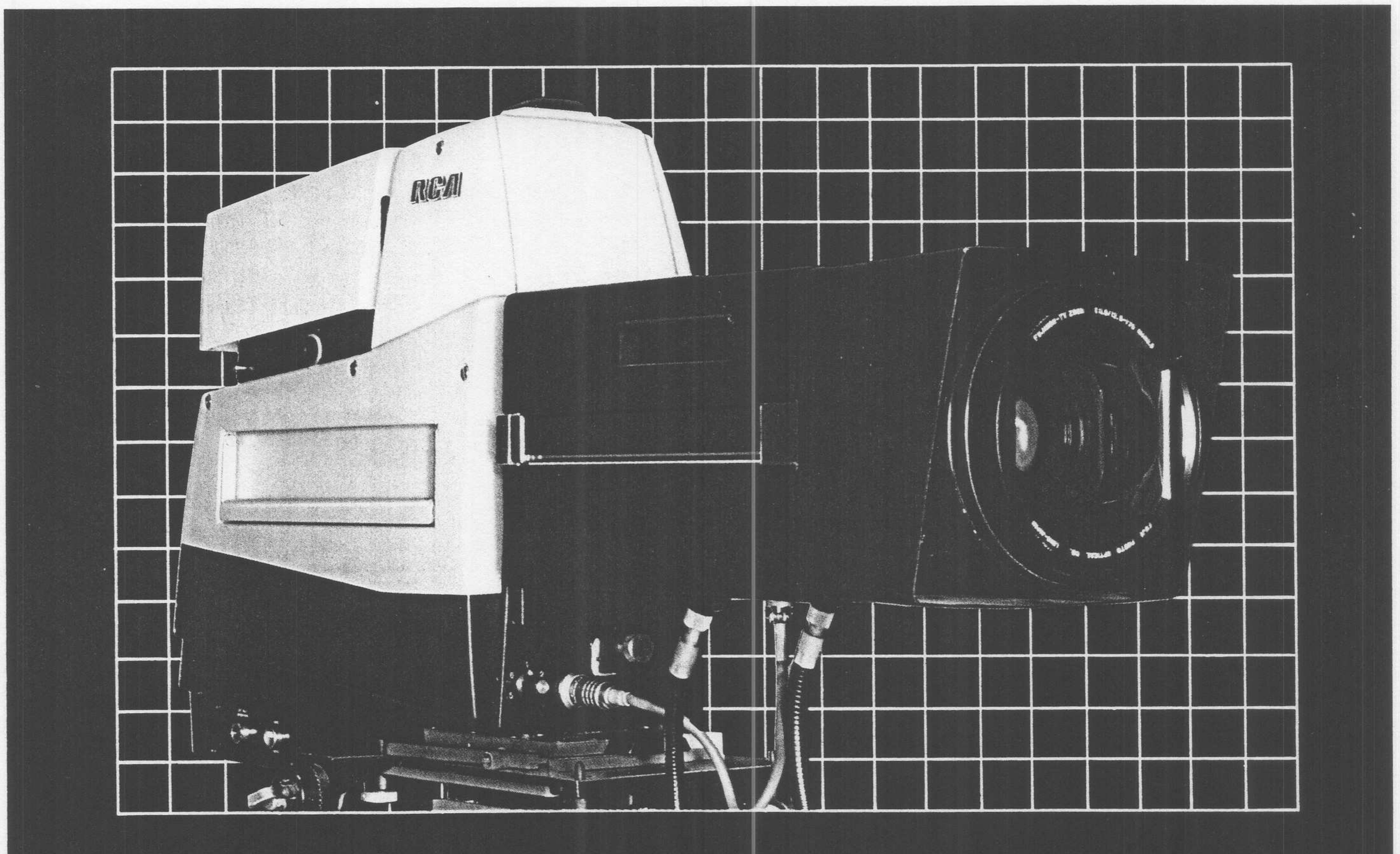
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