HITACHI

13-Bit Digital Color Camera

Z-ONE·DA CCD

DIGITAL

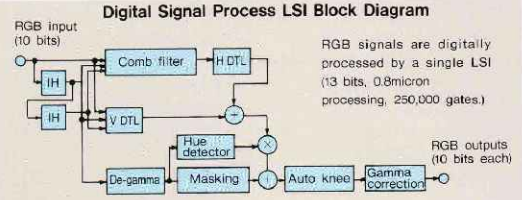
Newly developed LSI

DIGITAL TECHNOLOGY SETS NEW BENCH MARK IN PICTURE QUALITY FOR 2/3 INCH PROFESSIONAL CAMERAS

DIGITAL SCENE TRANSPARENCY PROVIDES THE ULTIMATE IN PICTURE QUALITY

- Highest picture quality due to the high precision 13-bit digital processing and 10-bit A/D converter.
- New unobtrusive digital detail with a host of new control functions for tailoring the detail to the scene.
- State-of-the-art 850 TV line resolution (Double Sampling Aperture DSA),63 dB S/N ratio and f8.0 at 2000 lux sensitivity.
- New powerful and expanded colorimetry control.
- CCD flare is tightly controlled with the improved black mask processing and digital flare correction.

Digital Signal Process LSI Block Diagram



NEW GENERATION OF DIGITAL USER FEATURES AND CONTROLS

- **Flesh tone detail** softens facial blemishes and wrinkles for a more youthful appearance without affecting the overall scene detail level.
- **6-vector and linear matrix** allow full control of colorimetry and at the same time allow "painting" the hue and saturation of a single color for subjective for easy and flexible control of color reproduction.
- **High chroma detail** increases detail level on single highly saturated colors for increased sharpness.
- **Selectable detail center frequency** allows setting the optimum detail frequency depending on the scene and application.
- **Special gamma** greatly improves the reproduction of the darkest portions of the scene for a more natural appearance.
- **Four scene files** allow setup for specific scene recreation at the push of button.
- New exclusive **DSA**(Double Sampling Aperture) circuit provides the sharpest picture available in this class camera.
- **Quick setup data transfer to other cameras**
  The setup data including masking and detail data of the master camera can be transferred immediately to other cameras.
- **Remote filter control function (option)**
  Lens filters can be switched from the camera control panel RC-Z2/Z21.

- **Programmable battery warning**
  Each set voltage of 12V, 13.2V and 14.4V batteries can be changed to display warning infomation.
- **Remaining power data of a digital battery (Anton/Bauer) can be displayed.**

DIGITAL PROCESSING PROVIDES HIGH STABILITY AND RELIABILITY

- Single high technology LSI used to provide RGB video processing for long term stability.
- Digital processing does not need periodic readjustment like analog processing because it is not affected by circuit tolerances and temperature variations.

EASY AND VERSATILE OPERATION

- **Superb high sensitivity performance** with Ultra-Gain to provide operation down to a mere 1.0 lux with an f1.4 lens (+24dB video gain and using increased gain CCD readout method).
- **Real-time automatic white balance** allows "hands free" white balance while shooting in areas with widely varying color temperatures.
- **Full featured electronic shutter** operation with both 5-step fixed shutter speeds for improved dynamic resolution and Lock Scan with adjustments in 1H steps to image computer monitors.
- **12-memory auto white balance** provides four color balance settings for each of the three filter wheel positions.
- **ID display** within the color bars to identify the camera.

High performance viewfinder (GM-8A)

- 600 TV line resolution for easy lens focus.
- Viewfinder can rotate a full 95°(perpendicular to camera) for easy carrying.
- Longitudinal and rotational positioning allows the viewfinder to be easily adjusted for maximum user comfort.
- Top mounted tally light ensures 360° visibility.

