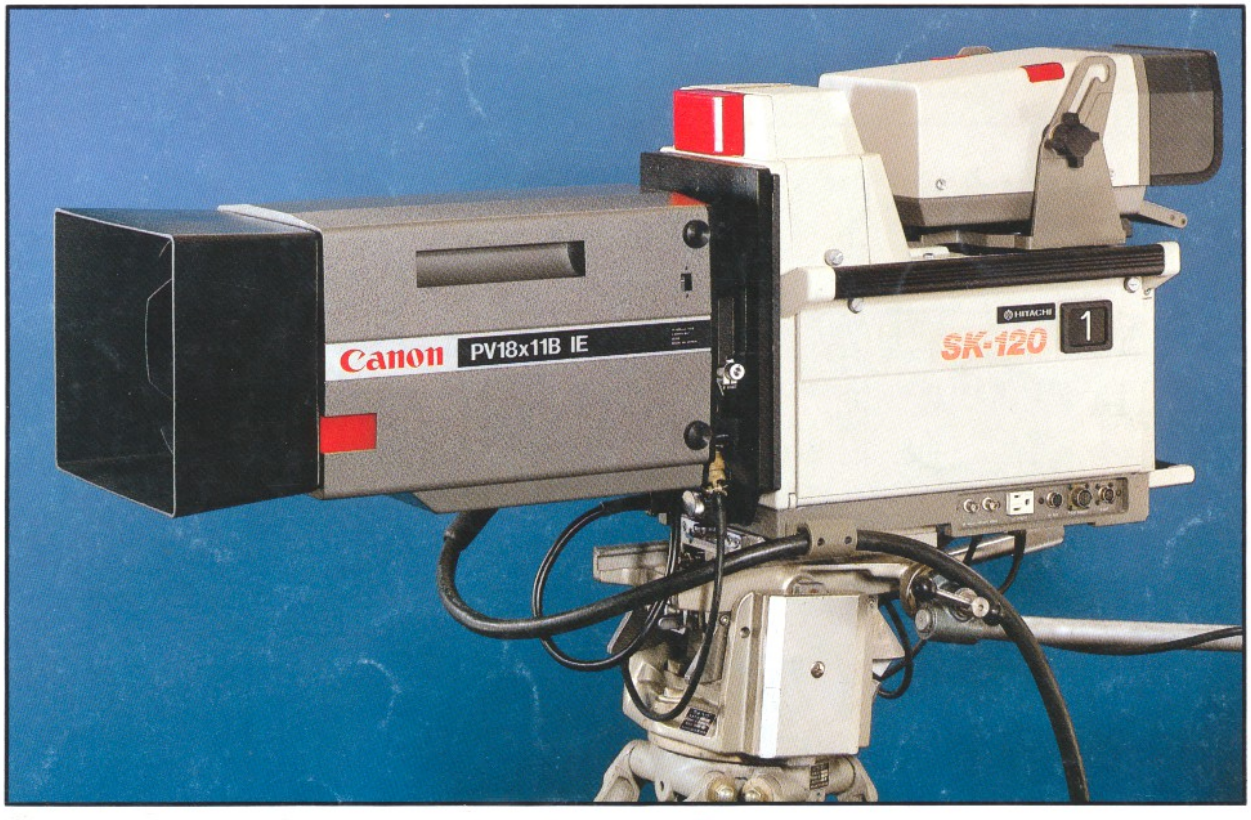
# SK-120

## Hitachi Full Auto-Setup Studio/Field Camera



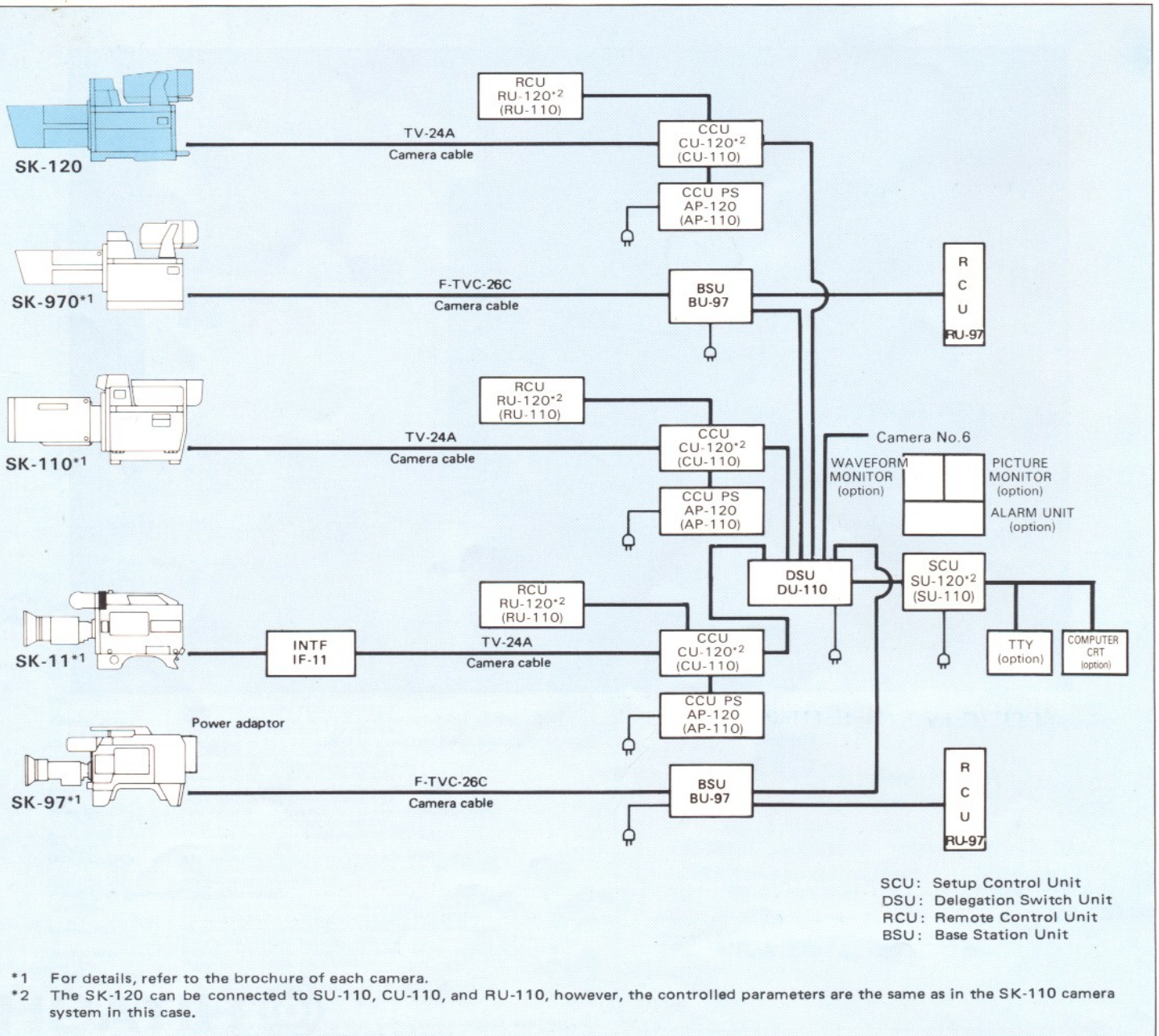

HITACHI

# Sister Camera to SK-110 Studio Camera Additional Functions in Small and Light-Camera Head

The SK-120 is a small-size, light-weight (30 kg) studio/field camera using 1-inch pickup tubes, provides the same full auto setup functions as the SK-110 studio camera, and can be used in the SK-110 camera system. Additional functions such as the world-first, on-line, real-time compensation circuit for the mis-registration caused by variations of lens focusing/zooming, and a head memory which enables scrambling use of multiple cameras are built in the camera.

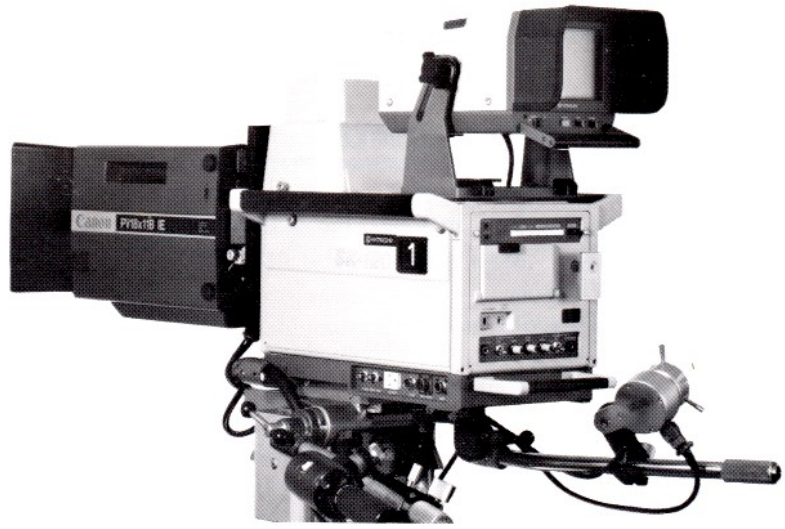
The camera series of SK-110, SK-11, SK-97, SK-970, and SK-120 developed in this order can be connected one other in a total camera system and used for various applications. Above all, the SK-120 is the most suitable for studio/field applications with its excellent picture quality and ease of operation.

## OPERATING SYSTEM




*1 For details, refer to the brochure of each camera.

*2 The SK-120 can be connected to SU-110, CU-110, and RU-110, however, the controlled parameters are the same as in the SK-110 camera system in this case.



## Simultaneously and automatically sets up multiple SK-120's in just two minutes by microprocessors. Building block configuration maximizes cost performance to handle a single camera chain to a large-scale camera system.

**• SCU (Setup Control Unit)**

This unit provides centralized camera control functions for 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 are provided for each camera. The picture monitor character display includes controlled parameters and percentage of controlled quantities.

**• DSU (Delegation Switch Unit)**

This unit serves as a switching unit for data lines and video signals 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 the CCU.

**• TSU (Transfer Switch Unit)**

This unit provides switching for data lines and video signals 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 alarm unit is located at the SCU and individually monitors the result of auto setup for each camera and the on/off condition of each power supply.

**• CCU (Camera Control Unit)**

In addition to the basic CCU functions, the following functions have been provided:

1. Automatic 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 errors caused by lens aberration.

**• RCU (Remote Control Unit)**

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

**• Camera Head**

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

## CAMERA HEAD

**• Small-size, light-weight camera head**

In spite of using 1-inch pickup tubes, the camera head is very small and light (30 kg). The SK-120 is best suited to studio/field applications.

