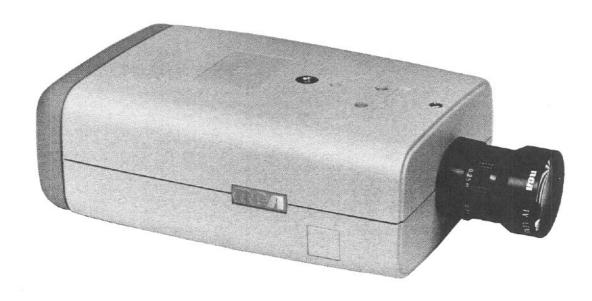
TC7000 Series Cameras TC7000X Series Cameras

Installation and Operating Instructions



Cameras Date-Coded October 1986 (06) and up.



Specifications

Camera Tube 2/3" (18 mm). Separate mesh, magnetic focus and deflection.

Model Number		TC7000	Series X Series		/U Series /UX Series
Camera Tube RCA Tube Type Sensitivity (2856 K)		Vidicon 8844 Usable Picture		Ultricon 4833/U Usable Picture	
Scene illumination*	fc Ix	0.20 2.15	0.80 8.61	0.016 0.172	0.064 0.689
Scene brightness*	fL nt	0.152 0.521	0.60 2.06	0.012 0.041	0.048 0.164
Faceplate illum.	fc Ix	0.015 0.161	0.06 0.65	0.0012 0.0129	0.005 0.054

^{*} f/1.4 lens. 75% highlight reflectance

Center Resolution (TVL min.): Vidicon Cameras - 700

Ultricon Cameras - 600 (when tested with IR blocking filter).

Amplitude Response (at 240 TVL):

Vidicon Cameras - 50% min.

Ultricon Cameras - 40% min., 50% typ.

Light Range:

Vidicon Cameras - 50,000:1 min.

Ultricon Cameras - 1,000,000:1 min.

Includes variable gain/bandwidth amplifier, internally adjustable for peak/average response weighting. Ultricon cameras include recommended f/1.4 - 360 auto-iris lenses.

Composite Video Output 1.0 V p-p into 75 ohms. Internally adjustable.

Synchronization:

Line-lock - Synchronizes camera to power line zero crossing for roll-free vertical interval switching.

Genlock - Accepts composite video at 1.0 V p-p nominal or composite sync or H&V drives at negative 4 V p-p nominal (3 to 6 V p-p). RS-170, RS-330 or Random Interlace on 60 Hz models. CCIR on 50 Hz models. HiZ/75 ohm select switch (optional).

Crystal-Lock - Internal crystal reference is standard on DC models. Crystal lock models have full genlock capabilities to allow master synchronization (with recommended power supply). TC7000 - EIA RS-170. TC7000X - CCIR.

Signal-to-Noise FET low noise preamplifier. Better than 44 dB.

Bandwidth 3 dB @ 9 MHz. Automatically reduced at low light levels to optimize signal-to-noise.

Grey Scale At least 10 steps.

Gamma Correction Factory set to preferred response for type of camera tube used. Internally adjustable from 0.4 through 1.0.

Geometric Distortion 1.5% maximum of picture height within a center circle with diameter equal to picture height. 2% overall.

Automatic Beam Control (ABC) Automatic circuitry reduces need for periodic readjustment of beam throughout life of camera

White Clipper Automatic. Keeps highlights within preset level to avoid monitor or VCR overdrive.

Auto Black plus Keyed Clamp Maintains constant pedestal setup throughout entire light range.

Supply Voltage/Power:

Rated Voltage	Operational Voltage Range	Nominal Power (Watts)	Model No.●	Sync
120 V, 60 Hz▲	100 to 140	10 @ 120 V	TC7011	EIA RS-170
24 V, 60 Hz	21 to 30	10@ 24 V	TC7012	EIA RS-170
220 V, 50 Hz▲	198 to 264	10 @ 220 V	TC7014X	CCIR
24 V, 50 Hz	21 to 30	10@ 24 V	TC7012X	CCIR
12 VDC	12 to 18	10@ 12 V	TC7055C	EIA RS-170
12 VDC	12 to 18	10@ 12 V	TC7055CX	CCIR

ADOUBLE INSULATED.

