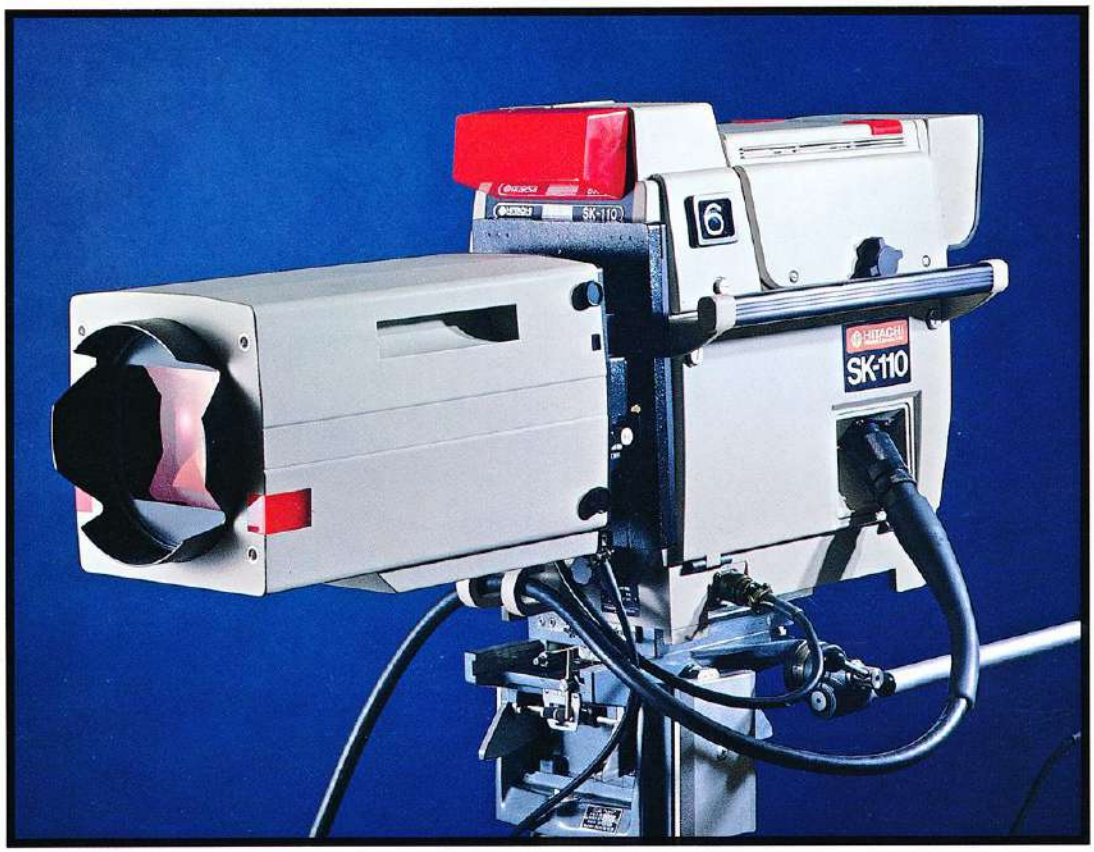
SK-110

Hitachi Full Auto-Setup Color TV Camera

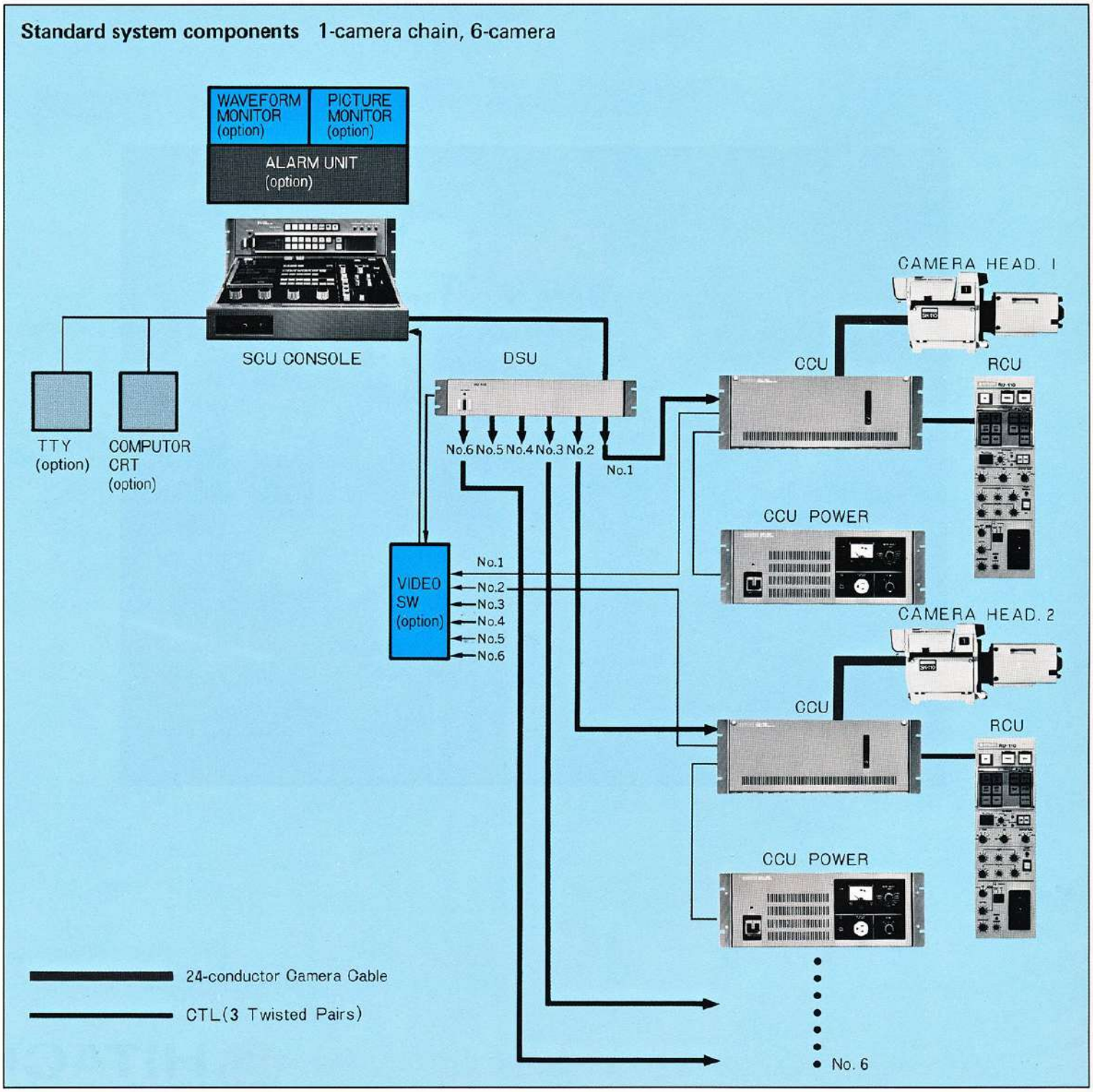


HITACHI
Hitachi Denshi, Ltd.

