

LIVE COLOR CAMERA CHAIN

TYPE TK-41



FEATURES

- All-purpose live color TV camera providing low noise, high resolution picture in full, natural color
- All controls conveniently located—only two master controls needed for on-air operation of camera chain
- Optional console mounting or rack mounting available for camera control equipment
- Utilizes same processing amplifier control equipment as 3-V color film cameras
- Improved, high quality color monitor
- Built-in camera cable equalization
- Optical orbiter extends life of IO tubes
- All electronic viewfinder with improved 7-inch aluminized kinescope
- Performance independent of line voltage variation over wide range
- Simplicity of mechanical design provides easy access to all circuits and controls
- Forced-air ventilation of pick-up tubes
- Stable, fixed, plug-in gamma corrector units
- Standard TV lenses including zoom-types

USES

The RCA TK-41 Live Color Camera Chain provides the television broadcast station with the ideal means of originating beautiful, full-color programs. Live color programming permits maximum realization of the benefits of color—adding a brilliant new dimension to programming techniques and presenting commercial products in thrilling reality. Local color originations of studio programs and commercials, sporting events, community parades and festivals can build station prestige and stimulate sponsor interest. Live color commercial inserts and station breaks between color network and color film features hold and strengthen viewer interest by maintaining color program continuity. Color mobile units, designed to handle up to

five color cameras, are available to extend the use of color cameras to a broad variety of field programming applications.

Designed with the objective of providing an easily operated, space-conserving and economical color television pick-up system, the TK-41 has earned wide acceptance throughout the broadcast industry. Its performance and reliability have been thoroughly proven by extensive use under daily operating conditions. The camera is easily handled and is designed for operation by a single cameraman. A cradle type camera mounting head, which accurately maintains the camera in balance about its own

center of gravity, results in maneuverability and convenience of operation comparable to that of monochrome studio camera equipment.

The TK-41 camera employs the same complement of standard lenses as monochrome camera equipment. The camera control equipment includes a processing amplifier which is identical with that used with the RCA Type TK-26A 3-Vidicon Color Film Chain. Centralized controls provide minimum setup time. During "on-air" operation, the camera control operator can control signal processing for best picture quality by the use of only two knobs. Control operations can be centered at a console or rack position as desired.

DESCRIPTION

The TK-41 Color Camera Chain is similar in many respects to monochrome camera chains now in use in that it contains a live pickup camera as well as signal processing and control units. The major equipment units include the color camera, viewfinder, camera control panel, processing amplifier, TM-21A color monitor, TX-1C Colorplexer

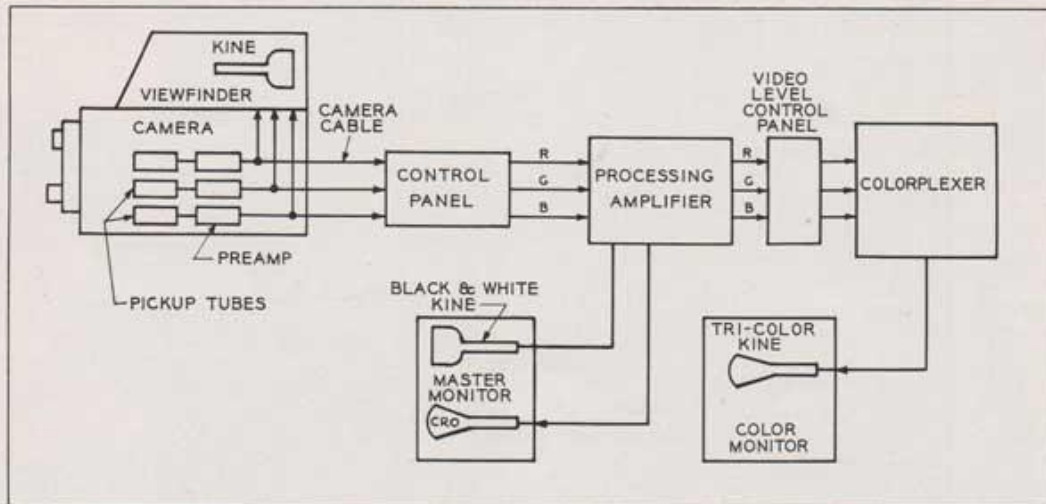
with aperture compensator and automatic carrier balance, TM-6C master monitor, and power supplies.

The color camera proper contains a light splitting optical system, three image orthicon tubes to provide red, blue and green signals, horizontal and vertical deflection circuits for the image orthicons, a target blanking circuit, regulated high voltage and negative voltage circuit, image orthicon protection circuit, and three plug-in video pre-amplifiers, one for each of the three color channels. The electronic viewfinder includes a 7TP4 kinescope with necessary deflection and video circuits to provide a picture for the camera operator.

The three video signals from the color camera are fed directly to the camera control panel on which both operating and selected set-up controls are located. These signals are in turn fed to the processing amplifier which performs the functions of cable compensation, video amplification, blanking and shading insertion, feedback clamping, linear clipping, gamma correction and output amplification as well as providing auxiliary switching for the master monitor kinescope and CRO.