Power Supplies Regulated switchmode high voltage for optimum camera tube performance.

External Controls IMAGER POSITION, IMAGER LOCK.

Lens Mount Standard "C".

Camera Mounts Two, 1/4"-20 (one in base - one in top).

Connectors:

Video - BNC.

Auto Iris Lens/Genlock - 8 pin DIN.

See Options for additional connectors.

Finish NorylTM case.

Weight:

DC Model - 0.9 kg (2.0 lbs).

AC Models (Integral Power Supply) - 1.5 kg (3.2 lbs)

DC Model - 70 x 121 x 184 mm (2.75 x 4.75 x 7.25 inches). AC Models - 70 x 121 x 219 mm (2.75 x 4.75 x 8.60 inches).

Environment:

Temperature - -18 to 60° C (0 to 140° F).

Humidity - 0 to 95% relative.

Vibration - 3 g swept sine wave, 15 to 2000 Hz.

Shock - 50 g.

Available With These Factory-Installed Lenses*

Vidicon Cameras (Fixed Lenses Without Iris):

8 mm, f/1.6

16 mm, f/1.6

Add suffix /8 or /16 to model number.

Ultricon Cameras (Fixed Lenses With Auto Iris) 8.0 mm, f/1.4 16 mm, f/1.4

Add 8 or 16 in model number following U.

*Optional lenses are available for these cameras; see CCV-198.

Options

These models include an AGC On/Off Switch and Adj. Phase Vert Line lock .:

TC7100, TC7100X Series — Camera Ident, BNC for External Sync.

TC7200, TC7200X Series — Camera Ident, Fiber Optic Output. TC7300, TC7300X Series — Available only with vidicon.

TC7000 Series: UL Listed for CCTV and Surveillance Equipment. TC7000X Series: TUV Approved. NEMCO Approved.

Complies with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC Rules.

All specifications subject to change without notice.

For further information contact your nearest Sales Representative.

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Printed in U.S.A./9-87 TC7000 Series TC7000X Series

^{1.0} lux (lx) = 0.0929 footcandle (fc)

^{1.0} nit (nt) = 0.2919 foot Lambert (fL)

Models shown are with vidicon; insert U after model number for Ultricon-

SAFETY PRECAUTIONS



CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT OPEN COVERS, NO USER SERVICEABLE PARTS INSIDE, REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with an arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the

product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Warning

To prevent fire or shock hazard, do not expose this camera or power supply to rain or moisutre.

GENERAL PRECAUTIONS

Use Only the Recommended Power Supplies The supplies recommended in these instructions offer several options. Substitutions may damage the camera or cause a fire or shock hazard. See page 6 for battery operation.

Class 2 Operation

Do Not Exceed 30 VAC Input Operation above 30 VAC violates Class 2 Specifications. Normal operation is 24 VAC. The camera will accept up to 30 VAC.

Tube Protection

The camera should not be pointed directly at the sun as the camera tube may be permanently damaged. Although some types of camera tubes such as the Ultricon™ are not subject to this type of damage, it is good practice to avoid the possibility on all cameras.

IMPORTANT OPERATING INFORMATION

All Cameras are shipped with the Automatic Gain Control (AGC) operative. TC7100, TC7200, and TC7300 Series cameras offer an external switch that allows the operator to disable or enable AGC.

CONTENTS

Important Safeguards 2	
FCC Information	
Safety Precautions	
General Precautions	
Important Operating Information 3	
Unpacking	
Service	

External Controls and Connections	4
Installation	5
External Power Supply Connections	5
Camera Setup	7
Special Setups	8
TC7100, TC7200, and TC7300 Series Cameras	9
Camera Identifier 1	C

UNPACKING

The shipping carton is the safest container in which the camera may be transported. Save it for possible future use.

The Warranty Registration Card should be completed and returned to RCA. Save the Service Report Form.

