

Field Television Camera Equipment, Type TK-30A

Features

- Highly sensitive at extremely low light levels.
- Able to handle enormous light ranges.
- No loss of picture after intense flashes of light.
- Simplified interconnections providing quick assembly on location.
- Electronic view finder.
- Rugged mechanical construction.
- A four position lens turret controlled from rear.
- Provision for two intercom telephone sets.
- Suitable for studio use.
- Easy access to all parts.

Uses

The TK-30A television camera is intended to be used in field television pick-ups of all kinds. It is especially suitable for use where the lighting conditions are poor, as is frequently the case at sporting events, in night clubs, and at other remote pick-up points. While designed especially for field use, it is also satisfactory for most types of studio programs; and for many applications the TK-30A has special advantages.

Description

The TK-30A is a portable, field television camera equipment consisting of camera, tripod, camera control, field power supply, and miscellaneous accessory items; such as: cables, etc. The camera makes use of the RCA-developed Image Orthicon. The remarkable sensitivity of the Image Orthicon is so great that operation is possible with light levels as low as one foot-candle with an f3.5 lens. The Image Orthicon is able to adapt itself automatically to enormous changes in scene brilliance without serious loss of contrast anywhere in the range. This characteristic makes it possible to shift instantly from a dark scene in heavy shadows to another in bright sunlight with only very slight readjustment. The Image Orthicon is able to withstand extreme peaks of intense illumination, such as photo flash lamps aimed directly at the lens, without any after effects requiring the resetting of controls.

The Field Camera Control is contained in a small easily-carried case. On the front, there are located two cathode ray tubes which serve as indicators of the picture quality. A seven inch kinescope is used as a picture monitor, and a three inch oscilloscope is used as a wave form monitor.

The picture signal amplifier performs the following several important functions:

1. It provides a gain control for the picture signal.
2. It mixes the picture blanking signal with the signal from the Camera.
3. It establishes black level at the beginning of each scanning line by means of a "clamp" circuit.
4. It provides for the addition of the Synchronizing signal whenever only a single camera chain is used.
5. Its output stage is a line amplifier capable of delivering two volts peak to peak composite picture and synchronizing signal to a 75 ohm coaxial transmission line (or 1.5 volts of picture only).
6. It includes a stage for introducing a fixed amount of gamma correction.
7. It includes high level driver stages for feeding the two monitor tubes.

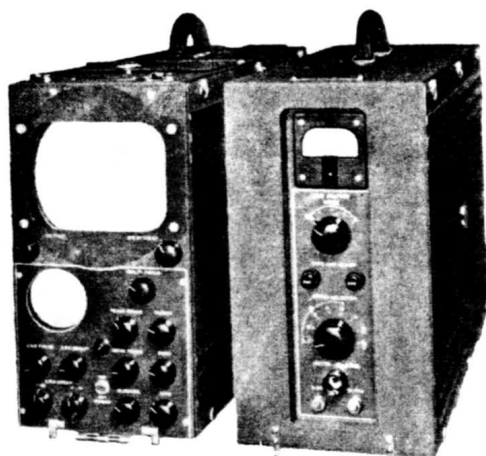
The Field Power Supply is a portable unit designed to provide all the d-c required by the circuits in the Field Camera, Field View Finder, and Field Camera Control in one camera chain. It may, of course, be used for any other application where its voltage and current ratings meet the requirements. The output voltage of this power supply is electronically regulated within very close limits. It is capable of delivering 1 ampere at a maximum of 285 volts. The internal impedance of the power supply is less than 0.25 ohm. This low impedance



makes it an excellent power supply for amplifiers having variable current requirements and critical low frequency response such as television amplifiers.

The complete camera may be disassembled into several parts for easy carrying. The camera is built into an exceedingly compact case which mounts on top of the tripod. All controls are conveniently located on the back. The camera assembly includes a picture signal preamplifier and the deflection and camera blanking circuits. A feature of this camera is the provision of a lens turret in which four lenses of different focal lengths may be mounted. On the rear of the case is located a large handle which rotates the lens turret. A trigger switch incorporated in the handle cuts off the picture during the interval while the handle is turning. Changing from one lens to another requires only one and a half seconds.