The SK-110 Introduces a New Concept in Studio Cameras

The SK-110 makes full use of the latest microcomputer technology with its μDDC (Microcomputerized Direct Digital Control) system of full auto-setup to ensure the highest picture quality.
This auto-setup system makes use of the zero method to control 31 parameters automatically enough capability to handle most operating controls and features a automatic fault diagnosis function as well.
Flexibility has been built into this building block configured system to allow it to handle basic camera chains as well as large-scale camera systems.
The SK-110 picture quality has been improved in sensitivity, S/N, and registration accuracy and this high-performance camera can be used with either a small-

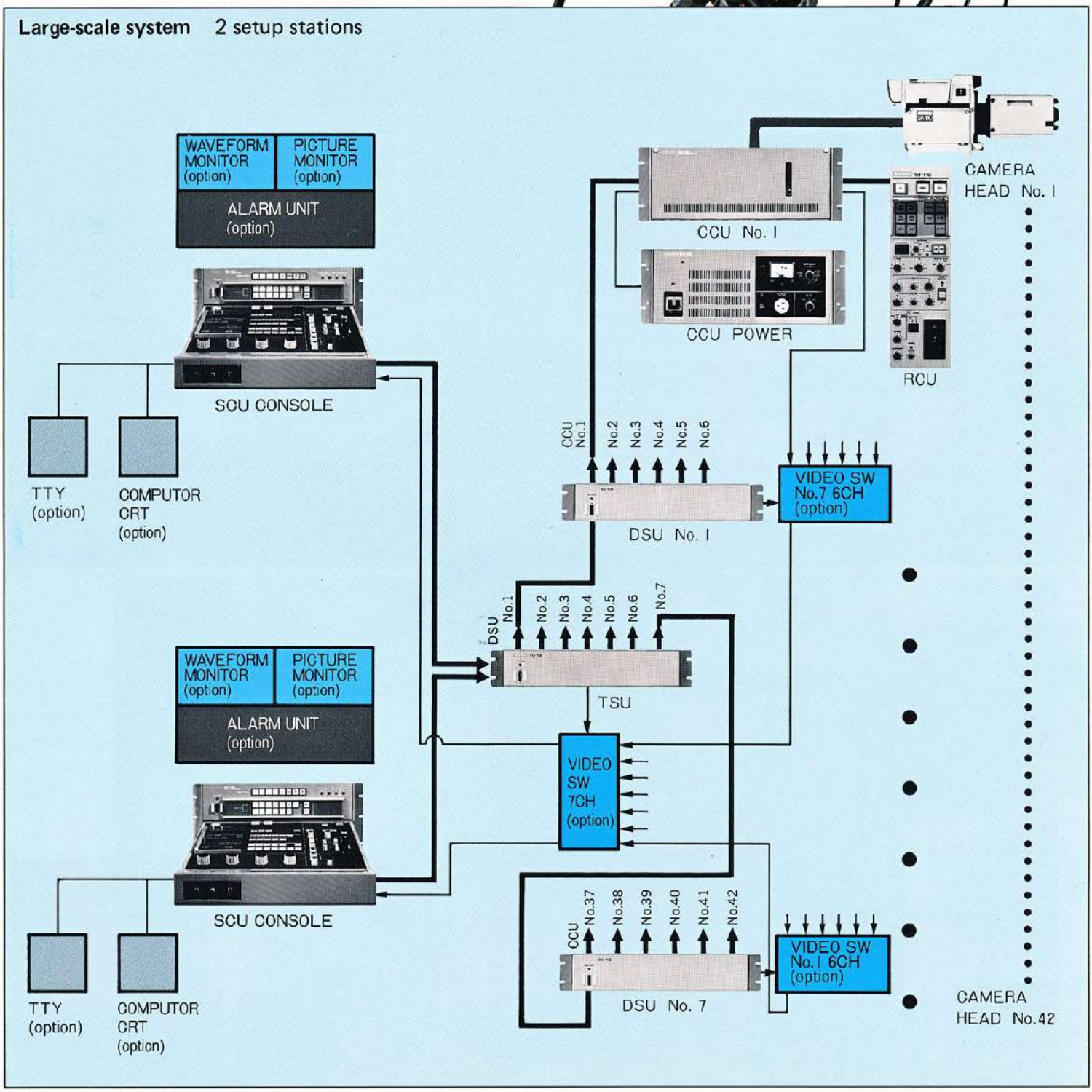
Standard system components 1-camera chain, 6-camera

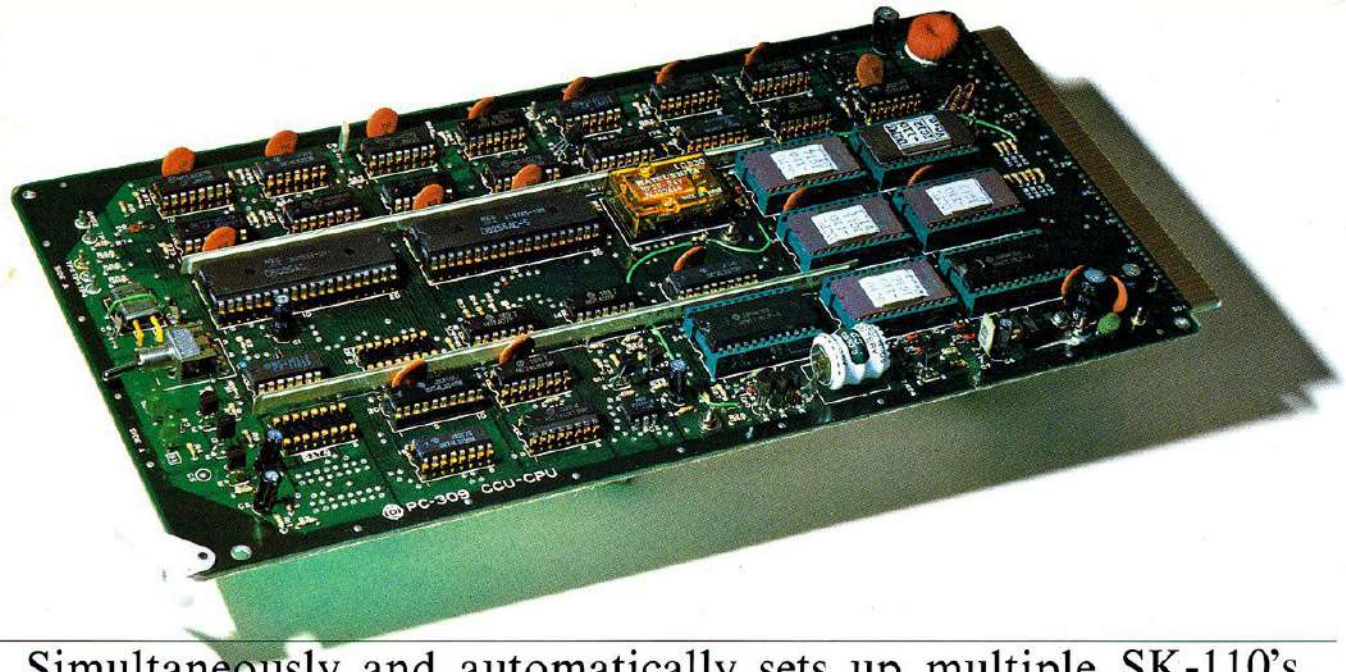




diameter, 24-conductor camera cable or a triaxial cable in combination with a DCU (Digital Command Unit), making it possible to satisfy the demands of both studio and remote location applications with one full-feature, high performance camera.

