New

HITACHI

Digital Color Camera

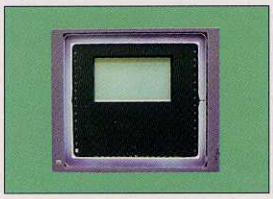
SK-777

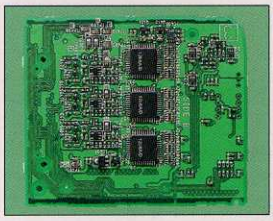
Top quality image with FIT CCD, 12-bits A/D, New DSP



DIGITAL

FIT CCD, 12-bits A/D, New DSP Premium picture quality and powerful new features.







The Hitachi SK-777 portable color camera offers a switchable 16:9 or 4:3 aspect ratio.

With its new 640,000 pixel (NTSC) / 740,000 pixel (PAL) FIT CCD's, the SK-777 provides outstanding performance in both aspect ratios.

The advanced new DSP provides fully digital video processing and encoding with 12 bit A/D converter and 20 to 30 bit digital processing.

This DSP provides higher stability as well as sharper and clear images with its enhanced gradation response and color reproduction accuracy.

CAMERA-HEAD

Outstanding Features

- **The new developed 640,000 pixel (NTSC) / 740,000 pixel (PAL) FIT CCD with micro lens provides high sensitivity, high resolution and low smear.**
- **12-bit A/D converter provides a wide dynamic range and contributes to the high signal to noise ratio.**
- **Digital video processing using the latest LSI technology**

The new 1.8 million gate DSP with 20 to 30-bit digital resolution and double sampling, together with 12-bit A/D conversion provide the ultimate video quality.

Digital video processing and encoding provide low interference and high stability.

- **The Switchable 16:9/4:3 aspect ratio enables flexible program production.**

Setup card

The small plug-in setup card (Compact Flash type) provides a new operational flexibility. Now setups can be optimized to a scene then stored and later recalled to reproduce the same "look" for that scene.

Studio system configurations

The SK-777 camera system can be used with the TU-Z3 Triax Base Station, CX-Z3 Triax Adaptor, CP-7/CP-7JY Camera Control Panel, SU-2100 Setup control unit and VF-506 5-inch viewfinder to provides a full featured studio system.

Remote filter wheel

Remote control of Filter Wheel is provided

Exceptional picture quality

- **Precision waveform rise and fall times**
- **High resolution 850 (4:3) / 800 (16:9) TVL**
- **Precision detail signal**
- **Absolute control repeatability and stability**
- **Precision masking control**

TU-Z3/CX-Z3



TU-Z3


Back


CX-Z3

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 camerahead and base station for all audio signal and control data.

Versatile intercom functions

The intercom is RTS/Clear-Com compatible and is selectable for, 2-wire and 4-wire or 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 waveformmonitor output.

Base station video inputs

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

Digital video interface (optional)

Two 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 wide and 4 rack units high. The flexible operation control panel (CP-7) can be mounted on the front panel of the base station or mounted in a desktop depending on the application.

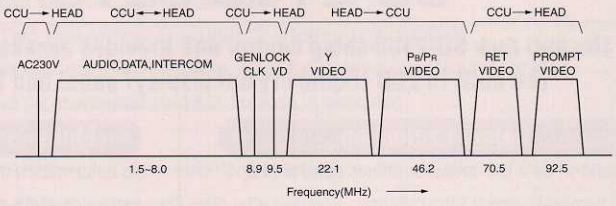
TU-Z3/CX-Z3 Triax System Specification

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 (loop through)	BNC
	Specify in order	
INTERCOM	4 Wire or 2 Wire	D-sub 15pin
PGM		D-sub 15pin
R/G TALLY		D-sub 15pin
REMOTE 1	(switchable)	4 pin, D-sub 25 pin
REMOTE 2		4 pin

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-3 pin
INTERCOM	4 Wire or 2 Wire	D-sub 15 pin
R/G TALLY	Contact	D-sub 9 pin
W/N CONTROL	Contact	D-sub 9 pin
TRUNK	VBS (option)	BNC

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
1.0 S/4.5 S	8.5	NK NETWORKS	740	920
1.4 S/6.6 S	11.0	NK NETWORKS	1100	1400

