

# HITACHI

DIGITAL



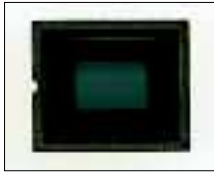
DIGITAL CAMERA  
**Z-3000W**  
**Z-3000**



# Outstanding Features.

## Resolution.

The outstanding 850 H. TV line resolution is due to the new 2/3-inch, 16:9 wide aspect ratio, 640,000 pixel CCD with micro-lens technology and the high performance double sampled digital signal processing.



## Switchable 16:9/4:3 or 4:3 only.

The Z-3000W provides the video professional the freedom to do productions in a 16:9 or 4:3 aspect ratio at the push of a button. The 2/3-inch, 640,000 pixel CCD's and digital switching assure the highest picture quality is preserved in either aspect ratio.

The Z-3000 operates in a dedicated 4:3 mode and offers maximum performance value for the investment. The 2/3-inch, 410,000 pixel CCD's (4:3 aspect ratio) achieve 850 TV lines of horizontal resolution. In all other aspects, the Z-3000 offers the same features and specifications as the Z-3000W.

## Next-Generation DSP.

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

The 10 bit A/D converter and 13 to 18 bit DSP processing provide a high S/N ratio and wide dynamic range.



## Signal to Noise Ratio.

With the new digital noise reduction and low noise DSP technology, a S/N ratio of 65dB is provided. 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 imaging low light scenes down to 0.5 lx (f1.4). The +36dB gain is a combination of +24dB high gain and low noise +12dB ultra-gain.

## Setup card.

A small plug-in setup card (Compact Flash type) stores the user setup information for later recall. The setup card offers operational flexibility by storing and recalling setups optimized for individual scenes.



## 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 100IRE. Dyna-chroma restores color saturation to scene highlights above 100IRE.

### 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 scene components.

### 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 automatic 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 for color temperature variations due to changing types of lighting conditions.

• Four scene files are provided to store and recall functions such as gain, detail, and gamma.

• A 4-point star filter is included in filter wheel.

• Menu access is provided for iris level (fine adjust) and iris peak/average selection.

• Computer controlled real-time auto-white balance.

• Camera ID, date and time are displayed on the color bar display.

• Audio test tone (1 kHz) is output when color bars are selected.

## Viewfinder Displays.

• The viewfinder displays the function tree menus.

• Self diagnostic and check function.

### • 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.

### • Battery remaining.

Fuel-gauge for Anton Bauer Digital interactive batteries. Displays percentage of battery power remaining.

### • 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).

- Offers automatic switching between 16:9/4:3 display when the camera aspect ratio is changed.
- 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.

## Camera adapter with D1 output for Z-3000 series CA-ZD1

Digital serial output combining with Z-3000 series Camera.

- 10-bit 4 : 2 : 2 Component Serial Digital Interface (D1) SMPTE 259M-C
- EDH (Error Detection and Handling) signal SMPTE RP165

Two D1 output (BNC connector, 26Pin connector)  
The 26Pin VTR connector can be switched to provide a D1 or VBS output  
(note : can not be used with RU-Z1 / RU-Z2/RU-Z3)



## Docks to a Wide Variety of VTR's.

Optional adapters and inner modules offer flexible docking solutions for popular video tape recorders.

### Compatible models.

Sony : DVCAM (DSR-1), Betacam PRO (PVV-3)  
Panasonic : DVCPRO (AJ-D90), MII Promind (AU-45H)  
JVC : Digital-S (BR-D40), S-VHS (BR-S422)



MP-Z3000

RC-Z33

## RC-Z33 Camera control panel

RC-Z33 Camera control panel provides direct control for Z-3000W camera with 11 potation meter

## MP-Z3000 Multi control Panel

MP-Z3000 Multi control Panel provides complete control for up to 12 Z-3000W camera



## FUNCTION MENU (Z-3000W)

### Main Menu

FUNCTION 1	SCENE 1
CONTRAST	: OFF
AUTO IRIS	: AVERAGE
GAIN LOW	: 0dB
MID	: 9dB
HIGH	: 18dB
DTL	: →
MASKING	: PRESET
GAMMA	: MEMORY
INITIALIZE	