Large-scale system 2 setup stations





Simultaneously and automatically sets up multiple SK-110's in just 2 minutes by microprocessors. Building block configuration maximizes cost performance to handle single cameras to large-scale camera systems.

- **SCU (Setup Control Unit)**

  This unit provides all camera control functions and is capable of providing centralized control of multiple cameras.
  A power supply on/off, auto-setup, quick check, fault diagnosis, manual control, typeout, picture monitor character display, digital display of lens f-Number, monitor picture selection and RCU function is provided for each camera. The picture monitor character display includes controlled paramenters and percentage of controlled quantities.

- **DSU (Delegation Switch Unit)**

  This unit serves as a data line and video switching unit when several cameras are controlled by an SCU. It is possible to assign up to 6 CCUs to one DSU which can be located anywhere between the SCU and CCU.

- **TSU (Transfer Switch Unit)**

  This unit provides data line and video switching when several camera groups are controlled by two SCUs. The group is selected in a block of a DSU and each camera is controlled through the DSU.

- **FA (Fault Alarm Unit)**

  This centralized fault display unit monitors individually the results of the automatic setup of each camera and on/off condition of their power supplies and is used in the same location as the SCU.

- **CCU (Camera Control Unit)**

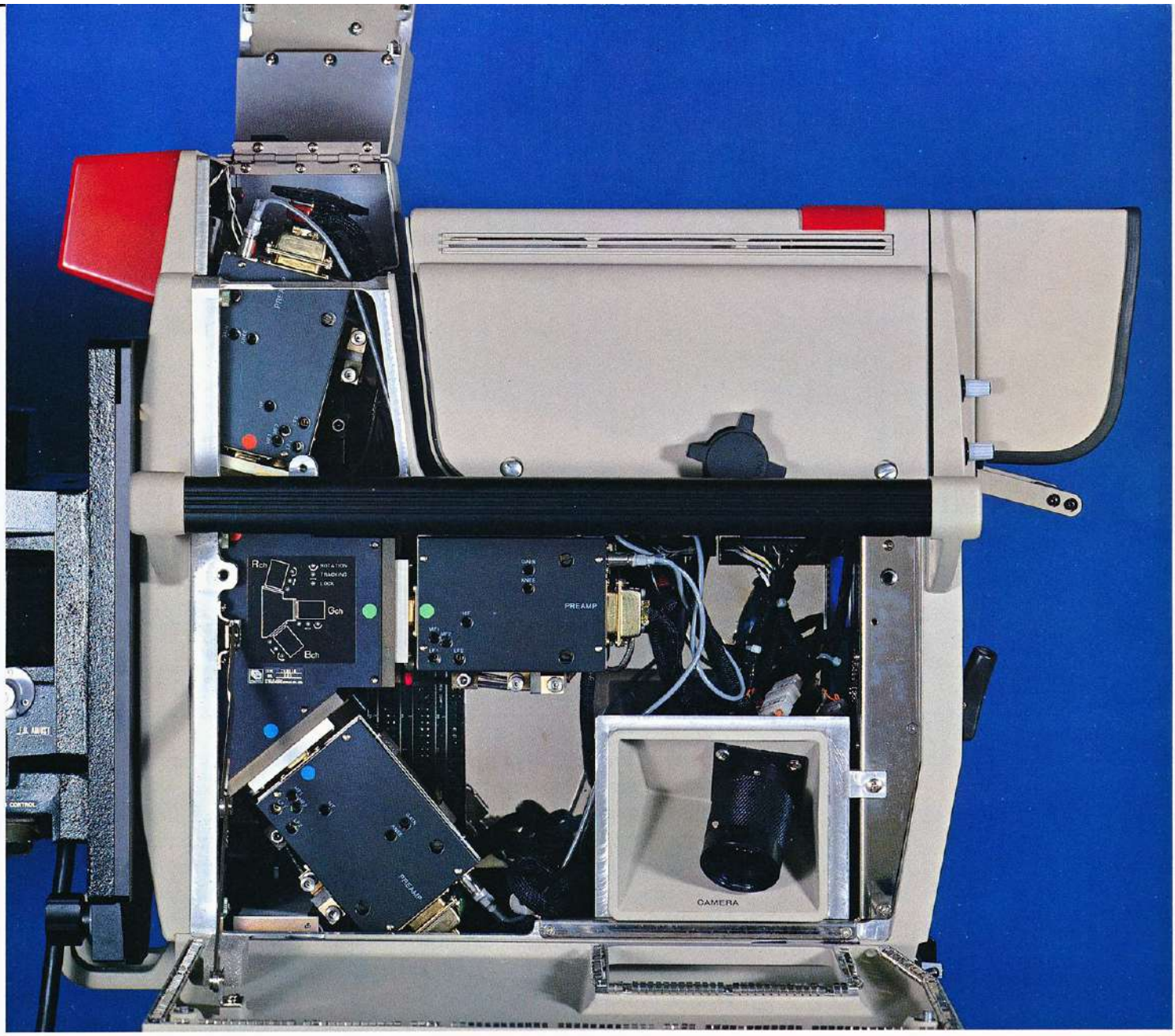
  In addition to the basic CCU functions, the following functions have been provided:
  1. Automatc setup operation
  2. Data storage by 5 types of data files
     1) Normal 2) Painting 3) H reverse 4) V reverse 5) H/V reverse
  3. RAM storage of data used to compensate for registration error caused by lens aberration.

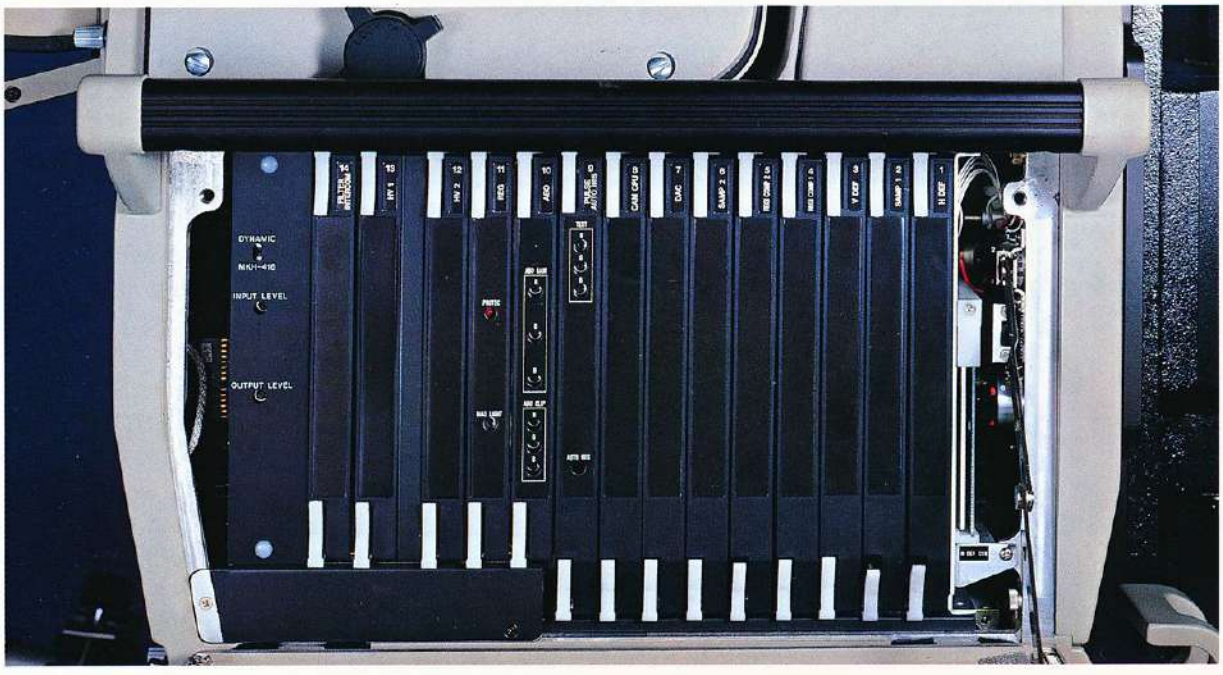
- **RCU (Remote Control Unit)**

  In addition to automatic setup commands and data file selection commands, this unit provides all the remote control functions ever needed for normal everyday operation.