SERVICE

If the camera ever needs factory service, the dealer who obtained the camera from RCA should complete the service report form contained in the packing box. Completion of this form will speed repair of the camera.

The camera and the service report form should then be returned together, prepaid, to RCA Camera Repair Center, New Holland Ave., Lancaster, PA 17604-3140 or your nearest RCA Camera Warranty Repair Center.

TC7100, TC7200, and TC7300 SERIES CAMERAS (CONT'D)

Camera Identifier (All TC7100 and TC7200 Models)

CAUTION: These special setup instructions are for use by qualified personnel only. To avoid electric shock do not perform special setups unless you are qualified to do so. Refer all servicing to qualified service personnel.

The Camera Identifier places a user-selectable and user-positionable number from 00 to 99 in the video signal from the camera. The number consists of white numerals outlined in black for readability and easy camera identification.

As delivered from the factory, the Identifier number is set at "00" and is positioned in the lower right quadrant of the picture. The recessed screwdriver controls labeled H&V on the top of the camera enable the user to position the number in any quadrant of the picture.

Switches to select the ID number are accessible by removing the top cover and lifting the camera board as shown.

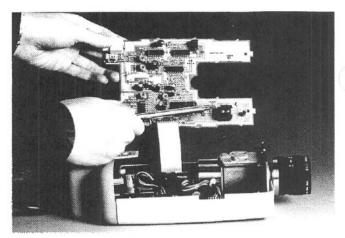
The intensity of the identification numerals may be changed by removing the top cover and adjusting the Identifier Level Control, R25, with a 0.060" blade Xceliter® M-02, or equivalent screwdriver. R25 is accessed through the ID LVL adjustment hole (on PC board).

External Synchronization Input (All TC7100 Models)

The additional BNC at the rear of the camera accepts composite sync or composite video from another camera for external synchronization. Composite sync should be 3 V to 6 V negative going. Composite video should be 1–2 V p-p. The external sync input BNC may be terminated into 75 ohms by removing the top cover of the camera and switching the TERM ON/OFF switch (S2) to the ON position. The switch is located directly in front of the external sync BNC.

Fiber Optic Output (All TC7200 Models)

A Fiber Optic Video Output is present at the rear of the camera for long range, high quality video. A companion Fiber Optic Receiver, TC4612, is available to link the fiber optic output and cable to the monitor BNC input.



Camera Identifier Selection Location

INSTALLATION

Attention: Installation should be performed by qualified service personnel only in accordance with the National Electric Code or applicable local codes.

Cable Routing

Caution: Be sure cable wires are routed so as not to pinch or rub when connected to pan/tilt units. Frayed, pinched, or broken wires can cause fire or shock hazards or system failure.

External Synchronization

The camera may be externally synchronized to separate Horizontal and Vertical drives, to Composite Sync, or to Composite Video via the DIN connector on the rear panel. Note: For TC7100 models the external sync signals may be applied through the external sync BNC connector and may be terminated via an internal 75 ohm terminating switch. This camera sync input is unterminated. Always be sure the drive cables are properly terminated, Sync pulses must be negative 4 V p-p (3 to 6 V p-p) or composite video 1 V p-p. DIN plug wiring is shown below:

Separate H&V Drives: Composite Sync Input: Horizontal - Pin 8 Comp Sync or

Vertical - Pin 2 Comp Video - Pin 8

Common - Pin 3 Common - Pin 3

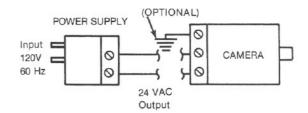
Phasing

The phase lock loop controlling the sync generator synchronizes the camera to the power line zero crossing to improve vertical interval switching and time lapse recording. In Class 2 systems, where the 24 VAC wires may easily be reversed, color coding is recommended to maintain correct power line phasing.

EXTERNAL POWER SUPPLY CONNECTIONS

Low Voltage Installations From 120 VAC source via low voltage (Class 2) wiring to a 24 VAC camera

TC1334 Power Supply TC7012 Vidicon Cameras TC7012U Ultricon Cameras



User supplied wiring from 24 V supply to camera:

Up to 10 ft. (3 m) - 18 AWG or larger Over 10 ft. (3 m) - 16 AWG or larger.