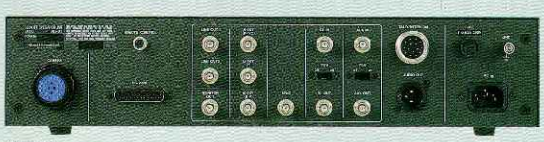
FLEXIBLE CHOICE OF REMOTE CONTROL UNITS

Camera Control Panel **RC-Z1**

Camera Control Panel **RC-Z11**

Remote Operation Unit **RU-Z1**

(Front)



(Back)

Camera Control Panel **RC-Z2**

RC-Z21(Joystick Type)

Camera Base Station **RU-Z2**

(Front)

(Back)

Note: RU-Z1 has to be operated with RC-Z1/Z11 and CA-Z1A. RU-Z2 has to be operated with RC-Z2/Z21 and CA-Z2.

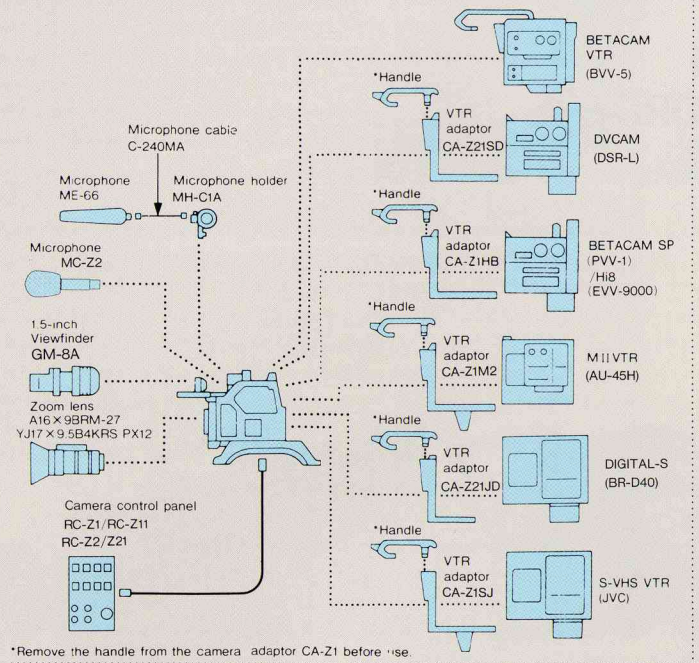
SPECIFICATIONS (RU-Z1 and RU-Z2)

		RU-Z1	RU-Z2
Color system		PAL-B	
OUTPUT signals	LINE 1	VBS 1.0Vp-p/75 ohms	
	LINE 2	VBS 1.0Vp-p/75 ohms	
	MON	VBS 1.0Vp-p/75 ohms	
	RGB	V : 0.7Vp-p/75 ohms	
	SERIAL DATA	–	1.5Vp-p/Low impedance
	AUDIO output	0dB, 600 ohms, one system	0dB, 600 ohms, Mic 1 & Mic 2
	SYNC output	2.0Vp-p/75 ohms	
INPUT signals	PROMPT	–	VBS 1.0Vp-p/75 ohms or loop-through
	AUX VIDEO	VBS 1.0Vp-p/75 ohms or loop-through	Aux 1 & Aux 2, Rating is same as RU-Z1
	GENLOCK	VBS 1.0Vp-p/75 ohms or loop-through	
	SERIAL DATA	1.5Vp-p/high impedance	
	TALLY	Closure or Voltage(24V)	
	INTERCOM	Corresponding to dynamic mic	
	RS-232C	H : +5 to +15V, L : -5 to -15V 3 to 7K ohms	JU-C20 Level convertor required
Power requirements		220V to 240V AC, 50Hz	230V AC, 50Hz
Power consumption		52W approx.	200W approx.
Maximum cable length		300m (980 ft approx.)	
Ambient temperature		5 to 40°C (41 to 104°F)	
Dimentions		482(W)×88(H)×300(D)mm (19.0×3.5×11.8 in)	
Mass		7.6kg(16.8lb) approx.	9kg(19.9lb) approx.

