

## **MS500 Series Manual Switchers**

### **Installation/ Operation Manual**

**C820M-D (1/01)**



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## IMPORTANT SAFEGUARDS AND WARNINGS

Prior to installation and use of this product, the following WARNINGS should be observed.

1. Installation and servicing should only be done by qualified service personnel and conform to all local codes.
2. Unless the unit is specifically marked as a NEMA Type 3, 3R, 3S, 4, 4X, 6 or 6P enclosure, it is designed for indoor use only and it must not be installed where exposed to rain and moisture.
3. Only use replacement parts recommended by Pelco.
4. After replacement/repair of this unit's electrical components, conduct a resistance measurement between line and exposed parts to verify the exposed parts have not been connected to line circuitry.

The product and/or manual may bear the following marks:



This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit.



This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.

<b>CAUTION:</b>
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RISK OF ELECTRIC SHOCK. DO NOT OPEN.
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Please thoroughly familiarize yourself with the information in this manual prior to installation and operation.

## DESCRIPTION

The MS500 Series provides an inexpensive and reliable method of switching 4 to 18 inputs to a single monitor output using interlocked manual pushbuttons. Included in this series is the MS540 switcher with two monitor outputs and the capacity to switch up to 40 inputs with a 14 pushbutton panel.

The MS500 Series Switchers are designed for either looping or terminating operation, depending on the model.

## MODELS

### Terminating

MS504DT	4 inputs (UL)
MS508DT	8 inputs (UL)
MS512DT	12 inputs (UL)
MS518DT	18 inputs (UL)
MS540DT	40 inputs (UL)
MS504GDT	4 inputs, illuminated buttons, 120 VAC (UL)
MS508GDT	Same as MS504GDT, 8 inputs (UL)
MS512GDT	Same as MS504GDT, 12 inputs (UL)
MS512GDT/220	Same as MS512GDT except 230 VAC
MS518GDT	Same as MS504GDT, 18 inputs (UL)

### Terminating With Audio Follow

MS504AF	4 inputs (UL)
MS508AF	8 inputs (UL)
MS512AF	12 inputs (UL)
MS518AF	18 inputs (UL)

### Terminating With Balanced Audio Follow

MS504BAF	4 inputs (UL)
MS508BAF	8 inputs (UL)
MS512BAF	12 inputs (UL)

### Looping

MS504LDT	4 inputs (UL)
MS508LDT	8 inputs (UL)
MS512LDT	12 inputs (UL)
MS518LDT	18 inputs (UL)
MS540LDT	40 inputs, 2 monitor outputs 120 VAC (UL)
MS540LDT/220	Same as MS540LDT except 230 VAC
MS504GLDT	4 inputs, illuminated buttons, 120 VAC input (UL)
MS504GLDT/220	Same as MS504GLDT except 230 VAC
MS508GLDT	Same as MS504GLDT, 8 inputs (UL)
MS512GLDT	Same as MS504GLDT, 12 inputs (UL)
MS512GLDT/220	Same as MS512GLDT except 230 VAC
MS518GLDT	Same as MS504GLDT, 18 inputs (UL)

### Looping With Audio Follow

MS504AFL	4 inputs (UL)
MS508AFL	8 inputs (UL)
MS512AFL	12 inputs (UL)
MS518AFL	18 inputs (UL)

### Looping With Balanced Audio Follow

MS504BAFL	4 inputs (UL)
MS508BAFL	8 inputs (UL)
MS512BAFL	12 input (UL) INSTALLATION

## INSTALLATION

**NOTE:** For the maximum recommended cable distances refer to the installation manuals supplied with equipment (camera, lens and monitor) to be used with the switcher.

1. Place the unit on a flat surface, or install it in an equipment rack using the appropriate rack-mount kit.
2. Refer to Figures 1 - 6 and select the desired configuration for your installation. Make all equipment connections as illustrated in the drawings. Refer to Table A for the type of coaxial cable to use.
3. Plug in the power cord. The switcher will begin operating.