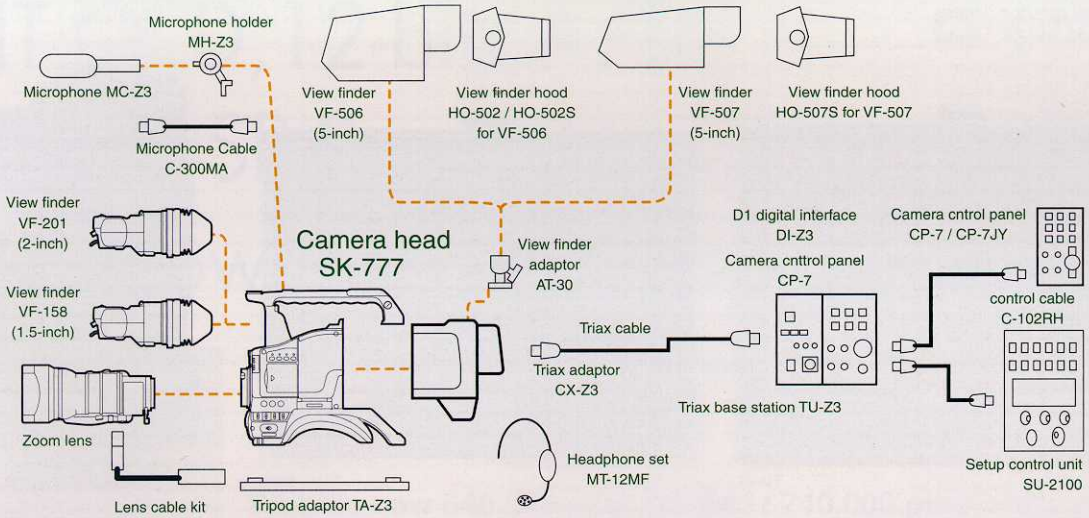
Frequency allocation



Video band width (Base band)	
Y signal	10 MHz
PB, PR signal	5 MHz
RET, PROMPT signal	5 MHz

Power supply voltage	AC117 V 60 Hz or AC230 V 50 Hz
Power consumption	130 W approx. (AC operation, including SK-777/VF506 and AUX POWER OUT 50 W)
	TU-Z3 : 25 W approx. (DC operation)
	CX-Z3 : 38 W approx. (DC operation, including SK-777/VF506)
Ambient Temperature	TU-Z3 : 0 to +40 °C
Operating	CX-Z3 : -10 to +45 °C
	Storage : -20 to +60 °C
Dimensions	TU-Z3 : 212*(W)* x 163*(H)* x 381*(D)* mm
	CX-Z3 : 135*(W)* x 196*(H)* x 215*(D)* mm
Mass	TU-Z3 : 9.0 kg (19.9 lb) approx.
	CX-Z3 : 3.0 kg (6.6lb) approx.

SK-777 system configuration



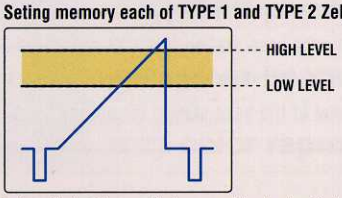
High Perf ormance Viewfinder (VF-158 / VF-201)

- Offers Automatic switching between 16:9/4:3 aspect ratios.
- 650 TV Line VF resolution allows easy focusing
- The oversized VF lens allows the operator to use the viewfinder at greater angle and distance from eyepiece than standrad viewfinder.
- For greater eye relief , the eye-piece can be flipped upward to allow easier viewing while composing scenes.
- Adjustable mechanical VF positioning and tilt to set best viewing.
- The direct VF mount eliminates the cable between the viewfinder and the camera increasing reliability.