Distances may be extended by using this criterion: TC7012 models require 460 mA (typically) at minimum supply voltage (20 VAC).

SPECIAL SETUPS

Camera performance in unusual situations may be improved by adjustment of certain internal controls.

CAUTION - These special setup instructions are for use by qualified personnel only. To avoid electric shock do not perform special setups unless you are qualified to do so. Refer all servicing to qualified service personnel.

Access to Internal Controls

The necessary controls may be accessed by removal of the camera top cover. To remove the cover, disconnect power from the camera and remove the Phillips screw located at the front of the top cover. Then lift on the front of the top cover until the cover pulls free.

Composite Video Output Level Adjustment

This adjustment may be desirable to balance the video level at the monitor in multi camera installations or to obtain specific video levels in special situations.

The video level (R221) is factory set for a 1.0 V p-p composite video output when properly terminated into 75 ohms.

CW adjustment of R221 decreases the composite video level.

CCW adjustment increases the composite video level.

Peak/Average (P/A) Response

Peak/Average control, R308, adjusts the Automatic Light Range circuitry of the camera toward either a response controlled primarily by the bright highlight areas of the scene (Peak) or toward a response which tends to ignore these bright areas and is controlled primarily by the surrounding lower light areas (Average).

This control is factory set to mid-range for Ultricon and Vidicon Cameras.

CCW adjustment increases response to peak scene brightness. (Camera "sees" into bright areas – ignores background.)

CW adjustment increases response to average scene brightness. (Camera "sees" background – ignores bright areas.)

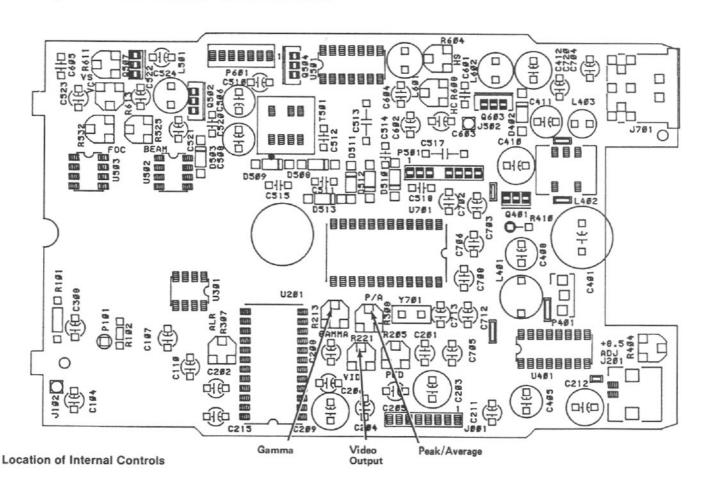
Gamma

Gamma control, R213, permits stretching the black portion of the video signal to give more contrast in the darker areas of the picture. It is factory set full CW for all cameras.

CCW adjustment stretches the blacks.

CW adjustment reduces black stretch.

Increased black stretch also gives more noise in the blacks.



CAMERA SETUP

TC7000 Series Cameras, as shipped, are factory adjusted and tested for optimum performance in most applications. No additional camera setup procedures should normally be required. However improved performance may be obtained in some applications by field setup. Such field setup should be limited to the procedures described below.

Tools Required

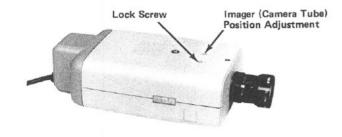
Screwdriver — No.1 Phillips. Screwdriver — 3/16" blade width.

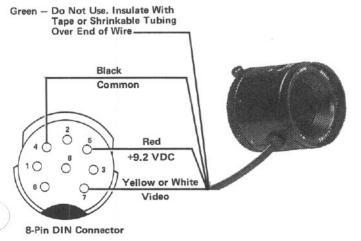
Camera Tube Position Adjustment and Lock

This adjustment may be necessary to accommodate special focal length lenses, close up lenses or zoom lenses.

