**Z-V1B**

**3-CCD Digital Camera/Recorder**

**Specifications**

**Hitachi Denshi,Ltd**

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**REV.1.0**

## 1. General

The Hitachi Z-V1B one piece camera/recorder is containing both digital 2/3" 470,000 (PAL) pixel 3-CCD color camera and a DVCPRO format VTR.

The Z-V1B is compact, lightweight and of low power consumption. The Z-V1B is provided with the optimal functions and performance such as high picture quality and sensitivity, mobility, dust-proof, damp-proof, etc which are required for an Electronic News Gathering(ENG) Camera/Recorder .

In addition, both the camera section and the VTR section employ Digital Signal Processing(DSP) system to improve picture quality and built-in small memory card to allow save and recall of camera setting information data.

## 2. Features

### 2.1 Camera section

**(1) low smear high sensitivity 2/3-inch 470,000 (PAL) pixel CCD**

The camera features a high signal-to-noise ratio(61dB(PAL)) and drastically improved sensitivity (minimum illumination 0.5 lx with F1.4 lens-stop) with +24 dB high gain mode and the ULTRA GAIN(+12dB) function. Thus sharp, clear picture is obtained under low light scene that can not be produced by conventional CCD cameras.

**(2) High resolution**

High horizontal resolution(850 TV-L) is realized by incorporating with high accuracy CCD off-setting technology and advanced-DSA(Double Sampling Aperture) circuit.

**(3) Digital Signal Processing**

High picture quality and high stability are realized by the 10-bit A-D converter and 13-bit operation technology.

**(4) Digital Signal Processing and Control Functions to improve the picture quality**

The 6-vector color corrector and the conventional linear matrix masking improve the color reproduction of the picture.

Flesh tone DTL functions makes the smooth face detail by reducing the detail in the skin color without losing the sharpness of the other color picture.

High chroma detail function reduces deterioration in resolution of highly saturated objects.

A detail boost frequency can be adjusted to get the best sharpness of the picture matched with the scene.

Flare correction circuit provides a crisp dark portion of the picture.

**(5)Functions to meet with variety of operational needs**

Two users operational switches are equipped, enabling to selecting functions most suitable for specific use.

One-touch full auto-functions including auto iris, AGC, auto electric-shutter(AES) and real time auto white balance are equipped, resulting in no losing the image timing of the

shooting.

Auto white shading correction function work with lens extended selection.

The fine iris level setting and the iris peak/average characteristic setting are available on menu screen.

Eight white balance memories work with 2 channel white balances, each having 4 optical filters.

Equipped auto knee function improves the dynamic range of video signal.

ID display is available in color bar mode.

(6) Multiple functions for CCD drive

Pre-set 5 steps electric shutter mode available.

Lock scan mode

A flickering picture can be eliminated by adjusting the lock scan frequency on shooting the different frequency display monitor.(Except special scan frequency of display monitor.)

CC frame mode

Improved vertical resolution.

(7) Set-up card system

The camera setting parameter information can be stored to a set-up card or read out instantly to adapt a variety of shooting conditions. The compact set-up card is suitable for operation and maintenance.

(8) Various kinds of VF display functions

Various function settings are available with tree structure menus in VF screen.

Display for diagnostic of various auto functions and condition of checking functions are available.

Display of safety zoom and center marker.

Two mode zebra displays.

Audio indicator display

Battery remaining value indicator display is available with mounting digital Magnum series of Anton Bauer battery.

Alarm indication of VTR conditions

Abnormal and alarm conditions such as tape end, short of battery power etc, are indicated by the various alarm lamps and alarm sound. Remaining tape time can also be displayed by the characters on the VF.

(9)Other functions

Built-in EBU color bar for PAL and standard audio signal generator.

Recording with external VTR

Remote control available

Phantom power supply microphone input available

(10) High quality VF(GM-9)

Easy focusing of VF picture realized by 600 TV lines VF resolution.

Improved viewing angle and distance from eye with employed larger VF lens.

For greater eye relief , the eye-piece can flipped upward to allow easier view such as composing the scene .

Adjustable mechanical VF positioning and tilt to set best viewing.

Bayonet mounting method: Direct connectable to camera without using a cable

Improved portability by positioning VF upright.

Built-in top tally

2.2 VTR section

(1)Digital system

The VTR section features a component digital recording system that employs the latest compression technology and non-compressed PCM recording for audio. This system provides superior S/N, frequency bandwidth and waveform characteristics as well as reproduction of detailed areas, etc. and realizes even higher picture and sound quality.

(2)Rec review function

This function automatically rewinds the tape and plays back the last two seconds recorded, allowing recorded contents to be quickly checked.