**• Highly efficient prism optics**

A newly developed f1.5 prism optics are used in conjunction with 1-inch pickup tubes to provide a high signal-to-noise ratio of 58 dB (NTSC) and 55 dB (PAL) at 2,000 lux, f4.
The optical filters are dust-proofed to virtually eliminate dust immersion and can be easily replaced in the field.

**• Selection of pickup tubes**

Any of the following high performance pickup tubes in the market can be used according to customer's request:

1-inch LOC diode-gun Plumbicon*1
1-inch diode-gun Plumbicon
1-inch diode-gun SATICON*2

**• Six-position ND and CC filter discs**

Two filter discs, one for ND filters and the other for CC filters with independent filter selection are provided. The former can be selected from any of the camera head, the RCU and the SCU, and the latter, from either the RCU or the SCU. Both the discs are driven by respective servo motors and may be rotated in either direction.

**• High-accuracy static registration**

Auto setup control for camera registration including that for bow and skew distortions in both the horizontal and vertical directions guarantees high-accuracy static registration, in combination with auto setup control of corner registration compensation which controls four corners independently.

**• High-precision dynamic registration (Option)**

By using an optional dynamic registration compensation, the auto setup system controls on-line, real-time compensation for registration errors caused by variations of lens zooming and focusing, and ensures consistently high precision dynamic registration.

**• Scrambling use of multiple cameras**

By a built-in camera head memory, quick change of camera heads in scrambling use of multiple cameras is possible.

**• Computerized tube hour meter**

Computerized tube hour meter which is controlled by the built-in microcomputer is used instead of a conventional electromechanical hour meter, providing a character display of operating hours on the viewfinder screen.

**• Dynamic focusing**

A dynamic focusing circuit is contained to improve the resolution at corners and to reduce the geometric distortion.

**• ABO (Automatic Beam Optimizer)**

The Hitachi developed ABO circuit greatly extends dynamic range, reduces comet-tailing and thereby guarantees easy highlight handling.

**• High performance viewfinder**

A bright, high-resolution CRT is used in the viewfinder to provide an easy-to-view image even for outdoor shooting. The viewfinder can be tilted by ±25°, and rotated by ±90° to be set 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 is 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 a limiter. The audio output is balanced to prevent noises from being picked up in the camera cable.

**• Test signals for amplifier calibration**

A 100% and a 200% level sawtooth test signal are provided to facilitate calibration and setup of each video amplifier. By applying these signals in sequence to the input of the process amplifier-2, process amplifier-1 and preamplifier first stage, it is possible to calibrate the level of each amplifier as well as to verify the gamma, knee point, slope, clipping point, etc.

**• Easy servicing**

The PC boards in the camera head and CCU are simple to remove 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 on the dolly.

## CCU

**• Compact design**

The CCU is designed as a dedicated camera control unit for a computer controlled camera. 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 to ensure 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 even for 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 are provided to save 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: Beam current of the pickup tube is turned on and the camera operates.

*1 ® N.V. Philips
*2 ®

- **Genlock**

The SK-120 is genlocked to a black burst signal. Horizontal and subcarrier phases can be adjusted manually.

- **High reliability LSI process amplifier**

Output picture quality is greatly effected by the stability of process amplifiers. LSI process amplifiers used in this camera provide stable operation against temperature variations and provide no deviation between channels. This results in high picture quality and high reliability, and represents the most advanced technology in the camera of this class.

- **Alarms and safety features**

Trying to turn on the power of the camera head while the camera cable is left unconnected, an alarm lamp blinks on the SCU. If the power supply is overloaded, a protection circuit operates to shut off the power until the overload condition is removed. In addition, overheating of the camera power supply and stoppage of the cooling fan cause a buzzer 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) Swinging of horizontal deflection is provided by means of an externally applied low frequency signal.

- **Encoder with variable gamma (contrast); Option for PAL**

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 extremely simple where light variations are small. The iris values are visible by a numerical display on the SCU and RCU.

## CAMERA CABLE

- **Small-diameter 24-conductor cable**

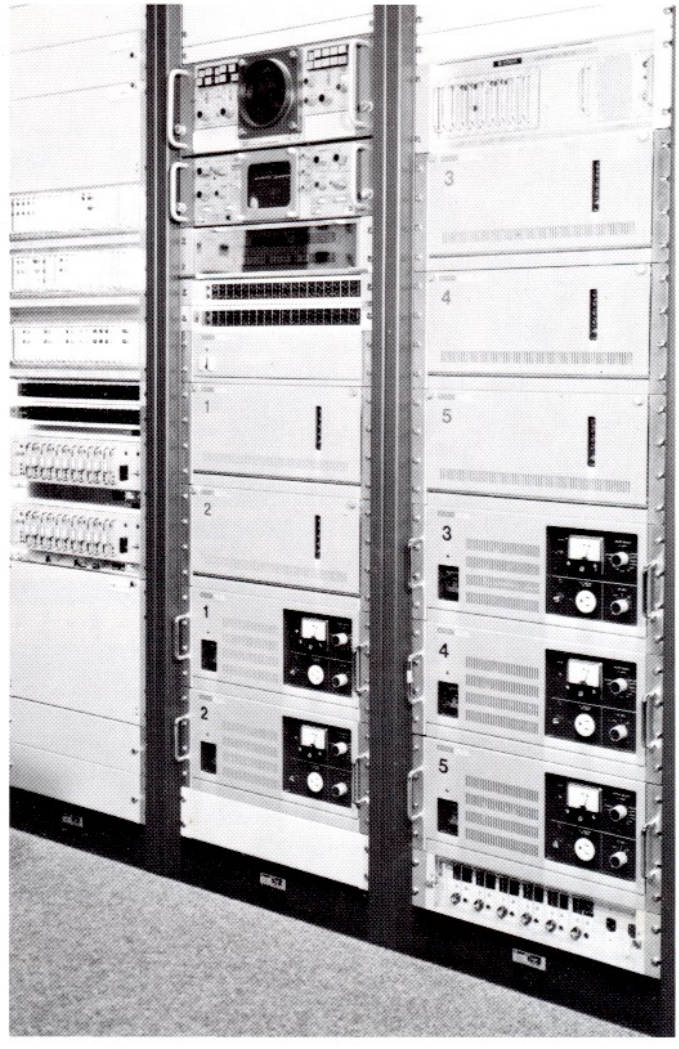
Through the use of a microprocessor built in the camera head and time division multiplexing to transmit serially analog control and on/off control signals, the camera cable needs only 24 conductors including coaxial, power supply, audio and intercom cables. Compared with previously used 78-conductor cable, the size and the weight have been greatly reduced, connector reliability has been much improved and cable handling has been significantly simplified.

