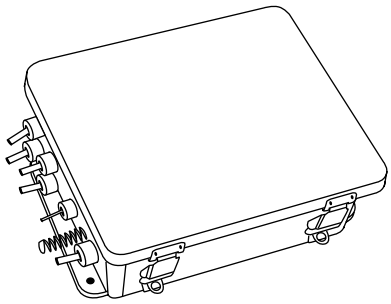

ERD97P21-U
Receiver

Installation/
Operation Manual

C939M-D (7/00)

Pelco • 3500 Pelco Way, Clovis • CA 93612-5699 USA • Pelco Online @ http://www.pelco.com
In North America and Canada: Tel (800) 289-9100 or FAX (800) 289-9150 • DataFAX (800) 289-9108
International Customers: Tel +1 (559) 292-1981 or FAX +1 (559) 348-1120 • DataFAX +1 (559) 292-0435
PelcoEurope BV • Dillenburg Center, Dillenburgstraat 5F • 5652 AM Eindhoven • The Netherlands
Tel +31(40) 251-9870 • FAX +31(40) 251-9835

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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.

5. The installation method and materials should be capable of supporting four times the weight of the receiver.

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.

CAUTION:
RISK OF ELECTRIC SHOCK. DO NOT OPEN.

Please thoroughly familiarize yourself with the information in this manual prior to installation and operation.

DESCRIPTION

The ERD97P21-U Receiver controls one pan/tilt unit, including camera and lens functions. The unit is designed for systems that transmit P protocol, such as CM6700 and CM9760. Standard features include 80 presets, frame scan, and random scan.

INSTALLATION

To install the ERD97P21-U Receiver:
- Mount the receiver.
- Change the input power cable (230 VAC only).
- Connect the wiring for power to the enclosure.
- Install the option board (if applicable).
- Make all equipment connections.
- Set the voltage options for input power (pan/tilt, camera, and lens functions).

MOUNTING

1. Determine the mounting location.
2. Use the ERD97P21-U Receiver as a template and mark the four fastener holes onto the mounting surface.
3. Prepare the holes for the fasteners (not provided). Pelco recommends 1/4-20 bolts or equivalent fasteners capable for supporting a minimum of 50 pounds (22.68 kg).
4. Position the receiver over the mounting holes. Secure the receiver to the mounting surface.

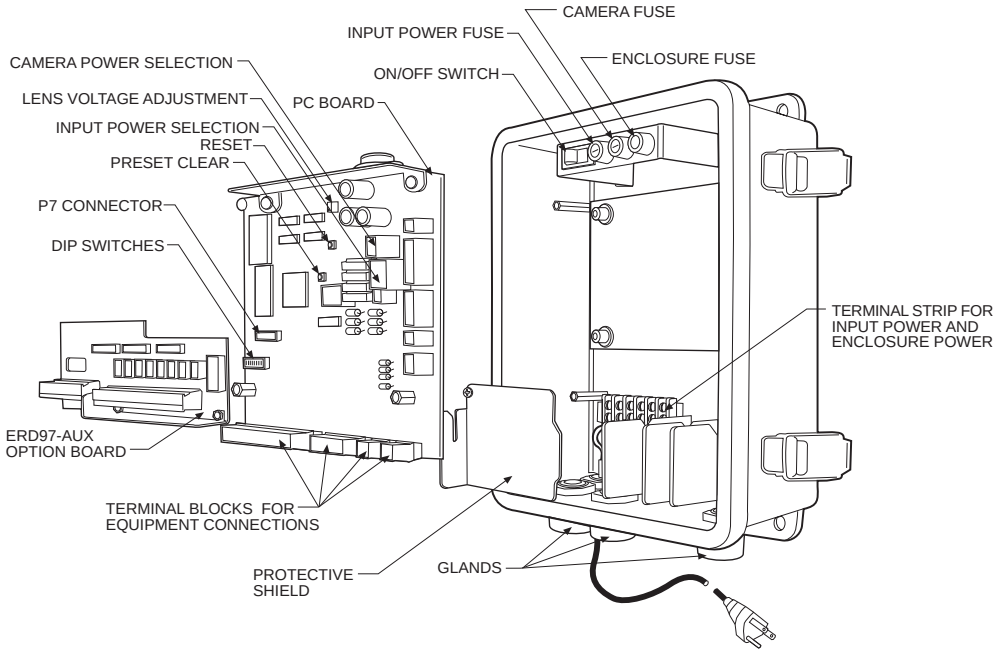

Figure 1. ERD97P21-U with ERD97-AUX Option Board

INPUT AND ENCLOSURE POWER

The receiver is configured for 120 VAC operation. The input power and enclosure power are connected to a terminal strip located underneath the PC board.