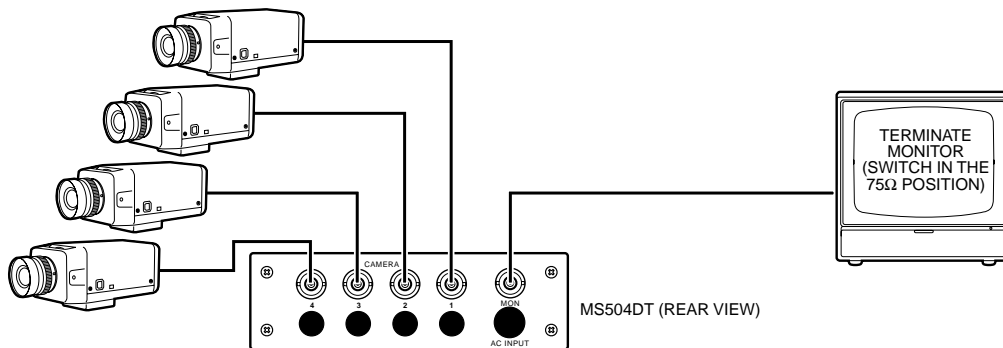
**Table A.** Video Coaxial Cable Requirements

Cable Type*	Maximum Distance
RG59/U	750 ft (229 m)
RG6/U	1,000 ft (305 m)
RG11/U	1,500 ft (457 m)

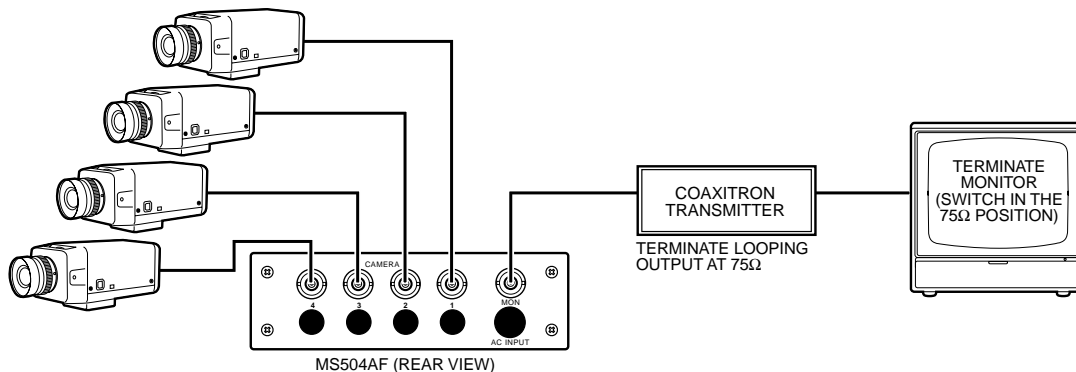
\* Minimum cable requirements:  
 75 ohms impedance  
 All-copper center conductor  
 All-copper braided shield with 95% braid coverage

## TERMINATING SWITCHERS

When using non-looping switchers, the monitor should be terminated unless the looping output, if available, on the monitor is used. (Refer to Figures 1 and 2.)



**Figure 1.** MS500 Series Switchers - Terminating Configuration



**Figure 2.** MS500 Series Switchers - Terminating Configuration with Coaxitron® Transmitter

## LOOPING SWITCHERS

**IMPORTANT:** Looping switchers do not have internal termination. Inputs must be terminated at 75 ohms by other equipment in the system.

Use coaxial cable to connect the input and looping video cables to the appropriate input connectors. Connect the monitor(s) to the monitor output. (Refer to Figures 3 and 4.)

