

MD2001  
Single Channel  
Analog Video  
Motion Detector

Installation/  
Operation Manual

C616M-B (11/97)

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## REVISION HISTORY

<u>Manual #</u>	<u>Date</u>	<u>Comments</u>
C616M	—	Original version. Manual for the MD2000.
C616M-A	3/90	Rev. A. Revised manual for the MD2000.
C616M-B	11/97	Rev. B. Completely revised. Manual for the MD2001.

### 1.1 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.

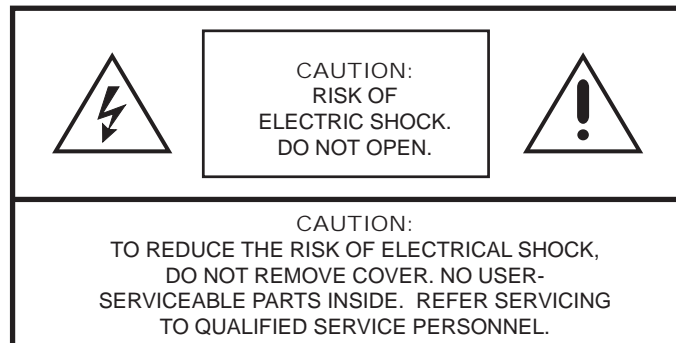
The product and/or manual may bear the following marks:



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.



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

## 1.2 UNPACKING INSTRUCTIONS

Unpack and inspect all parts carefully.

The following items are supplied:

- 1 Single Channel Analog Video Motion Detector
- 1 Installation/Operation Manual (C616M-B)
- 1 6-pin mating plug

Be sure to save the shipping carton, boxes and inserts. They are the safest material in which to make future shipments.

If an item appears to have been damaged in shipment, replace it properly in its box and contact the factory at 1-800-289-9100 or 1-559-292-1981 for a replacement. (International customers fax 1-559-348-1120 for authorization and instructions.)

If an item needs to be returned to the factory for repair, consult the WARRANTY AND RETURN section of this manual for instructions.

## 1.3 RECOMMENDED TOOLS

Pelco does not supply the basic tools needed for the installation process. The following tools are recommended.

Small flat blade screwdriver

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## 2.0 DESCRIPTION

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The MD2001 is an analog video motion detector designed to detect motion in the field-of-view of a CCTV camera.

The MD2001 utilizes solid-state circuitry and provides consistent detection levels and high levels of noise immunity. An on-screen window defines the sensitized detection area of the screen. Front panel controls allow for vertical and horizontal size and positioning of the detection area. Sensitivity is adjustable and automatically compensates for slow changes in light levels. Only standard video from a camera is required. No external sync devices are necessary.

Upon detection of motion, the MD2001 alerts the operator with a two-tone audio beeper and a flashing LED, and provides a switch closure to start an auxiliary device such as a Time Lapse VCR. Also, the MD2001 allows for automatic or manual reset.

### 2.1 MODELS

MD2001	Single channel analog video motion detector, 120 VAC.
MD2001-X	Single channel analog video motion detector, 230 VAC. (CE)

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## 3.0 INSTALLATION

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Systems involving video motion detectors must use the best possible connection and grounding practices. Poor wiring not only causes poor pictures, but could affect the alert function. Camera and lens selection, camera location, scene lighting, and mounting are also significant factors in achieving optimum performance. These factors are covered in more detail in Section 4.5, SYSTEM CONSIDERATIONS.

### 3.1 VIDEO INPUT

Connect a good grade of coax cable from the camera to the "VIDEO IN" BNC connector on the rear panel of the MD2001. The MD2001 has a passive loop-through input. It does not terminate the input in 75 ohms.

**Table A.** Video Coaxial Cable Wiring Distances

Cable Type*	Maximum Distance
RG59	750 ft (229 m)
RG6	1,000 ft (305 m)
RG11	1,500 ft (457 m)
*Minimum cable requirements: 75 ohms All-copper center conductor All-copper braided shield with 95-percent braid coverage	

NOTE: Refer to Table A for the type of video coaxial cable to use.