- **Automatic camera cable compensation**

Picture quality degradation caused by camera cable is automatically compensated for in the SK-120 camera system.

- **DCU/triaxial cable combination**

A DCU is available as an option. The DCU module located at the camera head has been greatly reduced in size and weight and can be built into the camera head. By using the DCU with a triaxial cable, usefulness of the SK-120 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 is 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**

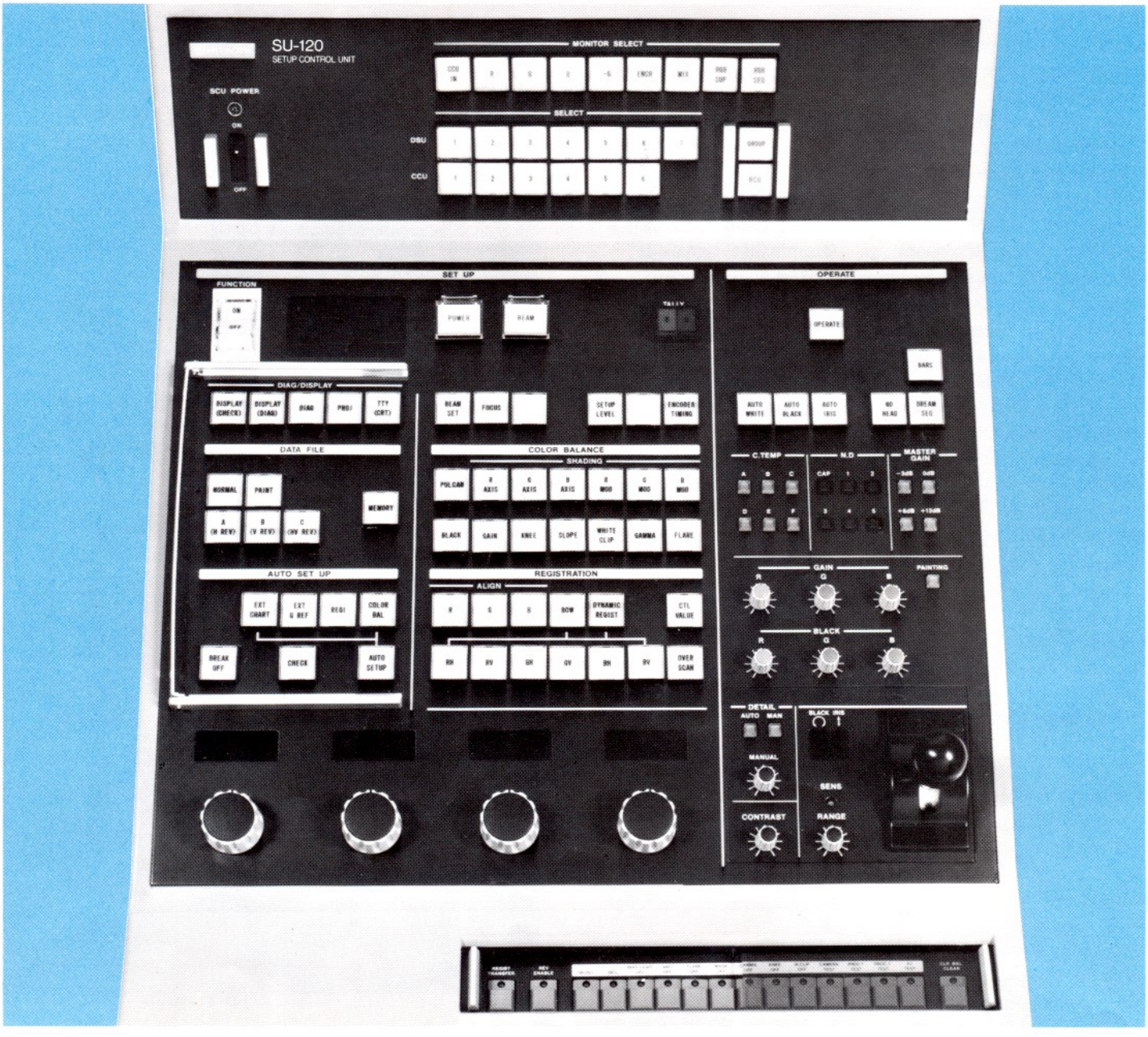
Eight automatic setup modes are provided; AUTO SETUP (full), COLOR BALance, REGIstration, EXTernal G REFerence, EXTernal CHART, CHECK, AUTO WHITE and AUTO BLACK. These can be selected to suit the picture conditions at the time. In addition, manual control from either the SCU or RCU is possible, with all normal operational controls accessible manually.