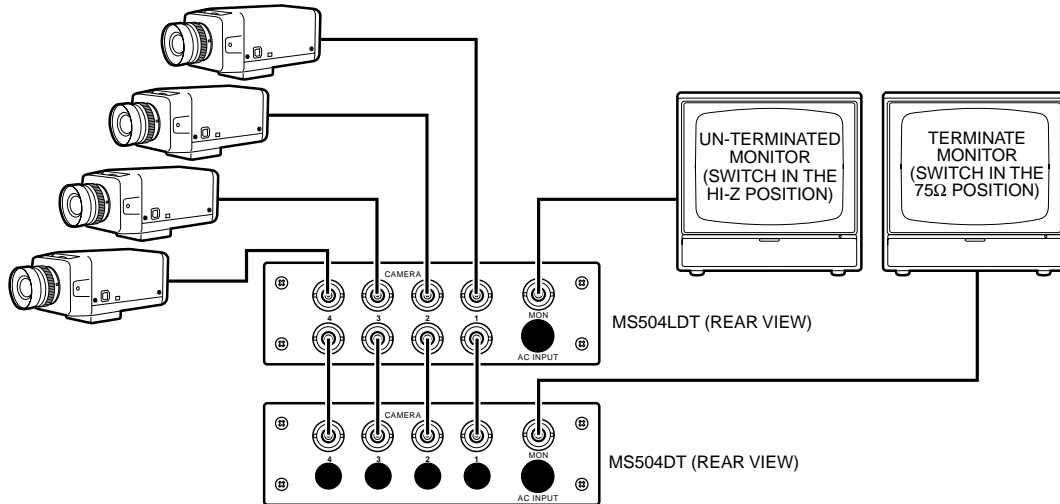


Figure 3. MS500 Series Switchers - Looping Configuration

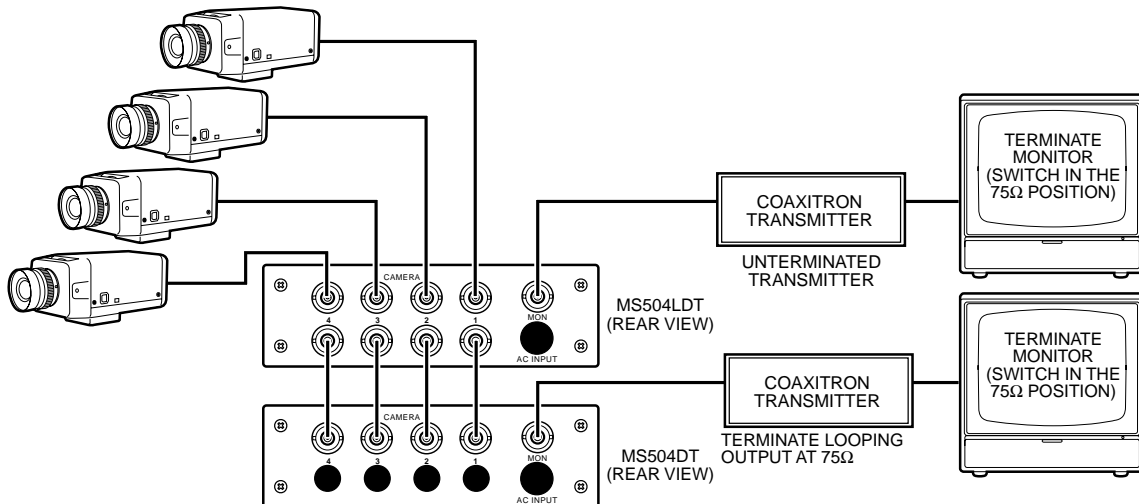


Figure 4. MS500 Series Switchers - Looping Configuration with Coaxitron Transmitter

## SWITCHERS WITH AUDIO FOLLOW

**NOTE:** Configuration does not permit two-way communication. Microphones or speakers, etc., can be installed at the camera site.

MS500 Series models with "AF" in the suffix have a connection for an audio signal source. Using appropriate cable with compatible connectors, connect audio signal sources to RCA jack (refer to Figure 5).