- **Camera Head**

  The camera head is provided with a built-in transmitter/receiver interface for setup data and A-D conversion interface.


Rch
Gch
Bch
PREAMP
CAMERA


DYNAMIC
INPUT LEVEL
OUTPUT LEVEL

CAMERA HEAD

• Highly efficient prism optics

A newly developed f1.8 prism optics are used in conjunction with 1-1/4-inch Plumbicon* tubes to provide a high signal-to-noise ratio of 54dB at 2,000 lux and f5.6. The optical filters have been dust-proofed to virtually eliminate dust problems.

• Six-position ND and color filter discs

Two filter discs, one for ND filters and the other for color filters have been provided, with independent filter selection possible from both the RCU and the SCU. The discs are servomotor driven and may be rotated in either direction.

• Improved registration and optical axis accuracy

By using an independent four-corner adjustable dynamic registration compensation unit, compensation to within 0.05% over the entire picture area is possible. This can be achieved by means of either the auto-setup or the remote control from the SCU. The compensation data is stored in RAM memory with a back-up battery. The optics, coil assemblies and zoom lens are mounted as a unit to ensure that mechanical distortion does not affect the optical system or coil assemblies and to eliminate the effects of external mechanical stresses on registration and optical axis accuracy.

• Comet tails eliminated by ABO (Automatic Beam Optimizer)

The Hitachi developed ABO circuit allows the beam current to be increased up to 16 times versus only 4 times the normal setting for conventional systems, a limitation imposed by considerations of picture quality. This means that comet tails can be eliminated without the usual accompanying mis-registration, loss of resolution, and increase in dark current.

*® N.V. Philips

• High-performance viewfinder

A bright, high-resolution CRT has been used in the viewfinder to provide an easy-to-view image even for outdoor shooting. The viewfinder can be tilted from +25° to -45° and rotated ±90° to set it at any arbitrary angle.

• Easy-to-use video select button

R, G, B, minus G, and two return video signals (AUX-1 and AUX-2) can be switch-selected as the viewfinder video signal.

• Convenient monitor output on the camera head

A separate video output has been provided on the camera head to be used for floor monitors, etc.

• Red and green tallies

The viewfinder is provided with both red and green tallies, the red one for live shooting and the green one used for VTR recording.

• Built-in microphone amplifier

The camera head is provided with a built-in microphone amplifier with limiter. The audio output is balanced to prevent the pickup of noise from the camera cable.

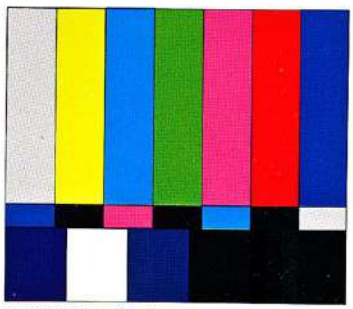
• Test signals provided to simplify setup

Test signals are used for easy calibration of the output of each amplifier stage. The signals are applied in sequence, starting from the process amplifier and walking back until the preamplifier is calibrated. The test signals may be applied to the input of the preamplifier first stage, process amplifier-1 and process amplifier-2, and consist of a 100% and 200% level sawtooth waveform which can be used for level calibration as well as verification of gamma, knee point, slope and clipping point.

• Designed for easy servicing

The camera head and CCU PC boards are simple to remove





• SMPTE color bar

and are marked on both sides, making parts easy-to-find for quick servicing or inspection. Another serviceability feature is a coil assembly that can be removed while the camera is mounted to the dolly.

CCU

• Compact design

The CCU is designed as a dedicated camera control unit for computer controlled cameras. Both the video processing section and the computer section have been housed in one compact package.

• Linear matrix masking

A built-in linear matrix masking circuit is provided and ensures faithful color reproduction and easy tone matching among cameras.

• High-performance contour corrector

Compensation signals derived from the R and G channels provide clear, crisp images of even red subjects. The contour correction signals are automatically processed to match the type of subject, maintain optimum compensation and ensure natural images.

• Standby mode operation

Three operating modes have been provided to reduce power consumption and extend the life of the pickup tubes and CRT.

(1) CCU POWER: Main power supply is switched on; the CCU is operating.

(2) POWER: The camera head is on and the heaters of the pickup tubes and CRT are supplied with 50% of the normal voltage.

(3) BEAM: The pickup tube beams are switched on and the camera operates.

• Genlock

The SK-110 is genlocked to an external sync signal when composite sync and subcarrier signals are applied. Horizontal and subcarrier phases can be adjusted manually. If required, genlocking by means of a black burst signal can also be provided.

• Built-in SMPTE/VIT color bar generator

A color bar generator conforming to the latest SMPTE standards has been built in for convenient adjustment of monitors. Also built in is a VIT color bar generator, allowing monitoring of the characteristics of the encoder and the transmission line while on the air.

• High-reliability LSI process amplifier

Camera picture quality is greatly effected by the stability of the process amplifiers used. LSI process amplifiers have been used in the SK-110 camera to provide stable operation with respect to temperature variations and eliminate variations between channels. They provide both picture quality and high reliability and represent the most advanced step in a camera of this class.

• Alarms and safety features

If the camera cable is left unconnected to the camera head and an attempt is made to power the camera head, an alarm lamp flashes on the SCU as a warning. If a power supply overload is detected, a protective circuit takes over until the overload condition is removed and the camera is restored to normal operating condition. In addition, abnormal power supply overheating or fan failures are detected and cause an audible alarm to sound.

• Special effects

(1) The horizontal and vertical deflection currents can be independently reversed, a feature useful in picking up mirror images.

(2) The video polarity of the R, G, and B signals can be independently inverted.

(3) A circuit has been provided which can be used to provide swinging of horizontal deflection by means of an externally applied low frequency signal.

• Encoder with variable gamma (contrast)

Gamma control of luminance and chrominance signals is linked and can be adjusted by remote control, making adjustment of the picture contrast very easy, even under such difficult conditions as those encountered outdoors.

• Iris

In the Auto Iris mode the lens iris is automatically adjusted according to subject illumination. In manual mode, the center value and adjustment range of the iris are set by the sense and range controls of the SCU or RCU. This feature makes operation in the studio where light variations are small extremely simple. The iris values are visible on the SCU and RCU LED display.

CAMERA CABLE

• Reduction in diameter

A built-in microprocessor in the camera head and time division multiplexing are used to transmit serially analog and on/off control signals, so that the cables other than the coaxial, power supply, audio and intercom cables have been greatly reduced in number. By using multicore cable with 24 conductors, connector reliability has been greatly improved. Compared with previously used 78-conductor cable systems, operation has been significantly simplified.