Graceful styling, maneuverability, and simplicity of operation are featured in TK-41.





Simplified diagram showing major components of the TK-41 Color Camera Chain. The lineup features considerable space and cost saving advantages over previous color chains.

The processing amplifier feeds a monochrome master monitor, which provides both kinescope and CRO displays of signals at various vital points in the system, selected by push-button. A colorplexer combines the processed video signals into a single FCC standard color signal. The colorplexer feeds a tri-color monitor and the camera switching system. This unit accepts the red, green and blue signals from the image orthicons and transforms them to M, I, and Q signals. These are adjusted with respect to bandwidth and delay and then multiplexed to produce one composite signal from the three input signals. An aperture compensator connects in series with the luminance channel of the colorplexer. A TM-21A Color Monitor is also included in the chain and is utilized at the camera control position to provide a check on the quality of the final color picture.

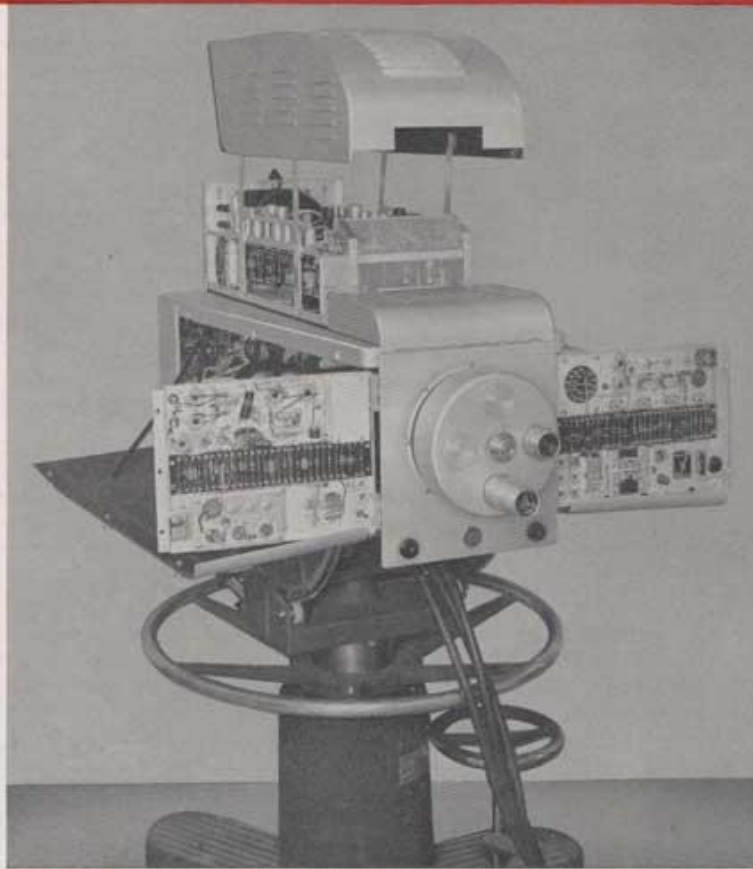
TK-41 Color Camera (MI-40500-A1)

The RCA Color Camera contains the three image orthicon pick-up tubes with their focus, deflection and beam-alignment coils, complete horizontal and vertical deflection circuits, the video preamplifiers, blowers, light-splitting optical system, turret with four lens positions, and means for adjusting optical focus and remote iris opening. The camera is entirely self-contained with the exception of the d-c power supplies, video processing amplifier and certain electrical controls which are located for operating convenience at the camera control panel. All electrical connections to the camera are made through three standard twenty-eight conductor camera cables attached by connectors in such manner as to permit the cables to be

brought toward the front of the camera, drawn through a special cable clamping bracket, and then draped in a gradual curve to the floor out of way of the cameraman. Physically the TK-41 Color Camera is 15 inches high, 44 inches long, and the width tapers from 16 inches at the front to a maximum of 21 inches at the rear edges of the side door covers. On the front end of the camera is the lens turret, and on the rear are the local electrical set-up controls and the control handle for rotating the turret. The optical focus handle is located on the right. This focus control and the turret handle are normally the only two controls which require the attention of the cameraman during a television program.

Two sets of communication and program sound jacks are mounted on a strip installed below the back operating panel at the rear of the camera. They provide voice communications between the camera operator, the camera control operator, and the program director or other studio personnel. Electrical registration controls are also located on the rear plate of the camera behind hinged covers. They include the following independent controls: red and blue skew, with polarity reversing switch, height, width, and vertical and horizontal Q adjustment. An off-on switch operates the blower motors. An overscan switch is also provided. The G-5 controls are located just inside the left side cover near the rear of the camera. Dynode gain controls are similarly located on the right side.