To change the receiver input power to 230 VAC and/or to connect power to the enclosure, do the following. Refer to Figure 1.

1. Loosen the thumbscrews on the PC board (refer to Figure 1) and move the board out of the way.
2. Remove the protective shield positioned over the terminal strip by loosening the thumbscrew that holds it in place.
3. 230 VAC Only - Remove the factory-installed 120 VAC power cable. Insert the 230 VAC power cable through the feedthrough gland at the base of the receiver. Connect to terminal strip.

4. Insert the enclosure cable through the feedthrough gland at the base of the receiver. Connect to terminal strip. Enclosure voltage is always the same voltage as the input voltage to the receiver.

5. Replace the protective shield over the terminal strip and reinstall the PC board.

ERD97P-AUX, OPTION BOARD (ALARMS AND AUXILIARIES)

To install the ERD97P-AUX board, do the following. If the ERD97P-AUX is already installed, proceed to step 4.

1. Locate P7, the 16-pin female connector located on the main board of the receiver. Refer to Figure 1.

2. Insert the male connector, located on the bottom of the ERD97P-AUX board, into P7.

3. Secure the ERD97P-AUX board to the main PC board with three Phillips head screws and lock washers. (The three screws and lock washers were packaged with the ERD97P21-U Receiver.)

4. (Optional) The auxiliary switches are factory set for remote (keyboard) operation. The option board's auxiliary functions can be controlled manually by resetting the Manual Auxiliary Control switches to the ON position. Refer to Figure 2.

5. (Optional) The auxiliary output relays are factory set in the normally open (NO) position. To reset the auxiliary output relays to normally closed mode, change the jumpers to the NC position. Refer to Figure 2.

EQUIPMENT CONNECTIONS

All connections to the PC board and option board are made through easy-to-use terminal strips. To make equipment connections, thread cable/wire through the feedthrough glands located on the base of the receiver. Refer to the Wiring Table (located on the inside lid of the receiver) and the printed labeling on the circuit boards. Use a small, slotted screwdriver to connect wires to the terminal strip.

WIRING TIPS

Pan/Tilt –The ERD9721-U has two connections for wiring pan/tilt preset operation.

a. SL/PP Models – Wire Pan A to the pan/tilt connection that is labeled "SL (360°) Preset." Wire Pan B to the pan/tilt connection that is labeled "Pan Preset."

b. PP Models – Pan A is not used. Wire Pan B to the pan/tilt connection that is labeled "Pan Preset."

Alarm Inputs – The main PC board has one alarm input, which is normally open. The ERD970-AUX option board provides an additional eight alarm inputs (normally open), as well as eight auxiliary outputs.

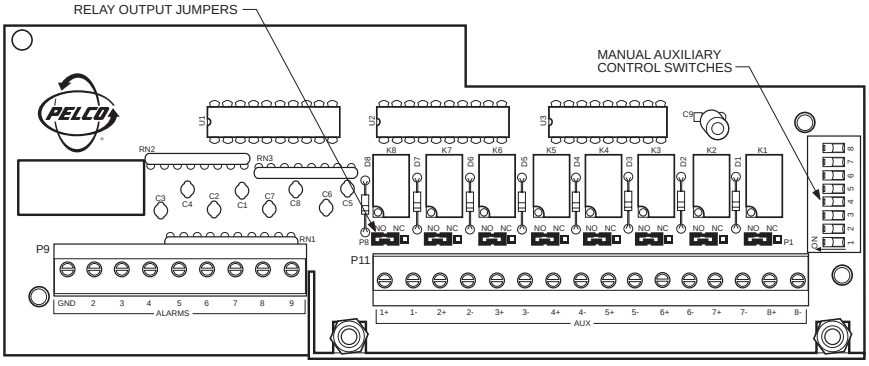

Figure 2. ERD97-AUX Option Board Layout

JUMPER SETTINGS

1. RX Termination – To daisy chain receivers (connect two or more receivers together), reset the RX Termination jumper to the non-terminating position. The last receiver in the daisy chain is the terminating unit, do not reset the jumper.

2. TX Termination – Not applicable.

3. Alarm Out – The ERD9721-U alarm output can be set for normally open or normally closed operation.

VOLTAGE AND FUSING OPTIONS

The ERD97P21-U Receiver can be configured to operate at 24 VAC, 120 VAC, or 230 VAC. Seven plug-in connectors and nine fuses are included with the ERD97P21-U Receiver. Install the proper voltage cubes and fuses. Refer to Table A and Figure 1.

