COMPUTACAM

Hitachi Auto Set-up ENG/EFP Camera

FP-Z31

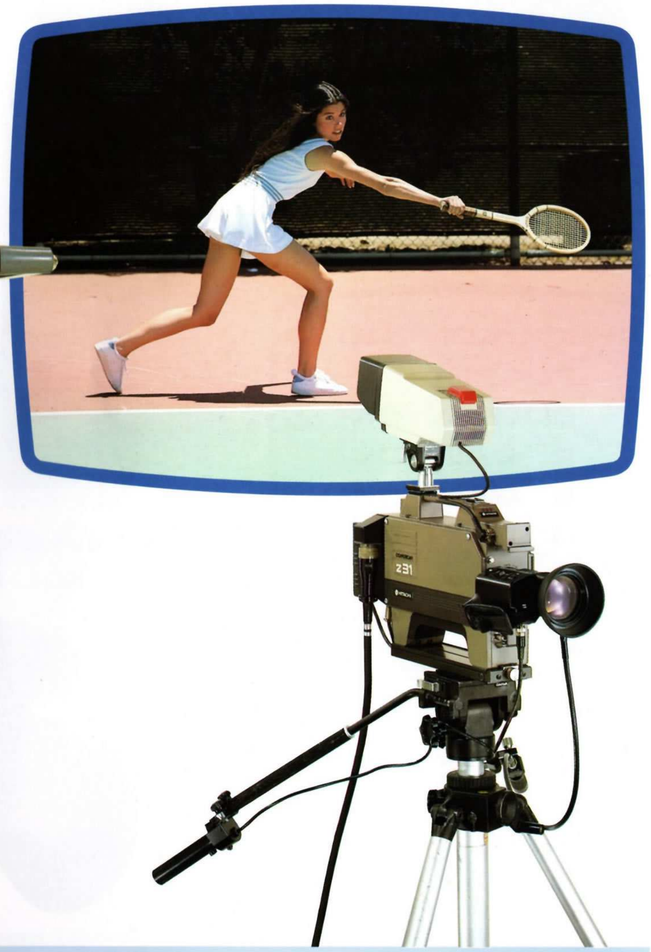


HITACHI

The new family, COMPUTACAM with HITACHI'S advanced auto set-up technology







●GENERAL

2/3-inch, TF-type MS SATICON* (electromagnetic focusing, electrostatic deflection), high-performance, fully automatic camera incorporating SATICON tube. Excellent operational ease and a wealth of accessories mean a wide range of applications from ENG and EFP to studio use.

* Trade mark

●FEATURES

1 Stable and excellent picture quality

• High Quality Picture
In this model, Hitachi, with our sparkling achievements in the field of cameras for broadcast and business use, incorporates a camera tube born of entirely new technology.
S/N: 58dB (NTSC)
Horizontal resolution: 750 lines

• Twist Field SATICON
Hitachi has developed a new technique for increasing both the corner depth of modulation and the resolution uniformity of the four corners. This technique, called "TWIST FIELD", has been developed for the MS (electromagnetic focusing, electrostatic deflection) pick-up tube, computer simulation found that a deflection electrode twist angle of 35 degrees, significantly decreased the beam diameter in the corners. This reduction in beam diameter, results in better corner focus and increased corner resolution. Also, due to the inherent linearity of the 35 degree twist angle, the variation of focus from corner to corner, shows significant improvement.



• ABO (Automatic Beam Optimizer)
The automatic beam control circuits are built in.

• Modulated Shading
The modulation shading correction circuits are provided for a complete flat picture regardless of the pickup tube and bias light shading.

• Frame Correction
The frame correction circuits are adopted to correct shading that occurs at the corners of the screen.

• Flare Compensation Circuit
The flare compensation circuits are employed to compensate for the flare which arises in the optical system and the camera tube.

• 2H Vertical Contour Corrector with Comb Filter
The 2H contour corrector with comb filter assures a clear-cut picture with minimal noise. The horizontal contour signal is composed of both green and red signals.