The side door panels of the camera housing swing outward making all components readily accessible for servicing. From the cameraman's position, the right side door



◀ **COMPLETE ACCESSIBILITY** to all circuits and controls makes maintenance and servicing of RCA color camera a pleasure for both operators and service technicians.



exposes the hinged horizontal deflection chassis, which may be swung 180 degrees from its normal position, permitting replacement of tubes and access to the remote iris synchro motor driving mechanism and other parts of the optical system. The yoke assembly of the red channel and the tube side of the red channel video preamplifier are also exposed. When the left side panel is dropped, the hinged vertical deflection chassis can also be swung outward 180 degrees. It permits further access to elements of the optical plate assembly, and the blue and green channel yoke assemblies. The Type 6474/1854 image orthicon tubes can be replaced by removing a single holding screw of each yoke assembly and swinging the yoke assembly out the sides of the camera.



EASE OF MANIPULATION will delight the studio cameraman and aids in maintaining smooth program performance. Set-up controls shown above are all conveniently located behind hinged doors. Only two handle controls are needed for on-air operation of camera.

Raising the ventilation hood at the front of the camera gives access to the connections of two heater transformers in this area as well as the relay lens and vertical compensator elements of the optical system. The elapsed time indicator is visible when the hood is raised. Viewfinder component and circuit tests together with tube replacements may be made with the viewfinder cover in the raised position.

The viewfinder may be removed from the camera to provide access to wiring of the hinged shelf type chassis at the rear of the camera. This shelf is used for tie points for the image orthicon sockets, and for filtering components of the deflection circuits. Included here are the three video preamplifier input coupling and filter circuits.

The image orthicon protection circuit with its associated tube and relay is also mounted here. Loss of either the vertical or horizontal deflection to the yokes of any of the image orthicons in the camera causes the circuit to bias off the image orthicons. This prevents the beam from being concentrated in a single line or spot which might cause permanent damage.

Removing the viewfinder also gives access to the plug-in preamplifiers located just ahead of the top shelf. These supply the red, blue and green signals to the camera cables and the camera viewfinder. Each of the preamplifiers includes six stages. The first four are simple shunt-peaked stages. The second stage has a screwdriver adjusted cathode peaking circuit for adjusting tilt in the low-frequency end of the response curve of the amplifiers. In the cathode of the third stage there is a similar circuit with a knob type control which may be adjusted to give minimum streaking for the associated image orthicon. The last two stages are a feed-back pair, providing cathode output to the 51-ohm camera cables and to the viewfinder. There is an adjustable trimmer in this stage which affects the response curve tilt at the high-frequency end. Each of

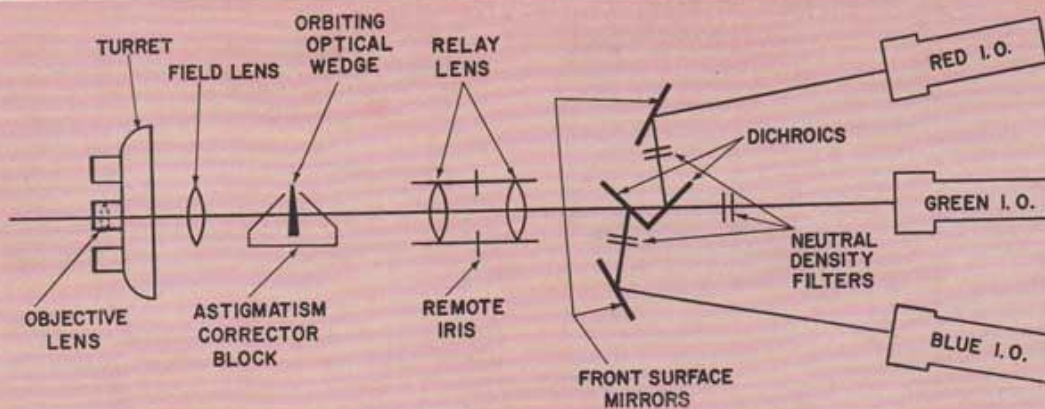
the preamplifiers is shack mounted and bonded to the cross members of the upper camera framing.

Two tally lights are mounted on the front face of the camera. They serve to indicate to the actors when the camera is in actual use. In addition, there is one on top of the viewfinder for directors and one on the kinescope bezel plate for the operator. The latter are operative, however, only when used in conjunction with a camera switching unit. The lights are normally off until a tally relay is actuated by a control voltage (24 volts d-c).

The individual image orthicon tubes and the area within the camera housing are forced-air cooled. Separate blowers are used to cool the individual image orthicon tubes. Cooling air is brought into the socket end of each yoke assembly by means of flexible hose leading from its associated blower. All external areas of the camera and viewfinder have an aluminum finish to further aid in maintaining optimum temperature conditions within the camera. Two utility outlets and a fuse are mounted on the under side at the back end of the camera. They provide facilities for an independent source of a-c that may be used for test equipment.

WBAP-TV studio scene showing a typical color telecast.





Optical System

The rotatable lens turret accommodates four objective lenses. A set of camera lenses having focal lengths of 50, 90, and 135 mm is supplied. Telephoto lenses may also be mounted on the turret. The optical axis of the taking lens is at the bottom section of the turret. The turret is attached to a shaft that protrudes through a stationary drum. The drum serves as a light trap as well as a support for the lens turret shaft. Each objective lens has a matching field lens mounted on a "spider" support housed within the drum. The objective lenses and the associated field lenses remain properly matched at each selected position of the lens turret. This lens selection is achieved by means of a handle type manual control on the back panel of the camera.