FUNCTION 2

M.BLACK	: 0
DYNA CHROMA	: OFF
ZEBRA TYPE	: 1
HIGH LEVEL	: >110%
LOW LEVEL	: 100%
CS-1 SW	: CUICK FOCUS
CS-2 SW	: CONTRAST
MIC SENSE	: MID
PHANTOM	: OFF
F. AUTO SEL	: ->

Seting memory each of TYPE 1 and TYPE 2 Zebra



Adjustable by 5% steps Display over video level or Display video level range as skin tone

Viewfinder displays

- The viewfinder displays the function tree menus.
- Status display
  Indicators for zoom and focus (with compatible lens), iris F-stop, color temperature for auto white balance, audio level and other functions are displayed.
- Two mode zebra
  Menu selection of over-level or between range zebra is provided.
- One of the three safety zones(16:9, 14:9, 4:3) and center marker can be displayed.
- Viewfinder Detail
  Both vertical and horizontal detail are provided for the 1.5-inch and 5-inch viewfinders to sharpen images for easier focusing.

SU-2100 SETUP CONTROL UNIT

The half rack SU-2100 setup control unit provides access and complete control for up to 12 SK-777 cameras. The built-in LCD (liquid crystal display) panel and touch screen allows quick and easy operation.

Camera selection

The built-in data line switcher allows control of up to 12 cameras.

- All camera functions can be controlled including masking
- Choice of automatic setup type
- Diagnostics display
- Selection of data files (SCENE file) DATA TRANSFER, etc.
- Color balance adjustments
- Maintenance ON-OFF functions

Selection of WFM and picture monitor

Full access to all digital detail adjustments

Multiple camera color matching

To color-match multiple cameras,a single camera can be carefully setup and then the data transferred to other cameras in that studio from the setup control unit. Accurate color matching is only possible due to the consistency and precision provided by digital processing.

IC memory card

the IC memory card is used to store the file information from one or more cameras. A video operator can come into a studio days or weeks after completing a program and using the IC memory card restore all cameras to the same settings used in the original program.

Improved operation

The camera status is displayed on the LCD panel as well as the values for the selected function.



New detail functions and control

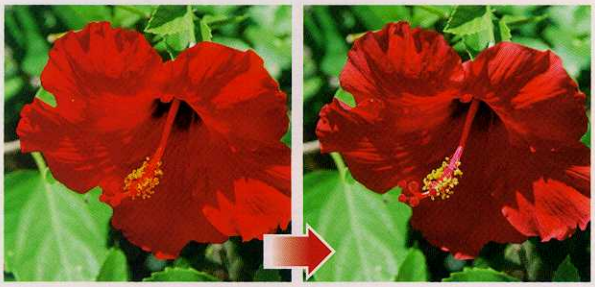
Fresh tone (two separate setting) /360° detail

Allows adjustment of the detail level on fresh tone areas of the picture without affecting the remainder of the image.
Extremely useful in softening bremishes and wrinkles on the talent's faces without affecting the detail on the rest of the scene.



High chroma detail

Increases apparent resolution of single colored objects by adding detail to them. For example , when imaging a red rose, high chroma detail makes the red image sharp. High chroma detail (RGB) is applied to the component video outputs as well as to the encoded output.



Adjustable detail center frequency

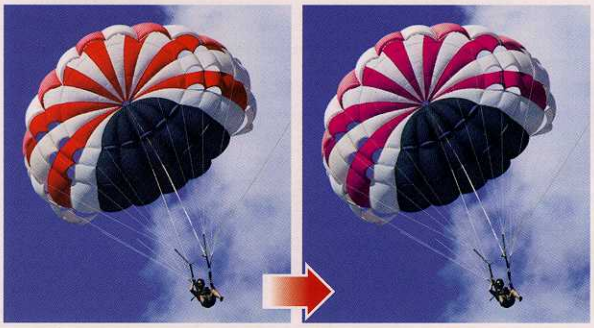
The detail center frequency can be adjusted from 4 to 8 MHz to optimize CCD's having different pixel numbers and to tailor the detail for best reproduction of specific scenes.

Other detail control features

- Independent adjustment of positive and negative "soft detail" (sometimes referred to as detail knee.)
- Level depend, crisp, HV-balance

Triple masking system

Both a linear and 6-vector corrector corrections are provided. Each can be used individually or both can be used at the same time allowing the linear matrix to provide standard colorimetry and the 6-vector color corrector to change a single color in a scene. New is the flesh tone masking a Hitachi exclusive feature that allows the "painting" of flesh tones without changing other colors in the scene.