FUNCTION 2	
M. BLACK	: 0
DYNA CHROMA	: ON
DNR MODE	: MODE 1
ZEBRA TYPE	: 1
LEVEL	: MID
CS-1 SW	: QUICK FOCUS
CS-2 SW	: CONTRAST
MIC SENSE	: MID
PHANTOM	: OFF
F. AUTO SEL	: →

VF DISPLAY	
SAFETY/CENT	: BOTH
EXTENDER	: ON
UPPER MID	: SHT/REC-T
UPPER RIGHT	: BATTERY
FILTER	: ON
WHITE BAL	: ON
GAIN	: ON
AUDIO IND	: ON
IRIS	: ON
VF V-DTL	: 0

SPECIAL SET	
MASKING	: →
DTL	: →
GAMMA	: →
KNEE/CLIP	: →
WHT SHADING	: →
FLARE	: →
SYSTEM	: →
ALL INITIALIZE	

### Sub Menu

MASKING <MEMORY>			
	HUE	SAT	LINEAR
R	0	0	R-G 86
Y	0	0	G-B -36
G	0	0	B-R 26
C	0	0	G-R 69
B	0	0	B-G 23
M	0	0	R-B 5
MASTER SAT	: 0		
INITIALIZE			

DTL	
LEVEL DEP	: - 97
CRISP	: - 96
H/V BAL	: 76
SOFT DTL	
WHITE LEV	: - 88
BLACK LEV	: - 60
INITIALIZE	

GAMMA <MEMORY>	
GAMMA TABLE	: A
TOTAL GAMMA	: 0
R ADJUST	: 0
B ADJUST	: 0
GRAY SCALE	: →
INITIALIZE	
GRAY SCALE → PUSH > 1SEC	

KNEE/CLIP	
KNEE POINT	: - 40
KNEE SLOPE	: 10
WHITE CLIP	: 32
INITIALIZE	

WHITE SHADING	
EXTENDER	: OFF
AUTO SETUP	: →
MANU R ADJ	: 0
G ADJ	: 0
B ADJ	: 0
INITIALIZE	
AUTO SETUP → PUSH > 1SEC	
(AWB) → PUSH < 1SEC	

FLARE	
R FLARE	: 0
G FLARE	: 0
B FLARE	: 0
INITIALIZE	

SYSTEM	
ASPECT	: 16 : 9
VF DTL CONT	: MENU
VIDEO (VTR)	: COMP100%
AUDIO LEVEL	: -60dB
CLOSE LIMIT	: →
IRIS SPEED	: 0
REMOTE	: 9600BPS
BATT TYPE	: 12V
ALARM SET	: 11.0V

# TU-Z3/CX-Z3



TU-Z3



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CX-Z3

## Features

### High quality video transmission

The wide bandwidth of the Y(10MHz),PB/PR(5MHz) and 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 audio transmission

To provide the highest quality microphone and intercom audio,bi-directional digital transmission is used between the camera head and base station for all audio signal and control data.

### Versas intercom functions

The intercom is RTS/Clear-Com compatible and is selectable for , 2-wire and 4-wire and other intercom systems. At the camera head ,the operator can select the PD or ENG intercom channel.

### Base station video outputs

The base station provides 3 encoder outputs,1 set of RGB or Y,PB,PR outputs, 1 pix monitor output and 1 waveform monitor output.

### Base station video inputs

2 return video inputs and 1 prompter video input are provided.The return video signal is selected at the camera head.

### Digital video interface (optional)

2 D1 serial digital outputs and 2 D1 serial digital inputs for return video are available as options.

### AC/DC operation

The base station provides for both AC and DC operation. DC operation allows the triax system to use less costly coaxial cable.

### Half rack base station

The compact base station is a half rack width and 4 rack units height. The flexible operation control panel (RC-Z3) can be mounted on the front panel of the base station or mounted in a desktop depending on the application.