• Automatic camera cable length compensation

Picture quality degradation caused by the camera cable is automatically compensated for in the SK-110 camera system. The camera head can be separated from the CCU by up to 600m (2,000ft).

• DCU/triaxial cable combination

A DCU is available as an option. The DCU module at the camera head has been greatly reduced in size and weight and built into the camera head. By using the DCU with a triaxial cable, the SK-110 usefulness can be extended to include remote location shooting.

AUTOMATIC SETUP

• Zero method control

The zero method of control is capable of controlling the R, G, and B channels, thus eliminating the troublesome manual adjustment of the G channel required in the G channel reference method. The system has been completely automated, and a parallel control system can set up multiple cameras simultaneously in just 2 minutes.

• Control of multiple cameras

By using a DSU for every group of six cameras, up to 24 cameras can be controlled with just one SCU. By adding a TSU control capabilities can be expanded to up to 42 cameras using two SCUs, providing all the flexibility you will ever need.

• Automatic Setup modes

Five automatic setup modes have been provided; full, registration, color balance, G-reference, and white balance. These can be selected from to suit the picture conditions at the time. In addition, manual control from either the SCU or RCU is possible, with all normal operational controls accessible manually.

• Data files

Five data files are provided except for the AUTO data file. Automatic setup data is automatically stored in the AUTO data file. It is possible to store or erase the manual setup data from the SCU in the five data files by operating the entry or reject switch. Once data has been stored in the data files, it is maintained in memory even when the camera power is turned off. This allows you to recall a particular set of data simply and repeatedly. By using the registration transfer switch, lens data in the NORMAL data file can be transfered to any of the other three data files. The Color Bal Clear switch allows only color balance data to be replaced with the auto setup data.



• Fault diagnosis

Fault diagnosis of the camera video system, power supply and pulse system is performed automatically to detect failures. Diagnosed results are printed out on the typewriter. This system has greatly simplified camera maintenance by providing quick and accurate information on failures.

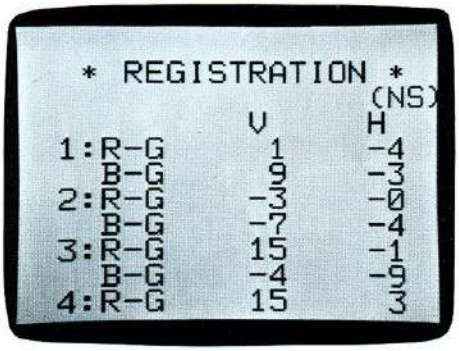
• Quick check

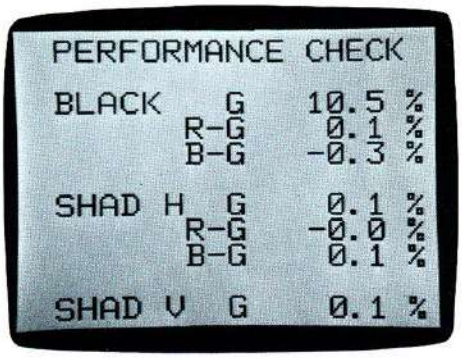
When the SCU Check switch is depressed, registration (G-reference) and color balance (G-reference) are automatically checked and, if the required accuracy is not being obtained, the readjustment is automatically made.

• Scroll display and automatic setup status display

The results of the fault diagnosis and the quick check are displayed on a scrolled picture monitor character display. The scrolling display may be stopped at any desired point for viewing.

The status of the automatic setup function (controlled parameters and their status) may also be viewed on the picture monitor character display. These man/machine interfaces have been provided to further enhance the ease-of-use of the SK-110 camera system.





• Break Off

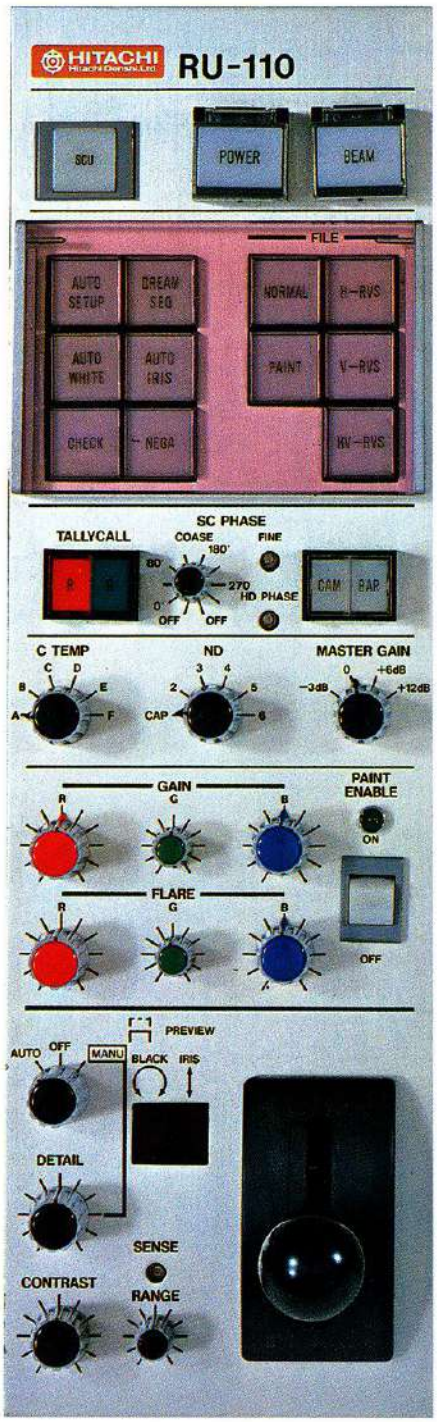
If during either automatic setup or manual adjustment the camera must be readied quickly for use, simply press the Break Off switch on the SCU to use the previous set of automatic setup data to control the camera(s).

• Remote control

The SCU, TSU, DSU, and CCU may be connected with just three twisted-pair cables and be separated from one other by up to 1,000m (3,000ft). The CCU and RCU may be connected using three twisted-pair cables and separated up to 100m (300ft). If the power supply is provided externally to the RCU the distance to the CCU can be extended up to 1,000m (3,000ft).

• Typeout

The results of automatic setup, quick check and fault diagnosis can be printed out on an optional typewriter at a speed of 110, 300, 1,200 or 4,800 BPS (selectable). By checking the printed out values against the standard values, drift can be detected and used to determine the affects of aging on the camera's performance, a means of predicting camera failures as well.