Control Items	
RU-Z1	RU-Z2
• R GAIN • B GAIN • BAR/CAM selection • HIGH GAIN selection • MASTER BLACK LEVEL • R BLACK LEVEL • B BLACK LEVEL • WHITE BALANCE selection (MEM 1/PRESET/MEM2-AUTO) • SC PHASE • H PHASE • IRIS CONTROL • IRIS(MANUAL/REMOTE/AUTO) selection • MON output (AUX/CAM) selection • AUTO WHITE • AUTO BLACK • SHUTTER • CHECK • CALL • TALLY • Intercom (COM/CAM) selection • Cable length selection • Cable length fine adjustment • Scene files (4 files & 1 PRESET file) • CONTROL (OFF/LOCK/ON) selection • DTL selection	• SC Phase • H Phase • Tally/Call • Cable lengh selection • Cable length fine-adjustment • TALK ON/OFF • Intercom (COM/CAM) selection RC-Z2 or RC-Z21 are required to control the other functions

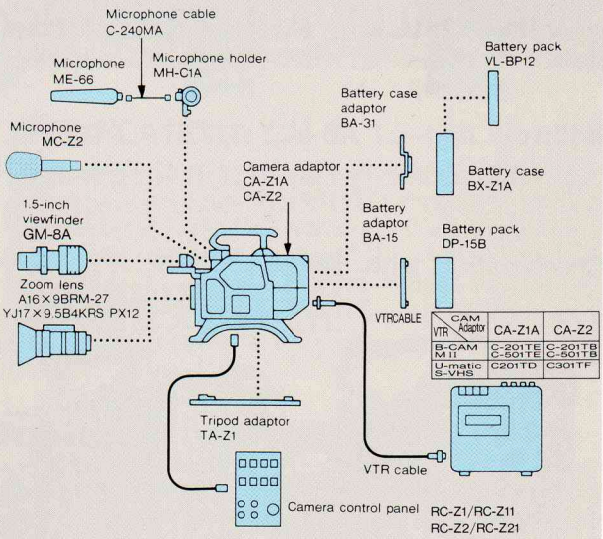
SYSTEM CONFIGURATIONS

ENG (Docked to VTR)



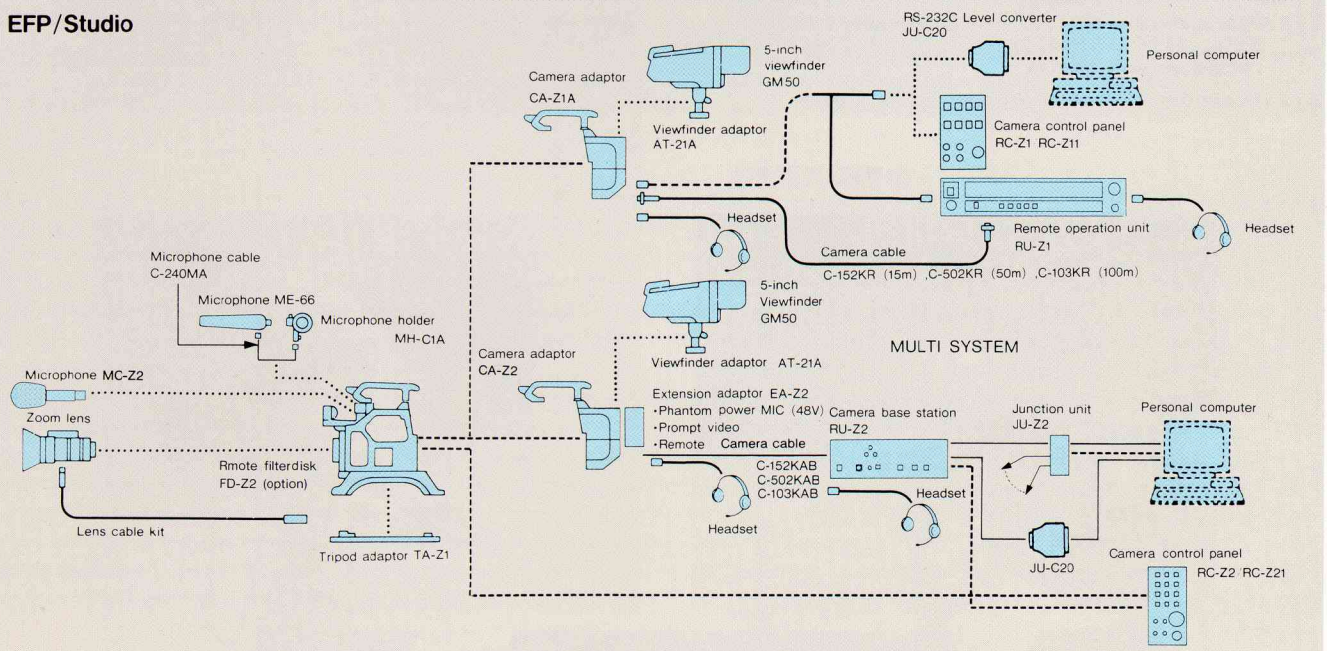
*Remove the handle from the camera adaptor CA-Z1 before use.