Table A. Voltage Cubes and Fuses

Voltage Input Cube	Fuse
Power 24V	5A Slow Blow
Power 120V (Installed)	2A Slow Blow (Installed)
Power 230V	1A Slow Blow
Camera Power 24V (Installed)	1A (Installed)
Camera Power 120/230V	.2A or 1/16A
Pan/Tilt Power 24V	None
Pan/Tilt Power 120/230V	None
	1.5A (Enclosure)*
	3A (Enclosure)*
	5A (Enclosure)*

*The receiver comes with three enclosure fuses (1.5A, 3A and 5A). Select the appropriate value for your application using the following steps:

1. Determine the full-load wattage requirements of the enclosure.

2. Divide the enclosure wattage determined in step 1 by the input voltage to the receiver.

3. Select a fuse value that is close to, but not less than, the value determined in step 2.

   Example:
   An environmental enclosure with 120 VAC input, heater, defroster and window wiper.

   From the enclosure specifications:
   Heater ..... 160 watts
   Defroster ..... 15 watts
   Window Wiper ..... 90 watts
   Total wattage ..... 265 watts

   265/120 VAC = 2.208 Amps

   Therefore, a 3A fuse will work for this sample enclosure.

SWITCH SETTINGS

DIP switches are used to select the receiver address, the communication rate and the communication protocol. Refer to Table B.

Table B. Switch Settings

Address	Switch Setting				
	1	2	3	4	5
1	Off	Off	Off	Off	Off
2	On	Off	Off	Off	Off
3	Off	On	Off	Off	Off
4	On	On	Off	Off	Off
5	Off	Off	On	Off	Off
6	On	Off	On	Off	Off
7	Off	On	On	Off	Off
8	On	On	On	Off	Off
9	Off	Off	Off	On	Off
10	On	Off	Off	On	Off
11	Off	On	Off	On	Off
12	On	On	Off	On	Off
13	Off	Off	On	On	Off
14	On	Off	On	On	Off
15	Off	On	On	On	Off
16	On	On	On	On	Off
17	Off	Off	Off	Off	On
18	On	Off	Off	Off	On
19	Off	On	Off	Off	On
20	On	On	Off	Off	On
21	Off	Off	On	Off	On
22	On	Off	On	Off	On
23	Off	On	On	Off	On
24	On	On	On	Off	On
25	Off	Off	Off	On	On
26	On	Off	Off	On	On
27	Off	On	Off	On	On
28	On	On	Off	On	On
29	Off	Off	On	On	On
30	On	Off	On	On	On
31	Off	On	On	On	On
32	On	On	On	On	On

Communication Rate	Switch Setting	
	6	7
1200 Baud	Off	Off
2400 Baud	On	Off
4800 Baud	Off	On
9600 Baud	On	On

	Switch Setting
Protocol	**8**
Reserved	Off
P Protocol	On

OPERATION

The ERD97P21-U Receiver runs a configuration cycle at startup to detect preset capabilities and verify that the unit functions properly.

To start the receiver, plug it in. Set the ON/OFF switch to ON. The pan/tilt unit tilts down and pans left, followed by a tilt up and a pan to the right. The lens zooms out and focuses far. The lens zooms in and focuses near. During the configuration cycle, the receiver will not accept any commands.

LENS VOLTAGE ADJUSTMENT

The lens voltage is adjusted manually by turning a potentiometer on the PC board. Refer to Figure 1. The range of adjustment is from 5 VDC to 10 VDC.

MOTION COMMANDS

Motion commands tell the receiver to start or stop a pan/tilt or lens motion. More than one motion command can be requested at a time. There is a 60-second timeout on all motion commands. If the receiver initiates a motion and no commands are received for 60 seconds, the receiver stops all motion. This prevents the receiver from being driven continuously if communication problems arise.

PRESETS

The ERD97P21-U can store up to 80 presets. (To set presets, refer to the instruction manual for the control unit.) All presets are cleared if the preset clear switch is pressed and held down while the processor is either reset or powered up.

If any motion command or alarm is received during a move to a preset position, the command is aborted and the new command is initiated.

ALARM AND AUXILIARY FUNCTIONS

The alarm inputs are reserved for the first nine presets. If an alarm becomes active and there is a preset for the alarm, the preset is initiated. For example, if alarm 4 is activated, the camera moves to preset 4. If more than one alarm is activated, the receiver sequences between the corresponding presets, stopping for five seconds at each preset.

If a motion command or move to preset command is received while alarms are active, alarm processing stops and the command is processed. After 60 seconds, alarm processing resumes. The alarm lockout timer is reset if all alarms become inactive. Alarm processing restarts immediately if an alarm is triggered.

AUXILIARY OUTPUTS

There are eight auxiliary outputs on the optional alarm/auxiliary board. These relays are opened and closed by receiver software commands.