CAMERA

RATINGS

•**Scan standard:**	EIA: 525 lines/60 fields
•**Color standard:**	NTSC
•**Pickup tubes:**	1-1/4-inch Plumbicon*1 or equivalent (G, B: XQ-1430, R: XO-1435)
•**Viewfinder CRT:**	7-inch (170FB-4)
•**Optical filters:**	
ND:	0, 1.6, 6.3, 25, 100% and one special effect filter (standard: starfilter)
Color:	3,200, 4,000, 5,000, 6,000, 7,000, 8,000°K
•**Input signals**	
Composite sync:	4Vp-p, negative, 75Ω, bridging
Subcarrier:	2Vp-p, sinewave, 75Ω, bridging
VF Aux:	AUX-1 and AUX-2 VBS or VS 1Vp-p, positive, 75Ω, bridging
G-REF:	0.7Vp-p, positive, 75Ω, bridging
Mix:	0.7Vp-p, positive, 75Ω, bridging
•**Output signals**	
Line:	VB 0.7Vp-p or VBS 1.0Vp-p 75Ω, 3 outputs
Chroma key:	R, G, B: 0.7Vp-p, 75Ω two out puts
Audio:	-20dBm, 600Ω, balanced
Internal sync:	
Composite sync:	2Vp-p, negative, 75Ω
Subcarrier:	2Vp-p, sinewave, 75Ω
•**Power requirements**	
Line voltage:	100/117/220/240VAC ±10%, 50/60Hz
Power consumption:	Approx. 600VA
Tally power supply:	21~24V DC (R & G, 2 systems)
Intercom power supply:	24V DC

PERFORMANCE SPECIFICATIONS

•**Resolution:**	600 lines (center) min. 500 lines (corners) min.
•**Modulation depth:**	Greater than 50% at 400 TV lines
•**S/N:**	Greater than 54dB (p-p/rms) for the output luminance signal, under the following conditions; G ch. signal current 0.3μA, gamma off, enhancer off, using RS*2 noise meter, with 4.2MHz LPF, SC trap in and the blanking gate on. (Nominal)
•**Sensitivity:**	f=5.6 (min) for 2,000 lux at 3,200°K color temperature under normal shooting conditions for a gray scale chart (reflectivity 90%) center white area.
•**Registration:**	Within 0.05% over entire picture area (Nominal)

•**Geometric distortion:**
Measured using a RETMA linearity chart superimposed with the grating signal (excluding lens distortion)
Zone 1: (in a circle of diameter equal to 80% of the picture height) within 0.5% of picture height
Zone 2: (within a circle of diameter equal to the picture width) within 0.8% of picture height
Zone 3: (area outside of Zone 2) within 1.0% of picture height

•**Frequency response** (with all compensation circuits off)
60Hz ~ 6MHz ±1dB
Below 60Hz and above 6MHz roll-off characteristics

•**Waveform Distortion** (with all compensation circuits off and an input signal risetime of 0.07μs)

60Hz sag	Within 2%
Risetime at 15kHz and 250kHz	Within 0.1μs
Overshoot at 15kHz and 250kHz (Excluding ringing above 10MHz)	Within 10%
Sag at 15kHz and 250kHz	Within 1%

•**Linearity:** Up to a rated output level of 0.7Vp-p
Within 5% for changes of APL 10%, 50% and 90%

•**Ambient temperature:**
(1) Temperature range
-20 ~ +50°C (-4 ~ +122°F)
(2) Temperature stability
After a 30-minute warmup period, with the adjusted values as a reference and excluding the following listed parameters, all specifications should be met without readjustment with a temperature change of ±10°C (±18°F) in the range 0 ~ 40°C (32 ~ 104°F).

(a) Video signal level change	Within ±2%
(b) Pedestal change	Within ±2%
(c) Color bar signal	Level change ±5%
Color phase change ±3° (Phase change of each bar with respect to a color burst)	Color phase change ±3%
	Carrier leak 10mV (max)
(d) Registration change	Within ±0.1% in zone 1
(e) Genlock	Horizontal phase ±0.05μs (max)

*1 ® NV. Philips *2 Rhode & Schwarz

AUTOMATIC SETUP

•Control method:	Zero method/simultaneous control of multiple cameras
•Number of cameras controllable:	42 max. (6 cameras for each DSU; by using a TSU, 42 cameras may be controlled by 2 SCUs)

•Control mode

Mode	Description	Control location
(1)FULL AUTO	Automatic setup of all control parameters	SCU, RCU
(2)REGI AUTO	Automatic registration setup	SCU
(3)COLOR AUTO	Automatic color balance setup	SCU
(4)G-REF AUTO	Automatic setup with the G-channel of a separate camera as a reference	SCU
(5)QUICK CHECK	Setup of BLACK, GAIN, FLARE, GAMMA, SHADING, WHITE CLIP, and R-G/B-G SIZE, CENT, LIN, and SKEW only	SCU, RCU
(6)DIAG	CCU POWER, Pulse Unit PRE AMP PROC AMP-1 PROC AMP-2 ENCR	SCU
(7)WHITE BAL	WHITE BALANCE only	SCU,RCU
(8)MANUAL	Manual adjustment	SCU,RCU

•Data files	(1)NORM (2)PAINT (3)A(H-REV) (4)B(V-REV) (5)C(HV-REV) Lens compensation data in the file(1) can be transfered to any of the files(3), (4) and (5).
•Auto setup parameters:	31 parameters (Refer to table of control parameters, control locations, and operating modes)
•Auto setup time:	2 minutes (average)
•Display:	Setup/fault diagnosis results are displayed on the TTY, the picture monitor, and the computer CRT display.
•Controlled quantity display:	Digital display, 0 ~ 100% (at SCU)
•Cable length between units (max):	(1)SCU-TSU 1 km (3,000 ft) (2)TSU-DSU 1 km (3,000 ft) (3)DSU-CCU 1 km (3,000 ft) (4)CCU-RCU 100 m (300 ft) (1 km using an external power supply for RCU)
•Special effects:	(1)H-REV (2)V-REV (3)HV-REV (4)PAINT (5)NEGA

DIMENTIONS AND WEIGHT

	Width		Height		Depth		Weight	
	mm	in	mm	in	mm	in	kg	lb
Camera Head	270	10.6	520	20.5	635	25.0	40	90.3
CCU	482	19.0	177	7.0	450	17.7	21.1	46.5
SCU	482	19.0	266	10.5	750	29.5	32.5	71.6
RCU	108	4.3	356	14.0	127	5.0	5	11.0
TSU	482	19.0	88	3.5	350	13.8	10	22.0
DSU	482	19.0	88	3.5	350	13.8	10	22.0
DCU	482	19.0	177	7.0	450	17.7		
CCU Power	482	19.0	177	7.0	450	17.7	42	92.5