(3)Playback function

Playback pictures (black-and-white pictures) can be seen on the viewfinder screen. In addition, color playback pictures can be seen on a color monitor connected to the VIDEO OUT connector on the main unit.

(4)Built-in time code generator/reader

Time code information can be recorded and played back on a dedicated subcode track.

(5)Locking of the time code to an external source

The built-in time code generator can be locked to an external generator. Also, the built-in time code generator uses a lithium battery as its back-up power supply, allowing time codes to be backed up for approximately one year even if power is not supplied to the unit.

(6)Built-in Dolby NR System*

A Dolby B Noise Reduction System is built in for audio recording in the longitudinal direction.

(7)Successive shooting

Image can be shot successively within an accuracy of ±1 frame can be performed simply by pressing the VTR START button or the lens VTR button.

*Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.

"Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

## Specification

### 3.1 General

| | |
|---|---|
| (1) Power supply voltage | +12V DC |
| (2) Power consumption | Approx. 25W |
| (3) Operating temperature | 0 +40 |
| (4) Storage temperature | -20 +60 |
| (5) Operating humidity | Less than 85%(relative humidity) |
| (6) Continuos operating time | Approx. 80 min.(using 1 Anton Bauer Hytron50 battery) |
| | Approx. 45 min.(using 1 SONY NP-1B battery) |
| (7) Weight | approx. 6.5 Kg (including main unit, VF, lens, battery pack, tape, microphone) |
| (8) Dimensions | 119(W)×255(H)×326(D) mm |
| | refer to drawing #7366560 |

### 3.2 Camera Section

| | |
|---|---|
| (1) Color system | PAL |
| (2) Optical system | 2/3", F1.4 prism |
| (3) Pickup system | RGB 3-chip system |
| (4) Imaging device | 2/3" CCD with micro lens |
| | Total pixels 795(H)×596(V) |
| | Effective pixels 752(H)×582(V) |
| (5) Sync system | Internal or genlock |
| (6) Horizontal. resolution | 850 TV lines (luminance signal, at center, DSA:ON, DTL:OFF) |
| (7) S/N | 61dB typical (PAL) |
| | (Gamma:1, DTL:OFF, Gain:0dB ,Y-OUT) |
| (8) Standard sensitivity | 2000 lx, F11 |
| (9) Minimum illumination | 0.5 lx, F1.4 / 0.8 lx, F1.8 |
| | (GAIN: +24dB, ULTRA GAIN: ON |
| (10) Gamma correction | 0.35 to 1.0 (ON/OFF switchable |
| (11) Geometric distortion | Below measurable limit (excluding lens) |
| (12) Registration | Less than 0.05% (excluding lens) |
| (13) Optical filter | 1: 3200K |
| | 2: 5600K + 1/8ND |
| | 3: 5600K |
| | 4: 5600K + 1/32ND |
| (14) Vertical contour correction | 2H |
| (15) Lens mount | 2/3" Bayonet type (flange back = 48 mm in air |

| | | |
|---|---|---|
| (16) Gain selector | L(LOW): | 0dB |
| | M(MID): | +6/+9/+12dB |
| | H(HIGH): | +12/+18/+24dB |
| | AGC: | 0 24dB(at FULL AUTO mode) |
| | with RC-Z2A/Z21A: | 0 to +24dB (3dB step) |
| (17) DTL control | DTL LEVEL, DTL FREQ, FLESH TONE, High CHROMA, LEVEL DEP, CRISP, H/V BAL, SOFT DTL, etc. | |
| (18) ULTRA GAIN | Gain is increased Approx. 12 dB by switching the read-out of CCD (This work with only Gain-selector :H and drop the horizontal resolution) | |
| (19)CCD drive mode | Preset: | 1/60, 1/250, 1/500, 1/1000,1/2000s, CC FRAME |
| | Lock scan: | 1/50.3 to Approx. 1/2000s (in 1H steps) |
| | Automatic Electric Shutter(AES) (at FULL AUTO mode): (Shutter speed varies in 1 H steps to equivalent of 4 F-stops) | |

### 3.3 Viewfinder (GM- )

| | |
|---|---|
| (1) Input signal | VS 1.0Vp-p |
| (2) CRT | 1.5" B/W |
| (3) Resolution | Approx. 600 TV lines (horizontal center |
| (4) LED display | B, T, , |
| (5) Controls | Brightness, Peaking, Contrast, Front Tally ON/OFF |
| (6) Power supply | +9V DC |
| (7) Power consumption | Approx. 1.4W |
| (8) Weight | Approx. 0.6Kg |

### 3.4 VTR Section

#### 3.4.1 Video performance Playback with standard playback VTR)

| | |
|---|---|
| (1) Bandwidth | 25Hz to 5.75MHz +1.0dB/-3.0dB (luminance) |
| (2) S/N | 55dB |
| (3) K factor(2T pulse) | Less than 2% |
| (4) Y/C delay | Less than 20nS |