Optical focus is accomplished by moving the lens turret longitudinally along the optical axis. This is done by rotating the focus handle located at the right rear of the camera. Focusing the secondary image on each of the red, blue and green image orthicons is achieved by sliding the individual image orthicon yoke assemblies backward or forward along their respective optical axis during initial set-up.

A complete relay optical system is mounted behind the field lenses. It consists of a vertical astigmatism corrector, relay lenses, remote control iris, dichroic mirrors, light filters, front surface reflective mirrors and horizontal astigmatism corrector. The purpose of this system is to separate the light image into three primary color images and direct each to the photo-sensitive cathode of an individual image orthicon tube. The individual components in this system are mounted on a supporting base plate. The complete unit can be taken from the camera by removing four screws that secure the base plate to the camera frame and then disconnecting the cable attached to the iris control selsyn. Color trimming filters are used in conjunction with the

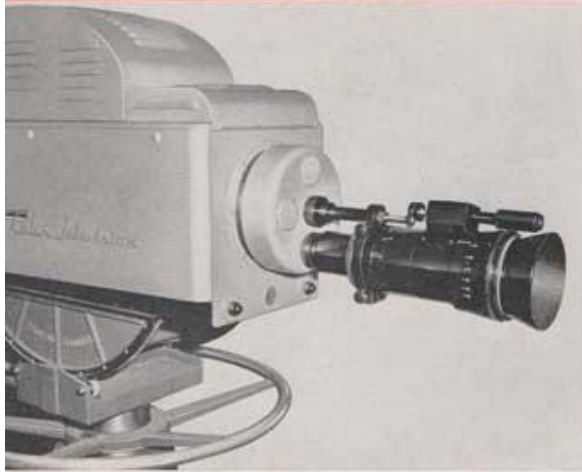
dichroic mirrors to adjust the overall spectral sensitivity curves as desired for the color camera. All filters are inserted in recessed grooves in frames that are secured to the dichroic block with spring clips. A filter in the common optical path eliminates spurious effects of undesirable infra-red and ultra violet wavelengths, and also aids in trimming the red channel. The three image orthicon tubes are mounted within focus and scanning coil assemblies, located at the rear of the optical assembly.

Located in a vertical plane between the vertical astigmatism corrector plates is a rotating circular glass plate with a slight taper that gives a circular movement to the image on the photocathodes of the image orthicon tubes. The unit is motor driven at the rate of approximately one orbiting cycle per minute. The movement of the picture is so slight and so slow that it is not apparent to the viewer; however, it is sufficient to prevent image burn-in on the image orthicon tubes. This extends the life of the image orthicons and reduces operating costs.

A cradle type tilt head, designed especially for use with the color camera, provides ease of maneuverability in both tilting and panning of the camera and viewfinder, comparable to that of the RCA monochrome camera. The TK-41 is provided with a TD-9C Motor Driven Pedestal for general studio use. Alternate mountings such as the Panoram Camera Dolly (MI-40823) and the Type TD-30B Studio Crane (MI-26037-1), are available for special program applications.

Camera Viewfinder (MI-40501)

The viewfinder is used by the operator of the color camera to frame the scene, to aid in focusing the camera, and to facilitate in setting up the camera registration. The viewfinder consists of a monochrome kinescope provided with deflection, blanking and video circuits required to provide a picture for the camera operator. A six push-button selector switch at the right of the viewing screen enables



Telephoto or zoom-type lenses can be accommodated on the TK-41 rotatable lens turret when desired.

the operator to view any channel separately, to view the red or the blue superimposed on the green, or to view all three images superimposed. The focus, brightness, and contrast controls are mounted to the left of the viewing screen.

The single channel positions are used when making adjustments on individual channels; the red on green and blue on green are useful for registration adjustments. The switching is accomplished by altering the bias on the input amplifier tubes; each of these tubes is kept at cutoff except when it is desired to view the particular signal connected to its input. Blanking pulses of adjustable duration are produced by two multivibrators (triggered by horizontal and vertical drive) and added to the video signal before application to the viewfinder kinescope.

The viewfinder is designed to slide in guides and lock in position directly above the camera. All signal and operating voltages are fed to the unit through a self-aligning socket connection that automatically engages when the unit slides into place. A pull handle to facilitate the installation and removal of the viewfinder is located on its operating panel just below the viewing screen. To the left of this handle is a thumb latch to release the unit from a locked position. The viewfinder is covered by a multi-louvered hood which can be raised to facilitate ease in servicing the unit. A detachable viewing hood (MI-40502) is attached to the viewfinder control panel for shielding the viewing screen from extraneous light.