Procedure:

- With the camera operating, view some object preferably at least 75 ft. away.
- Set the lens focus ring to the distance of the object being viewed — preferably to infinity.
- Set the lens iris to its widest usable opening. (If auto iris lens is being used, place a No.2 filter in front of lens to open iris.)
- Loosen the Lock screw (CCW). See figure below.
- Adjust the Imager (Camera Tube) Position cam to bring the object being viewed into sharpest focus using a screwdriver.
- Retighten the Lock screw (CW).





Auto-Iris Lens Wiring (ES and EX Series)

Auto-Iris Lens Adjustment

This adjustment may be necessary when the lens is changed or replaced.

The following procedure is necessary to assure that the Auto-Iris lens is adjusted properly.

Removal and cleaning:

- Remove the lens connector.
- Remove the auto-iris lens, and inspect the camera tube faceplate through the camera C-mount opening to assure that the faceplate is free of smudges or particles of dirt.
- Clean the faceplate, if necessary using lens tissue or a cotton tipped applicator and alcohol.
- Install the new lens and adjust using the 3/16" blade, 4" screwdriver.

Auto Iris Adjustment

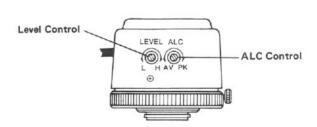
1. Set the lens ALC control (ES and EX Lenses):

Always set the ALC control on the lens to Average (full CCW). If necessary, a trained service technician can adjust the P/A control, R308, inside the camera, to obtain a desired picture contrast. See Special Setups, page 8.

2. Set the Lens Level control:

The following adjustment should be done while viewing a well-lighted scene with equal amounts of black and white information (e.g., test pattern or newspaper).

- a. Remove the lens adjustment cap, if supplied.
- b. If an oscilloscope is available, attach the probe to this terminated video line going to the monitor.
 At this time adjust the video level control (on the lens) to obtain 1 V p-p.
- c. If an oscilloscope is not available, turn the lens Level Control full CCW.
- d. If camera has AGC switch option, switch to the on position.
- e. Turn Level Control on lens CW until AGC noise just disappears then go 1/8 turn further.



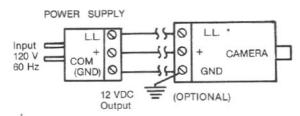
Location of Level and ALC Controls (ES and EX Series)

EXTERNAL POWER SUPPLY CONNECTIONS (CONT'D)

Remote Power Supply Installations From an AC power source via low voltage (Class 2) DC wiring to compact DC camera versions

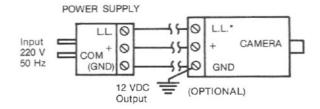
120 VAC Power Source

TC120PS Power Supply TC7055/C Vidicon Cameras TC7055/UC Ultricon Cameras



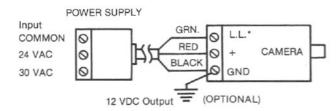
220 VAC Power Source (Export Models Only)

TC220PS Power Supply TC7055/CX Vidicon Cameras TC7055/UCX Ultricon Cameras



24 VAC (Class 2) Power Source

TC24PS Power Supply TC7055/C, TC7055/CX Vidicon Cameras TC7055/UC, TC7055/UCX Ultricon Cameras

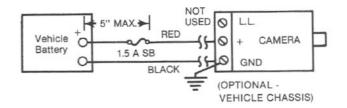


*Cameras may be operated as line lock or independent crystal controlled cameras; if no line lock (L.L.) connection is made, the cameras will be crystal controlled.

DC Operation (Crystal Control is Required)

From Vehicle Supplies

12 VDC Power Supply TC7055/C, TC7055/CX Vidicon Cameras TC7055/UC, TC7055/UCX Ultricon Cameras



Because vehicle batteries can generate enough energy to be considered a safety hazard, fusing must be used in the lead to the positive terminal of the battery. The fuse must be located within the first 5" of lead from the positive terminal. A 1.5 A Slo Blo type fuse is recommended.