The operator focuses the picture by observing the image in the electronic view finder, constituting the upper section of the camera assembly, and adjusting a knob on the right side of the cabinet. This knob slides the Orthicon back and forth inside the case. This saves having to adjust the lenses themselves for focusing. The use of the electronic view finder with this camera is a necessity; since at low light levels an optical view finder would not be satisfactory. It also has the advantage of eliminating the need for additional lenses which would be required for an optical system. The view finder employs a five inch kinescope with sufficient brilliance to produce a satisfactory picture under normal outdoor light conditions. Since the operator sees on the face of this kinescope the picture which is being transmitted, he is able to focus the picture, and also to monitor the quality and general operation. Two different viewing hoods are provided: one straight-on type, and the other a periscope type, which may be mounted in either of two positions. This gives the operator a choice of three different viewing heights. For ease in transporting and maintenance, the view finder and camera are separate units, each of which is an integral unit in itself. A streamlined cover with a carrying handle is placed on the camera unit when the view finder is removed. It is also possible to operate



Field Camera Control Unit and Field Power Supply

the camera without the view finder: as for instance where the camera is set up in a fixed position and operates unattended.

Specifications

FIELD CAMERA AND POWER SUPPLY

Number of Scanning Lines	525
Interlacing	2 to 1
Field Repetition Rate	60 per sec.
Frame Repetition Rate	30 per sec.
Line Repetition Rate	15750 per sec.
Picture Signal Level	2.0 volts, peak-to-peak, max. of which 75% is picture and blank, and 25% is sync. (See RMA Standards).
Picture Signal Polarity at Output	Black negative
Type of Transmission Line for Picture Signal	Coaxial
Impedance of Transmission Line	75 ohms
Maximum Length of Camera Cable	1000 ft.
Total Included Angle of Lenses (in horizontal plane):	
a. 50 mm f1.9 Ektar	34°
b. 90 mm f3.5 Ektar	20°
c. 135 mm f3.8 Ektar	13°
***d. 8.5 in., f3.9	8°
***e. 13 in., f5.0	5.3°
***f. 15 in., f5.0	4.5°
***g. 17 in., f5.0	4°
***h. 25 in., f5.0	2.75°

Incident Illumination on Scene:

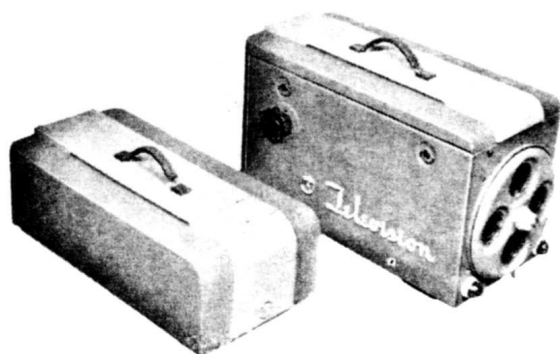
- (a) Minimum (approx.) 0.5 ft. candle
 (b) Required for First Grade Results 10 to 20 ft. candles
 (c) Maximum Bright sunlight

Note: Figure for (a) above is based on the use of an f3.5 lens or faster.

Primary Volts 98-129 volts, a-c, 50-60 cycles

Primary Voltage Taps:

	Nominal	Range
Tap No. 1	125 v.	121-129 v.
Tap No. 2	117 v.	113-121 v.
Tap No. 3	109 v.	105-113 v.
Tap No. 4	102 v.	98-106 v.



TK-30A Electronic View Finder and Camera disassembled for easy carrying

A-c Power Input for All Units Approx. 1200 watts
 Power Output of Supply:
 Regulated d-c Supply 270-285 volts 1 amp.
 Constant Current Supply intended to operate into 2000 ohm load (focusing coil) 50-80 ma.