**• Auto setup by external chart**

In the EXT CHART mode, auto setup for white balance (R, B gain) and registration (R, B) is obtained by shooting the external opaque chart so that it coincides with the frame marker on the viewfinder screen. The chart has the same pattern as the diascope chart built into an exclusive lens. This mode of operation is helpful to automatically compensate for the registration errors caused by lens aberration.

**• Auto white by automatic peak white searching**

In the AUTO WHITE mode, the system automatically searches the peak white area in a gray scale chart, controls the lens iris to set the peak white at 100% level and then automatically



sets up the white balance of the camera.

**• Data files**

Five data files are provided except for the AUTO data file. Auto setup data is automatically stored in the AUTO data file. It is possible to store or erase the manual setup data sent from the SCU in the five data files by depressing the memory or reject switch. Once data has been stored in the data files, it is maintained in the 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 transferred to any of the other three data files excluding PAINT data file. The Color Bal Clear switch allows only color balancce data to be replaced with the auto setup data.

**• Adjustable setup level reference**

The reference level for automatic color balance can be adjusted at the SCU, and color balance can be set up as you desire. Adjustable parameters include BLACK, GAIN, KNEE, SLOPE, WHITE CLIP, GAMMA and FLARE.

**• 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**

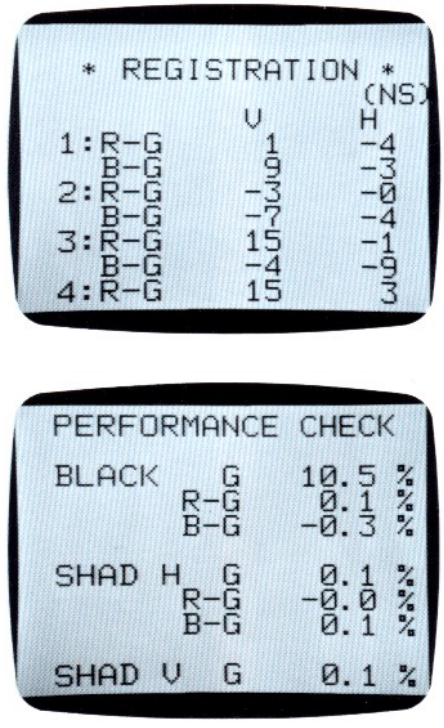
When the CHECK switch is depressed, registration (G-reference) and color balance (G-reference) are automatically checked and, if the required accuracy is not being obtained, the readjustment is automatically made.

**• Scroll display and automatic setup status display**

The results of the fault diagnosis and the quick check are displayed on a scrolling 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 further enhance the ease-of-use of the SK-120 camera system.




**• Break off**

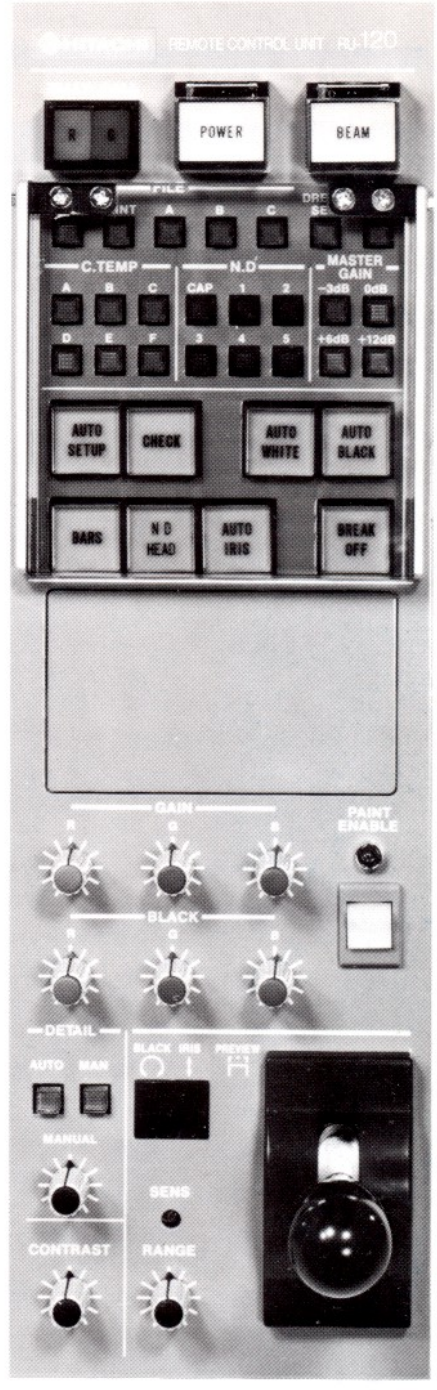
If, during either automatic setup or manual adjustment, the camera must be readied quickly for use, simply press the BREAK OFF switch on the SCU or RCU to use the previous set of automatic setup data to control the camera(s).

**• Remote control**

The SCU, TSU, DSU, and CCU may be connected with just three twisted-pair cables and be separated from one another 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 to determine the affects of aging on the camera's performance, a means of predicting camera failures as well.