### 3.2 VIDEO OUTPUT

Connect a good grade of coax cable from the "VIDEO OUT" BNC connector on the rear panel of the MD2001 to the video input of the monitor or video switcher. This cable should be terminated in 75 ohms, or if looped through the monitor or switcher, terminated at the far end of the run.



**CAUTION:** *Do not use relays to switch line voltages.*

### 3.3 RELAY CLOSURE CONNECTIONS

The 6-pin connector (supplied) is used to access a SPDT relay which can be used to activate a VCR or other devices during an alert. The relay contacts provide a closure between pins 1 and 3 when an alert condition occurs (see Figure 2, Rear Panel Controls and Connections).

The relay contact ratings are:

Voltage: 40 VDC or RMS maximum

Current: 0.8 amps DC or RMS maximum (resistive load)

The 6-pin connector pin-outs are:

Pin	Function	Description
Pin 1	C	Common Relay Contact
Pin 2	NC	Normally Closed Relay Contact
Pin 3	NO	Normally Open Relay Contact
Pin 4	Ground Symbol	Circuit Ground
Pin 5	LOGIC	Logic Out
Pin 6	EXT RESET	External Reset Input

### 3.4 LOGIC OUTPUT

An external device may be controlled from the 6-pin connector by wiring LOGIC (Pin 5) and ground (Pin 4). When activated, a ground level signal is at Pin 5. When inactive, there is a +10 VDC level signal at Pin 5 (referenced to Pin 4, ground). The logic output should be connected to high impedance devices; more than 50k ohms. (See Section 7.0, SPECIFICATIONS)

### 3.5 EXTERNAL RESET

An external switch can be used as an external reset from the 6-pin connector by wiring EXT RESET (Pin 6) and ground (Pin 4).

### 3.6 POWER

No power on/off switch is provided. The LED on the front panel indicates when power is applied. To apply power: insert the wall mount transformer plug into the 12 VAC PWR jack in the rear panel and insert the wall mount transformer into a 120V power source (230 VAC with MD2001-X).

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## 4.0 OPERATIONS

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### 4.1 FRONT PANEL CONTROLS AND INDICATORS

Refer to Figure 1 to better understand the front panel controls and indicators.

**Display (ON/OFF)** Activates (switch up position) or deactivates (switch down position) display of the sensitive area window. Motion inside this window will be detected.

**Vertical Adjustment (V)** Adjusts the vertical positioning (P) and size (S) of the detection window. Using a small screwdriver, turn the control and adjust the detection window vertical size and position on the screen.

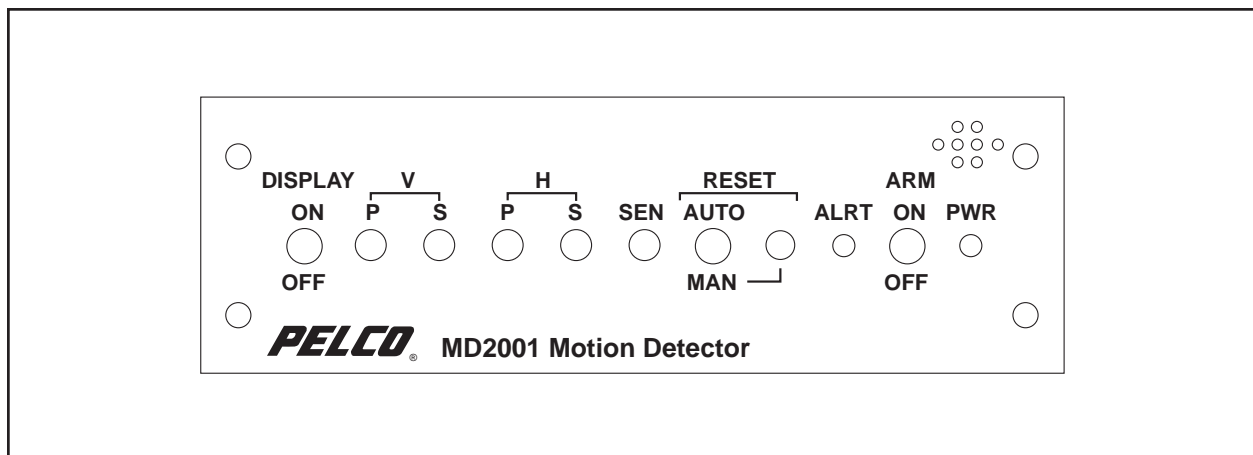
**Horizontal Adjustment (H)** Adjusts the horizontal positioning (P) and size (S) of the detection window. Using a small screwdriver, turn the control and adjust the detection window horizontal size and position on the screen.