Dimensions (in inches):

	CASE ONLY			OVERALL			
	L.	W.	Ht.	L.	W.	Ht.	Weight
Field Camera	28 1/8	10 3/8	11 3/16	26	11 3/4	13 5/8 **	65 lbs.
View Finder	21 3/4	10 3/8	7	21 3/4	11 3/4	13 5/8 **	34 lbs.
Field Camera Control	24 1/2	8 1/8	15 1/8	27 1/4	8 1/2	18 1/2	65 lbs.
Field Power Supply	24 1/2	8 1/8	15 1/8	24 1/2	8 1/2	18 1/2	58 lbs.
Turret with 3 Ektar Lenses							4 3/4 lbs.
Camera Cable (200 ft. with plugs)							80 lbs.
Camera Cable Dimensions:							
Diameter							0.840 in.
Standard Lengths							50 ft., 100 ft., 200 ft.
Finish							Two tone umber gray wrinkle with chrome trim

Tube Complement

- 1 RCA Image Orthicon (Field Type), 3 RCA 6AK5, 1 RCA 6AG5, 1 RCA 6J6, 3 RCA 6SN7GT, 2 RCA 6SL7GT, 1 RCA 6BG6G, 1 RCA 6AS7G, 1 RCA 1B3GT/8016, 1 RCA 6V6GT, 1 RCA 6L7
 Field Camera View Finder 2 RCA 6AG7, 1 RCA 6J6, 1 RCA 6V6GT, 1 RCA 6H6, 2 RCA 6SN7GT, 1 RCA 6SL7GT, 1 RCA 6BG6G, 1 RCA 1B3GT/8016, 1 RCA 6AS7G, 1 RCA 5FP4A
 Field Camera Control 1 RCA 6SK7, 4 RCA 6AC7, 2 RCA 6H6, 10 RCA 6SN7GT, 1 RCA 6AL5, 4 RCA 6AG7, 1 RCA 884, 1 RCA 6SL7GT, 1 RCA 6BG6G, 1 RCA 6AS7G, 1 RCA 2X2, 1 RCA 991, 1 RCA 3KP1, 1 RCA 7CP4
 Field Power Supply 5 RCA 6AS7G, 6 RCA 5R4GY, 1 RCA 6Y6G, 1 RCA 6AC7, 1 RCA 6SL7GT, 2 RCA VR150
 Stock Identification MI-26905

Equipment Supplied

(Includes equipment below plus miscellaneous cables, fittings, hardware and miscellaneous)

- 1 Camera MI-26010-A
 1 Camera Viewfinder MI-26015
 1 Metal Camera Tripod MI-26046
 1 Camera Control Unit MI-26065
 1 Power Supply MI-26095
 1 Set Interconnecting Cables MI-26730
 1 50 ft. Camera Cable MI-26725-1
 1 100 ft. Camera Cable MI-26725-2
 1 200 ft. Camera Cable MI-26725-3
 1 Camera Lens f1.9, 50mm MI-26550-1
 1 Camera Lens f3.5, 90mm MI-26550-2
 1 Camera Lens f3.8, 135mm MI-26550-3
 2 Shock Mounts MI-26510-1
 1 Shock Mount MI-26510-3
 1 Set of Tubes including (1) 3KP1, (1) 5FP4, (1) 7CP4, (1) Image Orthicon
 1 Ring Sight MI-26576
 1 Friction Head MI-26205-A

Accessories

- Camera Cable (length to be specified by customer) MI-94-C
 Video Coax Cable RG-11/u MI-83
 Video Coax Cable RG-59/u MI-75
 Camera Lens 8.5 in., f3.9 MI-26550-4
 Camera Lens 13 in., f5 MI-26550-5
 Camera Lens 15 in., f5 MI-26550-6
 Camera Lens 17 in., f5 MI-26550-7
 Camera Lens 25 in., f5 MI-26550-8
 Plate Current Meter MI-21200-C1

‡ Less viewing hood.

* Less lenses.

** Including cover.

*** Not standard equipment. Available as accessory items.