Control Console

The TK-41 camera control units may be conveniently mounted in the Control Console. This control position in-

cludes: (1) a TM-6C Master Monitor mounted in its Console Housing, and (2) a Master Console Housing in which the Camera Control Panel and the Processing Amplifier may be mounted. This Master Console Housing is designed to mount the 19-inch Camera Control Panel in the indented section of the console desk and the Processing Amplifier in the top sloping portion of the console. The camera control equipment also includes a TM-21A Color Monitor. This may be suspended from the wall or ceiling or set upon a stand.

If preferred, all of the TK-41 Control equipment may be rack mounted with the exception of the color monitor. In this case a Rack Mounted Control Desk and Accessory Kit, MI-40415, is available to provide desk space at the rack location.

Camera Control Panel (MI-40523)

The camera control panel, on which the remote control adjustments of the color camera are mounted, is located in the sloping portion of the desk section of the 19-inch console which houses the processing amplifier. It lies below and in front of the processing amplifier front panel, and has a cover plate through which the two program operating controls protrude. These are the Pedestal and Iris

Master Monitor and Processing Amplifier mounted in new console housings. The consoles are also designed to house Camera Control Panel, Color Monitor, and other camera chain equipment.



Control knobs. The latter operates the remote iris selsyn motor in the optical system, and is conveniently operated by the right hand. Mounted directly above this control, in the processing amplifier panel, is the iris f stop indicator meter. In normal operation, the remote iris control performs the function of overall gain control for the complete color camera chain. The left hand operates a master pedestal control which provides simultaneous adjustment of the pedestal voltage in the three channels. Set-up controls for each of the three image orthicons may be reached by lifting the cover plate.

Colored knobs identify the three video channels. The individual channel controls include horizontal and vertical centering, alignment, orthicon focus, multiplier focus, image focus, image accelerator voltage, target voltage, and beam current. Also provided is a target test knob to aid in setting target voltage accurately and rapidly, as well as a selector switch which permits the metering of: target, orth focus, image focus and multiplier focus voltage settings in each color channel.

Video Level Control Panel (MI-40871)

The Video Level Control Panel is mounted in an MI-40872 Table Assembly, adjacent to the MI-40523 Camera Control Panel. The Video Level Control Panel consists of three attenuator pads located in the video line between the Processing Amplifier and the Colorplexer to allow precise settings of the white balance, thereby completely eliminating pedestal-riding during programming. The control may also be used to introduce color shifts of precisely controlled amplitude into the picture to compensate for minor color differences between cameras. The pads are thus used as trimmer adjustments to achieve true color picture uniformity between cameras.

Processing Amplifier

The processing amplifier, MI-40520-A, has been designed to perform a great number of functions in a single versatile unit. Integration of these electrical functions in a single unit results in a simple, space-conserving system. Use of this design allows set-up time to be substantially reduced and requires fewer video operators and control room engineers for programming. Hence considerable savings in operating costs can be realized. A large reduction in power required as well as increased tube life due to extremely conservative operation of tubes further reduce costs, at the same time improving performance and overall quality.

The basic circuit elements in the processing amplifier are three plug-in video amplifiers which perform accurately and with extreme stability the following functions: cable compensation, video amplification, blanking insertion, shading insertion, feedback clamping, linear clipping,



Optional rack mounting for the TK-41 control equipment may be specified. A convenient desk with top panel removed to reveal set-up controls is shown above.

gamma correction, and output amplification. Pulse circuitry needed for the camera and shading generators, is obtained from stabilized multi-vibrators. These multi-vibrators provide pulses of constant amplitude and width independent of the incoming pulse. These circuits require no tube selection and are completely stable. Shading signals are provided for insertion of either horizontal or vertical shading. A fourth plug-in unit serves as the video section of an electronic switcher which is an integral part of the main chassis. The switcher, used with Master Monitor, TM-6C, provides an individual or combined presentation of red, blue and green video.

The entire chassis of the processing amplifier is drawer-slide mounted for easy pull-out for servicing. The front panel is hinged, thus permitting it to be opened to facilitate removal of tubes and servicing of other components behind the panel.

An edge-lighted translucent plastic escutcheon is mounted on the outside surface of the panel to provide illumination of the nomenclature for the various controls when the unit is operated in semi-darkness. All controls are conveniently mounted on the panel. Thirteen lucite pushbuttons at the top of the panel control the switching arrangement which permits separate Master Monitor Kinescope or CRO observation of important test points, including individual channels, various channels superimposed, and colorplexer output. A staircase signal for the CRO circuit is provided for a sequential display of red, blue, and green channels.

Master and Color Control Monitors

The Type TM-6C Master Monitor provides in a compact form a complete monitoring unit for the observation of the camera chain's video signals. It is used for both picture (kinescope) and waveform (oscilloscope) monitoring of signals at any stage of transmission from the camera to the output of the colorplexer. Careful scrutinization of a number of details of the video signal may be performed which will aid in maintaining proper level and color balance, as well as obtaining registration during set-up.

The unit employs a special ten-inch aluminized, straight gun, electro-statically focused kinescope for direct picture monitoring and a five-inch, flat faced, cathode ray tube for waveform presentation. When used with the processing amplifier of the color camera, the wide band CRO display consists of three adjacent waveforms corresponding to the red, blue, and green video signals.