SCANNING

FRAME SCANNING

To start frame scanning, call preset 98.
To stop frame scanning, call preset 96.

Panning motion is not continuous during frame scanning operation. The receiver moves the pan/tilt unit to the right for three seconds, stops for three seconds, pans to the right again for three seconds. When the unit hits a limit stop, it reverses direction.

If any motion command or alarm is requested during frame scan, the scanning is aborted and the new command is initiated.

RANDOM SCAN

To start random scanning, call preset 97.
To stop random scanning, call preset 96.

When random scanning starts, the pan/tilt unit moves to the left for 60 seconds or until it hits a limit stop. When a limit stop is hit, the unit pans to the right for 60 seconds or until it hits a limit stop. The receiver then starts a random cycle of movement, panning and stopping for a random amount of time.

If there are no limit stops, the movement time varies between 1 and 60 seconds. If there are limit stops, the movement time varies between 1 second and the time it takes to move between the limit stops. The time between movement varies from 4 to 60 seconds. If any motion command or alarm is received during random scan, the scan is aborted.

TROUBLESHOOTING

RESET

If the receiver settings are changed (for example, DIP switch or voltage settings) or if the unit locks up, press the reset button located on the main PC board. Refer to Figure 1.
The reset command starts the receiver's configuration cycle. The pan/tilt unit tilts down and pans left, followed by a tilt up and a pan to the right. The lens zooms out and focuses far. The lens zooms in and focuses near. The receiver will not accept any commands during the configuration cycle.

SERVICE MANUAL

If you need to service your unit, obtain a service manual in one of the following ways:

- Go to Pelco's web site at ftp://www.pelco.com and find service manual C939SM.
- Call Pelco's DataFAX service at 1-800-289-9108 or 1-559-292-04335 and request document 29398.
- Contact Pelco's Literature Department and request service manual C939SM.

SPECIFICATIONS

ELECTRICAL

Input Voltage:	24 VAC, 120 VAC, 230 VAC (selected with labeled plug-in connectors)
Pan/Tilt Voltage:	24 VAC (2A maximum), 120 VAC, 230 VAC (selected with labeled plug-in connectors; no voltage step-up possible; with 230 VAC input, not possible to step down to 120 VAC)
Camera Voltage:	24 VAC (0.5 A maximum), 120 VAC, 230 VAC (selected with labeled plug-in connectors; no voltage step-up possible; with 230 VAC input, not possible to step down to 120 VAC).
Enclosure Voltage:	Follows input voltage to receiver, fused.
Lens Voltage:	6 to 10 VDC; 25 mA at 10 VDC and 100 mA at 9 VDC
Power Consumption	
Pan/Tilt:	48 vA maximum
Camera:	12 vA maximum
Lens:	5 vA maximum
Receiver:	15 vA maximum
Total:	80 vA maximum
Control Method:	RS-422 compatible (at 1200, 2400, 4800, 9600 baud). Receiver address and baud rate selectable by DIP switch.
Alarm Inputs:	Main PC board has 1 normally open alarm input. Option board has 8 additional normally open alarm inputs
Relay Outputs:	Main PC board has 1 relay. Option board has additional 8 relay outputs, which are under receiver control or manual control via DIP switch. (All relay outputs can be set for normally closed or normally open operation.)
Contact Rating:	1A at 24 VDC, 0.5 A at 120 VAC
Random Scan:	Yes
Frame Scan:	Yes
Presets:	Standard with all units, 80 presets maximum
LED Indicators:	Power, TX data, RX data
Fuse Protection	
Receiver Input Power:	24 VAC – 5 ASB 120 VAC – 2 ASB 230 VAC – 1 ASB
Camera Power:	24 VAC – 1.0 A 120 VAC – 0.2 A 230 VAC – 1/16 A
Enclosure Power:	Fuse values depend on the specifications of the equipment/accessories installed in the enclosure. Check equipment specifications for determining fuse values.

GENERAL

Operating Temperature:	14° to 122°F (-10° to 50°C)
Dimensions:	9.44 (W) x 4.32 (H) x 11.62 (D) inches (23.98 x 10.97 x 29.51 cm)
Weight:	12 lb (5.43 kg)
Rating:	NEMA 4X

(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
C939M	11/95	Original manual.
C939M-A	12/95	Fusing information updated.
C939M-B	5/96	Updated per ECO#95-468. Changed exploded view and parts call-out.
C939M-C	12/99	Revised range for lens voltage adjustment. Moved exploded assembly diagram and parts lists to new maintenance/service manual (C939SM). Updated manual to new format.
C939M-D	7/00	Removed references to LRD41TLC.