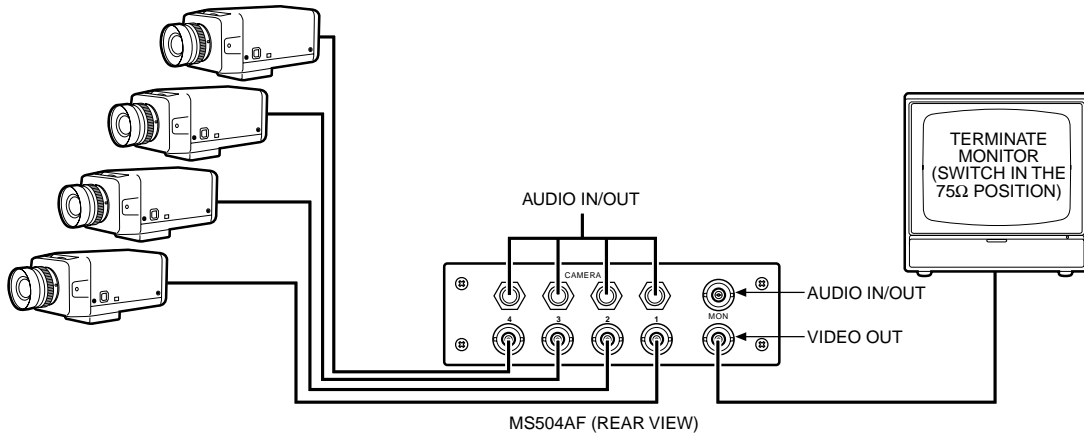


Figure 5. MS500 Series Switchers with Audio Follow

## SWITCHERS WITH BALANCED AUDIO FOLLOW

**NOTE:** Configuration does not permit two-way communication. Microphones or speakers, etc., can be installed at the camera site.

MS500 Series models with "BAF" in the suffix have terminal block connections for a two-conductor cable. This cable can be used for balanced audio follow or similar signals. (Refer to Figure 6.)

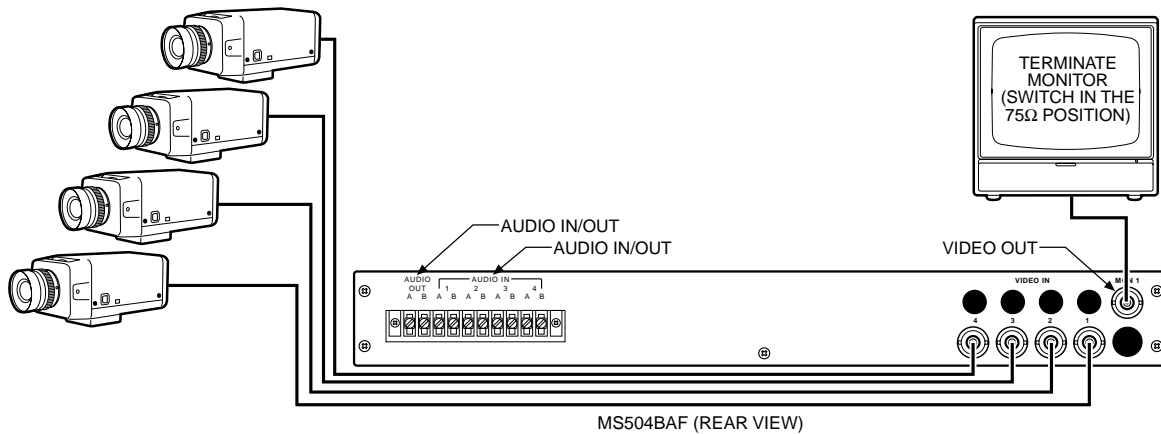


Figure 6. MS500 Series Switchers with Balanced Audio Follow

## SWITCHERS WITH AMPLIFIED OUTPUT

The MS540DT and MS540LDT switchers provide both an amplified output (Monitor 1) and a non-amplified output (Monitor 2). Most installations require the use of Monitor 2 output for proper operations.

