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HV-HD33 Tentative version

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Color Camera Specification

C

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**For under development,
this specification may change.**

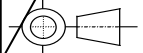
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-	Mar 15, 2012	(first edition)	S.Ikeda	S.Ikeda
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SYMBOL	DATE	DESCRIPTION	(DRAWN)	DESIGNED
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MODEL HV-HD33		TOLERANCE		Prod. Code - Order No.	
DESIGNED	DATE	APPROVED	DATE	TITLE HV-HD33 specification	REV. 0
CHECKED	DATE	STORED	DATE		
UNIT		SCALE			

Hitachi Kokusai Electric			DWG. No.		SHEET 1 / 7
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1. Overview

The Hitachi color camera HV-HD33 is an HDTV/SDTV multi format camera that supports the 1080i or 720p or 480i or 576i scan formats. The HV-HD33 is a small box type camera by combination between newly developed 1/3 size MOS image sensor, C-mount prism and the Hitachi's digital signal processing technology. I comprise the standard HD-SDI output in the field of broadcast and facilitate the use to various uses. In addition, I added the RS-422 which was convenient for a negative positive inversion function and a theater corresponding to tele-cine, stadium setting newly.

2. Feature

(1) Newly developed 1.3 million pixels MOS image sensor

Newly developed MOS image sensor's picture is very clear by 59.94 fps (or 50 fps) progressive scan. And the sensor does not have vertical smear, so the picture is not adversely affected even if high light objects appear in the picture.

(2) Multi format

Switchable 1080/59.94i, 1080/50i, 720/59.94p and 720/50p HDTV, and 480/59.94i and 576/50i SDTV output.

(3) Small size

Since the lens mount is C-mount, a commonly used lens mount in the industrial field, the HV-HD33 is a very compact HDTV camera that has an HD-SDI output. The HV-HD33 also has an adjustment of flange back, so the camera can be used with many type of lens.

(4) Picture quality improvement functions

- Knee
- Flare
- Master black
- Black and Gain control for R channel and B channel
- Dynachroma
- Masking
- DTL

(5) Special effects function by the signal processing

- Negative positive inversion function
- Right and left inversion function

(6) Electronic shutter

- Preset (6 position)
- Lock scan
- AES (Auto Electric Shutter)

(7) Auto control function

- Auto white balance
- Auto black balance
- ALC (In combination of gain, iris, and shutter)
- ASC(Auto Shading Compensation, Vertical shading only)

(8) Bi-directional data transfer

A personal computer can be connected directly (RS-232C/RS-422) for remotely controlling the camera functions. The camera mode data is transmitted back to the computer to allow very precise camera control. In multiple camera systems, each camera can be assigned an ID number to enable controlling multiple cameras from a single computer. Because long-distance camera control is possible in RS-422, the setting of the broadcast facilities in a theater and the stadium becomes easy. As means except it, RC-Z3 which is accessories of other selling can control a camera.

3. Specification

(1) Scan system

HDTV system 4 mode

1080/59.94i, 1080/50i, 720/59.94p, 720/50p

SDTV system 4 mode

576/50i(4:3), 576/50i(16:9), 480/59.94i(4:3), 480/59.94i(16:9)

(2) Image sensor

1/3-size MOS image sensor

Total pixels 1376(H) x 1070(V)

Effective pixels 1280(H) x 720(V)

Effective image area 4.80 mm(H) x 3.84 mm(V)

(3) Imaging system

R, G, B 3-MOS

(4) Optical system

1/3-size, F2.2 prism

(5) Lens mount

C-mount (flange back 17.526 mm in air)

Available lens: Flange surface of lens: **4.0mm or less**

(6) Horizontal resolution

720 TV lines, luminance signal center (Y out and DTL off)

(7) Standard sensitivity

F8.0 (2000lx, 3200K, reflection ratio 89.9%)

(8) S/N

53dB

(9) Minimum illumination

10 lx (F.2.2, Gain +15dB, Video level 350mV(50%),gamma:on)

(10) Geometric distortion

Full screen 0% (not including lens characteristics)

(11) Registration

Full screen within 0.05% (not including lens characteristics)

(12) Gain

0dB to +15dB 1dB step

(13) Shutter (Tentative specification)

Preset 1/100, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 sec

Variable

1/60 to 1/11239 (@59.94Hz, 1H (approx. 23msec) step)