## TU-Z3/CX-Z3 triax system Specification

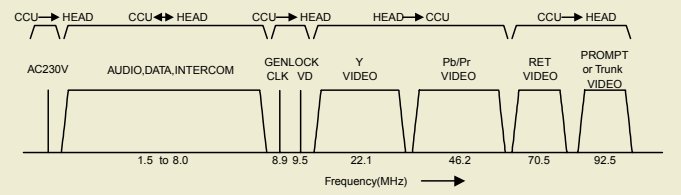
Triax base station (TU-Z3)	Input signal	Connector type
GEN LOCK	B.B 75 Ω(loop through)	BNC
RET 1,2	VS or VBS 75 Ω(loop through)	BNC
PROMPT	VS or VBS 75 Ω(loop through)	BNC
DIGITAL RET 1,2	D1 (Active through) Specify in order	BNC
INTERCOM	4 Wire or 2Wire	D-sub 15pin
PGM		D-sub 15pin
R/G TALLY		D-sub 15pin
REMOTE 1	(switchable)	4pin, D-sub 25pin
REMOTE 2		4pin

Triax base station (TU-Z3)	Output signal	Connector type
ENCR	VBS	BNC(x3)
Pr or R, Y or G, Pb or B	VS(switchable)	BNC
DIGITAL OUT	D1 (option)	BNC(x2)
PIX(R,G,B,ENCR)	VS or VBS	BNC
WF OUT(R,G,B,ENCR)	VS or VBS	BNC
MIC OUT 1,2		XLR-3pin
INTERCOM	4 Wire or 2Wire	D-sub 15pin
R/G TALLY	Contact	XLR-3pin
W/N CONTROL	Contact	XLR-3pin
TRUNK	VBS Specify in order	BNC

INTERCOM HEAD SET Dynamic MIC XLR-5pin(Female)

Triaxial Cable Cable type	Diameter (mm)	Maker	Maximum cable length(m)	
			W/ PROMPT	W/O PROMPT
4.8/1.0 EFTXF	8.6	FUJIKURA	930	1100
9.6/2.2 EFTXF	14.5	FUJIKURA	1500	1900
9267	9.1	BELDEN	720	910
9232	13.2	BELDEN	1200	1500
1.0S/4.5S	8.5	NK NETWORKS	740	920
1.4S/6.6S	11.0	NK NETWORKS	1100	1400

## Frequency allocation



Video band width(Base band)	
Y signal	10 MHz
Pb,Pr signa	5 MHz
RET, PROMPT signal	5 MHz

<b>Power supply voltage</b>	AC117 V 60 Hz
<b>Power consumption</b>	130 W approx. (AC operation, including Z-3000W/GM-51 and AUX POWER OUT 50 W) TU-Z3 :25 W approx. (DC operation) CX-Z3 :33 W approx. (DC operation, including Z-3000W/GM-51)
<b>Ambient Temperature Operating</b>	TU-Z3 0 to +40 °C CX-Z3 -10 to +45 °C Storage: -20 to +60 °C
<b>Dimensions</b>	TU-Z3 212(W) x 163(H) x 381(D) mm CX-Z3 135(W) x 196(H) x 215(D) mm
<b>Mass</b>	TU-Z3 9.0 kg (19.9 lb) approx CX-Z3 3.0 kg ( 6.6 lb) approx.

# FLEXIBLE CHOICE OF REMOTE CONTROL UNITS

Camera Control Panel **RC-Z11**



**RC-Z21A (Joystick Type)**



Camera Control Panel **RC-Z3**



Note : RU-Z1 has to be operated with RC-Z11 and CA-Z31, RU-Z3 has to be operated with RC-Z3/Z21A and CA-Z32.

Remote Operation Unit **RU-Z1**



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Camera Base Station **RU-Z3**



Back

## Suggested System Configurations.

- New 16:9/4:3 switchable studio system: RU-Z3 Camera Base Station, CA-Z32 Camera Adapter, RC-Z3/RC-Z21A Camera Control Panel, GM-51 5-inch viewfinder.
- Small scale 16:9/4:3 switchable studio system: RU-Z1 Remote Operation Unit, CA-Z31 Camera Adapter, RC-Z11 Camera Control Panel, and GM-51 5-inch viewfinder.