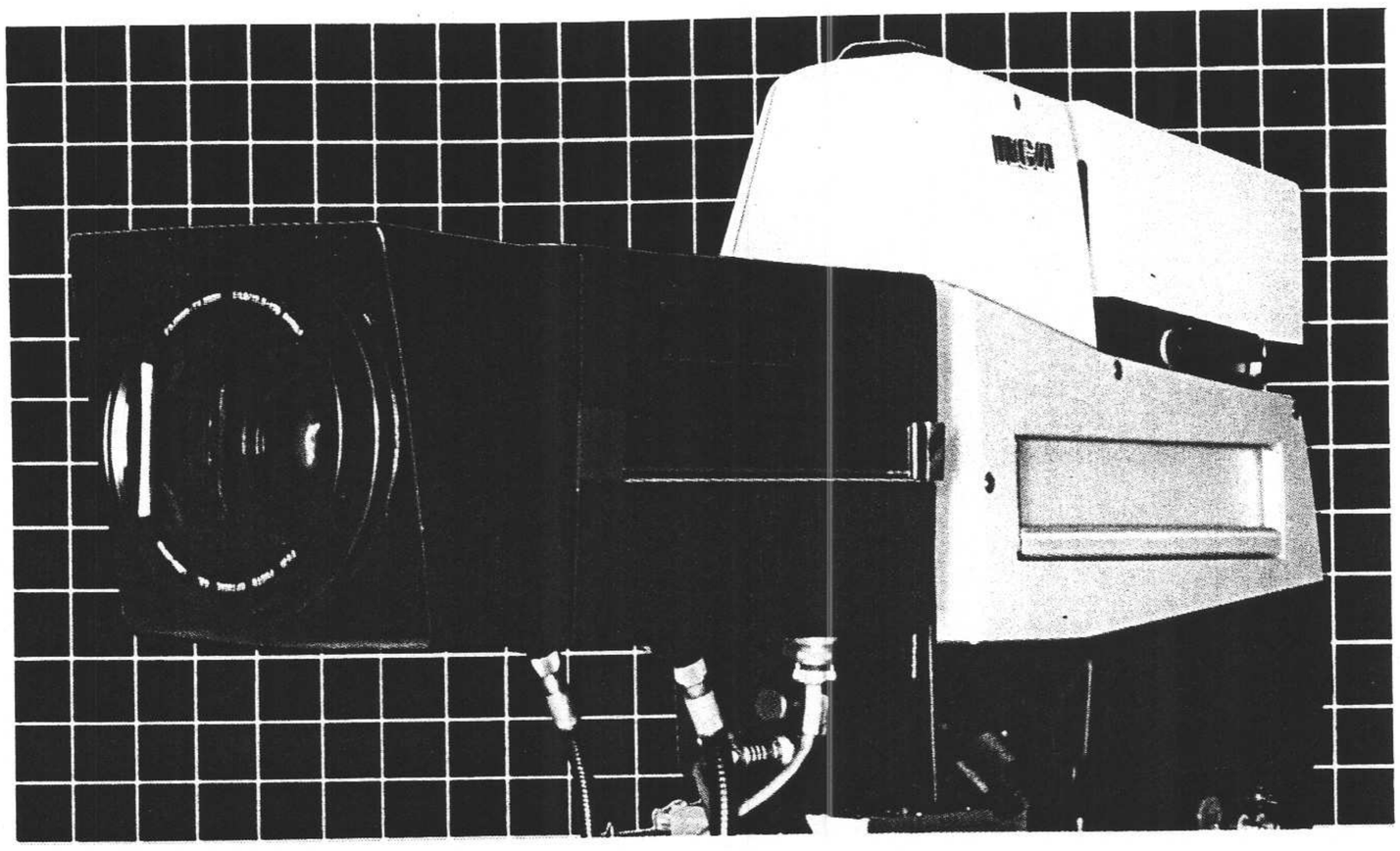
# TK-48