**NOTE:** Use Monitor 2 non-amplified output only when interfacing with the MPT9000CZ/MPT9000PZ or KBD9000/KBD9000-X Coaxitron controls.

## OPERATION

To operate the MS500 Series Switcher, plug in the power cord and press a camera button to view video from the corresponding camera.

## MAINTENANCE

Regularly scheduled maintenance is not required. However, maintenance may be required in the following situations:

1. For switcher contacts that are not conducting properly, clean with a non-conducting electrical contact spray cleaner especially made for that purpose. Remove cover for access to the contacts and spray cleaner carefully into contacts from the rear.
2. To replace burned out bulbs in illuminated models, remove the switch cover from the front of the unit and push the bulb upwards, then lift out. Replace with Pelco #LAP327.



**IMPORTANT:** Units plugged into electrical outlets should be unplugged before spraying contacts.



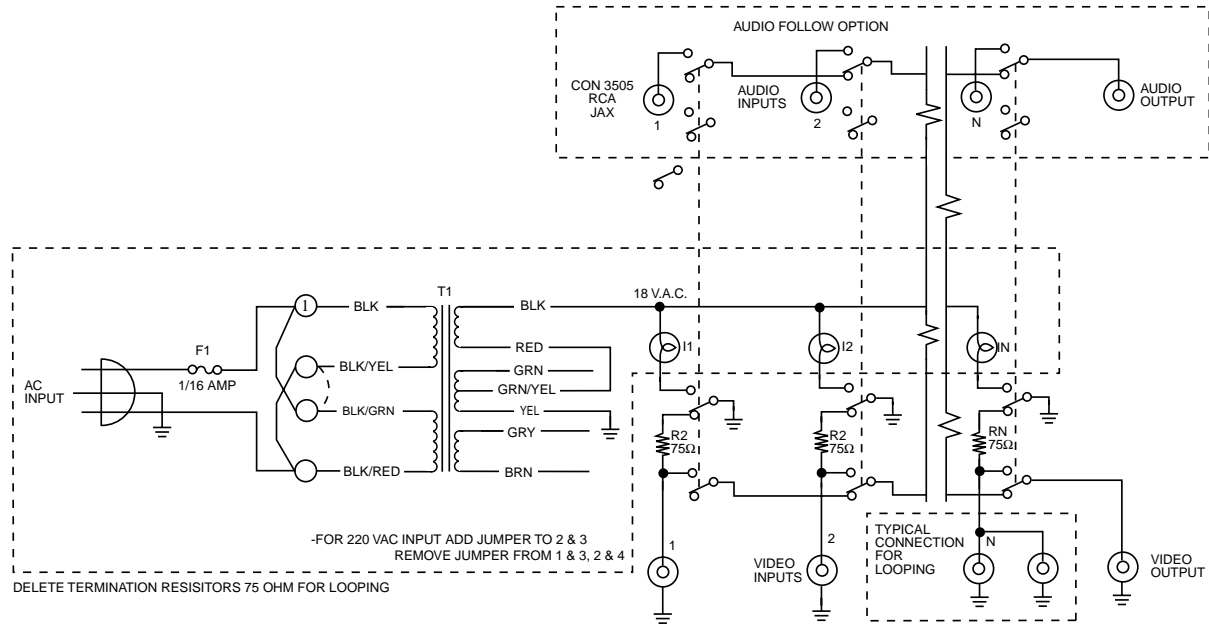