## Studio operation Enhancement.

The optional EA-Z3 Extension Adapter adds (in combination with the RU-Z2) intercom PD/ENG switching, prompter video output, mic 2 input, call, and Aux 1 and 2 switching to a studio system.

## RU-Z3 Features

### SMPTE26 bayonet connector

The 26 pin bayonet connector is easily attached and detached.

### Augmented camera power supply

Approximately 70W of power is available for connecting other equipment. (Although varies with the system configuration, 40 to 50W can be taken from the CA-Z32 camera adaptor.)

### Intercom system support

Intercom systems such as RTS, Clearcom and 4 wire are supported, as well as 2 channel systems.

### Waveform monitor (WFM) output

Video output for a waveform monitor and control output are provided. The RC-Z3/Z21A or a personal computer can be used for fine color and level adjustment.

### Enhanced functions

Two channel microphone outputs and an auxiliary inputs are provided. A prompter input has been added, together with other significant functional enhancements.

### Bi-directional communications

Camera control is advanced by a bi-directional serial control signal communication system.

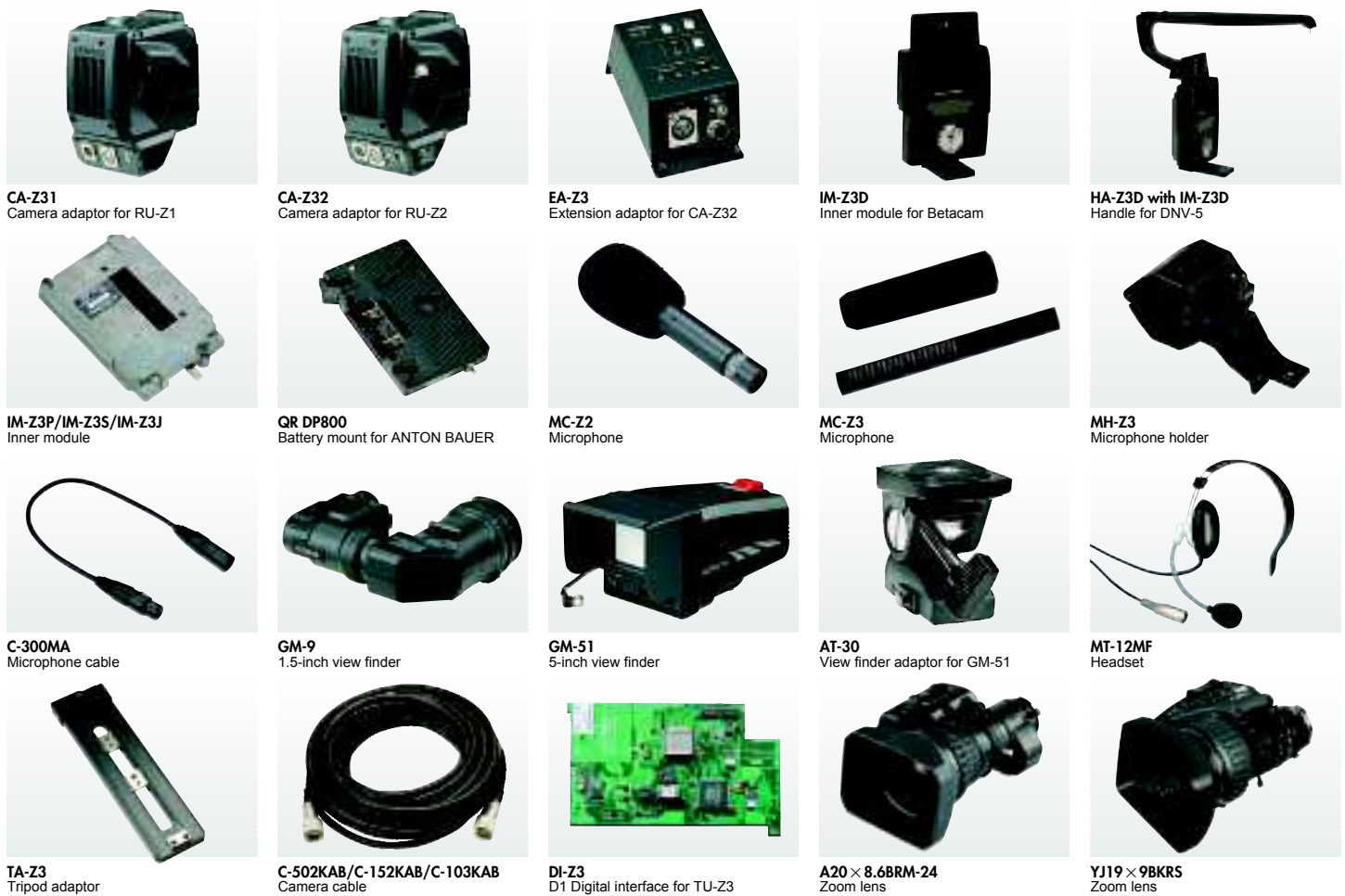
### Serial digital interface (D1)