From User Supplied DC Power

12 VDC Power Supply TC7055/C, TC7055/CX Vidicon Cameras TC7055/UC, TC7055/UCX Ultricon Cameras Installation procedure similar to vehicle supplies except available power must be restricted in compliance with electrical codes, Class 2 power levels.

User Supplied Wiring From 12V Supply to Camera

Up to 10 ft. (3 m) - 18 AWG or larger. 10 to 150 ft. (3 to 45 m) - 16 AWG or larger.

Distances may be extended by using this criterion: TC7055C models require 520 mA (typically) at minimum supply voltage (12 VDC).

TC7100, TC7200, AND TC7300 SERIES CAMERAS

Option	TC7100	TC7200	TC7300
Vidicon	Yes	Yes	Yes
Ultricon	Yes	Yes	No
AGC On/Off Switch	Yes	Yes	Yes
Adjustable Phase Vert Line Lock	Yes	Yes	Yes
Camera Identifier	Yes	Yes	No
BNC for External Sync	Yes	No	No
Fiber Optic Output	No	Yes	No

With the exception of the above items, installation and operation of the TC7100, TC7200, and TC7300 Series cameras is identical to the TC7000 Series.

AGC On/Off (All TC7100, TC7200, and TC7300 Models)

Sensitivity at lower light levels will be improved by a factor of approximately 4 to 10 (depending on the camera model) when the AGC On/Off switch is in the "On" position.

Adjustable Phase Vertical Line Lock (All TC7100, TC7200, and TC7300 Models)

DO NOT ADJUST THE $V\phi$ CONTROLS PRIOR TO READING THESE INSTRUCTIONS. ADJUSTMENT CAN COMPLICATE FUTURE SETUP BY DISTURBING THE FACTORY PRESETTING.

In multi-camera systems using vertical interval switchers and a time lapse recorder, it is desirable to have the video output signal from all cameras vertically synchronized. This may require phase delays in specific cameras if the entire system is not on the same phase of the AC power source, or if cameras are powered from different phases of a 3-phase power source. If the above does occur, it will show up on the monitor as a vertical roll when switching from one camera to another.

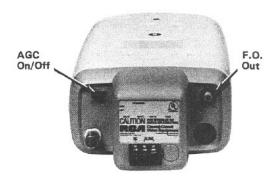
The Vertical Phase $(V\phi)$ delay circuit permits variable phase shifting within each camera to obtain proper vertical synchronization.

As shipped from the factory, vertical sync is phased to the input AC line at the positive-going zero crossing as are all other TC7000 models.

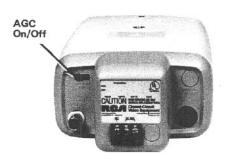
Phase adjustments to accommodate different phases of a 3-phase power source or a completely different power source may be made by further adjustment of $V\phi$. The vertical phase delay, with respect to the original unactivated condition, ranges from 0° to more than 300° .



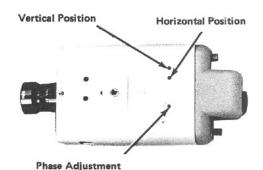
Rear View TC7100 Series Cameras



Rear View TC7200 Series Cameras



Rear View TC7300 Series Cameras



Top View

EXTERNAL CONTROLS AND CONNECTIONS

Imager (Camera Tube) Position Adjust . (CCW for Forward) 8-Pin DIN Connector (All Models) Pin 1: No Connection Pin 2: Vertical Drive In Position Lock Pin 3: Ground (CW to Lock) O 3 Pin 4: GND (Video Common for Lens) 0 Pin 5: +9.2 VDC to Lens Pin 6: No Connection Pin 7: Video to Lens 1/4 - 20 Mount Hole . Pin 8: Horizontal Drive/Composite Sync (Top & Bottom) or Composite Video Input or External Camera Sync 120 and 220 VAC Internal Power Supplies TC7011, TC7014X Vidicon Cameras TC7011/U, TC7014/UX Ultricon™ Cameras Video Output BNC (75 Ohm)