## *AUTOMATIC*
## COLOR TELEVISION CAMERA




- A new generation of technologically advanced automatic cameras
- Automated, microprocessor-based system
- New Operating Ease
- Dynamic Lens Correction
- "Intelligent" Viewfinder System with menu-based graphics
- User-programmable with unique "Electronic Screwdriver"
- Enhanced viewfinder display facilities
- Wide-range of tilt and rotation of viewfinder mount
- Multicore and Triax Systems

# **TK-48:** THE STATE-OF-THE-ART AUTOMATIC CAMERA FOR THE 80's



RCA's new TK-48 Automatic Color Camera springs from a tradition of excellence and innovation in camera design.

Innovative is an apt description of the TK-48. It reflects the swift pace of technology, incorporating numerous advanced features for extended versatility, operational convenience and enhanced performance.

Superb picture quality, stability, operational simplicity and reliability are expected in a premium quality camera. And the TK-48's performance meets and exceeds those expectations.

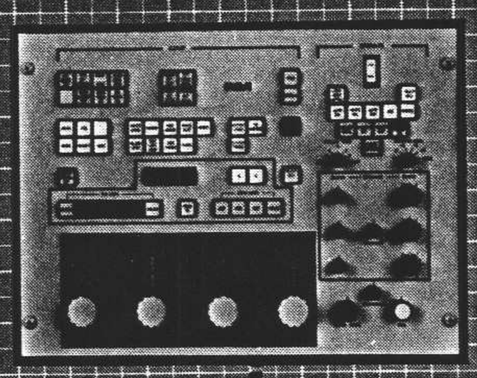
Design and operational enhancements abound in this camera:

New software; extended microprocessor functions and capacity; an "Intelligent" viewfinder system with menu-based graphics; dynamic lens correction, and a unique "Electronic Screwdriver" device for initiating a variety of user-programmable software functions.

The Camera employs latest technology in its circuit integration and design; in solid state memories; in microprocessor-controlled functions and in computer-assisted component matching and assembly techniques.

The new TK-48 provides fresh benchmarks for measuring quality camera performance. It is indeed the state-of-the-art automatic camera for the 80's.

Set-Up Terminal



The remaining camera system component—the Set-Up Terminal (SUT)—is only connected to the camera during set-up and is dis-

connected during normal camera operation. Thus, a single Set-Up Terminal can service an entire multiple-camera system.

Set-up is reduced to the operation of a single push-button for over 100 camera set-up adjustments. And, the "Check" pushbutton is routinely used for a quick 15-second check of more than 50 functions, using the green channel as reference. "Check" automatically handles the pre-operational check-out to verify that the camera is optimized for peak performance. Either the lens diascope pattern or an equivalent external chart may be used.