Figure 7. Schematic for 4-18 Position Manual Switchers

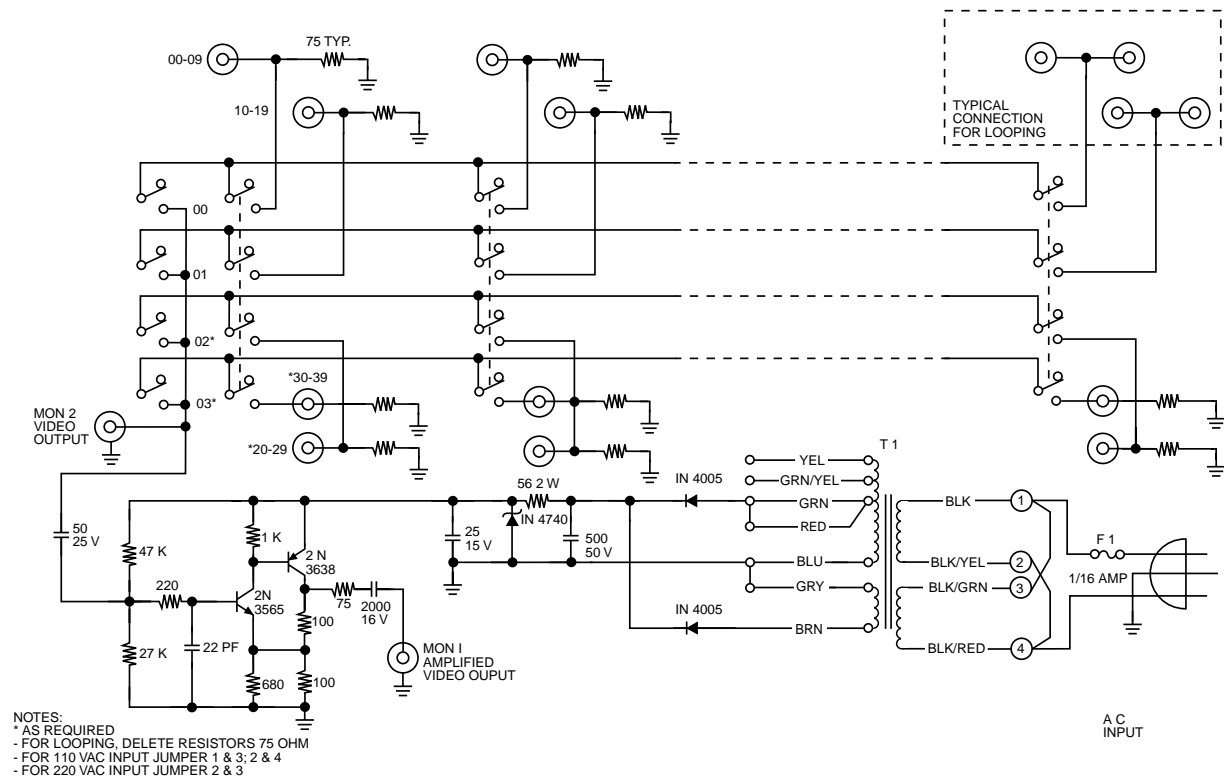


Figure 8. Schematic for 40 Position Manual switchers

## SPECIFICATIONS

### VIDEO

Inputs: 4, 8, 12, or 40 as indicated by the last two digits of the model number.

Video Connectors: BNC

#### Audio Connectors:

AF Switchers 1/8-inch RCA phone jack  
BAF Switchers Terminal block

#### Termination:

##### Terminated or Non-looping Switchers

Input 75-ohm internal termination  
Output 75-ohm source termination

##### Looping Switchers

Input High impedance looping  
Output High impedance looping

### ELECTRICAL

(Models MS500G, MS500GL, MS540DT, and MS540LDT)

Input Voltage: 120 VAC, 50/60 Hz or 230 VAC, 50 Hz

Power Requirement: .095 amp (11 vA)

Fuse: 3 AG 1/16 amp slo-blow

Power Cord: 3-wire grounded #18 AWG

(Models MS540DT and MS540LDT Only)

Output Amplifier: One amplified output and one non-amplified output for use with MPT9000CZ/MPT9000PZ (Coaxitron® System).