1/50 to 1/9375 (@50.00Hz, 1H (approx. 28msec) step)

(14) Gamma

0.45/1.0(on/off)

(15) DTL function

DTL level, DTL frequency, Level dependent, Crisp, Balance, Flesh tone,

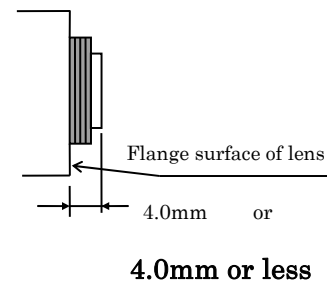
Hi chroma DTL, Color DTL

(16) Scene file

4 Scene files

(17) Color bar

ARIB bar



4.0mm or less

- (18) Power supply voltage
12V DC (Stable operation at 10.5 to 15 VDC (ripple and noise absent))
- (19) Power consumption
approx. 8W
- (20) Dimension
65mm(W) x 65mm(H) x 125mm(D)
- (21) Mass
Approx. 550g
- (22) Ambient temperature Operation -10 to 40 °C
Storage -20 to 60 °C

4. Standard composition

Color camera	HV-HD33	1
Power plug	R03-P3F	1
Lens plug	E4-191J-100	1
Operation manual		1

5. Input and output signals

5-1. Input signals

- (1) Sync input (MULTI connector)
- SYNC 0.3 V_{p-p} ±0.1V_{p-p} (HDTV , SDTV(No burst))
 - HD/VD 2 to 5 V_{p-p}, negative (MULTI connector)

Note: Sync input and Sync output are selected by internal input/output switch.
External synchronization can synchronize only in the same TV SYSTEM mode as the image output.

- (2) Serial data (REMOTE connector, MULTI connector)
- 1.5 V_{p-p} ±3 dB (when connected to RC-Z3)
 - RS-232C level (when connected to personal computer)
 - RS-422 level (when connected to personal computer. Only as for MULTI connector.)

Note: Please change RS232/RS-422 and RC-Z3 with the side switch of the camera.
(cf. table one or two)
Please set RS -232 and RS-422 by a menu. (cf. table one or two)
Please do not connect serial control to REMOTE connector and MULTI connector at the same time.

5-2. Output signals

- (1) HD-SDI output or SD-SDI output (SDI OUT connector)
0.8 V_{p-p}/75Ω
- (2) Component output (MULTI connector)
- Y : 1.0 V_{p-p}/75Ω
 - R-Y: 0.7 V_{p-p}/75Ω
 - B-Y: 0.7 V_{p-p}/75Ω
- (3) RGB output (MULTI connector)
- R : 0.7 V_{p-p}/75Ω
 - G : 0.7 V_{p-p}/75Ω
 - B : 0.7 V_{p-p}/75Ω

Note: Please choose RGB output or component output by a menu.

(4) SYNC output (MULTI connector)

HD : 2 V_{p-p}/75ΩVD : 2 V_{p-p}/75ΩSYNC : 0.3 V_{p-p}/75Ω**Note:** Please change SYNC input and the SYNC output with an internal switch.

(5) Serial data (REMOTE connector, MULTI connector)

1.5 V_{p-p} ±3 dB (when connected to RC-Z3)

RS-232C level (when connected to personal computer)

RS-422 level (when connected to personal computer. Only as for MULTI connector.)

Note: Please change RS232/RS-422 and RC-Z3 with the side switch of the camera.

(cf. table one or two)

Please set RS-232 and RS-422 by a menu. (cf. table one or two)

Please do not connect serial control to REMOTE connector and MULTI connector at the same time.

Table 1. Control signal setting of the MULTI connector

Menu \ Side switch	RS-232	RS-422	RC-Z3
RS-232/RS-422	RS-232	RS-422	
RC-Z3			RC-Z3

Table 2. Control signal setting of the REMOTE connector

Menu \ Side switch	RS-232	RS-422	RC-Z3
RS-232/RS-422	RS-232		
RC-Z3			RC-Z3

(6) Lens iris control output (Lens connector, manual override)

IRIS CONT : 1.5 V (closed) to 7.5 V (open)

(The control range is adjustable by a menu.)

