

# HITACHI

**New**

## 14bit A/D DIGITAL CAMERA



# Z-3500

The Hitachi Z-3500 offers Professional users the best combination of features and price. The Z-3500 incorporates added new technology advancements, performance and functionality that continue the tradition and popularity the Z-series Hitachi cameras are known for.

Budget-conscious users now benefit from the use of Hitachi's own DSP IC's and the implementation of the latest generation of 14-bit Analog to Digital Converters; technologies which add up to high-quality images with superb resolution and low noise qualities.

# Outstanding Features

## Resolution 900TV lines

An outstanding 900 TV Lines of resolution is achieved through the use of Hitachi's own Digital Signal Processor and new 2/3-inch, 410,000 pixel IT-CCDs.

## Next-Generation DSP

Hitachi's unique DSP technology encompasses the video digital processing and the encoder into a single LSI device. This single chip 3 million gates 0.18µm DSP design reduces the size, power consumption and greatly enhances stability.

The 14 bit A/D converter and 20 to 30 bit DSP processing provide a high S/N ratio and wide dynamic range.

## Signal to Noise Ratio 65dB

With the new digital noise reduction and low noise DSP technology, a S/N ratio of -65dB is achieved. This new technology assures clear low noise images while operating in the high gain modes.

## Sensitivity - F11(2000 lx)

A total of +36dB of gain is available for reproducing low light scenes down to 0.5 lx (F1.4). The +36dB gain is a combination of +24dB high gain and +12dB digital gain.

## Versatile CCD Shutter

Four modes of shutter operation are provided : Five Preset electronic shutter speeds, Lock Scan to image computer monitors without flicker, Auto Electronic Shutter (AES) maintains the video level with a fixed lens f-stop, and CC Frame offers improved vertical resolution.

## Digital Processing Improves Image Highlight Quality

### Dyna-Chroma and Auto Knee

The auto knee provides a wide dynamic range by compressing the video above 100%. Dyna-chroma restores color saturation to scene highlights above 100%.

### Automatic Flesh Tone Detail

Flesh tone detail smooths and softens facial lines and blemishes without sacrificing overall scene detail. Automatic flesh tone detail provides an easy and fast means to optimize flesh tone detail.

### Variable Detail Boost Frequency

The detail center frequency is user selectable to match the detail signal to the scene.

### 6-Vector and Linear Matrix

The 6-vector color corrector and linear matrix provide the user a wide latitude in subjective image color control. The linear matrix provides overall color control and the 6-vector color corrector provides independent control of the hue and saturation for each of the three primary and three secondary colors.



## Special Gamma

Adjusts the initial gamma gain to optimize the reproduction of the dark areas in a scene.



## Gray Scale Automatic Setup

This "through the lens" automatic is used in combination with a standard gray scale chart to automatically setup gain, gamma, black and flare. Markers are provided in the viewfinder to aid in the positioning of the gray scale chart and the iris is automatically adjusted to the correct video level.

## Automatic shading

Automatic shading corrects white vertical shading at the push of a button. This feature provides separate setups to optimize the X1 and X2 lens extender positions.

## Extensive User-Friendly Features

### • Quick Focus

Quick Focus automatically opens the iris then sets the video level with the electronic shutter. With the resulting shallow depth of focus, the exact focus point can be set easily.

### • Two User-Programmable Switches (CS-1, CS-2)

The user can assign full auto, quick focus or contrast to either of the two programmable switches for ease of operation.

### • Full Auto

The built-in automatic electronic shutter (AES) and automatic iris maintain the video level even with radically changing light levels. Real-time automatic white balance corrects color temperature variations due to changing types of lighting conditions.

- Four scene files are provided to store and recall functions such as gain, detail, masking, gamma and other settings.
- Title texts are displayed on the color bar display.
- Audio test tone (1kHz) is output when color bars are selected.

## Viewfinder Displays

• The viewfinder displays the function tree menus.

### • Status display

Indicators for zoom and focus (with compatible lenses), iris F-stop, color temperature for auto white balance and other functions are displayed.