The Color Control Monitor, Type TM-21A, provides an accurate, stabilized color picture display at high brightness level and is extremely useful in pinpointing parts of the color chain requiring adjustment. The equipment affords the control operator precision checks on camera registration, color balance, shading, deflection and transmission system transients, and effects of pedestal adjustments, as well as camera deflection linearity, chroma level and phase of hue adjustments. It greatly simplifies camera



Type TM-21A Color Control Monitor, MI-40226-A.

matching and provides a standard against which color performance can be evaluated. Long term stability of the monitor is assured by liberal use of feedback. Time devoted to monitor adjustments is negligible.

Rack Mounted Equipment

All the units normally housed in the consoles—Master Monitor, Control Panel and Processing Amplifier may be rack mounted. To complete the camera chain, a Colorplexer, aperture compensator, automatic carrier balance, focus current regulator and centering current supply, and a set of two WP-15 power supplies also mount in standard 84-inch cabinet racks.

Television Color Camera Chain Power, Space, Tube and Weight Information

Equipment	MI	Tubes	D-C ma	A-C Watts	Total Heat	Rack Space	Weight
Color Camera—Defl.	40500-A	37	225+ (210at 360 v.)	132	277	—	250
—Preamp.			330				
Viewfinder	40501	20	125+ (65at 360 v.)	58	117	—	45
Processing Amplifier	40520	55	360	180	200	10½"	50½
Focus Current Regulator.....	40524	4	12	85	90	5¼"	22
Centering Current Regulator.....	40839	—	—	40	40	5¼"	22
Colorplexer	40209-A	36	300	95	180	21"	34
Automatic Carrier Balance	40416	5	20	—	—	3½"	10
Aperture Compensator	40414	2	33	10	15	1¾"	3
TM-6C Master Monitor.....	26136-B	31	450	90	220	18"	55
TM-21A Color Monitor	40226-A	63	—	900	900	—	213
Regulator—WP-15B Power Supply (2 Units)	26088-B	3 ea.	—	—	—	3½" ea.	12 ea.
Rectifier—WP-15B Power Supply (2 Units)	26087-B	—	—	415 ea.	—	7" ea.	59 ea.

SPECIFICATIONS

Camera Electrical Specifications

Input:	
Horizontal Drive from Processing Amp-51 Ohm.....	Min. 2 volts, (neg.) peak-to-peak
Vertical Drive from Processing Amp-51 Ohm.....	Min. 2 volts, (neg.) peak-to-peak
D-C Power (from power supplies):	
Regulated	
Camera.....	280 volts, 245 ma
Preamplifiers.....	280 volts, (3x110) ma
Unregulated	
Camera and Deflection.....	360 volts, 210 ma
Focus Coil Current.....	75 ma
Tally Lights (Relay Controls).....	24 volts d-c
A-C Power:	
Heaters, Blowers.....	117 v., 50/60 cycle, 1 phase, 132 watts
Output:	
Video Response.....	Essentially flat to 8 mc
Video Signals (black negative) 51 Ohm.....	0.3 volt, peak-to-peak
Video Signals to Viewfinder.....	0.6 volt, peak-to-peak

Viewfinder Electrical Specifications

Input:	
Video Signals (negative).....	0.6 volt, peak-to-peak
Horizontal Drive (negative—Hi-impedance).....	2 volts, peak-to-peak
Vertical Drive (negative—Hi-impedance).....	2 volts, peak-to-peak
D-C Power (from power supply):	
Regulated	
Camera.....	280 volts, 125 ma
Unregulated	
Camera and Deflection.....	360 volts, 65 ma
Tally Lights (Relay Controls).....	24 volts, d-c
A-C Power.....	50/60 cycles, single phase, 117 volts, 58 watts

Processing Amplifier Electrical Specifications

Input:	
Video (red, blue, green and test).....	0.3 volt peak-to-peak
Impedance (red, blue, green and test).....	75 ohm \pm 5%
Horizontal Drive (high impedance).....	1.5 to 5 volts peak-to-peak
Vertical Drive (high impedance).....	1.5 to 5 volts peak-to-peak
Blanking Pulse (high impedance).....	1.5 to 5 volts peak-to-peak
Calibration Pulse (high impedance).....	15 kc sq. wave 0.7 volt peak-to-peak
Output:	
Video to Colorplexer (red, blue and green).....	0.7 volt peak-to-peak
Impedance.....	75 ohms
Video to Monitor CRO.....	0.7 volt peak-to-peak
Impedance..... (Sending end 75 ohms, receiving end unterminated)	
Video to Monitor Kinescope.....	0.7 volt peak-to-peak
Impedance.....	75 ohms
Horizontal Drive:	
Width.....	8.5 microseconds \pm 5%
Amplitude.....	3.5 volts peak-to-peak
Impedance.....	75 ohms
Vertical Drive:	
Width.....	800 microseconds \pm 20%
Amplitude.....	3.5 volts peak-to-peak
Impedance.....	75 ohms
Blanking Pulse:	
Width.....	Equal to input pulse width \pm 1%
Amplitude.....	2 volts peak-to-peak
Impedance.....	75 ohms
Calibration Pulse:	
Width.....	Equal to input pulse width
Amplitude.....	0.7 volt peak-to-peak \pm 1%
Impedance.....	Low
Twenty Cycle Staircase Voltage to Master Monitor:	
Amplitude (maximum).....	20 volts peak-to-peak
Impedance.....	High
Regulated D-C Supply Voltage.....	280 volts
D-C Current.....	360 ma
Filament Voltage.....	6.3 volts a-c
Filament Current.....	25.0 amps
Regulated D-C Voltage.....	130 volts
Dimensions.....	10 15/32" high x 17 1/4" wide x 20 3/8" long
Weight.....	50 1/2 lbs.