ENG



VTR	CAM Adaptor	CA-Z1A	CA-Z2
B-CAM M II		C-201TE C-501TE	C-201TB C-501TB
U-matic S-VHS		C201TD	C301TF

EFP/Studio



MAJOR ACCESSORIES

5-inch Viewfinder GM-50

VTR adaptor CA-Z1HB and For the other kind adaptors

Battery pack DP-15B

AC adaptor charger AP-61B

AC adaptor AP-60B

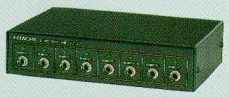
Remote filter disk FD-Z2

Microphone ME-66

Microphone holder For ME-66 MH-C1A

Camera adaptor CA-Z1A for RU-Z1

Camera adaptor CA-Z2 for RU-Z2



Junction unit JU-Z2

RS-232C Level converter JU-C20

Extention adaptor EA-Z2 for RU-Z2

Camera cable C-152KR C-502KR C-103KR for RU-Z1

Camera cable C-152KAB C-502KAB C-103KAB for RU-Z2

VTR cable C-201/501TE C-201/501TD for RU-Z1A C-201/501TB C-301TF for CA-Z2

DOCKING CAPABILITY WITH VIRTUALLY ALL VIDEO RECORDERS

Combination with Various VTRS

Dockable camera/
BETACAM SP recorder (SONY),
DVCAM recorder (SONY),

Dockable camera/
M-Ⅱ recorder (Panasonic)

Dockable camera/
S-VHS recorder (Panasonic)

Dockable camera/
S-VHS recorder(JVC)
DIGITAL-S recorder(JVC)

For a VTR other than a Betacam SP VTR,a VTR adaptor is required.

