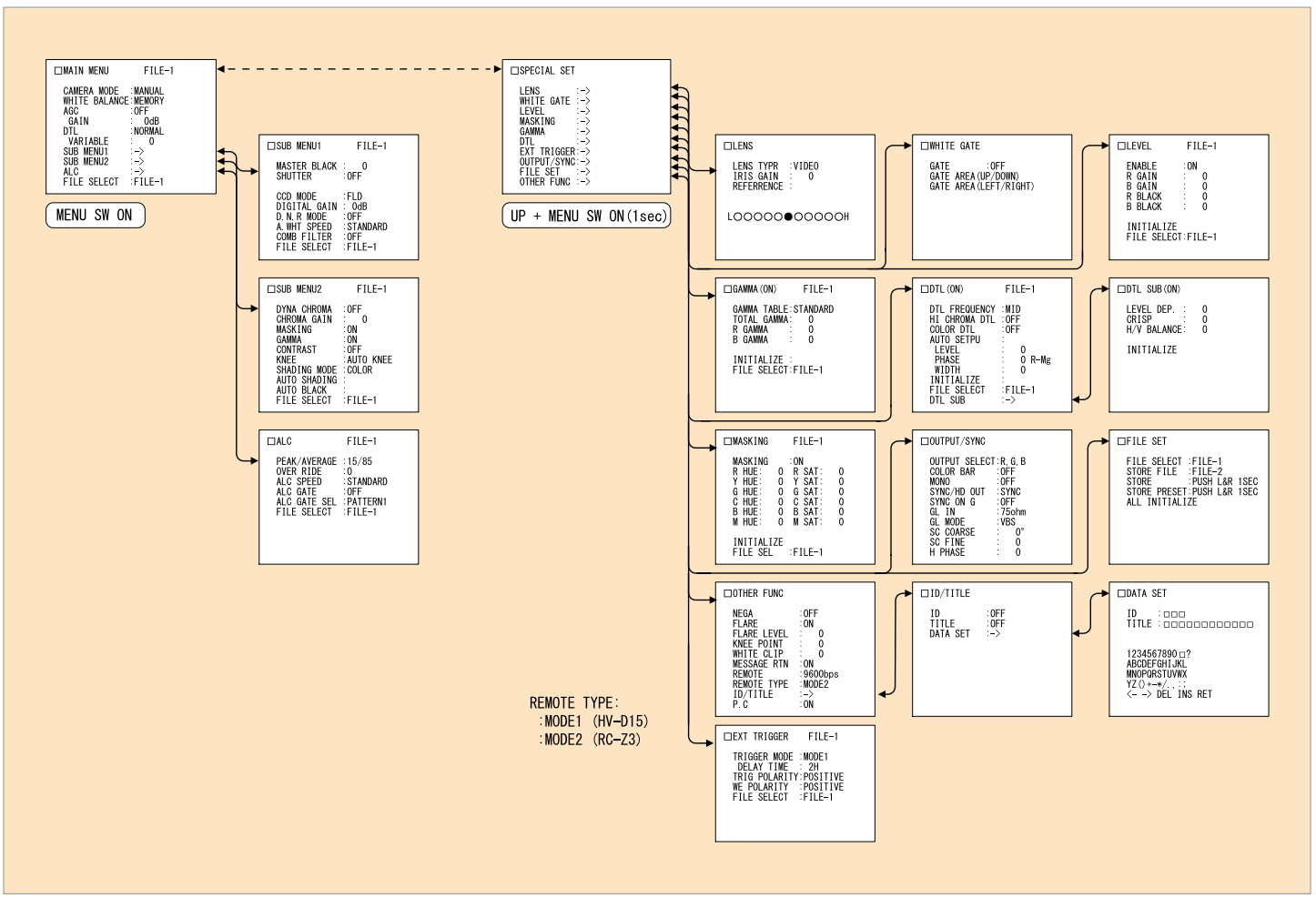



| Pin No. | Signal | Pin No. | Signal | Pin No. | Signal |
|---|---|---|---|---|---|
| 1 | R/R-Y/C OUT | 6 | VIDEO GND | 11 | GND |
| 2 | G/Y/Y OUT | 7 | VIDEO GND | 12 | RXD |
| 3 | B/B-Y/VBS2 | 8 | VIDEO GND | 13 | HD IN/HD/OUT/SYNC OUT |
| 4 | WE OUT | 9 | UNREG +12V OUT | 14 | VD IN/VD OUT/GL IN |
| 5 | GND | 10 | TRIG IN | 15 | TXD |

