

Viewfinder Vidicon TV Camera

STUDIO TYPE TK-15B



FEATURES

- Precision vidicon camera with integrated 7-inch electronic viewfinder
- Low-noise preamplifier, variable gamma and aperture correction assure excellent picture quality
- Reliable picture performance at all times by feedback stabilized black level, video, and deflection amplifiers
- Electromagnetic vidicon alignment, amplifier test pulse and local camera controls simplify setup and maintenance
- Output amplifier provides three sending end terminated video signals
- Precision focus mechanism with optical focus over full range in less than one turn of knob
- Automatic Sensitivity Control available
- Transistor amplifier intercom system

DESCRIPTION

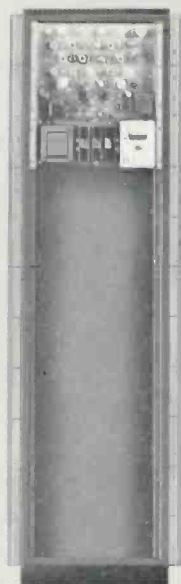
The TK-15B Vidicon Camera has many applications in both television stations and closed-circuit installations. As a source of live programming in television stations, this new vidicon camera is extremely useful for picking up scenes on which adequate lighting levels (approximately 200 foot-candles) can be maintained. For example, a single TK-15B camera can be utilized for live newscasts, simple product demonstrations and flip-chart commercials. Under adequate lighting conditions, excellent picture quality is available from the vidicon tube. Usable pictures can be obtained with lighting levels of 50 foot-candles or less, depending upon the picture quality requirements of the application. The economy of operation inherent in the vidicon makes the TK-15B an excellent investment for the uses described.

Design of the TK-15B meets professional requirements in every way. Mechanically, the camera is designed for rugged use and utmost accessibility to components. Electrically advanced circuit techniques, a reduced tube complement and simplified operating controls have been introduced without compromise to performance. Signal-to-noise ratio, gray scale rendition and detail resolution are excellent.

Each TK-15B includes two transistorized intercom circuits, for engineering and production use. Each circuit provides high level voice communications between camera operator, the camera control operator and program director or other operating personnel. Variable volume controls allow individual adjustment of sound level output.



**BASIC CAMERA CHAIN
WITH LOCAL CAMERA CONTROLS**



**REMOTE CONTROL AND
MASTER MONITOR (OPTIONAL)**

TK-15B Camera and rack-mounted equipments comprise the basic camera chain. Optional remote-control facilities are mounted in standard control console at the right.

Local operating controls (gain, pedestal, beam and electrical focus) are available at the rear of the camera, where they are convenient to the operator for setup and maintenance.



The TK-15B camera and 7-inch electronic viewfinder constitute a single, self-contained chassis equipped with a 4-lens turret and all operating controls (gain, pedestal, beam and electrical focus). A standard camera cable connects the camera with the output amplifier which may be mounted in a standard cabinet rack. These units, plus a WP-16 Power Supply, comprise the basic camera chain.

Operating control of all electrical adjustments including an ASC "on-off" switch is available by means of optional remote camera control panels. The MI-26213-A Remote Control Panel may be mounted along with a master monitor in a standard 13¼-inch television console housing or cabinet rack. Each panel includes an ASC "on-off" switch as well as gain, focus, pedestal and beam controls.

Rugged, vertical plane chassis construction has been featured in the TK-15B camera design. Hinged doors on either side of the camera open downward to expose the camera interior for inspection and maintenance. The video amplifying circuits are mounted on a hinged subchassis which swings outward from the camera, providing easy access to every component. The video preamplifier circuits are contained on a separate shock-mounted subchassis.

Precision Optical Focus Mechanism

Special attention has been given to the precise mechanical requirements of the optical system for the vidicon. Due to the small size of the picture on the surface of the vidicon photocathode, extremely close tolerances must be maintained on optical focus travel to avoid focus backlash. This is achieved by an ingenious, cam-operated mechanism which precisely translates the focus knob rotation into an exact, nonlinear characteristic motion to the vidicon and yoke assembly. Complete absence of focus backlash is thus assured, even under the severe tolerance requirements of short focal length lenses. Also, due to the special nonlinear focus motion characteristic, the amount of focus knob rotation required to adjust optical focus is essentially independent of distance.

Any high quality, 16mm Type "C" mount lenses may be used with the TK-15B camera. Up to four lenses may be mounted in the turret at any time. A hollow-turret shaft makes it possible to use a manual zoom lens as one of the four lenses.