Tube Complement

CAMERA:	
3—RCA 6474/1854	
Image Orthicon	
1—6AL5	5—12AT7
3—6CB5	2—12AU7
2—6V6-GT	12—6AH6
2—1B3-GT	3—5687
4—6U8	1—12AX7
	1—6AU5
VIEWFINDER:	
2—6AB4	1—6CB6
1—6AG7	1—6BQ6-GT
1—6AH6	2—1X2A
1—6AL5	3—12AT7
1—6AQ5	5—12AY7
1—6AS7-G	1—7TP4
PROCESSING AMPLIFIER:	
9—12AT7	3—6U8
3—12AU7	1—6CL6
1—12BH7	1—6BX7
1—12AX7	4—6BQ7A
VIDEO AMPLIFIERS:	
12—6BQ7A	8—6CL6
8—12AX7	4—6AL5
FOCUS CURRENT REGULATOR:	
1—5R4GY	1—12AX7
2—6BX7	
COLORPLEXER:	
11—6AU6	5—6AS6 (Stock #204603)
2—6AH6	1—OA2
2—12AU7	6—6AL5
4—6U8	1—OB2
2—6BQ7	2—5687
APERTURE COMPENSATOR:	
1—6BQ7A	1—6AU8
COLOR CONTROL MONITOR	
4—6AU8	1—6CG7
5—6BQ7A	2—6CD6-G
5—6197	1—382
9—12AX7	2—6BD4A
4—6AL5	2—6AU4GTA
1—6AN8	1—1X2B
8—6AW8	1—21CYP22
8—12AT7	1—6X4
1—OA2	4—6080
1—6BC7	1—5651
1—6W6	
MASTER MONITOR:	
1—12BH7	1—10SP4 kinescope
3—6485	(not supplied)
7—12AT7	1—6BQ7A
1—6AL5	4—1X2A
2—6BQ6-GT	1—6L6
1—12AU7	2—6CB6
2—12AX7	4—6197
1—5ABP1 CRO	
(not supplied)	
REGULATED POWER SUPPLIES:	
6—6336	2—12AX7
2—12AT7	2—5651

Mechanical Specifications—Overall

	Camera	Viewfinder	Camera Control Panel
Length.....	44"	34 1/2"	18"
Width.....	21"	13 3/4"	13 1/8"
Height.....	14 1/2"	11 1/8"	8"
Weight.....	250 lbs.*	45 lbs.	10 lbs.

* Camera weight less objective lens, panning and focus handles.