Master saturation

The built-in Master saturation function allows the adjustment of the chroma level without affecting white balance.

Dyna-chroma, auto knee and knee apurture

The auto knee provides a wide dynamic range by compressing the video above 100%. The knee aperturerestores detail and dyna-chroma restores color saturation to scene highlights above 100% for more natural reproduction.

Digital noise reduction

The digital noise reduction circuit provides clear images when using high gain.

Special gamma

In addition to the conventional gamma control adjustments,the initial gamma gain can be selected for best color reproduction and personal preference. Also the 14-segment adjustment provides a precision gamma curve.

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.

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 Feature

- **Quick focus**

Quick Focus automatically opens the iris then sets the video level with the electric 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 electric 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 do to changing types of lighting conditions.

Advanced Ergonomics

- **New low center of gravity design.**
- **Main operating switches are grouped forward for easy access.**
- **Featherweight design (camera head 2.7 kg) is ideal for portable use.**
- **Adjustable shoulder pad position and non-slip finish provide on-the-shoulder balance, comfort and confidence.**

SK-777 color camera head

Color system	NTSC (RS-170A) / PAL-B	
Optical system	2/3-inch F1.4 prism	
Pickup system	RGB 3-CCD system	
Pickup elements	2/3-inch equivalent FIT CCD	
	Total pixels	1270*(H)* x 503*(V)* : 640K pixels : NTSC
		1255*(H)* x 589*(V)* : 740K pixels : PAL
	Effective pixels	1185*(H)* x 485*(V)* : 570K pixels : NTSC
		1170*(H)* x 575*(V)* : 670K pixels : PAL
	Aspect ratio	16 : 9
Sync system	Internal or genlock	
Horizontal resolution	850 TV lines (at 4:3, center, DTL off, Y-OUT)	
	800 TV lines (at 16:9, center, DTL off, Y-OUT)	
Vertical resolution	400 TV lines : NTSC 480 TV lines : PAL	
	(at normal mode, center, DTL off, Y-OUT)	
	450 TV lines : NTSC 530 TV lines : PAL	
	(at CC Frame mode, center, DTL off, Y-OUT)	
Moduration depth	more than 80% (at 16:9, 5 MHz) more than 70% (at 4:3, 5 MHz)	
Signal to noise ratio	63 dB (NTSC) / 61 dB (PAL) typ. (γ =1, DTL off, gain : 0 dB, Y-OUT)	
Standard sensitivity	F8 at 2000 lx	
Minimum illumination	1.0 lx (at F1.4) / 1.5 lx (at F1.8)	
Optical filters remote control	3200 K, 5600 K +1/16 ND, 5600 K, 5600 K +1/64 ND	
Lens mount	Bayonet (flange back : 48 mm in air)	
Gain selection	L (low)	0/-3 dB
	M (medium)	+6/+9/+12 dB
	H (high)	+12/+18/+24 dB
	Remote control	-3 to +24 dB (3 dB steps)
Ultra gain function	Sensitivity is increased approx. +12 dB	
	by switching thereadout mode of CCD. (horizontal resolution is lowered).	
Electric shutter	Preset mode : 1/100 (NTSC), 1/60 (PAL), 1/250,	
	1/500, 1/1000, 1/2000 second	
	Lock scan mode : (NTSC) 1/30.5 to 1/57.3, and 1/60.6 to approx.	
	1/2000 second (1 H steps)	
	(PAL) 1/25.4 to 1/47.5, and 1/50.4 to approx.	
	1/2000 second (1 H steps)	
	Auto-electronic shutter (AES)mode : Shutter speed varied in 1 H steps to	
	the equivalent of 4 F-stops CC frame mode :	
Gamma correction	0.35 to 1.0 (on/off switchable)	
Detail controls	DTL Level, DTL frequency, flesh tone, level dependent, crisp,	
	H/V balance, soft DTL	
Scene files	4 Filed items : Gain setting, detail, masking, gamma, electronic shutter,	
	auto iris mode, auto knee, contrast	
Setup card files	4 (scene files and other menu items)	
Ambient temperature	operating	: -10 to +45 °C
	Storage	: -20 to +60 °C
Rated power supply	12 V DC / Stable operation in range of 10.5 to 17 V DC	
Power consumption	Approx. 16.5 W (excluding view finder and camera adaptor)	
Dimensions	125*(W)* x 268*(H)* x 160*(D)* mm (excluding camera adaptor)	
Mass	Approx. 2.7 kg (6 lb) (incl. VF-158, excluding view finder, lens and camera adaptor)	