2 Full complement of automatic functions

• Auto Set-Up
With a one-touch operation, auto centering and auto set-up are completed by means of a built-in microcomputer. Troublesome registration setting has also been made automatic.
As well, through auto set-up, black set, black balance and white balance are automatically adjusted in sequence.
These data are preserved digitally so variations due to humidity or time are eliminated.
The camera also contains a back-up battery for memories so that if it is returned to standby or even if power is cut, balance is preserved over a long period of time.
These automatic camera set-up functions serve to make the maintenance of a high-quality picture an easy task, and make an indispensible contribution towards increasing ease of use.

• Fault Diagnosis
If any abnormality occurs in centering, white balance, black balance or black set during auto set-up, the problem is indicated by the character display in the electronic viewfinder.

• High Accurate Registration Correction
Heretofore, even slight registration errors due to prism temperature characteristics that had been left as uncorrectable have been taken care of by the addition of a real-time correction circuit, providing a stable picture at all times.



www.tvcameramuseum.org

●FEATURES

• Character Display Function
Titles can be stored in memory beforehand and superimposed on the picture being shot.
In addition, auto set-up results are displayed and if auto set-up are not satisfied, the correct procedures are displayed.
The maximum number of characters displayed is 180. (9 lines and 20 characters per line)



• Test Pulses
Test pulse circuit, most convenient during camera set-up, have been incorporated.

• Built-in Color Bar
SPLIT Bar with EIA Specifications
EBU Bar with PAL Specifications

• Presettable Masking Circuit Built In
Even subtle color tones can be adjusted without destroying the white balance.

• Other Functions
Battery Alarm
High Grain + 9 dB, + 18 dB
Adjustable Blanking Width (NTSC)



VIEWFINDER DISPLAY
LED: TALLY (T), BATT ALM (B), HIGAIN (A), WRITE MODE (W)
CRT: Wave form level (ZEBRA)
CHARACTER DISPLAY:
Function indicator:
WHT, GAIN, CAM/BAR
Warning indicator:
DTL OFF, BAR
Diagnosis:
Auto Set-Up results display
In case of Auto Set-Up
Misoperations:
Correct procedures are displayed.





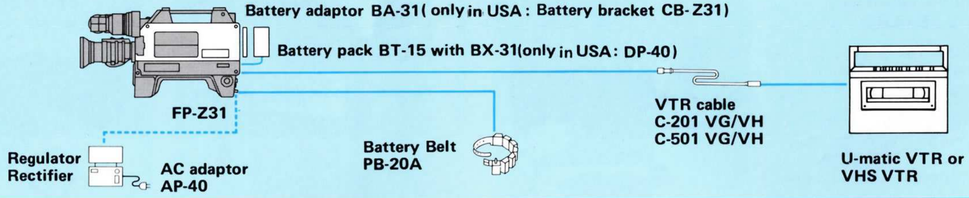


www.tvcameramuseum.org

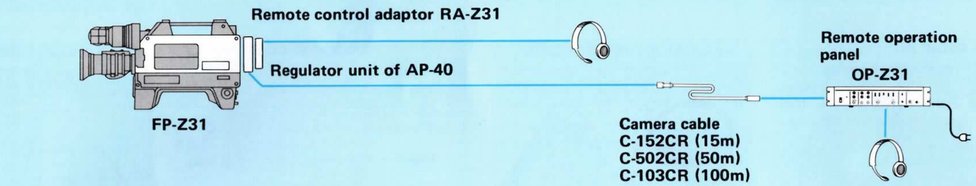
●OPERATING SYSTEMS

Ample accessories offer you various systems configuration serving your purpose.

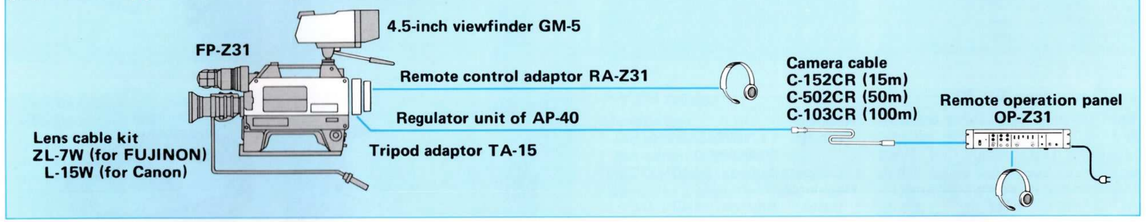
(A) ENG application: Operating the camera with batteries in combination with a portable VTR.