Thorough Electrical Filtering

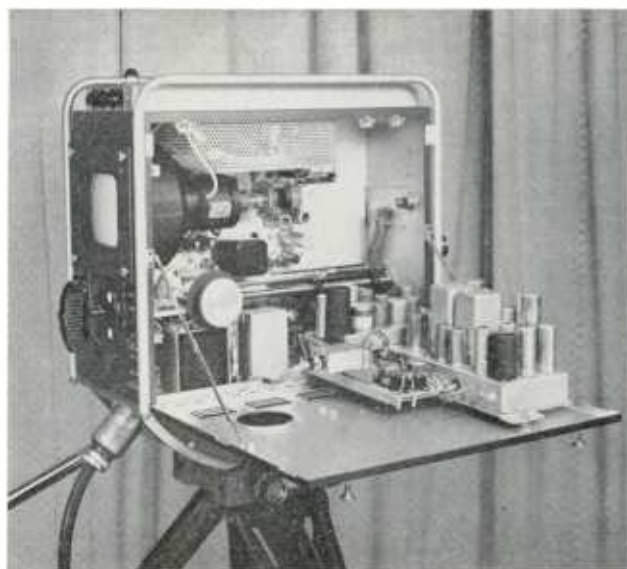
Electrical interference in the camera is eliminated by means of individual camera cable conductor barrier filters at the cable connector and thorough shielding of the low level video circuits. These facilities are vital to the quality of pictures and operational reliability.

The output amplifier performs the functions of video amplification, blanking insertion, feedback clamping, linear clipping, camera pulse amplification, gamma compensation and sync mixing. A variable gamma compensation circuit is provided in the output amplifier chassis to provide "stretching" of black information in the picture, thereby compensating for the black "compression" inherent in kinescope picture reproduction. Three separate feedback isolated video output circuits are provided with a minimum of 40 db of isolation between circuits.

Simplified Self-Stabilized Circuits

A substantial saving has been achieved in the total number of tubes used in the camera chain. In addition, the number and complexity of setup and operating controls have been minimized, resulting in savings to the user through reduced demands on the skill of technical personnel. At the same time, stability and reliability of the camera have actually been improved. For example:

- (1) All video amplifier stages are gain stabilized.
- (2) Pedestal levels are stabilized by feedback clamp circuits.



Vertical plane construction with hinged subchassis provides complete accessibility.

- (3) Deflection linearity and amplitude are feedback stabilized.
- (4) Internal calibration signal permits accurate setting of channel gain; simplifies vidicon setup adjustments.
- (5) Cascode high transconductance video preamplifier provides high signal-to-noise ratio.
- (6) Detail resolution is sharpened by delay line aperture compensation.

The TK-15B camera is available with several combinations of accessory equipment to fit a variety of applications. For broadcast television studio use and other applications requiring a very high quality picture monitor and waveform monitor, a studio camera chain is available including a TM-6C Master Monitor and console housing.

A single WP-16B Power Supply is capable of powering two camera chains. The TK-15B Vidicon Camera working in conjunction with an Automatic Sensitivity Control, MI-26191-A, makes possible virtually unattended operation. The ASC continuously monitors the output of the vidicon camera and translates this information into a control signal which is fed back to the Vidicon tube. The control voltage is applied to all of the control electrodes of the Vidicon, except the Vidicon target. This results in an effective change of target voltage, but avoids the introduction of d-c components into the video signal with changes in control voltage. Changes in vidicon sensitivity may thus be made automatically to compensate for changes in scene high-light level of approximately 20 to 1.

SPECIFICATIONS

General

Type of Reproduction.....	Monochrome
Viewfinder Kinescope.....	Seven-inch diameter, P4 phosphor
Number of Scanning Lines.....	525 or 625, 2 to 1 interlocked
Frame Repetition Rate.....	30 or 25 per second
Field Repetition Rate.....	60 or 50 per second
Line Repetition Rate.....	15,750 or 15,625 per second
Incident Illumination for Best Results.....	200 foot-candles
Picture Polarity at Output.....	Black negative
Maximum Length of Camera Cable.....	500 feet
Lens Type.....	16mm C-mount
Intercom Facility.....	Separate engineering and production, transistorized amplifier talk circuits, plus cue

Electrical

AC Power:

115 volts, 50/60 cycle chain.....	376 watts
230 volts, 50 cycle chain.....	376 watts
Current (utility outlet).....	Fused for 5 amperes

Input Signals:

Horizontal Drive.....	4 volts peak-to-peak negative
Blanking.....	4 volts peak-to-peak negative
Sync.....	4 volts peak-to-peak negative

Output Signals:

Picture #1.....	Picture with optional sync 1.4 volts
Picture #2.....	Picture with optional sync 1.4 volts
Picture #3.....	Picture only, 1.0 volt
Bandwidth.....	Essentially flat to 6 megacycles, 3 db down at 8 megacycles

Aperture Compensation Peak

Boost Frequency.....	4.5 megacycles, ± 0.25 mc
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Aperture Compensation Amplitude.....	Continuously variable from 0 to 10 db
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Gamma Correction Factors.....	0.5, 0.7 and unity
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Isolation between Output Lines.....	40 db minimum
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Output Impedance.....	75 ohm coaxial, doubly terminated
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Mechanical

Dimensions:

Camera Case (head on).....	11" wide, 21 $\frac{5}{8}$ " high, 26 $\frac{7}{8}$ " deep
Output Amplifier (rack mounting).....	14" high, 19" wide, 9" deep
Camera Control Panel (console mounting).....	11" wide, 3 $\frac{1}{2}$ " high, 2 $\frac{3}{4}$ " deep
Camera Control Panel (TM-35 mounting).....	7 $\frac{3}{4}$ " wide, 2 $\frac{1}{8}$ " high, 3 $\frac{1}{2}$ " deep

Weight:

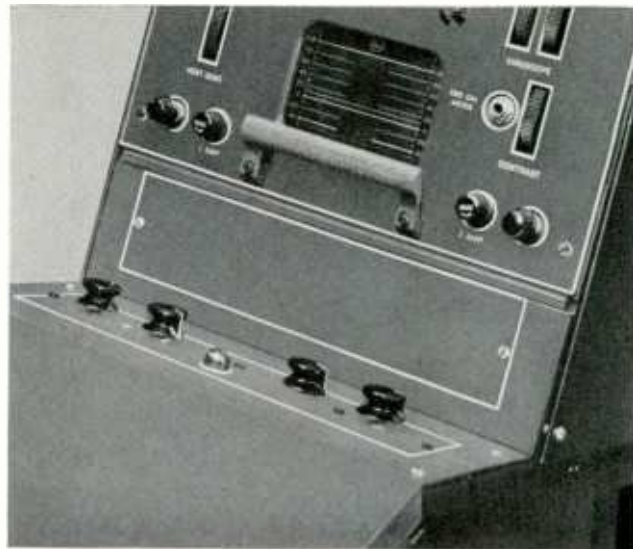
Camera.....	79 lbs.
Output Amplifier.....	23 $\frac{1}{2}$ lbs.
Camera Control Panel.....	2 $\frac{1}{2}$ lbs.

Note: More complete technical specifications are available on request

Equipment Supplied

TK-15B Studio Vidicon Camera Chain with TM-6C Master Monitor, including the following:

115 V., 60 Cycles		230 V., 50 Cycles	
Qty.	MI Number	Description	Qty. MI Number
1	26023-C	TK-15B Vidicon Camera	1 P26023-C
1	26063-A	Output Amplifier	1 P26063-A
1	26213-A	Remote Control Panel	1 26213-A
1	26842	Viewfinder Shade	1 26842
1	26084-B	Power Supply, WP-16B	1 26094-B
1	26083-A	Centering Current Subchassis	1 26083-A
1	26725-E5	Camera Cable, 50 feet	1 26725-E5
1	36316-25	Lens, 25mm, f/1.5	1 36316-25
1	36316-50	Lens, 50mm, f/1.5	1 36316-50



Remote control panel mounts below master monitor for control room operations with waveform and picture display.

1	36316-75	Lens, 75mm, f/1.9	1	36316-75
1	36323-A	Vidicon Tube, Type 7735-A	1	36323-A
1	26136-C	Master Monitor, TM-6C	1	N26136-C
1	26655	Kinescope Tube, 10SP4	1	26655
1	26667	Cathode Ray Tube, 5ABP1	1	26667
1	26579-B	Blower for TM-6C Master Monitor	1	556579-B
1	26786	Console Housing, 13-inch	1	26786
1	26212	Console Well Adaptor for MI-26213-A	1	26212

TK-15B Studio Camera Chain with TM-35 Master Monitor, including the following:

115 V., 60 Cycles		230 V., 50 Cycles	
Qty.	MI Number	Description	Qty. MI Number
1	26023-C	TK-15B Vidicon Camera	1 P26023-C
1	26063-A	Output Amplifier	1 P26063-A
1	26213-A	Remote Control Panel	1 26213-A
1	26842	Viewfinder Shade	1 26842
1	26084-B	Power Supply, WP-16B	1 26094-B
1	26083-A	Centering Current Subchassis	1 26083-A
1	26725-E5	Camera Cable, 50 feet	1 26725-E5
1	36316-25	Lens, 25mm, f/1.5	1 36316-25
1	36316-50	Lens, 50mm, f/1.5	1 36316-50
1	36316-75	Lens, 75mm, f/1.9	1 36316-75
1	36323-A	Vidicon Tube, Type 7735-A	1 36323-A
1	26154	Master Monitor, TM-35	1 556154
1	26873	Console Mounting Adaptor for TM-35	1 26873
1	26786	Console Housing, 13-inch	1 26786
1	26212	Console Well Adaptor for MI-26213-A	1 26212

Accessories

Automatic Sensitivity Control Chassis (115 V., 60 cycle).....	MI-26191-A
Automatic Sensitivity Control Chassis (230 V., 50 cycle).....	MI-N26191-A
Camera Cradle Head.....	MI-26203-A
TD-10 Hydraulic Pedestal.....	MI-26053
TD-11A Metal Tripod.....	MI-26046
TD-15A Tripod Dolly, folding type.....	MI-26042-A
Remote Control Panel, TM-35 Mounting.....	MI-26161-A
Adjustable Viewfinder Hood.....	MI-26843
Interphone Connection Unit.....	MI-11784