### • Two mode zebra

Menu selection of over-level or between range zebra is provided.

### • Viewfinder V-Detail

Vertical detail is enhanced in both the 1.5-inch VF (GM-9) and 5-inch VF (GM-51) viewfinders for easy lens focus. Horizontal detail is also provided.

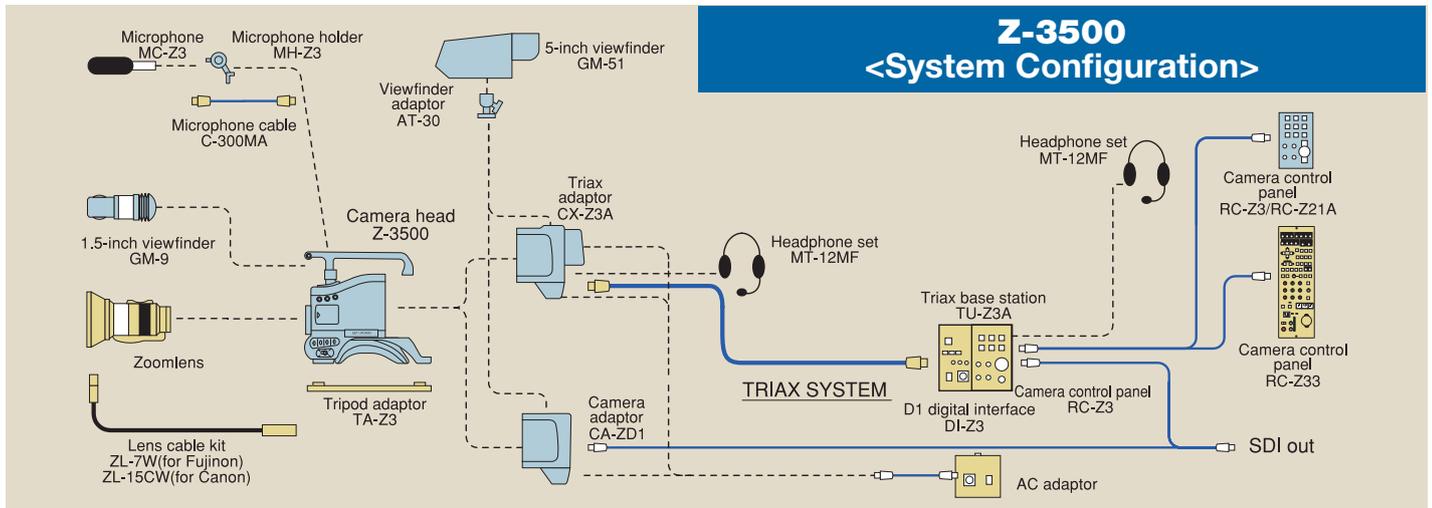
## High Performance 1.5 inch Viewfinder (GM-9)

- The 600 TV line resolution assures easy focus.
- Large aperture lens improves viewfinder viewing.
- Front-back, left-right and tilt positioning is provided for optimum user comfort. The bayonet mount provides a direct connection to the camera eliminating the need of a cable.
- Rotates to a perpendicular position for convenient carrying.



## Advanced Ergonomics

- New low center of gravity design.
- Main operation switches are grouped forward for easy access.
- Featherweight design (camera head 2.6 kg) is ideal for portable use.
- Adjustable shoulder pad position and non-slip finish provide on-the-shoulder balance, comfort and confidence.



## FLEXIBLE CHOICE OF REMOTE CONTROL UNITS

### Suggested System Configurations

Studio system : TU-Z3A Triax base station, CX-Z3A Triax adaptor, RC-Z3/RC-Z21A/ RC-Z33 Camera Control Panel, and GM-51 5-inch viewfinder.

### RC-Z33 Camera Control Panel

The RC-Z33 Camera Control Panel has 11 potentiometers to control the Z-3500 camera.