## CAMERA

| | |
|---|---|
| **•Scan standard:** | EIA 525 lines/60 fields (NTSC)<br>CCIR 625 lines/50 fields (PAL) |
| **•Pickup tubes:** | 1-inch Plumbicon (G, B: XQ-3070, R: XQ-3075), or SATICON (H9379D) |
| **•Viewfinder CRT:** | 7-inch |
| **•Optical filters** | |
| **ND:** | CAP, 100%, 25%, 6.3%, 1.6% and one special effect filter (star filter standard) |
| **Color:** | 3,200, 4,000, 5,000, 6,000, 7,000, 8,000°K |
| **•Resolution (typical):** | 700 lines (center)<br>600 lines (corners) |
| **•Modulation depth (typical):** | 60% at 400 TV lines (center), gamma off, enhancer off, aperture off. |
| **•S/N (typical):** | 58 dB (NTSC), 55 dB (PAL) for the output luminance signal, under the following conditions; G ch. signal current 0.3 μA, gamma off, enhancer off, using RS*[1] noise meter, LPF ON, SC trap in and the blanking gate on. |
| **•Sensitivity:** | f=4 at 2,000 lux (200 fc), 3,200°K for the center white area of a gray scale chart of 90% reflectivity. |
| **•Geometric distortion:** Superimposing the image of a RETMA linearity chart with the grating signal (excluding lens distortion)<br>Zone 1 (in a circle of diameter equal to 80% of picture height): 0.5% of picture height<br>Zone 2 (within a circle of diameter equal to the picture width): 0.8% of picture height<br>Zone 3 (area outside of Zone 2): 1.0% of picture height | |
| **•Registration:** | Zone 1 0.05%<br>Zone 2 0.1%<br>Zone 3 0.1% |
| **•Frequency response** (with all compensation circuits off): | 60Hz to 6MHz ±1dB<br>Below 60Hz and above 6MHz roll-off characteristics |
| **•Waveform distortion** (with all compensation circuits off and with an input signal risetime of 0.07μs): | |
| 60Hz | Sag: 2% |
| 15/250kHz | Risetime: 0.1μs<br>Overshoot: 10%<br>(Excl. ringing above 10MHz) |
| | Sag: 1% |
| **•Linearity:** | 5% up to the rated output level of 0.7Vp-p, and for changes of APL 10%, 50% and 90%. |

| | |
|---|---|
| **•Power requirements** | |
| **Input:** | 100/117/220/240V AC ±10%, 50/60Hz |
| **Power consumption:** | Approx. 450VA |
| **Tally power supply:** | 21 to 24V DC (R & G, 2 systems) |
| **•Ambient temperature:** | |
| (1) Temperature range | -20 to +50°C (-4 to +122°F) |
| (2) Temperature stability | After a 30-minute warmup period, specifications are satisfied without readjustment over variations of ±10°C (±18°F) from the setup temperature, within the range of 0 to +40°C (+32 to +104°F), except for the following items. |
| (a) Video level change: | ±2% |
| (b) Pedestal change: | ±2% |
| (c) Color phase change: | ±3° |
| (d) Registration change: | ±0.1% in zone 1 |
| (e) Genlock horizontal phase: | ±0.05μs (max) |

*1 Rhode & Schwarz

# AUTOMATIC SETUP

| | |
|---|---|
| •**Control method:** | Zero method/simultaneous control of multiple cameras |
| •**Number of cameras controlled:** | 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)REGIST 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)EXT-CHART | Setup of GAIN, WIDTH, CENT, LIN, HEIGHT, SKEW, BOW (R.B) | SCU |
| (6)QUICK CHECK | Setup of BLACK, GAIN, FLARE, GAMMA, SHADING, WHITE CLIP, and R-G/B-G SIZE, CENT, LIN, and SKEW only | SCU, RCU |
| (7)DIAG | CCU POWER, Pulse Unit<br>PRE AMP<br>PROC AMP-1<br>PROC AMP-2 | SCU |
| (8)WHITE BAL | WHITE BALANCE only | SCU,RCU |
| (9)BLACK BAL | BLACK BALANCE only | SCR,RCU |
| (10)MANUAL | Manual setup | SCU,RCU |

| | |
|---|---|
| •**Data files:** | (1)NORM<br>(2)PAINT<br>(3)A(H-REV)<br>(4)B(V-REV)<br>(5)C(HV-REV)<br>Lens compensation data in the file (1) can be transferred to any of the files (3), (4) and (5). |
| •**Auto setup parameters:** | 37 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 of 0 to 100% (at SCU) |
| •**Cable length between units (max):** | (1)SCU-TSU 1 km (3,000 ft)<br>(2)TSU-DSU 1 km (3,000 ft)<br>(3)DSU-CCU 1 km (3,000 ft)<br>(4)CCU-RCU 100 m (300 ft)<br>(1 km using an external power supply for RCU) |
| •**Special effects:** | PAINT<br>H-REV<br>V-REV<br>HV-REV<br>NEGA |

## DIMENTIONS AND WEIGHT

| | Width | | Height | | Depth | | Weight | |
|---|---|---|---|---|---|---|---|---|
| | mm | in | mm | in | mm | in | kg | lb |
| Camera Head | 260 | 10.2 | 467 | 18.4 | 440 | 17.3 | 30 | 66.0 |
| CCU | 482 | 19.0 | 177 | 7.0 | 450 | 17.7 | 21.1 | 46.5 |
| SCU | 482 | 19.0 | 355 | 14.0 | 540 | 21.3 | 30 | 66.0 |
| 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 | 14 | 30.8 |
| CCU Power | 482 | 19.0 | 177 | 7.0 | 450 | 17.7 | 42 | 92.5 |