# HV-30D Features

- Digital signal processor (DSP) is contained on a single newly developed ultra-LSI (large scale integration) chip utilizing Hitachi's most recent processing technology (0.18 μm, internal core plus 1.8 V drive, 3 million gates) to achieve small size, low power consumption and high stability.The multi-functional design is conducive to a wide range of industrial and general-purpose applications.
- Performance in a cube
  The camera is built into a compact cube with short depth dimension for easy incorporation into an overall system.
- High picture quality
  Each high sensitivity 1/3-inch CCD has 410,000 picture elements (470,000 pixels PAL). Together with the 12-bit analog to digital (A/D) converter and 14-bit accelerated DSP, horizontal resolution is 800 TV lines and signal to noise ratio (S/N) is 64 dB(62 dB Pal) by using dynamic noise reduction (DNR).
- Auto shading compensation (ASC)
- The ASC function automatically compensates for color shading, brought about by the C-mount optical system, and two-dimensional luminance shading.
  Note: The luminance shading mode requires time to process. Select this mode as appropriate to the application.
- Versatile functions
  - 6-vector independently variable masking Optimum for microscope and other applications where color fidelity is important.
  - Color detail adjustment
    Two colors can be selected and the detail of each adjusted independently.
    The function is excellent for smoothing human complexion and enhancing color contours for easy visibility.
  - Intelligent auto level control (ALC)
    Digital light metering, computer chip controlled automatic gain control (AGC) lens iris and auto electronic shutter (AES) operate under continuous control to respond to an extremely wide range of light variation.
    Note: AES functions continuously only with a manual over-ride lens.
  - External trigger
    A scene can be captured at a desired timing and exposure time. Strobe and frame readout can also be combined.
  - RS-232C enables bi-directional communication.

## HV-D30 Menu



# Major specifications

| | | |
|---|---|---|
| Color system | | NTSC/PAL |
| Optical system | | 1/3-inch, F2.2 prism |
| Imaging system | | R, G, B 3CCD |
| Lens mount | | C-mount (Frangeback 17.526 mm in air) |
| CCD | | 1/3-inch interline transfer |
| | Total pixels | NTSC 811(H)×508(V)<br>PAL 795(H)×596(V) |
| | Effective pixels | NTSC 768(H)×494(V)<br>PAL 752(H)×582(V) |
| | Effective image area | NTSC 4.88(H)×3.66(V) mm<br>PAL 4.89(H)×3.64(V) mm |
| Horizontal resolution | | 800 TV lines (Y signal center, DTL off) |
| S/N | | NTSC 64 dB (DNR on) 64 dB (DNR off)<br>PAL 62 dB (DNR on) 59 dB (DNR off)<br>(Y OUT, γ off, DTL off, Gain 0 dB) |
| Standard sensitivity | | 2000 lx, F9.5 |
| Sensitivity setting | | AGC (0 to +24 dB) /<br>Manual (0 to +24 dB, 1 dB step)<br>and Digital gain (approx. 0 to +6 +12 dB, 6 dB step) |
| Minimum Sensitivity | | 0.9 lx(F2.2 +24 dB Digital gain on) |
| Electronic shutter | | 4 mode |
| | Preset mode | 1/100 s (PAL 1/60 s) to 1/100,000 s,<br>10 steps |
| | Lock scan mode | NTSC 1/60.38 s to 1/100,000 s<br>PAL 1/50.38 s to 1/100,000 s |
| | Auto electronic Shutter (AES) | OFF to 1/100,000 s |
| | Long term Integration | Field/Frame integration selectable<br>NTSC 1/30 s to 8 s<br>PAL 1/25 s to 8 s (1 frame step)<br>(external image memory needed<br>for continuous image) |
| External trigger | | Field/Frame readout selectable<br>One pulse trigger input |
| White balance mode | | Preset : 3200 K/5600 K selection<br>Memory : Auto white balance<br>Auto: Real time auto white balance |
| Scene files | | 4 files |
| Color bars | | NTSC : SMPTE, PAL : FULL |
| Power supply voltage | | 12 V rated<br>(stable operation at 10.5 to 15 Vdc) |
| Power consumption | | 4.5 W approx |
| Dimensions | | 65(W) × 65(H) × 80(D) mm |
| Mass | | 400 g(14 oz) approx. (not include lens) |
| Ambient temperature | | Operating : -10 to +45 ºC (+14 to 113 F)<br>Storage : -20 to +60 ºC (-4 to 140 F) |