### Triax System

#### High quality video transmission

The wide bandwidth of the Y(10MHz) and PB/PR(5MHz) component FM transmission provide high resolution video with a high S/N ratio. A digital comb filter improves cross color artifacts in the video out put.

#### Digital video interface (optional)

2 D1 serial digital outputs and 2 D1 serial digital inputs for return video are available as options. With this system, cable length up to 1900 meters (14.5mm Fujikura cable) may be used by FM modulation triax system.

#### TRUNK VIDEO (Optional)

This function optionally provides the ability to send an external video signal source input at the camera head to the CCU via the existing triax cable. The PROMPT RF transmission is reversed by a simple switch on the camera's triax unit for instances were a video feed need take advantage of the camera's existing location without running any other video cables to recover that feed at the CCU.

## ACCESSORIES



**MC-Z3**  
Microphone



**MH-Z3**  
Microphone holder



**C-300MA**  
Microphone cable



**GM-9**  
1.5-inch viewfinder



**GM-51**  
5-inch viewfinder



**AT-30**  
Viewfinder adaptor for GM-51



**MT-12MF**  
Headset



**TA-Z3**  
Tripod adaptor



**A20 x 8.6BRM-24**  
Zoomlens



**YJ19 x 9BKRS**  
Zoomlens



**TU-Z3A**  
Triax base station with RC-Z3 (option)



**CX-Z3A**  
Triax adaptor rear view

## SPECIFICATIONS : Z-3500 Camera Head

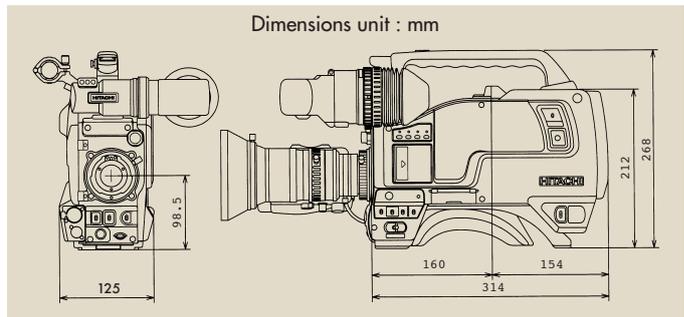
<b>Color System</b>	NTSC
<b>Optical system</b>	2/3" F1.4 prism
<b>Pickup system</b>	RGB 31F-CCD, 2/3" Image format
<b>Imaging size</b>	4 : 3 8.8 x 6.6mm
<b>Picture elements (pixels)</b>	Total 811(H) x 508(V) Effective 768(H) x 494(V)
<b>Sync system</b>	Internal or genlock
<b>Horizontal resolution</b>	900 TV lines
<b>Signal-to-noise ratio</b>	65 dB typical (Gamma : 1, DTL : off, Gain : 0 dB, Y-OUT)
<b>Standard sensitivity</b>	F11 at 2000 lx
<b>Minimum illumination</b>	0.5 lx F1.4 / 0.8 lx F1.8 (Gain : +24dB, digital gain : on)
<b>Gamma correction</b>	0.35 to 1.0 (ON/OFF switchable)
<b>Geometric distortion</b>	All zones : less than measurement limit (excluding lens)
<b>Registration</b>	All zones : less than 0.05% (excluding lens)
<b>Optical filters</b>	3200K, 5600K +1/16ND, 5600K, 5600K+1/64ND
<b>Vertical detail correction</b>	2H
<b>DTL controls</b>	DTL LEVEL, DTL FREQ, FLESH TONE, LEVEL DEP, CRISP, H-V BAL, SOFT DTL, etc.
<b>Lens mount</b>	Bayonet (Backfocus : 48mm in air)
<b>Gain selector</b>	Low : 0dB Mid : +6/ +9 / +12dB High : +12/ +18 / +24dB Remote mode : 0dB to +24dB (3dB steps)
<b>Digital-Gain function</b>	Gain is increased +6dB, +12dB by Internal processing of DSP
<b>Scene file</b>	4 scene files Items: gain, DTL, masking, gamma, electronic shutter, auto iris mode, contrast, etc.
<b>Electronic shutter</b>	Preset mode 1/100, 1/250, 1/500, 1/1000, 1/2000 CC FRAME Lock SCAN mode : approx 1/60 to approx. 1/2000 (in 1H steps); Automatic Electronic Shutter (AES) mode : (up to 4 lens-stops)
<b>Input signals</b>	1. Genlock input (BNC or multi-connector) : VBS 1.0Vp-p ( $\pm$ 3dB or black burst/75 $\Omega$ ) (sync 0.3 $\pm$ 0.1Vp-p, burst : 0.3 $\pm$ 0.1Vp-p) 2. Viewfinder AUX input (multi-connector) : VBS 1.0Vp-p $\pm$ 3dB / 75 $\Omega$
<b>Output signals</b>	1. Video output (BNC) VBS 1.0Vp-p / 75 $\Omega$ 2. VTR output 1 (multi-connector) VBS 1.0Vp-p / 75 $\Omega$ 3. VTR output 2 (multi-connector) a : Composite signal: VBS 1.0Vp-p / 75 $\Omega$ b : Y/C output : Y : 1.0Vp-p / 75 $\Omega$ , C : 0.3Vp-p (burst), c : RGB output : RGB : 0.7Vp-p / 75 $\Omega$ d : Component output: VS : 1.0Vp-p / 75 $\Omega$ R-Y, B-Y : 0.525Vp-p / 75 $\Omega$ 4. Monitor output (BNC) VBS 1.0Vp-p / 75 $\Omega$ , with characters 5. Audio output (multi-connector) -20dBm or -60dBm
<b>Ambient temperature</b>	Operating: -10 to +45 $^{\circ}$ C (+14 to +113F) Storage: -20 to +60 $^{\circ}$ C (-4 to +140F)
<b>Power requirement</b>	12 V DC (+10.5VDC to +17VDC)
<b>Power consumption</b>	Approx. 10.5W (excluding GM-9, camera adapter)
<b>Dimensions</b>	125(W)x268(H)x160(D)mm (excluding camera adapter)
<b>Mass</b>	Approx. 2.6kg (5.7 lb) (excluding GM-9, lens and camera adapter)