# CONTROL PARAMETERS, LOCATIONS, AND OPERATING MODES

| CONTROL PARAMETERS AND DISPLAY \ CONTROL LOCATIONS AND OPERATING MODES | SCU | | | | | | | | RCU | | | | CCU | CAM HEAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | AUTO SETUP | | | | | | | | | | | | |
| | MAN-UAL | FULL | REGIST | COLOR BAL | G-REF | CHECK | EXT-CHART | AUTO WHITE/ BLACK | MAN-UAL | AUTO SETUP | AUTO CHECK | AUTO WHITE/ BLACK | | |
| 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) CCA IN | ● | | | | | | | | | | | | | |
| (f) ENCR | ● | | | | | | | | | | | | | |
| (g) GRATING | ● | | | | | | | | | | | | | |
| (h) RGB SUP | ● | | | | | | | | | | | | | |
| (i) RGB SEQ | ● | | | | | | | | | | | | | |
| 6. INCOM PRIVATE /COMMON | ● | | | | | | | | | | | | | |
| 7. POWER | ● | | | | | | | | ● | | | | ● | |
| 8. BEAM | ● | | | | | | | | ● | | | | | |
| 9. FUNCTION | ● | | | | | | | | | | | | | |
| 10. TALLY CALL | ● | | | | | | | | ● | | | | ● | ● |
| 11. AUTO SETUP | | ● | | | | | | | | ● | | | | |
| 12. REGIST | | ● | ● | | | | | | | | | | | |
| 13. COLOR BAL | | ● | | ● | | | | | | | | | | |
| 14. G-REF | | ● | | | ● | | | | | | | | | |
| 15. CHECK | | | | | | ● | | | | | ● | | | |
| 16. EXT-CHART | | | | | | | ● | | | | | | | |
| 17. AUTO WHITE | | | | | | | | ● | | | | ● | | |
| 18. AUTO BLACK | | | | | | | | ● | | | | ● | | |
| 19. CAM/BARS | ● | | | | | | | | ● | | | | | |
| 20. C. TEMP (A~F) | ● | | | | | | | | ● | | | | | |
| 21. ND (1~6) | ● | | | | | | | | | | | | | |
| 22. OPERATE | ● | | | | | | | | ● | | | | | |
| 23. DREAM SEQ | ● | | | | | | | | ● | | | | | |
| 24. AUTO IRIS | ● | | | | | | | | ● | | | | | |
| 25. MASTER GAIN (-3, 0, +6, +12dB) | ● | | | | | | | | ● | | | | | |
| 26. PAINT ENABLE | ● | | | | | | | | ● | | | | | |
| 27. REGI TRANSFER | ● | | | | | | | | | | | | | |
| 28. REV ENABLE | ● | | | | | | | | | | | | | |
| 29. MONO | ● | | | | | | | | | | | | | |
| 30. NEG | ● | | | | | | | | ● | | | | | |
| 31. BIAS LIGHT OFF | ● | | | | | | | | | | | | | |
| 32. ABO OFF | ● | | | | | | | | | | | | | |
| 33. FLARE OFF | ● | | | | | | | | | | | | | |
| 34. MASK OFF | ● | | | | | | | | | | | | | |
| 35. GAMMA OFF | ● | | | | | | | | | | | | | |
| 36. KNEE OFF | ● | | | | | | | | | | | | | |
| 37. W. CLIP OFF | ● | | | | | | | | | | | | | |
| 38. CAM TEST | ● | | | | | | | | | | | | | |
| 39. PROC 1 TEST | ● | | | | | | | | | | | | | |
| 40. PROC 2 TEST | ● | | | | | | | | | | | | | |
| 41. x2 TEST | ● | | | | | | | | | | | | | |
| 42. CLR BAL CLEAR | ● | | | | | | | | | | | | | |
| 43. REJECT | ● | | | | | | | | | | | | | |
| 44. BREAK OFF | ● | | | | | | | | ● | | | | | |
| 45. DETAIL (AUTO. OFF. MAN) | ● | | | | | | | | ● | | | | | |
| 46. MEMORY | ● | | | | | | | | | | | | | |
| 47. OVER SCAN | ● | | | | | | | | | | | | | |
| 48. AUTO ALIGN | ● | | | | | | | | | | | | | |
| 49. FILE SELECT | ● | | | | | | | | ● | | | | | |
| 50. CTL VALUE | ● | | | | | | | | | | | | | |
| 51. ND REMOTE | ● | | | | | | | | ● | | | | | |
| 52. IRIS/BIK REMOTE | | | | | | | | | ● | | | | | |