**Reset (RESET AUTO/MAN)** The reset area has a toggle switch and a push-button switch.

When the AUTO setting (up toggle switch position) is activated, depending on the dip switch time settings, an alert condition will automatically be cleared (see Table B, Setup Timer Table and Figure 3, Dip Switch Settings for more detail).

When the MAN setting (down toggle switch position) is activated, the manual reset or remote reset button must be used to clear an alert condition. (Automatic reset of the motion detector is deactivated.)

The manual reset or remote reset push-button switch restores the unit to motion detection mode after an alert has been indicated and stops all alert signals. The unit will return immediately to the alert condition if the motion is still present. The manual reset or remote reset push-button switch is available regardless of the AUTO/MAN toggle switch position.



**Figure 1.** Front Panel Controls and Indicators for the MD2001



Sensitivity (SEN)	This control adjusts the sensitivity of the detection area window. Clockwise rotation of a screwdriver on this control increases sensitivity.
Visual Alert LED (ALRT)	When no motion is detected, the red LED is constantly on (the ARM toggle switch is in the [ON] up position). The LED is off when the ARM toggle switch is in the (OFF) down position. The LED flashes on and off when motion has been detected, regardless of the ARM switch position.
ARM (ON/OFF)	Activates (switch up position) or deactivates (switch down position) the relay, logic output, and audible alert functions of the motion detector. It must be in the activated ON position (switch up) when these functions are desired.
Power On LED (PWR)	Green LED lights when power is applied to the unit.

## 4.2 REAR PANEL CONTROLS AND CONNECTIONS

Refer to Figure 2 to better understand the rear panel controls and connections.

Power (12 VAC PWR)	Input power for the unit.
Video (IN/OUT)	The video input (IN) BNC connects the camera to the MD2001. The video output (OUT) BNC connects the MD2001 to a monitor or switcher.
6-Pin Connector	The 6-pin connector connects external wires to the MD2001. (See Sections 3.3, 3.4, and 3.5.)
Dip Switch 1-3 (AUTO TIME)	Setting dip switches 1-3 define the approximate time for an alert condition to clear (see Table B, Setup Timer Table and Figure 3, Dip Switch settings).
Dip Switch 4 (AUDIBLE)	Setting dip switch #4 in the up (on) position activates the audible buzzer and setting #4 in the down position deactivates the audible buzzer (See Figure 3, Dip Switch settings).
Display Adjustment (DISP ADJ)	Adjusts the detection area window outline from white to gray. To adjust, turn the display adjustment counter clockwise for white or clockwise for black.