VIDEO CONT : 0.0V_{p-p} to 1.0V_{p-p}

6. Pin assignment of connectors

MULTI

Pin number	Signal name	
1	R/PR out	
2	G/Y out	
3	B/PB out	
4	NC(Reservation)	Note 3
5	GND	Note 1
6	R GND	
7	G GND	
8	B GND	
9	UNREG +12V in	Note 1
10	TXD-	Note 1
11	RXD-	Note 1
12	RXD/RXD+	Note 1
13	Input(HD / NC) / Output(HD / SYNC)	Note 1,2,3
14	Input(VD / SYNC) / Output(VD / NC)	Note 1,2,3
15	TXD/TXD+	Note 1

Note1:When you use TXD/RXD, HD/VD/SYNC, UNREG +12V, please use GND of 5pin.

Note2:The standard shipment setting becomes the input. Please contact sale service to make output.

Note3:Please do not do electrical connection in pin.

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REMOTE

Pin number	Signal name
1	UNREG +12V OUT
2	RXD
3	TXD
4	GND

DC IN

Pin number	Signal name
A	GND
B	UNREG +12V IN
C	NC

LENS

Pin number	Signal name
1	UNREG +12V OUT
2	NC
3	IRIS CONT
4	GND

7. Dimensions

DWG. No.

SHEET 6 / 8

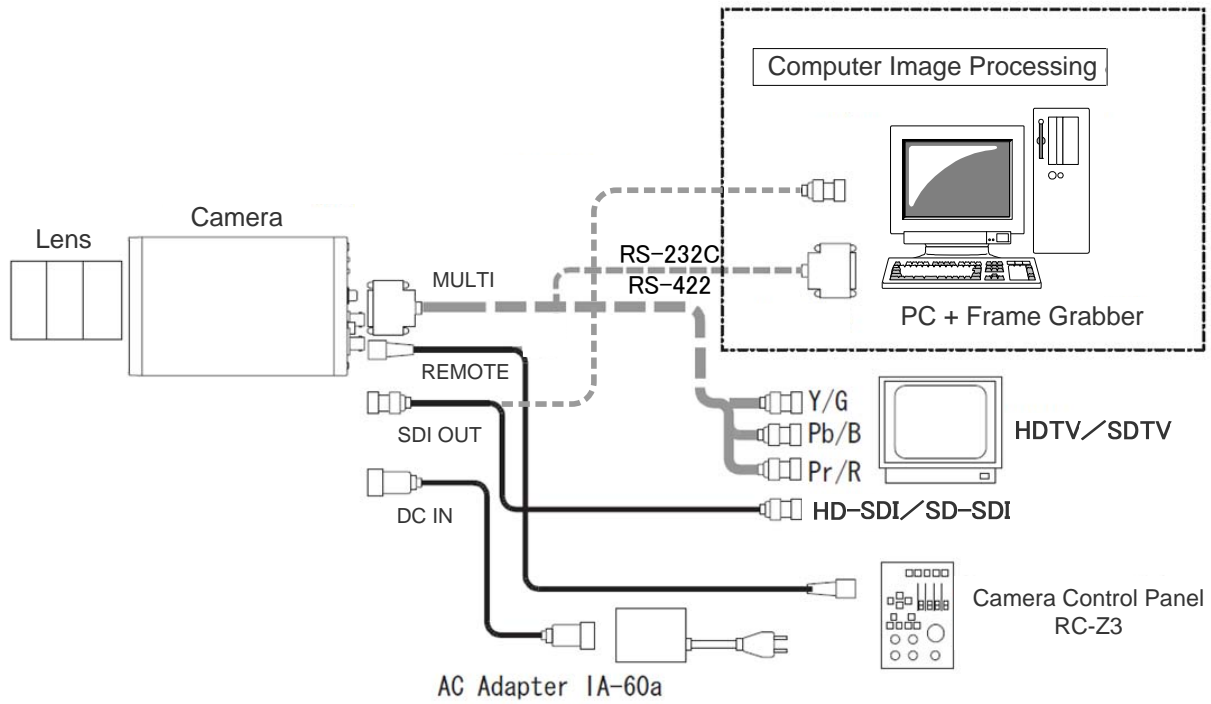
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8. Accessory

Camera control box
AC Adaptor
DC cable (For IA-60a)

RC-Z3
IA-60a
C-501ES

9. System



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