| CONTROL LOCATIONS AND OPERATING MODES / CONTROL PARAMETERS AND DISPLAY | | SCU | | | | | | | | RCU | | | | | CCU | CAM HEAD |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MAN-UAL | AUTO SETUP | | | | | | | SETUP LEVEL | MAN-UAL | AUTO SETUP | AUTO CHECK | AUTO WHITE | | |
| | | | FULL | REGIST | COLOR BAL | G-REF | CHECK | EXT-CHART | AUTO WHITE/ BLACK | | | | | | | |
| COLOR BALANCE (R, G, B) | 1. GAIN | ● | ● | | ● | ● | ● (R.B) | ● (R.B) | ● (R.B) | ● (REF) | ● | ● | ● (R.B) | ● (R.B) | | |
| | 2. GAMMA | ● | ● | | ● | ● | ● " | | | ● " | | ● | ● " | | | |
| | 3. FLARE | ● | ● | | ● | ● | ● " | | | ● " | ● | ● | ● " | | | |
| | 4. BLACK LEVEL | ● | ● | | ● | | ● " | | ● | ● " | | ● | ● " | | | |
| | 5. KNEE | ● | ● | | ● | | ● " | | | ● " | | ● | ● " | | | |
| | 6. SLOPE | ● | ● | | ● | | ● " | | | ● " | | ● | ● " | | | |
| | 7. WHITE CLIP | ● | ● | | ● | | ● (R.B) | | | ● (REF) | | ● | ● (R.B) | | | |
| | 8. PULSE CANCEL | ● | ● | | ● | | | | | | | ● | | | | |
| | 9. AXIS SHAD HS | ● | ● | | ● | | | | | | | ● | | | | |
| | 10. AXIS SHAD HP | ● | ● | | ● | | | | | | | ● | | | | |
| | 11. AXIS SHAD VS | ● | ● | | ● | | | | | | | ● | | | | |
| | 12. AXIS SHAD VP | ● | ● | | ● | | | | | | | ● | | | | |
| | 13. MOD SHAD HS | ● | ● | | ● | | | | | | | ● | | | | |
| | 14. MOD SHAD HP | ● | ● | | ● | | | | | | | ● | | | | |
| | 15. MOD SHAD VS | ● | ● | | ● | | | | | | | ● | | | | |
| | 16. MOD SHAD VP | ● | ● | | ● | | | | | | | ● | | | | |
| | 17. IRIS | ● | | | | | | | | | ● | | | | | |
| | 18. CONTRAST | ● | | | | | | | | | ● | | | | | |
| | 19. MASTER BLK | ● | | | | | | | | | ● | | | | | |
| | 20. DETAIL | ● | | | | | | | | | ● | | | | | |
| | 21. IRIS RANGE | ● | | | | | | | | | ● | | | | | |
| | 22. IRIS SENS | ● | | | | | | | | | ● | | | | | |
| | 23. SC $\phi$ | ● | | | | | | | | | | | | | | |
| | 24. HD $\phi$ | ● | | | | | | | | | | | | | | |
| | 25. BEAM SET | ● | | | | | | | | | | | | | | |
| REGISTRATION (R, G, B) | 1. WIDTH | ● | ● | ● (R.B) | | | ● (R.B) | ● (R.B) | | | | ● (R.B) | ● (R.B) | | | |
| | 2. H-CENT | ● | ● | ● " | | | ● " | ● " | | | ● (Option) | ● " | ● " | | | |
| | 3. H-LIN | ● | ● | ● " | | | ● " | ● " | | | | ● " | ● " | | | |
| | 4. HEIGHT | ● | ● | ● " | | | ● " | ● " | | | | ● " | ● " | | | |
| | 5. V-CENT | ● | ● | ● " | | | ● " | ● " | | | ● (Option) | ● " | ● " | | | |
| | 6. V-LIN | ● | ● | ● " | | | ● " | ● " | | | | ● " | ● " | | | |
| | 7. V-SKEW | ● | ● | ● " | | | ● " | ● " | | | | ● " | ● " | | | |
| | 8. H-SKEW | ● | ● | ● (R.B) | | | ● (R.B) | ● (R.B) | | | | ● (R.B) | ● (R.B) | | | |
| | 9. FOCUS | ● | ● | | | | | | | | | | | | | |
| | 10. ALIGN X | ● | ● | | | | | | | | | | | | | |
| | 11. ALIGN Y | ● | ● | | | | | | | | | | | | | |
| | 12. BOW | | | | | | | | | | | | | | | |
| | (a) H | ● | ● | ● (R.B) | | | | ● (R.B) | | | | ● (R.B) | | | | |
| | (b) V | ● | ● | ● " | | | | ● " | | | | ● " | | | | |
| | 13. DYNAMIC REGIST | | | | | | | | | | | | | | | |
| | (a) V-UR | ● (R.B) | ● (R.B) | ● " | | | ● (R.B) | ● " | | | | ● " | ● (R.B) | | | |
| | (b) H-UR | ● " | ● " | ● | | | ● " | ● " | | | | ● " | ● " | | | |
| | (c) V-UL | ● " | ● " | ● " | | | ● " | ● " | | | | ● " | ● " | | | |
| | (d) H-UL | ● " | ● " | ● " | | | ● " | ● " | | | | ● " | ● " | | | |
| | (e) V-LR | ● " | ● " | ● " | | | ● " | ● " | | | | ● " | ● " | | | |
| | (f) H-LR | ● " | ● " | ● " | | | ● " | ● " | | | | ● " | ● " | | | |
| | (g) V-LL | ● " | ● " | ● " | | | ● " | ● " | | | | ● " | ● " | | | |
| | (h) H-LL | ● (R.B) | ● (R.B) | ● (R.B) | | | ● (R.B) | ● (R.B) | | | | ● (R.B) | ● (R.B) | | | |
| | 14. DYNAMIC FOCUS | ● | | | | | | | | | | | | | | |
| 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) CABLE ERROR | ● | | | | | | | | | | | | | | |
| | (b) CCU ERROR | ● | | | | | | | | | | | | | | |
| | (c) DSU ERROR | ● | | | | | | | | | | | | | | |
| | (d) TSU ERROR | ● | | | | | | | | | | | | | | |
| | 9. INCOM | ● | | | | | | | | | | | | | ● | ● EMG PD |