24 VAC Internal Power Supply TC7012, TC7012X Vidicon Cameras TC7012/U, TC7012/UX Ultricon Cameras

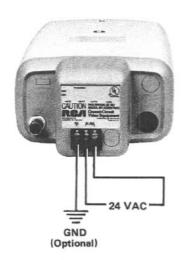
2-Wire Power Cord

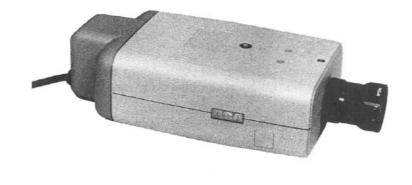
With 2 Prong Plug

Power Switch

Power On LED

Off - On





Note: Cameras with 120 VAC or 220 VAC power cords are double

insulated. Article 250-45 of the National Electrical Code (NEC)

states that listed products protected by a system of double

insulation shall not be required to be grounded.

General Purpose 2/3-inch CCTV Cameras

Model: TC7000 Series TC7000X Series

- Two Camera Tube Options
- Excellent Resolution
- Sync: TC7000 Series - EIA RS-170 TC7000X Series - CCIR
- Genlock
- Wide Dynamic Range
- Automatic Beam Control
- Five Power Options
- Phase Locked Loop
- Fiber Optic Output Available
- □ Double Insulated (120 V and 220 V Models)

The TC7000 and TC7000X Series are two-thirds-inch format, closed-circuit video cameras for general purpose closed-circuit video and surveillance applications. They are available with either Ultricon IIITM or vidicon camera tubes.

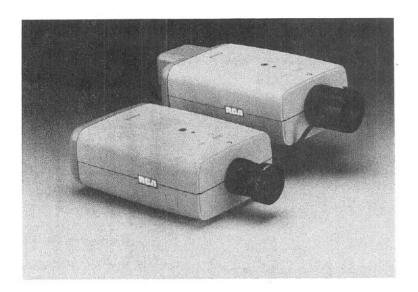
The Ultricon III models, for difficult indoor/outdoor and low-light use, operate over a very wide light range. With available auto iris lenses, they provide usable pictures from only 0.172 lux (0.016 fc) scene illumination up to bright sunlight. They are practically immune to burn and image retention. The vidicon models, for economical general indoor use at normal ambient light, can be operated at light levels as low as 2.15 lux (0.20 fc).











These cameras are designed with Large Scale Integration (LSI) technology for exceptional camera operation. Rugged surface mount devices ensure accurate, reliable, and uninterrupted service under the toughest conditions. Double insulation on the 120 V and 220 V models simplifies installation by eliminating the need for a third-wire ground. Safety is not compromised, and ground loops can be eliminated. Ground loops cause hum bars and make systems vulnerable to damage from lightning transients.

Designed to fully utilize the camera tube's potential, these cameras provide very high resolution. Vidicon models have a resolution of 700 lines and Ultricon III models exceed 600 lines for extremely clear, sharp pictures. Standard features include internal gamma correction, automatic beam control, and auto black plus keyed clamp. In addition, the standard camera will Genlock to other composite video systems, standard sync and drive sources, or line lock to power line reference for roll-free switching and recording.

Available options include fiber optic output and a variety of power sources. On-screen camera identification is available.

The large number of available precision manufactured lenses create a camera which can be adapted for nearly any closed-circuit video application. They are designed to work with CCTV components in a modular fashion and are easily connected to video monitors, sequential switchers, and time lapse video recorders. These cameras are compatible with the entire line of RCA CCTV family of products.