STANDARD SYSTEM COMPONENT

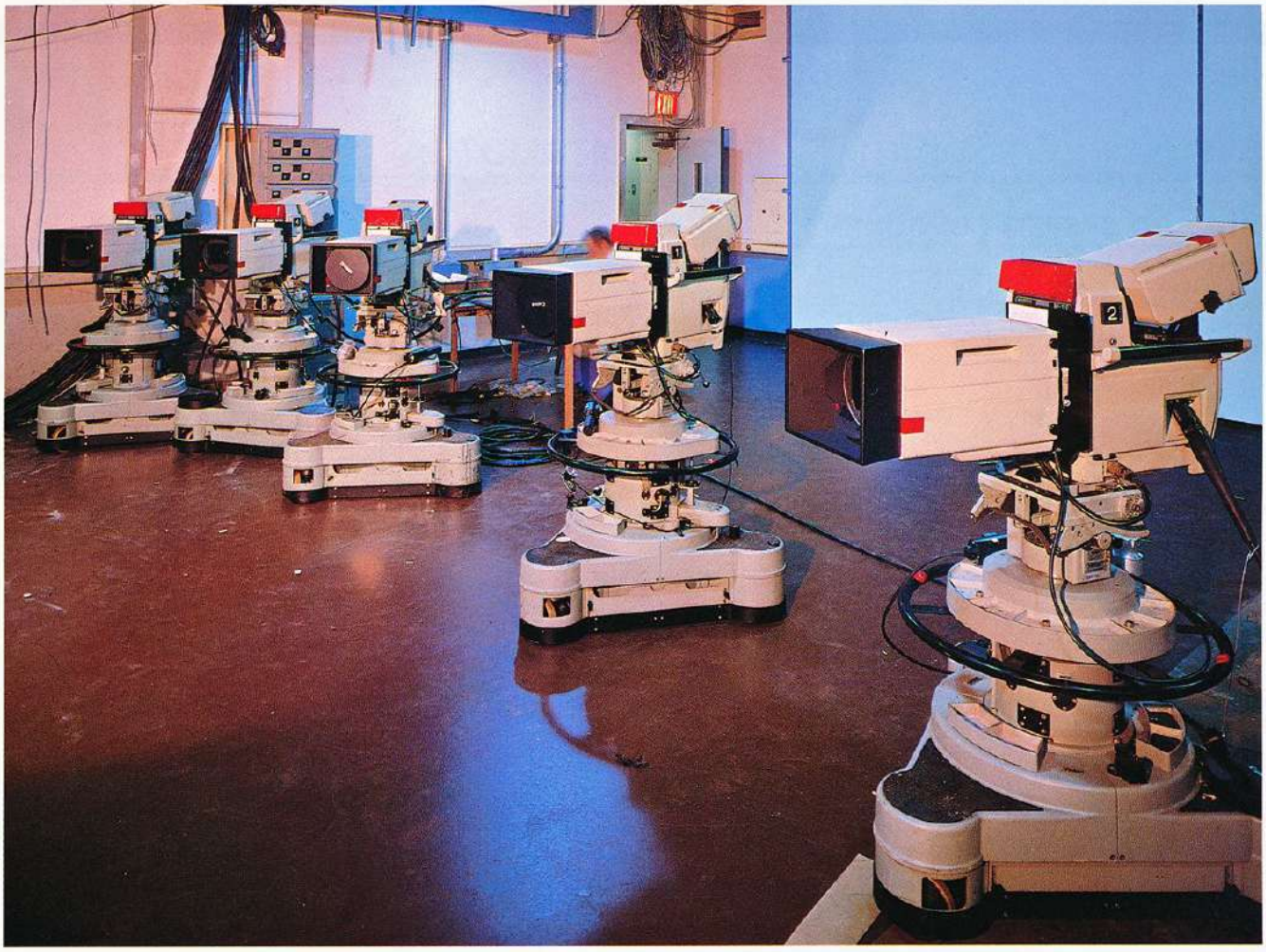
Components	Type
(1) Camera head (W/O tube)	SK-110
(2) CCU	CU-110
(3) CCU power supply	AP-110
(4) Viewfinder	VF-704
(5) Remote control unit (RCU)	RU-110
(6) Setup control unit (SCU)	SU-110
(7) Delegation switch unit (DSU)	DU-110
(8) Standard accessories (a) Viewfinder hood (b) Transfer cables (10m long each) (c) Extender PC board (d) Lamps and fuses	

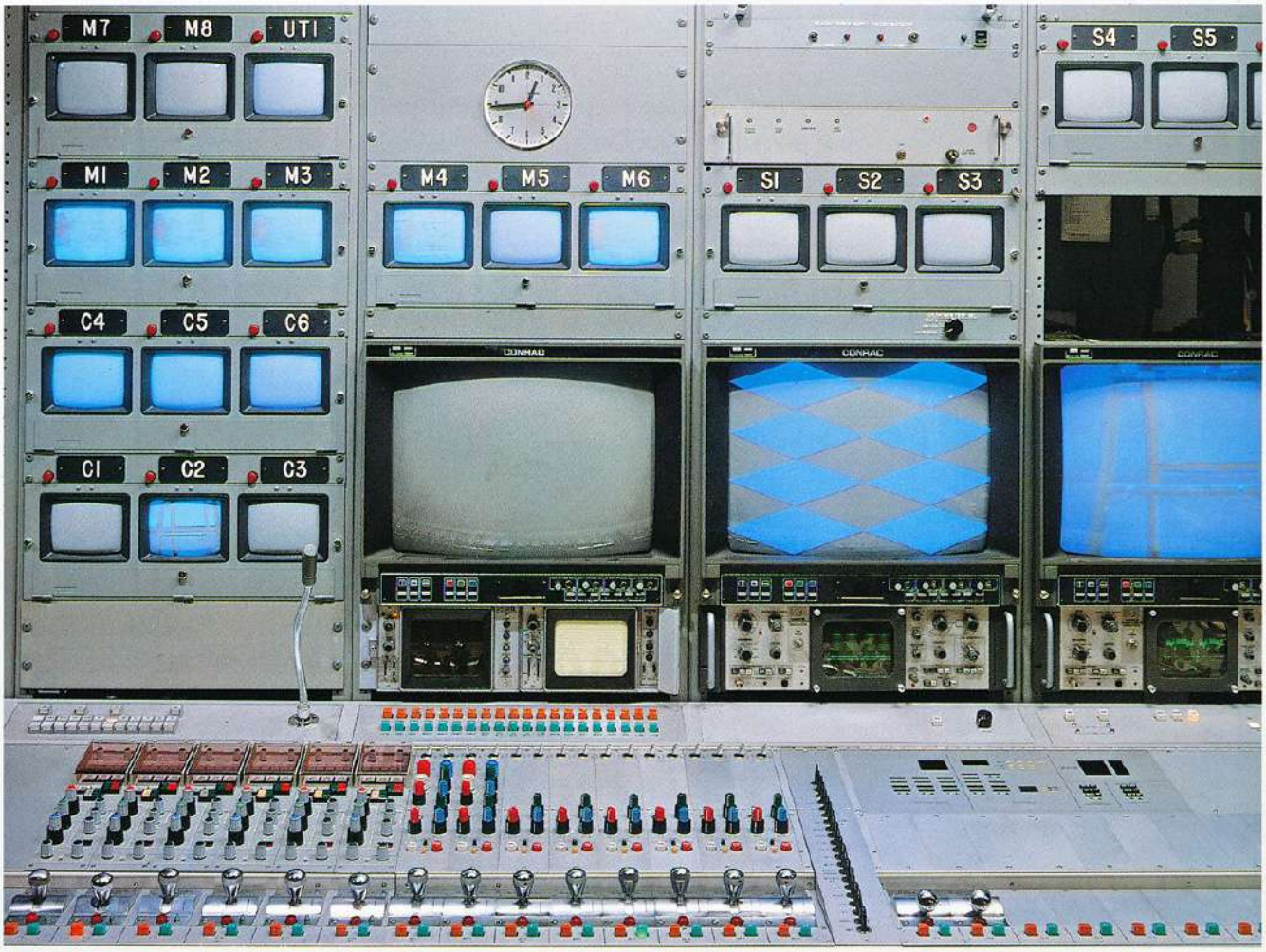
OPTIONS

(1) Fault alarm unit FA-110	(6) Script lamp	(11) Viewfinder outdoor hood
(2) Camera cable	(7) Cold protecting cover	(12) Transfer switch unit (TSU) TU-110
(3) Lens mount	(8) Dust protecting cover	(13) DCU TC-110
(4) Lenses and lens accessories (with built-in diascope)	(9) Rainproof cover	(14) Teletypewriter
(5) Pickup tube (1-1/4 inch PbO)	(10) Sunshade cover	(15) Character display