VF-158 1.5-inch viewfinder

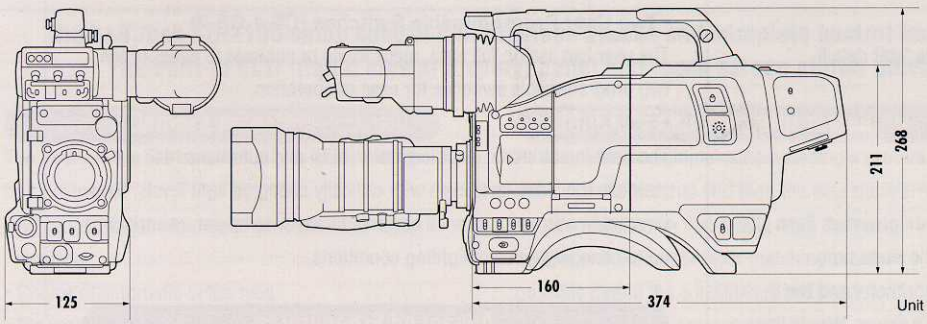
Input signal	VS 1 Vp-p, 1K Ω impedance	
CRT	1.5-inch monochrome	
Resolution	Approx. 650 TV lines (horizontal center)	
Picture aspect ratio	16:9 : 4:3	
Front Tally	LED display	
LED indicators	5	
	TALLT	: R.Tally
	G.TALLY	: G.Tally
	EXT	: lens extender
	SAVE/BATT	: VTR SAVE and Battery warning
	MODE	: Warning of non-standard camera status
Cotrols	Bright, contrast, pecking, Front tally on/off, Zebra on/off, Check on/off	
Power supply voltage	12 V DC	
Power consumption	Approx. 22 W	
Mass	Approx. 0.8 kg (1.8 lb)	

Input and Output signals

Input signals	
Genlock	VBS 1.0 Vp-p ± 3 dB or Black Burst, 75 Ω
(multi-pin connector or BNC)	(sync 0.3 ± 0.1 Vp-p, burst 0.3 ± 0.1 Vp-p)
Viewfinder auxiliary input (multi-pin connector)	VBS 1.0 Vp-p ± 3 dB, 75 Ω
Output signals	
Video output 1 (BNC)	VBS 1.0 Vp-p, 75 Ω
Video output 2 (multi-pin connector)	VBS 1.0 Vp-p, 75 Ω
Video output 3 (multi-pin connector)	See note (1) RGB
	RGB : 0.7 Vp-p, 75 Ω
	(2) Component
	VS : 1.0 Vp-p, 75 Ω
	R-Y, B-Y : 0.7 Vp-p, 75 Ω
	(Betacam (NTSC) at 75 % color bar)
	R-Y, B-Y : 0.525 Vp-p, 75 Ω
	(Betacam (PAL) / MII at 75 % color bar)
	(3) Composite output
	VBS : 1.0 Vp-p, 75 Ω
	(4) Y/C outputs
	Y : 1.0 Vp-p, 75 Ω
	C : 0.3 Vp-p(burst), 75 Ω
Monitor output (BNC)	VBS : 1.0 Vp-p, 75Ω
Audio outup (multi-pin connector)	See note / -20 dBm, 600 Ω / -60 dBu, high impedance

Standard composition

No.	Name	Model	Region Q'ty N	Region Q'ty P	Notes
1	Camera Head	SK-777 (N)	1		NTSC
		SK-777 (P)		1	PAL
2	Fuse	TSC UL CSA 3. OA	3	3	
3	Operation manual	SK-777	1	1	



Unit : mm

CERTIFICATE No.
JMI-0062
ISO 9001/BS 5750Pt1
EN 29001/JIS Z9901

⚠ **CAUTION :** To ensure safe operation, please read the instruction manual before using this product.

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