Gain: Unity

Frequency Response: Flat within  $\pm 1$  dB to 10 MHz

Max. Signal Level: 2 Vp-p

**GENERAL**

Switching:	Interlocked manual pushbuttons
Construction:	
Cover	Steel, black polyester powder coat
Chassis	Steel, zinc plated
Panel	Aluminum, black polyester powder coat
Environment:	32° to 120°F (0° to 48.89°C)
Dimensions	
MS504 Series (except AFL, BAF, and BAF models):	1.75 (H) x 5.3 (W) x 9.3 (L) inches (4.45 cm x 13.46 cm x 23.62 cm)
MS504AFL, MS504BAF, MS504BAFL, and MS508 Series (except AFL model):	1.75 (H) x 14.3 (W) x 9.3 (L) inches (4.45 cm x 36.32 cm x 23.62 cm)
MS508AFL, MS512 Series, MS518 Series, and MS540DT (except MS518AFL and MS540LDT):	1.75 (H) x 17.12 (W) x 9.3 (L) inches (4.45 cm x 43.48 cm x 23.62 cm)
MS518AFL and MS540LDT:	3.50 (H) x 17.12 (W) x 9.3 (L) inches (8.89 cm x 43.48 cm x 23.62 cm)

*(Design and product specifications subject to change without notice.)*

## WARRANTY AND RETURN INFORMATION

### WARRANTY

Pelco will repair or replace, without charge, any merchandise proved defective in material or workmanship for a period of one year after the date of shipment. Exceptions to this warranty are as noted below:

- Three years on Genex® Series (multiplexers, server, and keyboard).
- Two years on cameras and all standard motorized or fixed focal length lenses.
- Two years on Legacy®, Camclosure™ Camera Systems, CM6700/CM8500/CM9500/CM9750/CM9760 Matrix, PelcoVision®, DF5 Series and DF8 Fixed Dome products.
- Two years on Spectra® and Esprit™, including when used in continuous motion applications.
- Two years on WW5700 series window wiper (excluding wiper blades).
- Six months on all pan and tilts, scanners or preset lenses used in continuous motion applications (that is, preset scan, tour and auto scan modes).

Pelco will warrant all replacement parts and repairs for 90 days from the date of Pelco shipment. All goods requiring warranty repair shall be sent freight prepaid to Pelco, Clovis, California. Repairs made necessary by reason of misuse, alteration, normal wear, or accident are not covered under this warranty.

Pelco assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the Products. Pelco's liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the Products shall not exceed the price paid by the Dealer to Pelco for such Products. In no event will Pelco be liable for any special, incidental or consequential damages (including loss of use, loss of profit and claims of third parties) however caused, whether by the negligence of Pelco or otherwise.

The above warranty provides the Dealer with specific legal rights. The Dealer may also have additional rights, which are subject to variation from state to state.

If a warranty repair is required, the Dealer must contact Pelco at (800) 289-9100 or (559) 292-1981 to obtain a Repair Authorization number (RA), and provide the following information:

1. Model and serial number
2. Date of shipment, P.O. number, Sales Order number, or Pelco invoice number
3. Details of the defect or problem

If there is a dispute regarding the warranty of a product which does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

Method of return shipment shall be the same or equal to the method by which the item was received by Pelco.

### RETURNS

In order to expedite parts returned to the factory for repair or credit, please call the factory at (800) 289-9100 or (559) 292-1981 to obtain an authorization number (CA number if returned for credit, and RA number if returned for repair). Goods returned for repair or credit should be clearly identified with the assigned CA/RA number and freight should be prepaid. All merchandise returned for credit may be subject to a 20% restocking and refurbishing charge.

Ship freight prepaid to: Pelco  
3500 Pelco Way  
Clovis, CA 93612-5699

## REVISION HISTORY

Manual #	Date	Comments
C820M	3/88	Original version.
C820M-A	9/90	Added to Warning Section for UL compliance.
C820M-B	6/92	Revised to cover all MS500 Series models. Added DT200 to Options section.
C820M-C	10/97	Revised Figures 1 and 2. Put into new format.
C820M-D	1/01	Added illustrations for terminated and looping configurations with a Coaxitron transmitter. Updated manual to new format.