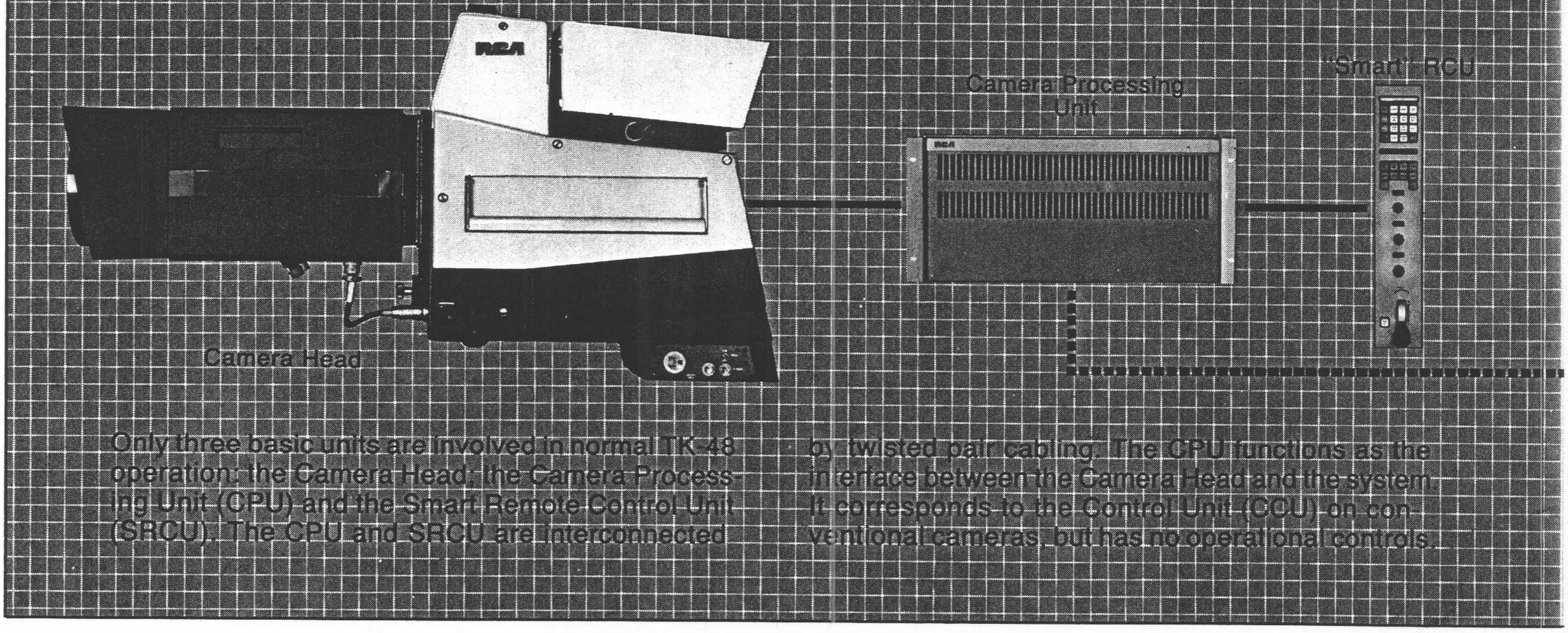
Since there are no technical controls at the camera head, the operator is free to concentrate more on creativity and picture composition. The simplicity, stability and reliability of the system mean consistent high level performance.

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# **TK-48:** ADDITIONAL FEATURES

- Extended software-controlled functions
- A minimum of controls for simplicity of operation
- No technical controls at camera head
- Digital, solid state memories replace mechanical potentiometers
- No potentiometers to set the range of "software controls"
- Hard-mounted tubes; enclosed, shock-mounted optical system for stability
- Full range of automatic functions
  - Automatic Iris Control (with manual trim)
  - Automatic White Balance
  - Automatic Black Balance
  - Automatic Pulse Advance
  - Automatic Cable Equalization
  - Automatic Comet Tail Suppression
- Extensive use of LSI circuits
- Scene Contrast Compression
- Contours out of Green and Red
- Built-in Sync Generator with Genlock
- Memory File and Recall capability
- Eight set-up files
- Eight dynamic lens files
- Eight system timing files
- 32 operate files
- "Electronic Instruction Book" sequencing for quick manual camera set-up
- Centralized set-up and monitoring for multiple camera systems
- Video bus for Waveform and Picture Monitors
- Data bus for control signals
- Weather-resistant Camera Head
- Electronic Color Temperature Control
- 6-position Motorized Filter Wheel
- Two-level tally

# TK-48: A SIMPLY BETTER CAMERA SYSTEM




Only three basic units are involved in normal TK-48 operation: the Camera Head, the Camera Processing Unit (CPU) and the Smart Remote Control Unit (SRCU). The CPU and SRCU are interconnected by twisted pair cabling. The CPU functions as the interface between the Camera Head and the system. It corresponds to the Control Unit (CCU) on conventional cameras, but has no operational controls.

# TK-48

# CAMERA HEAD CONTROL SYSTEM

Advanced microprocessor-controlled functions in the TK-48 Camera Head are indicative of its state-of-the-art design. A microprocessor an RAM with back-up battery located in the camera head provides additional data storage capability and an extended range of facilities available to the camera operator.

### Dynamic Lens Correction

Dynamic Lens Correction is a significant feature which provides new levels of accuracy in correcting for the annoying abberations in registration that are inherent in all lenses as they are operated through the zoom range.