High quality digital component signals can be sent to other digital video equipment with a single coaxial cable. The added EDH (error detection and handling) function is used for transmission error detection by the receiving equipment.

**Control Item List**

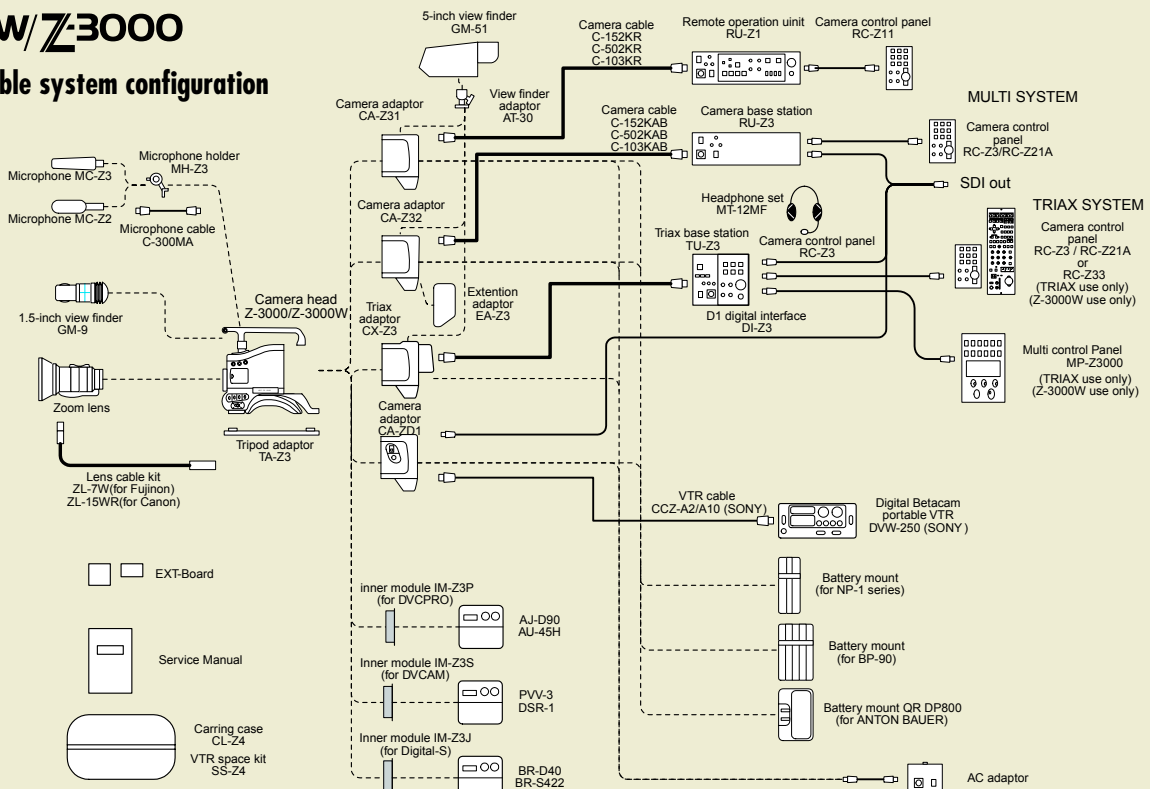
Control items	Units				
	RU-Z1	RC-Z11	RU-Z2/ RU-Z3	RC-Z3/ Z21A	TU-Z3
SC Phase, H Phase adjustment	○	○	○		○
Cable length adjustment	○		○		Auto
Tally / Call	○		○		○
Intercom Talk ON / OFF			○		○
Intercom Level control	○		○		○
Intercom COMMON / CAMERA selection	○		○		○
MONITOR OUT AUX / CAM selection	○				
R GAIN, B GAIN control	○	○		○	
R BLACK, B BLACK control	○	○		○	
IRIS control	○	○		○	
MASTER BLACK control	○	○		○	
Scene files selection (4 files & 1 PRESET file)	○	○		○	
BAR / CAM selection	○	○		○	
A. WHT / A. BLK	○	○		○	
FUNCTION	○	○		○	
DTL selection	○	○		○	
WHITE BALANCE mode selection	○	○		○	
GAIN selection	○	○		○	
IRIS mode selection	○	○		○	
CONTROL (OFF / LOCK / ON) selection	○	○		○	
SHUTTER ON / OFF	○	○		○	
CONTRAST ON / OFF					○
ULTRA GAIN ON / OFF				○	
CHECK	○	○			
Lens extender indicator				○	