IMPORTANT SAFEGUARDS

- Read Instructions All the safety and operating instructions should be read before the unit is operated.
- Retain Instructions The safety and operating instructions should be retained for future reference.
- Heed Warnings All warnings on the unit and in the operating instructions should be adhered to.
- Follow Instructions All operating and use instructions should be followed.
- Cleaning Unplug the unit from the outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- Attachments Do not use attachments not recommended by the product manufacturer as they may cause hazards.
- 7. Water and Moisture Do not use this unit near water for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, near a swimming pool, in an unprotected outdoor installation, or any area which is classified as a wet location.
- 8. Accessories Do not place this unit on an unstable stand, tripod, bracket, or mount. The unit may fall, causing serious injury to a person and serious damage to the unit. Use only with a stand, tripod, bracket, or mount recommended by the manufacturer, or sold with the product. Any mounting of the unit should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
- 9. Ventilation Openings in the enclosure, if any, are provided for ventilation and to ensure reliable operation of the unit and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked. This unit should not be placed in a built-in installation unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
- 10. Power Sources This unit should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of the power supply you plan to use consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the operating instructions.
- 11. Grounding or Polarization This unit may be equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
 - Alternately this unit may be equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
- 12. Power-Cord Protection Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
- 13. Power Lines An outdoor system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outdoor system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal. U.S.A. models only refer to the National Electrical Code Article 820 regarding installation of CATV systems.
- Overloading Do not overload outlets and extension cords as this can result in a risk of fire or electric shock.

- 15. Object and Liquid Entry Never push objects of any kind into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the unit.
- 16. Servicing Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- 17. Damage Requiring Service Unplug the unit from the outlet and refer servicing to qualified service personnel under the following conditions:
 - a. When the power-supply cord or plug is damaged.
 - b. If liquid has been spilled, or objects have fallen into the unit.
 - c. If the unit has been exposed to rain or water.
 - d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
 - e. If the unit has been dropped or the cabinet has been damaged.
 - f. When the unit exhibits a distinct change in performance -this indicates a need for service.
- 18. Replacement Parts When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.
- Safety Check Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.
- 20. Coax Grounding If an outside cable system is connected to the unit, be sure the cable system is grounded. U.S.A. models only – Section 810 of the National Electrical Code, ANSI/NFPA No.70-1981, provides information with respect to proper grounding of the mount and supporting structure, grounding of the coax to a discharge unit, size of grounding conductors, location of discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
- 21. Lightning For added protection of this unit during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the cable system. This will prevent damage to the unit due to lightning and power-line surges.

FCC INFORMATION (U.S.A. Models Only)

WARNING — This equipment generates and uses radio frequency energy and if not installed in accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in residential or commercial installations. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference.

If necessary, the user should consult the dealer or an experienced radio/television technician for corrective action. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No.004-000-00345-4.

RECOMMENDED PROCEDURE FOR CAMERAS IN STORAGE

THE CAMERA TUBE IN TV CAMERAS IS A VACUUM DEVICE WHICH CAN BE ADVERSELY
AFFECTED DURING INACTIVE STORAGE. TO PREVENT POSSIBLE CAMERA TUBE DAMAGE
DUE TO EVOLUTION OF GASES WITHIN THE TUBE DURING CAMERA STORAGE. THE

- 1. STORE IN COOL DRY AREAS.
- 2. AFTER ANY IDLE PERIOD OF 90 DAYS OR MORE, THE CAMERA SHOULD BE OPERATED FOR AT LEAST EIGHT (8) HOURS AND PREFERABLY UP TO TWENTY-FOUR (24) HOURS WITH THE LENS CAPPED. REPEAT THIS PROCEDURE 90 DAY INTERVALS IN THE EVENT OF LONG TERM STORAGE.

NOTES

- 1. THE MOST COMMON CAMERA TUBE DAMAGE, AS RESULT OF EVOLUTION OF GASES WITHIN THE TUBE, IS THERMONIC CATHODE DAMAGE.
- 2. IT IS OF PARTICULAR IMPORTANCE TO ASSURE THAT SIT AND ISIT CAMERAS
 HAVE THE LENS CAPPED, DURING THIS PROCEDURE. IF NOT CAPPED, THE
 PHOTOCATHODE MAY BE DAMAGED.
- 3. OPERATION AT INTERVALS SPECIFIED PERMITS THE TUBE GETTERS TO EFFECTIVELY CONTROL THE GAS BUILD UP DURING STORAGE.