With Dynamic Lens Correction, errors in three user-selected positions in the zoom range are eliminated. Then software-programmed interpolations between these selected points provide a smooth correction function across the entire zoom range.

Dynamic lens files permit storing correction data for up to eight different lenses.

### Unique "Electronic Screwdriver"

A new device developed for the TK-48 is the "Electronic Screwdriver". This hand-held device with pushbutton function switches is plugged into the camera head while the Dynamic Lens Corrections are being made. When the program is completed and added to the lens file, the "Electronic Screwdriver" is disconnected and stored. Additionally, this device is used in conjunction with the "Intelligent" viewfinder in programming and storing the data and parameters for viewfinder display system functions.

### "Intelligent" Viewfinder System

A major design innovation in the TK-48 is the "Intelligent" viewfinder system which incorporates a dedicated microprocessor and adds a new range of software-controlled capabilities.

On each side of the viewfinder are six unlabelled membrane-type pushbutton switches which are used for selecting desired functions from any of four or more screen displays. A "menu" button is used to select the desired screen display; with the choice of display graphics being determined by the camera operating mode. Identification graphics show on the screen next to each of the left and right-side switches. The desired function is selected by depressing the appropriate pushbutton.

Typically, one of the screen "menus" lists six available box cursor memory files on one side, and viewfinder monitoring functions on the other side. From this "menu", R, G, and B signals can be selected for the viewfinder monitoring, as well as any combination of the six box cursor memories. Motion control switches permit adjusting the box cursor lines up and down, left and right, as desired, prior to storing in one of the six memories.

The Safe Title and Safe Action areas are two pre-set boxes at the edge of the screen. The size of these two areas, as well as the Center Cross position, are programmable, using the "Electronic Screwdriver".

The motorized filter wheel can also be controlled through the menu system, or remotely from the SRCU.

Zoom position is indicated by a bar graph at the top of the viewfinder which is continuous across the screen for a wide angle and reduces from both edges as the zoom angle is reduced.

The Safe Title/Safe Action area; Zoom indicator and Center Cross can be turned off by the camera operator if desired.

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# TK-48 Specifications

**Scan Standards**

EIA .....525/60 Fields
CCIR .....625/50 Fields

**Color Standards**

Types available for NTSC, PAL, PAL-M or SECAM.

**Tube Type**

30 mm Lead-Oxide, integral bias light
Leddicon® .....P8400HG, P8400B, P8401RF, or
Plumbicon® .....XQ1410G, XQ1410B, XQ1415R

**Power Requirements**

Input Voltage .....Switchable: 100/120/200/220/240 Volts ±10%
Frequency .....45 to 66 Hz
Power Consumption .....390 watts max.
Inputs (Loop-through, Bridging):
Reference Video .....1.0V composite across 75 ohm
Viewfinder External Video ...1.0V composite across 75 ohm
Grating .....0.7V non-composite across 75 ohm
Outputs:
Encoded Program Video
(2 Outputs) .....1.0V composite across 75 ohm
OR .....0.7V non-composite across 75 ohm
RGB Program Video ....0.7V non-composite across 75 ohm
RGB Chroma Key Video .....0.7V non-composite across 75 ohm

**Aperture Correction**

Horizontal combed aperture correction is derived from the green signal and is added to R, G and B prior to gamma correction. This can set response of luminance to provide a depth of modulation of 100% at 400 TV lines (relative to 50 TV lines) with an in-band ripple < 1 dB. Coring is employed to remove noise.

**Contour Enhancement**

Horizontal and vertical combed correction derived from green is added to the red, green and blue video signals after gamma. A horizontal contour derived from the red signal is automatically switched in whenever the green video drops below a predetermined level. The level of these contour signals is considered an operational control and is continuously adjustable from the RCU or the SUT. Coring is employed to remove noise.

**Shading Correction**

H/V sawtooth and parabolic modulation shading for each video channel. H/V sawtooth and parabolic axis shading for each video channel.