# Standard composition

Camera ..... 1

## Accessories

Power plug(R03-P3F) ..... 1

Operation manual ..... 1

# Major accessories

- Camera control box, RC-Z3
- Junction box, JU-Z2
- Level converter, JU-C20

# Input and output signals

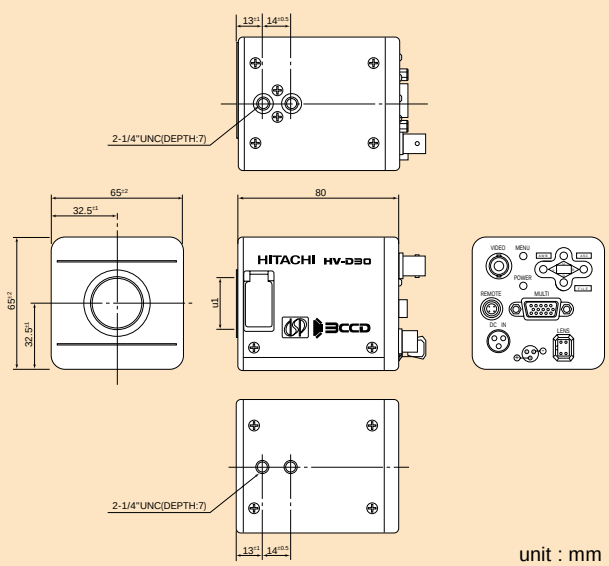
| Input signals | |
|---|---|
| Genlock (Multi*2) | VBS 1.0 Vp-p±3 dB<br>or black burst/75 Ω<br>HD/VD 2 to 5 Vp-p, negative |
| External Trigger(Multi) | Low 0 Vdc, High 2 to 5 Vdc |
| Serialdata (Remote*3) | 1.5 Vp-p / High<br>( when connected to RC-Z3)<br>RS-232C level<br>(when connected to personal computer) |
| **Output signals** | |
| Composite video (Video, Multi *1) | VBS 1.0 Vp-p / 75 Ω |
| RGB (Multi) | 0.7 Vp-p / 75 Ω |
| Component (Multi *1) | Y : VS 1.0 Vp-p / 75 Ω<br>R-Y : 0.7 Vp-p / 75 Ω<br>B-Y : 0.7 Vp-p / 75 Ω |
| Y/C (Multi *1) | Y : VS 1.0 Vp-p / 75 Ω<br>C : NTSC BURST 0.286 Vp-p / 75 Ω<br>PAL BURST 0.3 Vp-p / 75 Ω |
| Sync (Multi *2) | SYNC/HD : 2.0 Vp-p / 75 Ω<br>VD : 2.0 Vp-p / 75 Ω |
| Serial data(Remote *3) | 1.5 Vp-p / Low<br>( when connected to RC-Z3)<br>RS-232C level<br>(when connected to personal computer) |

Note1 : RGB,Component and YC/VBS Multi connector outputs are selected by menu.

Note2 : Sync and HD Multi connector output are selected by menu.
Inputs (Genlock, HD/VD) and Outputs (Sync, HD/VD) are selected by internal switch

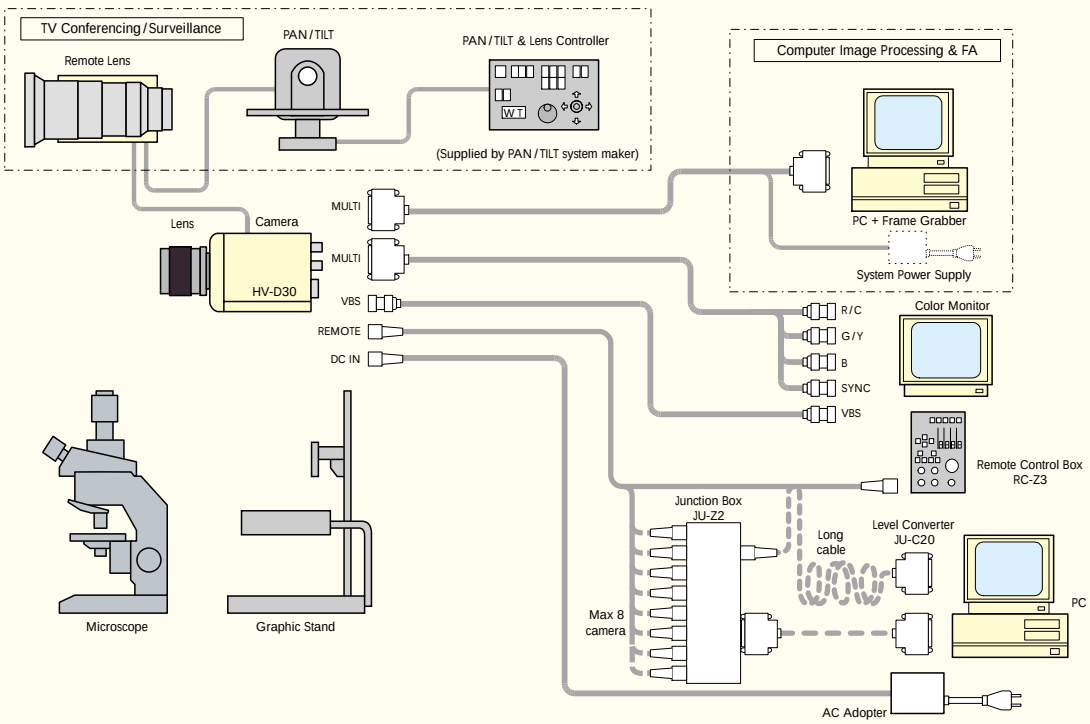
Note3 : Set internal switch according to connected equipment.
(Factory setting RS-232C)

## Dimensions




unit : mm

# System configurations




# Accesories

## Remote control box,RC-Z3

### Major specifications

**Serial data output : 1.5Vp-p**

**Maximum cable length : 200m (cable equiv. to HC-5B2)**

**Power supply : 9 to 15 VDC (supplied from camera)**

**Ambient temperature : 5-40 grad C**

**Power consumption : 0.5W approx**

**Dimensions and mass : 116(W)X128(H)X60(D)mm,500g approx**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