(B) EFP application: Using the camera for EFP in combination with ROP.



(C) Studio application: Using the camera as a studio camera in combination with ROP.





OP-Z31



●STANDARD CONFIGURATION

(1) Camera	FP-Z31	**(4) AC adaptor**	AP-40
(2) 15×Power zoom lens	J15×9.5B4KRS(by Canon)	**(5) Tripod adaptor**	TA-15
(3) 1.5-inch viewfinder	GM-3B	**(6) Carrying case**	CL-Z31

●OPTIONAL ACCESSORIES

Equipment	Type	Remarks	Equipment		Type	Remarks
Remote operation panel	OP-Z31	With RA-Z31, C-152CR	Battery adaptor		BA-31	For BX-31 battery case
4.5-inch viewfinder	GM-5	With viewfinder mounting attachment(AT-21)	Battery charger pack		BC-31*	For BT-15
10×power zoom lens	A10×10BRM-17	By FUJINON	Battery belt		PB-20A	Battery charger : BC-20B
12×power zoom lens	A12×9BERM-87	With Extender by FUJINON	Battery charger		BC-20B	For PB-20A battery belt
14×power zoom lens	A14×10BRM-67	By FUJINON	Microphone		MC-30E	————
13×power zoom lens	J13×9B4IRSII	By Canon	Camera cable (50m/150ft)		C-502CR	————
Lens cable kit	ZL-7W	Manual focus, servo zoom unit(for FUJINON)	Camera cable (100m/330ft)		C-103CR	————
Lens cable kit	ZL-15W	Manual focus, servo zoom unit(for Canon)	VTR cable(2m/6ft)		C-201VH/VG	VH cable is for VHS VTR : 10Pin
Shoulder belt	SB-1	————	VTR cable(5m/15ft)		C-501VH/VG	VG cable is for U-matic VTR : 14Pin
Tripod	T-4D	With dolly	Only in USA market	Battery pack	DP-40	Battery charger : BC-40
Head set	DR-10A	————		Battery charger	BC-40	Trickle type : 15 hour charging
Battery pack	BT-15	Battery charger pack : BC-31		Battery bracket	CB-Z31	For DP-40
Battery case	BX-31	For BT-15				

※BC-31 should be used with the rectifier unit of AP-40.

Accessories for opening up a new vista in system upgrading

● 15x power zoom lens: J15 x 9.5B4KRS

Zoom ratio: 15x
Focal length: 9.5 to 143mm
F-number: f1.8
Mount: Bayonet
MOD: 1m
Filter mount: 86mm diameter, 1mm pitch
Weight: Approx. 1.5kg (3.3 lbs)



● Lens cable kit

This kit enables zooming and focusing of the power zoom lens by cable drive when the camera is used in a studio configuration.
ZL-15W (for Canon)
ZL-7W (for FUJINON)



● AC adaptor: AP-40

The AP-40 consists of a rectifier and a regulator which can be separated from each other. Both units are used combined when the camera is powered from an AC source. When the remote operation panel (ROP) is employed, the regulator unit is mounted on the back of the FP-Z31. The camera and ROP are connected by a camera cable.

Rectifier
Input: 117/220/240V AC, 50/60Hz
Output: Approx. +140V DC
Regulator
Input: Approx. +140V DC
Output: +12V DC
Dimensions:
Approx. 100(W) x 145(H) x 170(D)mm (3.9 x 5.5 x 5.5 in)
Weight: Approx. 1.7kg (3.7 lbs)
DC cable: Approx. 5m (16.5 ft)

Regulator unit



Rectifier unit

● Remote operation panel (ROP): OP-Z31

The camera and ROP can be connected with a single camera cable up to a distance of 300m (1,000 ft) for the transmission of the video and control signals as well as the supply of the power simultaneously.