## SPECIFICATIONS : GM-9 1.5-inch Viewfinder

<b>Input signal</b>	VS 1.0 Vp-p, sync negative
<b>CRT</b>	1.5" B/W
<b>Resolution</b>	600 TV lines approx. (horizontal center)
<b>Aspect ratio</b>	16:9 / 4:3
<b>LED display</b>	TALLY, BATT, SAVE, (!) Warning indicator : out of standard application
<b>Controls</b>	Brightness, Peaking, Contrast, Front tally ON/OFF
<b>Power supply</b>	9V DC
<b>Power consumption</b>	1.4 W approx.
<b>Mass</b>	0.6 kg (1.3 lb) approx.

## SPECIFICATIONS : TU-Z3A/ CX-Z3A

<b>Video band width (Base band)</b>	Y signal : 10 MHz PB, PR signal : 5 MHz RET, PROMPT signal : 5 MHz
<b>Ambient Temperature</b>	Operating : TU-Z3A 0 to +40 $^{\circ}$ C CX-Z3A : -10 to +45 $^{\circ}$ C Storage : -20 to +60 $^{\circ}$ C
<b>Power supply voltage</b>	117V AC 50 Hz
<b>Power consumption</b>	approx. 130 W (AC operation, including Z-3500/GM-51 and AUX POWER OUT 50 W) TU-Z3A : approx. 25 W (DC operation) CX-Z3A : approx. 30 W (DC operation, including Z-3500/GM-51)
<b>Dimensions</b>	TU-Z3A 212(W) x 163(H) x 381(D) mm CX-Z3A 135(W) x 196(H) x 215(D) mm
<b>Mass</b>	TU-Z3A Approx. 9.0 kg (19.9 lb) CX-Z3A Approx. 3.0 kg (6.6 lb)



**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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