NUMBER OF SYSTEM COMPONENT

Item	Component	Number of system component											
1	CAM HEAD	1	2	3	4	5	6	7~12	13~18	19~24	25~30	31~36	37~42
2	CCU	1	2	3	4	5	6	7~12	13~18	19~24	25~30	31~36	37~42
3	CCU power	1	2	3	4	5	6	7~12	13~18	19~24	25~30	31~36	37~42
4	RCU	1	2	3	4	5	6	7~12	13~18	19~24	25~30	31~36	37~42
5	DSU	1						2	3	4	5	6	7
6	TSU	0						1 (When using 2 SCUs)					
7	SCU (1 station)	1											
8	SCU (2 stations)	2											
9	Standard accessories	1	2	3	4	5	6	7~12	13~18	19~24	25~30	31~36	37~42


2


M7
M8
UTI
S4
S5
MI
M2
M3
M4
M5
M6
SI
S2
S3
C4
C5
C6
CI
C2
C3
CONRAC
CONRAC
CONRAC

CONTROL PARAMETERS, LOCATIONS, AND OPERATING MODES

CONTROL PARAMETERS AND DISPLAY / CONTROL LOCATIONS AND OPERATING MODES		SCU							RCU				CCU	CAM HEAD
		MANUAL	AUTO SETUP						MANUAL	AUTO SETUP	AUTO CHECK	AUTO WHITE		
			FULL	REGI	COLOR BAL	G-REF	CHECK	AUTO WHITE						
ON/OFF CONTROL	1. GROUP	●												
	2. RCU	●												
	3. SELECT DSU (1~7)	●												
	4. SELECT CCU (1~6)	●												
	5. MONITOR SELECT													
	(a) R	●												
	(b) G	●												
	(c) B	●												
	(d) −G	●												
	(e)NTSC	●												
	(f)GRATING	●												
	(g)RGB SUP	●												
	(h)RGB SEQ	●												
	6. INCOM PRIVATE / COMMON	●												
	7. POWER	●							●				●	
	8. BEAM	●							●					
	9. FUNCTION	●												
	10. TALLY CALL	●							●				●	●
	11. AUTO SETUP		●							●				
	12. REGI		●	●										
	13. COLOR BAL		●		●									
	14. G-REF		●			●								
	15. CHECK						●				●			
	16. AUTO WHITE							●				●		
	17. CAM/BARS	●							●					
	18. C. TEMP (A~F)	●							●					
	19. ND (1~6)	●												
	20. OPERATE	●							●					
	21. DREAM SEQ	●							●					
	22. AUTO IRIS	●							●					
	23. MASTER GAIN (−3, 0, +6, +12dB)	●							●					
	24. PAINT ENABLE	●							●					
	25. REGI TRANSFER	●												
	26. REV ENABLE	●												
	27. MONO	●												
	28. NEG	●							●					
	29. BIAS LIGHT OFF	●												
	30. ABO OFF	●												
	31. FLARE OFF	●												
	32. MASK OFF	●												
	33. GAMMA OFF	●												
	34. KNEE OFF	●												
	35. W. CLIP OFF	●												
	36. CAM TEST	●												
	37. PROC 1 TEST	●												
	38. PROC 2 TEST	●												
	39. ×2 TEST	●												
	40. CLR BAL CLEAR	●												
	41. REJECT	●												
	42. BREAK OFF	●												
	43. DETAIL (AUTO.OFF.MAN)	●							●					
	44. MEMORY	●												
	45. OVER SCAN	●												
	46. AUTO ALIGN	●												
	47. FILE SELECT	●							●					
	48. CTL VALUE	●												

CONTROL LOCATIONS AND OPERATING MODES / CONTROL PARAMETERS AND DISPLAY		S C U							R C U				CCU	CAM HEAD
		MANUAL	AUTO SETUP						MANUAL	AUTO SETUP	AUTO CHECK	AUTO WHITE		
			FULL	REGI	COLOR BAL	G-REF	CHECK	AUTO WHITE						
COLOR BALANCE SYSTEM(R,G,B)	1. GAIN	●	●		●	●	●(R.B)	●(R.B)		●	●(R.B)	●(R.B)		
	2. GAMMA	●	●		●	●	● 〃			●	● 〃			
	3. FLARE	●	●		●	●	● 〃			●	● 〃			
	4. BLACK LEVEL	●	●		●		● 〃			●	● 〃			
	5. KNEE	●	●		●		● 〃			●	● 〃			
	6. SLOPE	●	●		●		● 〃			●	● 〃			
	7. WHITE CLIP	●	●		●		●(R.B)			●	●(R.B)			
	8. PULSE CANCEL	●	●		●					●				
	9. AXIS SHAD HS	●	●		●		●(R.B)			●	●(R.B)			
	10. AXIS SHAD VS	●	●		●		●(R.B)			●	●(R.B)			
	11. IRIS	●												
	12. CONTRAST	●												
	13. MASTER BLK	●												
	14. DETAIL	●												
	15. MOD SHAD VS	●												
	16. IRIS RANGE	●							●					
	17. IRIS SENS	●							●					
	18. SC ϕ	●							●					
	19. HDϕ	●							●					
	20. BEAM SET	●												
REGISTRATION(R,G,B)	1. WIDTH	●	●	●(R.B)			●(R.B)			●(R.B)	●(R.B)			
	2. H-CENT	●	●	● 〃			● 〃			● 〃	● 〃			
	3. H-LIN	●	●	● 〃			● 〃			● 〃	● 〃			
	4. HEIGHT	●	●	● 〃			● 〃			● 〃	● 〃			
	5. V-CENT	●	●	● 〃			● 〃			● 〃	● 〃			
	6. V-LIN	●	●	● 〃			● 〃			● 〃	● 〃			
	7. V-SKEW	●	●	● 〃			● 〃			● 〃	● 〃			
	8. H-SKEW	●	●	●(R.B)			●(R.B)			●(R.B)	●(R.B)			
	9. FOCUS	●	●											
	10. ALIGN X	●	●											
	11. ALIGN Y	●	●											
	12. BOW													
	(a) H	●	●	●(R.B)						●(R.B)				
	(b) V	●	●	● 〃						● 〃				
	13. DYNAMIC REGIST													
	(a)UR	●	●	● 〃			●(R.B)			● 〃	●(R.B)			
	(b)UL	●	●	● 〃			● 〃			● 〃	● 〃			
	(c)LR	●	●	● 〃			● 〃			● 〃	● 〃			
	(d)LL	●	●	●(R.B)			●(R.B)			●(R.B)	●(R.B)			
DISPLAY/OTHERS	1. TALLY R	●							●				●	●
	2. TALLY G	●							●				●	●
	3. FAULT Buzzer	●							●				●	
	4. TALLY CALL Buzzer								●				●	●
	5. IRIS DISPLAY	●							●					
	6. CTL VALUE	●												
	7. CTL ITEM	●												
	8. ALARM													
	(a)CAMERA POWER	●												
	(b)CCU POWER	●												
	(c)DSU POWER	●												
	(d)TSU POWER	●												
	9. INCOM	●											●	● ENG I'D



Specifications are subject to change without notice.

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