Power requirements:
117/220/240V AC, 50/60Hz
Power consumption:
Approx. 50W
(incl.: camera and GM-5)
Dimensions:
480(W) x 88(H) x 300(D)mm
(18.9 x 3.5 x 11.8 in)
Weight: Approx. 7 kg (15.4 lbs)

Remote control functions

1 Iris
2 Master black
3 R black
4 B black
5 R gain
6 B gain
7 R-H centering
8 R-V centering
9 B-H centering
10 B-V centering
11 High gain select switch
12 Camera/bar select switch
13 Detail ON/OFF switch
14 Auto white balance switch
15 Auto black balance switch
16 Auto centering switch
17 Auto setup switch
18 Subcarrier phase
19 H phase
20 Camera call button
21 Tally
22 MON select switch
23 Iris AUTO/MAN/REMOTE



● Digital command unit DU-22

Maximum cable length
Coaxial cable: 1,000m (3,300 ft) by 5C-2W
(DU-22, MU-22, RA-Z31, AC Adaptor or battery)
Traxial cable: 2,000m (6,600 ft) by 9.6/2.22 EFT x (14.5mm in dia) Fujikura
(DU-22, TX221S, TX221R, MU-22, RA-Z31)



● 1.5-inch viewfinder: GM-3B

CRT: 1.5-inch
Resolution: Approx. 350 lines
Power requirements: +9V DC, Approx. 0.2A
Weight: Approx. 650g (1.4 lbs)



● 4.5-inch viewfinder: GM-5

CRT: 4.5-inch
Resolution: 500 lines
Power requirements: +12V DC, approx. 0.6A
Weight: Approx. 1.5 kg (3.3 lbs)



● Battery pack BT-15

Battery: Nickel-Cadmium
Voltage: 12V DC
Capacity: 3.5 Ah/5 hours
Dimensions:
122(W) x 167(H) x 34(D)mm
(4.8 x 6.6 x 1.3 in)
Weight: Approx. 1.7 kg (3.7 lbs)



● Battery charger pack BC-31

BC-31 is a battery charger for Battery Pack BT-15. Two battery packs can be charged one after another.
Output: 15V DC
Dimensions:
100(W) x 65(H) x 170(D)mm
(3.9 x 2.6 x 6.7 in)
Weight: Approx. 1 kg (2.2 lbs)
BC-31 should be used with the rectifier unit of AP-40.

BC-31



Rectifier unit of AP-40

● Battery belt: PB-20A

Battery: Nickel-cadmium
Voltage: +12V DC
Capacity: 6 Ah/5 hours
Dimensions:
1,350(L) x 90(W) x 40(T)mm
(4ft 5 in x 3.5 in x 1.6 in)
Weight: Approx. 3.4kg (7.5 lbs)



● Battery charger: BC-20B

Battery charger for PB-20A
Power requirements:
117/220/240V AC, 50/60Hz
Output: 15V DC
Dimensions:
200(W) x 182(H) x 315(D)mm
(7.9 x 7.2 x 12.4 in)
Weight: Approx. 8.5 kg (18.7 lbs)



● Microphone: MC-30E

Impedance: 10kΩ
Dimensions:
21.5 (diameter) x 270(L)mm
(0.85 x 10.6 in)
(with wind hood removed)
Weight: Approx. 175g (6.2 ozs)



● Tripod adaptor: TA-15

Dimensions: Approx.
86(W) x 25(H) x 335(D)mm
(3.4 x 0.98 x 13.2 in)
Weight: Approx. 1.2kg (2.6 lbs)
This is used when attaching the camera to a tripod.



● Camera cables for OP-Z31

15m cable: C-152CR
50m cable: C-502CR
100m cable: C-103CR
This connect the camera to the remote operation panel.
The cable can be extended up to a maximum of 300 meters (1,000 ft) in combination.



● VTR cables

U-matic use
2m cable: C-201VG
5m cable: C-501VG
This is used to connect the camera to a U-matic VTR.



VHS use
2m cable: C-201VH
5m cable: C-501VH
This is used to connect the camera to a VHS VTR.



● Carrying case: CL-Z31

Dimensions: Approx.
360(W) x 670(H) x 340(D)mm
(14.2 x 26.4 x 13.4 in)
Weight: Approx. 7.5 kg (16.5 lbs)
This carrying case is lightweight and comes with casters and three grips for the maximum in mobility.