SPORTS

STUDIO

ENG

SPECIFICATIONS: Z-ONE·DA Camera Head

Color system	PAL-B
Optical system	2/3",f1.4 prism
Pickup system	RGB 3-chip system
Imaging device	CCD equivalent to 2/3" tube (with micro lenses)
Encoder system	UV
Sync system	Internal or genlock
Hor. resolution	850 TV lines (luminance signal, at center, DSA ON, DTL OFF)
Signal-to-noise ratio	61dB(Typ) (Gamma:1, DTL:OFF, Gain:OdB, Y OUT)
Standard sensitivity	2000 lx, f11
Minimum sensitivity	1.0 lx f1.4 /1.5 lx f1.8(Gain: +24dB, ULTRA-GAIN:ON)
Gamma correction	0.35 to 1.0 (ON/OFF switchable)
Geometric distortion	All zones : 0% (excluding lens)
Registration	All zones : 0.05% (excluding lens)
Optical filter	3200K, 5600K, 5600K+1/16ND
Vertical contour correction	2H
Lens mount	Bayonet(Backfocus:48mm in air)
Gain selector	Low: 0dB Mid: + 6/+ 9/+12dB High: +12/+18/+24dB } selectable for each scene Remote mode:0 to +24dB (in 3dB steps,RU-Z1 used)
DTL control	DTL LEVEL,DTL FREQ,FLESH TONE,HI CHROMA, LEVEL DEP,CRISP,H-V BAL,SOFT DTL,etc.
Scene file	4 scene file (13 items) Items: Auto white memory,gain,DTL,masking,gamma, electronic shutter,auto iris mode,auto knee,contrast,etc.
ULTRA-GAIN function	Gain is increased by approx.12dB by switching the read-out mode of CCD. (Horizontal resolution is lowered.)
Electronic shutter	Preset mode 1/60,1/250,1/1000,1/2000s. CC FRAME, Lock SCAN mode: (1/51.1) to approx.1/2000s.(in 1H steps) Automatic Electronic Shutter(AES)mode:OFF~1/1000S (Variable in 1H steps up to 4 lens-stop)
Input signals	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) ②Viewfinder AUX input(multi-connector):VBS 1.0Vp-p±3dB/75Ω
Output signals	①Video output(BNC) VBS 1.0Vp-p/75Ω ②VTR output 1(multi-connector) VBS 1.0Vp-p/75Ω ③VTR output 2(multi-connector) ⓐ Composite signal:VBS 1.0Vp-p/75Ω ⓑ Y/C output Y: 1.0Vp-p/75Ω, C: 0.286 Vp-p(burst) ⓒ RGB output RGB: 0.7Vp-p/75Ω ⓓ Component output : VS: 1.0Vp-p/75Ω R-Y,B-Y: R-Y,B-Y:0.525Vp-p/75Ω(BETACAM, MII, 75% Color bars) ④Audio output(multi-connector)-20dBm or -60dBm
Ambient temperature	Operating: -10 to +45℃ Storage: -20 to +60℃

Supply voltage	Rated input voltage: 12 VDC (Stable operation is ensured for the DC input voltage ranging from 10.5 to 17V.)
Rated power supply	12V DC
Power consumption	15W approx. (including GM-8A camera adaptor CA-Z1A)
Dimensions	120(W)×293(H)×156(D)mm (excluding camera adaptor)
Mass	3.7kg approx. (including GM-8A and excluding lens and camera adaptor)

SPECIFICATIONS: GM-8A 1.5-inch Viewfinder

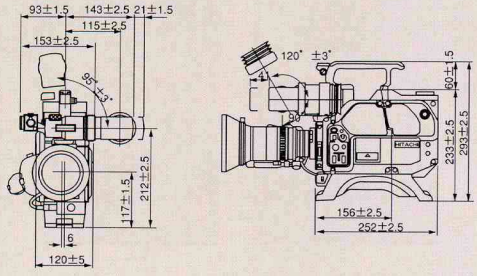
Input signal	VS 1.0Vp-p, sync negative
CRT	1.5" B/W, direct-heating type
Resolution	600 TV lines approx. (horizontal center)
LED display	B(Battery warning),T(Tally),L(Low light),H(Hight gain)
Controls	Brightness, Peaking, Contrast, Front tally ON/OFF
Power supply	9V DC
Power consumption	1.4W approx.
Mass	0.6kg approx.

STANDARD COMPOSITION

Equipment	Model
Camera head	Z-ONE·DA
1.5-inch viewfinder	GM-8A
Tripod adaptor	TA-Z1
Carrying case	CL-Z1
16x zoom lens (Fujinon) (Note 1)	A16×9 BRM-27
17x zoom lens (Canon) (Note 1)	YJ17×9.5B4KRS P×12

(Note 1:) Either zoom lens is supplied as standard.

DIMENSIONS



unit: mm

Specifications are subject to change without notice.

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