# ACCESSORIES



## Z-3000W/Z-3000

### Wide switchable system configuration



## SPECIFICATIONS : Z-3000W/Z-3000 Camera Head

<b>Color System</b>	NTSC		
<b>Optical system</b>	2/3" F1.4 prism		
<b>Pickup system</b>	RGB 3IT-CCD, 2/3" Image format		
<b>Imaging size</b>	16 : 9 9.6 x 5.4mm 4 : 3 8.8 x 6.6mm		
<b>Picture elements (pixels)</b>	Z-3000W	Total	1290(H) - 496(V)
		Effective	1216(H) - 492(V)
	Z-3000	Total	811(H) - 508(V)
		Effective	768(H) - 494(V)
<b>Sync system</b>	Internal or genlock		
<b>Horizontal resolution</b>	Z-3000W	850 TV lines (4 : 3), 800 TV lines (16 : 9)	
	Z-3000	850 TV lines (4 : 3)	
<b>Signal-to-noise ratio</b>	63dB(Typ), 65dB (DNR ON) (Gamma : 1, DTL : OFF, Gain : 0dB, Y OUT)		
<b>Standard sensitivity</b>	F11 at 2000 lx		
<b>Minimum sensitivity</b>	0.5 lx F1.4 / 0.8 lx F1.8 (Gain : +24dB, ULTRA-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, cross filter		
<b>Vertical contour correction</b>	2H		
<b>Lens mount</b>	Bayonet (Backfocus : 48mm in air)		
<b>Gain selector</b>	Low : 0dB/-3dB		
	Mid : +6/+9/+12dB		
	High : +12/+18/+24dB		
	Remote mode : -3 to +24dB (in 3dB steps)		
<b>DTL controls</b>	DTL LEVEL, DTL FREQ, FLESH TONE, LEVEL DEP, CRISP, H-V BAL, SOFT DTL, etc.		
<b>Scene file</b>	4 scene files Items: gain, DTL, masking, gamma, electronic shutter, auto iris mode, contrast, etc.		
<b>Setup card file</b>	4 (scenes files and other menu items)		
<b>ULTRA-Gain function</b>	Gain is increased by approx. +12dB by switching the read-out mode of CCD (Horizontal resolution is lowered)		
<b>Electronic shutter</b>	Preset mode 1/100, 1/250, 1/500, 1/1000, 1/2000 CC FRAME Lock SCAN mode : approx 1/61 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 (±3dB or black burst)/75Ω (sync 0.3±0.1Vp-p, burst : 0.3±0.1Vp-p) 2. Viewfinder AUX input (multi-connector) : VBS 1.0Vp-p ±3dB / 75Ω		
<b>Output signals</b>	1. Video output (BNC) VBS 1.0Vp-p / 75Ω 2. VTR output 1 (multi-connector) VBS 1.0Vp-p / 75Ω 3. VTR output 2 (multi-connector) a: Composite signal: VBS 1.0Vp-p / 75Ω b: Y/C output : Y : 1.0Vp-p / 75Ω, C : 0.286Vp-p (burst), c: RGB output : RGB : 0.714Vp-p / 75Ω d: Component output: VS : 1.0Vp-p / 75Ω R-Y, B-Y : 0.7Vp-p / 75Ω (BETACAM, 75% color bars), 0.525Vp-p / 75Ω (MI, 75% color bars) 4. Monitor output (BNC) VBS 1.0Vp-p / 75Ω, with characters 5. Audio output (multi-connector) - 20dBm or - 60dBm		