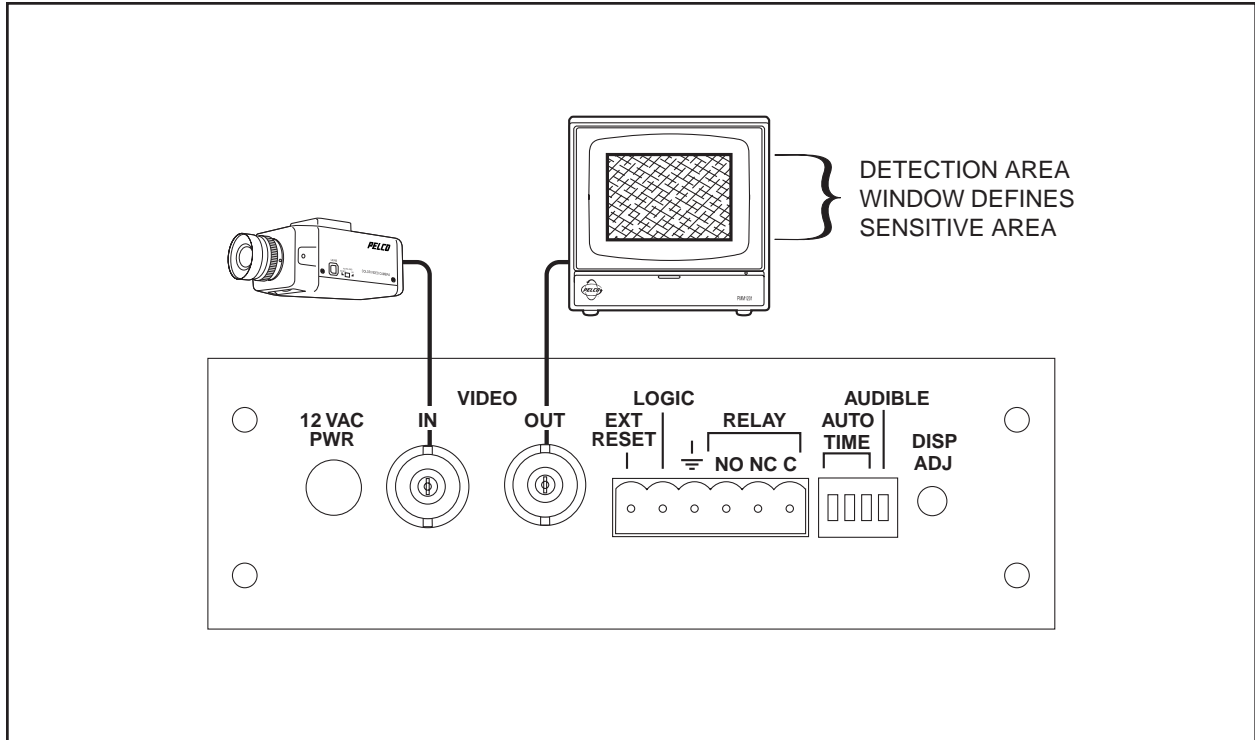


Figure 2. Rear Panel Controls and Connections

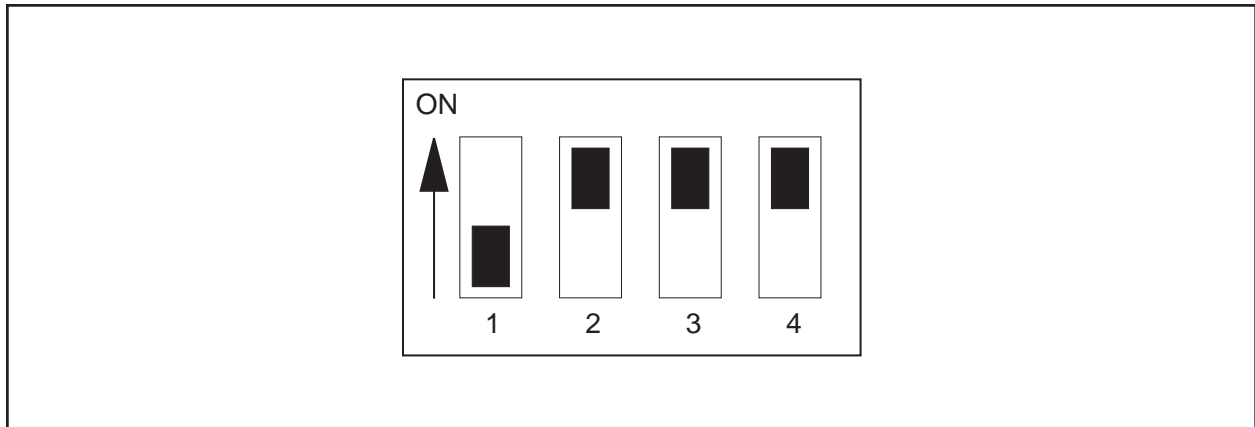


Figure 3. Dip Switch Settings

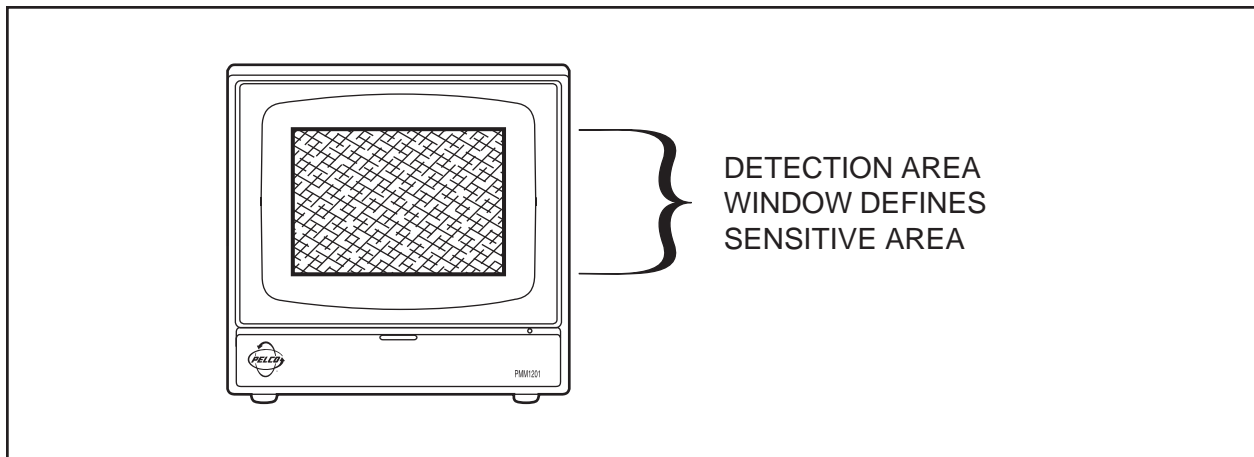
Table B. Setup Timer Table (Approximate Time)

TIMER	Switch1	Switch 2	Switch 3
1/2 second	ON	ON	ON
2 seconds	OFF	ON	ON
7 seconds	OFF	OFF	ON
15 seconds	ON	ON	OFF
22 seconds	OFF	OFF	OFF

NOTE: Dip switch ON settings in Table B, Setup Timer Table, are in the "up" position.

### 4.3 SETUP

1. Apply power to the motion detector and associated cameras, switchers, and monitors. It is normally better to have power to auxiliary equipment, such as VCR's, turned off during initial setup.
2. If necessary, adjust the switcher to display the camera connected to the motion detector.
3. Turn all motion detector toggle switches to OFF (down position).
4. Turn the DISPLAY switch to ON (up). The detection area window (see Figure 4) can be seen on the monitor. Motion inside this detection window will be detected. The size of this area may be adjusted (using a small screwdriver) using the front panel controls for vertical and horizontal position and size. (See Section 4.1, FRONT PANEL CONTROLS AND INDICATORS)
5. Turn the ARM toggle switch to the ON position (up). This will activate all alert functions. Motion in the detection window will cause the audio beeper to sound, the visual alert red LED to flash on and off, the relay contacts to close, and the switcher logic output to go active low.
6. Check to see that the RESET toggle switch is in the MAN (down) position before proceeding with sensitivity adjustment. This will allow adjustment of the detection window sensitivity without the interference of an automatic reset.
7. Sensitivity, the most critical adjustment, can be varied using the SEN control (using a small screwdriver). The setting should be low enough to avoid false or unwanted alerts caused by normal motions such as birds or blowing leaves, but high enough to detect motions of interest. The optimum setting is best determined by experimenting at the site where the MD2001 is to be used. Start with the mid-range setting. Simulate anticipated motions which should and should not cause an alert. If the results are unsatisfactory, raise (adjust control clockwise) or lower (adjust control counter clockwise) the sensitivity, reset the unit with the MAN RESET button, and repeat the simulated activity until satisfactory performance is obtained.
8. If desired, turn the RESET toggle switch to the AUTO (up position). The unit will automatically reset after motion ceases. If the reset interval is to short or long, reconfigure the rear panel dip switch settings for the time desired (see Section 4.2, REAR PANEL CONTROLS AND CONNECTIONS and Table B, Setup Timer Table).
9. Setting the AUDIBLE dip switch (switch #4 on the back panel) in the up position will enable the buzzer. Setting dip switch #4 in the down position will disable the buzzer.