#### 3.4.2 Audio performance Playback with standard playback VTR)

| | |
|---|---|
| (1) Sampling frequency | 48KHz (Synchronized to video) |
| (2) Quantization | 16 bits/sample |
| (3) Frequency response | 20Hz to 20KHz ±1.0dB (at reference level) |
| (4) Dynamic range | 85dB or more (at 1KHz, AWTD) |
| (5) Distortion | Less than 0.1% (at 1KHz, operating level) |

| | |
|---|---|
| (6) Wow/flutter | Below measurable limit |
| (7) Head room | 20dB |
| (8) Emphasis | T1=50 s, T2=15 s (can be turned ON/OFF |

3.4.3 VTR tape running system

| | |
|---|---|
| (1) Tape speed | 33.820mm/s (33.854mm/s for PAL) |
| (2) Recording/playback time | Approx. 66min. (using the AJ-P66MP) |
| (3) FF/REW time | Approx. 3min. (using the AJ-P66MP) |

Input/Output signal

4.1 Input

| | |
|---|---|
| (1) AUDIO IN CH1/CH2 | MIC/LINE switchable |
| (XLR 3pin, male | MIC :-60/-50/-40dBu (selectable with menu) |
| | LINE:-6/0/+4dBu (selectable with menu) |
| (2) MIC IN (XLR 3pin, female) | -60/-50/-40dBu (selectable with menu), 3K balanced |
| (3) GENLOCK IN (BNC) | 1.0Vp-p 75 |
| (4) TIME CODE IN (12pin) | 0.5V to 18Vp-p |

4.2 Output

| | |
|---|---|
| (1) CAMERA OUT (BNC) | 1.0Vp-p 75 |
| (2) VIDEO OUT (BNC) | 1.0Vp-p 75 |
| (3) AUDIO OUT | 0dBu, balance, low-impedance |
| (XLR 3pin, female | CH1/CH2/MIX (Selectable with menu) |
| (4) AUDIO CH1/CH2 OUT | -20dBu, unbalance, low-impedance |
| (12pin, combined with TC IN/OUT) | |
| (5) VTR (26Pin, Option) | |
| (6) TIME CODE OUT (12pin) | 1.0Vp-p, 75 |
| (7) PHONES (Mini-jack) | |

4.3 Others

| | |
|---|---|
| (1) DC IN (XLR 4pin,male) | DC11 to 17V |
| (2) DC OUT (4pin) | DC11 to 17V Maximum current: 0.1A |
| (3) LENS (12pin) | |
| (4) REMOTE (4pin) | |

**Standard Composition**

| | | |
|---|---|---|
| (1) Main unit | Z-V1 | |
| (2) 1.5 inch view finder | | GM- |
| (3) Mount cap | | |
| (4) Battery mount | QRDP-800 | |
| (5)Mic holder | | MH-V1 |
| (6) BNC connector-cap | | BNC Jcap(3) |
| (7) Video input connector | | |
| (8) Operating Instructions | | |

**Major accessory**

**6.1 Option**

| | |
|---|---|
| Zoom lens X19(Fujinon) | A19×8.7BRM-24 |
| Zoom lens x18(Canon) | YJ18×9BKRS |
| Tripod adapter | TA-ZV1 |
| Carrying case | CL-ZV2 |
| Microphone | MC-Z2 |
| Microphone cable(For MC-Z2) | C-300MA |
| (For ME-66/ATM-57) | C-500MA |
| Shoulder belt | SB-1 |
| 26pin output connector(Panasonic) | AJ-YA700 |
| Camera control panel | RC-Z2A |
| (Joystick remote control) | RC-Z21A |
| VTR cable for BETACAM/M 2M | C-201TB |
| 5M | C-501TB |
| S-VHS | C-301TF |

**6.2 Recommended accessory**

| | |
|---|---|
| Microphone | ME-66 (Sennheiser)/ ATM57 (audio-technica) |
| NP1B Battery case | SHAN-B220 |
| AC adapter | AJ-B75(Panasonic), IA-60a W/Cable(I D X) |
| DVCPRO video cassette tapes | AJ-P12MP, AJ-P24MP, AJ-P33MP, AJ-P66MP (Panasonic) |
| | DP121 M-cassette series (FUJI FILM) |
| | DVP-12M,DVP-24M,DVP-33M,DVP-66M (maxell) |
| Cleaning tape | AJ-CL12MP (Panasonic) |
| Memory card | Compact flash memory(SanDisk Corp.) |
| | (2M/4M/8M/15MB) equivalent |

**Specifications are subject to change without notice.**