●SPECIFICATIONS

Color system: NTSC, PAL-B
Camera tubes: 2/3-inch Twist Field type M-S SATICON tube
Optical system: f1.4 prism (with bias light)
Encoding system: IQ (NTSC), UV (PAL-B)
Sync system: Internal sync or gen-lock (operation with composite video signal or black burst signal)
Horizontal resolution: 750 lines (G-ch at center)
Sensitivity: 2,000 lux (200fc), f4 (89.9% reflection factor)
Minimum illumination: 40 lux (f1.6 +18 dB)
Signal-to-noise ratio: 58dB (NTSC), 55dB (PAL-B) [Typical]
Registration accuracy: Zone 1 (within a circle of a diameter equal to 80% picture height): Less than 0.1% of picture height
Zone 2 (within a circle of a diameter equal to picture width): Less than 0.2% of picture height
Zone 3 (outside of zone 2): Less than 0.4% of picture height

Output signals:
LINE: Composite video signal: 1.0Vp-p/75Ω (BNC)
MONITOR:
R, G, B,–G: 1.0Vp-p/75Ω (BNC)
Composite video signal: 1.0Vp-p/75Ω (BNC) (switch selectable)
VTR output (multi-pin connector): 1.0Vp-p/75Ω
Audio (mic amp): –60 to –20 dBm (adjustable)

Input signals:
Genlock: Composite video signal 1.0Vp-p/75Ω or black burst signal (BNC)
AUX: Composite video signal 1.0Vp-p/75Ω (BNC)

Gamma correction: 0.35 to 1.0
Optical filter: 3,200°K, 5,600°K + 1/8ND, 5,600°K, cap
Lens mount: Bayonet
Auto functions:
Auto white balance
Auto black balance
Auto iris
Automatic beam optimizer (ABO)
Auto centering
Auto setup
Auto black set
Auto registration correction
Automatic fault diagnosis
Auto black level

Ambient operating temperature: –20 to +40°C (–4 to +104°F)
Power requirements: 12V DC
Power consumption: Approx. 22W (incl. 1.5-inch view finder)
Dimensions: 98(W) x 275(H) x 330(D)mm (3.9 x 10.8 x 13 in)
Weight: Approx. 4.9 kg (10.8 lbs) (excl. lens and viewfinder)

●DIMENSIONS





Unit: mm (in)

Specifications are subject to change without notice.

Hitachi Denshi, Ltd.

23-2, Kanda-Suda-cho 1-chome, Chiyoda-ku, Tokyo 101, Japan Phone : (03) 255-8411 Telex : J24178

▪ Hitachi Denshi America, Ltd.
Headquarters and New York Office : 175 Crossways Park West, Woodbury, New York 11797, U.S.A. Phone (516) 921-7200, TWX 510-221-1899, FAX 516-496-3718
Chicago Office : 1725 North 33rd Ave., Melrose Park, Illinois 60160, U.S.A. Phone (312) 344-4020, FAX 312-344-9842
Los Angeles Office : 18005 South Adria Maru Lane, Carson, California 90746, U.S.A. Phone (213) 538-4880, FAX 213-515-1029
Dallas Office : 14169 Proton Road, Dallas, Texas 75234, U.S.A. Phone (214) 233-7623, FAX 214-458-9284
Atlanta Office : 3610 Clearview Parkway, Doraville, Georgia 30340, U.S.A. Phone (404) 451-9453, FAX 404-458-8356

▪ Hitachi Denshi, Ltd. (Canada)
Head Office : 65 Melford Drive, Scarborough, Ontario M1B 2G6, Canada Phone (416) 299-5900, Telex 652-5324, FAX 416-299-0450
Eastern Office : 8096 Trans-Canadienne, St-Laurent, Quebec H4S 1M5, Canada Phone (514) 332-6687, Telex 582-4768
Western Office : 3433-12th St North-East, Calgary, Alberta T2E 6S6, Canada Phone (403) 291-4388, Telex 382-5861

▪ Hitachi Denshi (Europa) GmbH
Head Office : Weiskircher Straße 88, D-6054 Rodgau 1 (Jügesheim), West Germany Phone (06106) 13027, Telex 417-849, FAX (06106) 16906

▪ Hitachi Denshi (U.K.) Ltd.
Head Office : Garrick Industrial Centre, Garrick Road, Hendon, London NW9 9AP, United Kingdom Phone (01) 202-4311 Telex 27449, FAX 01-202-2451
Leeds Office : Video House, 55 Manor Road, Leeds, LS11, 5PZ, United Kingdom Phone 0532-430294, FAX 0532-459263

www.tvcameramuseum.org

DV-E246P Printed in Japan (N-I) '85-9