SPECIFICATIONS (Continued)
Equipment Supplied

CONSOLE-MOUNTED CONTROL			RACK-MOUNTED CONTROL		
Qty.	MI Number	Description	Qty.	MI Number	Description
1	40500-A1	Color Camera (less Image Orthicons)	1	40500-A1	Color Camera (less Image Orthicons)
1	40501	Viewfinder (including Kinescope)	1	40501	Viewfinder (including Kinescope)
1	40502	Hood	1	40502	Hood
1	40520-A	Processing Amplifier (less Gamma Correctors)	1	40520-A	Processing Amplifier (less Gamma Correctors)
3	40833-1	Gamma Corrector (0.7)	3	40833-1	Gamma Corrector (0.7)
1	40833-2	Gamma Corrector (1.0)	1	40833-2	Gamma Corrector (1.0)
1	40523	Camera Control Panel	1	40523	Camera Control Panel
1	40524	Focus Current Regulator	1	40524	Focus Current Regulator
1	40839	Centering Current Supply	1	40839	Centering Current Supply
1	40829	Neutral Density Filters, Set of	1	40829	Neutral Density Filters, Set of
1	26550-1	Lens, 50mm Objective	1	26550-1	Lens, 50mm Objective
1	26550-2	Lens, 90mm Objective	1	26550-2	Lens, 90mm Objective
1	26550-3	Lens, 135mm Objective	1	26550-3	Lens, 135mm Objective
1	40802-1	Field Lens (for 50mm Objective Lens)	1	40802-1	Field Lens (for 50mm Objective Lens)
2	40802-2	Field Lens (for 90mm and 135mm Objective Lens)	2	40802-2	Field Lens (for 90mm and 135mm Objective Lens)
1	40951	TX-1C Colorplexer comprising the following:	1	40951	TX-1C Colorplexer comprising the following:
		1 MI-40209-B Colorplexer			1 MI-40209-B Colorplexer
		1 MI-40414 Aperture Compensator			1 MI-40414 Aperture Compensator
		1 MI-40416 Automatic Carrier Balance Control			1 MI-40416 Automatic Carrier Balance Control
1	26136-C	TM-6C Master Monitor	1	26136-C	TM-6C Master Monitor
1	26544	Sync Interlock Relay (for TM-6C)	1	26544	Sync Interlock Relay (for TM-6C)
1	40416	Automatic Carrier Balance Control (for TX-1C)	1	40416	Automatic Carrier Balance Control (for TX-1C)
1	40226-A	TM-21A Color Monitor	1	40226-A	TM-21A Color Monitor
1	26786	Console Housing (for TM-6C)	—	—	Console Housing (for TM-6C)
1	26787	Console Housing (for MI-40520-A and 40523)	—	—	Console Housing (for MI-40520-A and 40523)
1	26579-B	Blower (for TM-6C)	—	—	Blower (for TM-6C)
—	—	Rack Mounting Desk for Control Panel	1	40415	Rack Mounting Desk for Control Panel
—	—	Rack Mount Adaptor for TM-6C	1	26526	Rack Mount Adaptor for TM-6C
—	—	Rack Extension Kit	2	40408	Rack Extension Kit
1	26655	Kinescope Tube, Type 10SP4 (for TM-6C)	1	26655	Kinescope Tube, Type 10SP4 (for TM-6C)
1	26667	CRO Tube, Type 5ABP1 (for TM-6C)	1	26667	CRO Tube, Type 5ABP1 (for TM-6C)
3	40825	Image Orthicon Tube, Type 6474/1854	3	40825	Image Orthicon Tube, Type 6474/1854
2	26087-B	WP-15B Power Supply (Rectifier)	2	26087-B	WP-15B Power Supply (Rectifier)
2	26088-B	WP-15B Power Supply (Regulator)	2	26088-B	WP-15B Power Supply (Regulator)
3	26725-B5	Camera Cable, 50-ft. (with Connectors)	3	26725-B5	Camera Cable, 50-ft. (with Connectors)
1	40834	Cable Harness and Barrier Strips	1	40834	Cable Harness and Barrier Strips
1	26759-41	Power Cable	1	26759-41	Power Cable
1	26759-42	Power Cable	1	26759-42	Power Cable
1	26646	Adjustable Transformer	1	26646	Adjustable Transformer
1	26647	Transformer Mounting Plate (for MI-26646)	1	26647	Transformer Mounting Plate (for MI-26646)
1	40824	Cradle Head	1	40824	Cradle Head
1	40861	TD-9C Motor Driven Pedestal (Complete with operating tubes including those listed)	1	40861	TD-9C Motor Driven Pedestal (Complete with operating tubes including those listed)
1	40871	Video Level Control Panel	1	40871	Video Level Control Panel
1	40872	Table Assembly for MI-40871	1	40872	Table Assembly for MI-40871

NOTE: The following bulk cable is required and should be ordered separately to meet individual installation requirements:

83	RG-11/U 75 Ohm Coaxial Cable	83
75	RG-59/U 75 Ohm Coaxial Cable	75
94E	28-Conductor Shielded Cable	94E
80	12-Conductor Shielded Cable	80
82	8-Conductor Shielded Cable	82

Accessory Equipment

Neutral Density Slide Mechanism for TK-41	MI-40528	RETMA Registration Test Chart	MI-26822-3
Left End Panel for Console Housing	MI-26788-1	RETMA Linear Gray Scale	MI-26822-4
Right End Panel for Console Housing	MI-26788-2	RETMA Logarithmic Gray Scale Chart	MI-26822-5
Left Side Cover for Console Housing	MI-26789-1	Plastic Cover for TK-41	MI-26862-2
Right Side Cover for Console Housing	MI-26789-2	Type BR-84D Cabinet Rack	MI-30951-D84
Single Headset	MI-11743	*WA-9A Calibration Pulse Generator	MI-26070
Double Headset	MI-11744	*WA-1D Color Bar Generator	MI-34001
Interphone Connection Unit	MI-11734	WA-7B Linearity Checker	MI-34017-A
Interphone Retardation Coil	MI-11737	WA-21B Video Sweep Generator	MI-30021-B
Mounting Plate for Interphone Connection Unit	MI-11735	TO-524D Oscilloscope	MI-26500
Mounting Panel for Retardation Coil	MI-11736/A	WA-3B Grating Generator	MI-30003-B
TK-41 Optical Alignment Tool Kit	MI-40836		
Magnetic Shielding Kit for TK-41	MI-40834		
RETMA Linearity Test Chart	MI-26822-1		
RETMA Resolution Test Chart	MI-26822-2		

* If not already available, one each of the above starred equipments is necessary for operation of the TK-41 Color Studio Camera Chala.