<b>Ambient temperature</b>	Operating: -10 to +45°C (-28 to +113°F) Storage: -10 to +60°C (-28 to +140°F)
<b>Power requirement</b>	12 V DC (+10.5V DC to +17V DC)
<b>Power consumption</b>	16W approx. (including GM-9, excluding camera adapter)
<b>Dimensions</b>	125(W)×268(H)×160(D)mm (excluding camera adapter)
<b>Mass</b>	3.2kg (7.1 lb) approx. (including GM-9 and excluding lens and camera adapter)

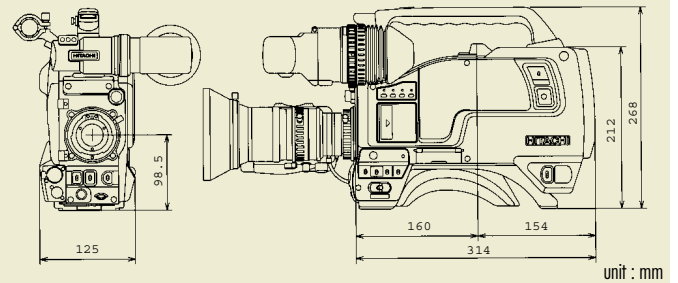
## SPECIFICATIONS : GM-9 1.5-inch Viewfinder

<b>Input signal</b>	VS 1.0Vp-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>	1.4W approx.
<b>Mass</b>	0.6kg (1.3 lb) approx.

## SPECIFICATIONS : RU-Z1 and RU-Z3

	RU-Z1	RU-Z3	
<b>OUTPUT signals</b>	<b>LINE 1 / 2</b>	VBS 1.0Vp-p/75Ω	
	<b>MON</b>	VBS 1.0Vp-p/75Ω	
	<b>RGB R-Y, Y, B-Y</b>	V : 0.7Vp-p VS1.0Vp-p/75Ω	
<b>AUDIO output</b>	0dB, 600Ω, one system	0dB, 600Ω, Mic 1 & Mic 2	
<b>INPUT signals</b>	<b>PROMPT</b>	—	VBS 1.0Vp-p/75Ω or loop-through
	<b>AUX VIDEO</b>	VBS 1.0Vp-p/75Ω or loop-through	Aux 1 & Aux 2, Rating is same as RU-Z1
	<b>GENLOCK</b>	BB 0.6Vp-p/75Ω or loop-through	
	<b>TALLY</b>	Closure or Voltage(24V)	
	<b>INTERCOM</b>	XLR-5pin Corresponding to dynamic mic	
<b>RS-232C</b>	D-SUB 25pin	—	
<b>Power requirements</b>	117V AC, 60Hz	117V AC, 60Hz	
<b>Power consumption</b>	52W approx.	125W approx.	
<b>Maximum cable length</b>	300m (980 ft approx.)		
<b>Ambient temperature</b>	5 to 40°C (41 to 104°F)		
<b>Dimension</b>	482(W) x 88(H) x 300(D)mm (19.0 x 3.5 x 11.8 in)		
<b>Mass</b>	7.6kg(16.8 lb) approx.	9.5kg(21 lb) approx.	

### 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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