**Gamma**

0.4 adjustable ±0.05
0.5 adjustable ±0.05
0.6 adjustable ±0.05
1.0 fixed

**Registration**

Zone 1 (circle = 0.8V) .....< 0.05%
Zone 2 (circle = 1.0H) .....< 0.05%
Zone 3 (all other) .....< 0.10%

**Geometry**

Zone 1 .....< 0.5%
Zone 2 .....< 1.0%
Zone 3 .....< 1.5%

**Interphone**

Will accommodate dynamic, carbon, and amplifier microphones. Can be connected for 4-wire, 2-wire balanced or 2-wire unbalanced operation. The intercom remains operational with camera head maintenance power off. RTS compatible.

**Viewfinder**

CRT Size .....7 in. (178 mm) 6.2 diagonal (157 mm)
Resolution .....800 lines
Brightness .....150 footlamberts

**Camera Cable Length**

BIW 30 Core Cable .....2,000 ft. (610m) maximum with 0.66 in. (16.8mm) diameter
Belden Triax Cable .....6,500 ft. (2,000m) maximum with 0.51 in. (13mm) diameter (no repeater)
F&G Triax Cable .....11,000 ft. (3,400m) maximum with 0.64 in. (16.2mm) (no repeater)

**Control Cable Length**

RCU to CPU .....Up to 1,000 ft. (305m)
SUT to CPU .....Up to 1,000 ft. (305m)
DSU to CPU .....Up to 1,000 ft. (305m)

**Sensitivity and Signal/Noise**

NTSC .....125 footcandles at f/4.0, luminance S/N 55 dB (measured on 14% reflectance, 3,200°K illumination, 100 IRE white, unweighted bandwidth 10 kHz to 4.2 MHz, chroma, contour and aperture off)

PAL .....1,340 lux at f/4.0, luminance S/N 52 dB (measured on 14% reflectance chip, 3,200°K illumination, 100 IRE white, unweighted bandwidth 10 kHz to 5.5 MHz, chroma, contour and aperture off)

**Ambient Temperature (Without Solar Radiation)**

Camera Head (not including tubes) .....−20°C to +50°C (−4°F to +122°F)
CPU, SCU, RCU .....0°C to +50°C (+32°F to 122°F)
Storage Temperature (not including tubes) ...−40°C to +70°C (−40°F to +158°F)

**Relative Humidity**

0 to 95%, non-condensing.

**Operating Altitude**

Up to 10,000 ft. (3050m) ASL.

Specifications subject to change without notice.

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## DIMENSIONS AND WEIGHT

| | Height | Width | Length/Depth | Weight |
|---|---|---|---|---|
| Camera Head (less lens) | 21 in. (533 mm) | 11.2 in. (284 mm) | 22 in. (559 mm) | 88 lbs. (39.9 kg) |
| Triax Camera Head (less lens) | 21 in. (533 mm) | 11.9 in. (302 mm) | 22 in. (559 mm) | 100 lbs. (45.5 kg) |
| Camera Processor Unit | 8¾ in. (222 mm) | 19 in. (483 mm) | 22.4 in. (569 mm) | 88 lbs. (39.9 kg) |
| Remote Control Unit ("Smart")* | 14 in. (356 mm) | 5.4 in. (137 mm) | 4.5 in. (114 mm) | 5.5 lbs. (2.5 kg) |
| Set-Up Terminal | 14 in. (356 mm) | 19 in. (483 mm) | 6¾ in. (171 mm) | 26 lbs. (11.7 kg) |
| Delegate Switcher Unit | 1¾ in. (44.4 mm) | 19 in. (483 mm) | 8½ in. (216 mm) | 7 lbs. (3.2 kg) |
| Transfer Switcher Unit | 1¾ in. (44.4 mm) | 19 in. (483 mm) | 8½ in. (216 mm) | 7.5 lbs. (3.4 kg) |

*"Smart" RCU's are usually supplied as dual panels. Dimensions shown are for two panels.

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RCA Broadcast Systems

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