**Figure 4.** On-Screen Display of Detection Area Window

#### 4.4 NORMAL OPERATION

During normal operation, the motion detector may be set with all toggle switches in the active mode (up position). This displays the detection window, arms the four action indicators (LED, Logic output, relay contact, and buzzer) and activates the AUTO reset. It allows the operator to look away from the monitor and quickly locate the detection window on the screen. If the operator wishes to turn the alert indicators off and reset sooner, the manual reset button can be used.

If the motion detector is used to view a critical area during a non-critical time period, such as a door at quitting time, the ARM switch may be set to OFF (down position). In this mode the ALRT LED will flash, but the audio signal and auxiliary output will not activate.

#### 4.5 SYSTEM CONSIDERATIONS

Motion detectors operate on the principle that any change in the camera field-of-view is caused by some moving object. They monitor the content of the camera field-of-view within a sensitized area and detect differences in the scene content in that area from one TV frame to the next. Moving objects in the detection area field-of-view cause video changes which, depending on the sensitivity setting, cause alerts. However, particularly in outdoor installations, normal motions such as blowing leaves, small animals, birds, or clouds may cause unwanted alerts. Other factors, such as instability in the camera, rapid changes in light level caused by an auto-iris, jitter caused by camera interlace, or electrical noise signals superimposed on the video signal by improper cabling or poor grounding will also cause changes in the scene content and produce false alerts. The sensitivity adjustment establishes the amount of change in scene content that is required within the detection area before the unit produces an alert. Reducing the sensitivity will reduce unwanted or false alerts. However, sensitivity to desired alert conditions is also reduced. Other important system considerations for achieving optimum motion detector performance are discussed in the following sections.

#### 4.6 CAMERA SELECTION

The MD2001 may be used with both 2:1 interlace and random interlace cameras. No external sync drive from the camera is required. These features are exceptional in motion detection systems.

Nevertheless, camera selection is very important. The selected cameras should be electrically and mechanically stable, low-noise, high quality units for best performance.

In general, random interlace cameras will give a lower level of performance than 2:1 interlace cameras. Small disturbances of the image are inherent with random scanning. These disturbances may be interpreted by the motion detector as object motions. Consequently, a system using random interlace cameras will require a slightly lower sensitivity setting to minimize false alerts.

#### 4.7 LENS SELECTION

Video motion detector systems are primarily affected by three lens parameters: Focal length, Lens Aperture and the Iris control method.

##### 4.7.1 Focal Length

The focal length of a lens directly affects the apparent size of objects as seen on the monitor and by the motion detector. Focal length also affects the overall camera field-of-view. A long focal length (telephoto) lens magnifies objects in the scene, but covers a smaller area. A short focal length (wide-angle) lens covers a large overall scene, but shrinks the apparent size of objects in the scene. Motion detectors can be affected by lenses that are too short or too long in focal length.

A long focal length (telephoto) lens is often used outdoors to view distant areas. These lenses magnify the effects of camera motion. It is important for the camera to have a stable mount. Avoid unsteady towers or poles. Telephoto lenses also magnify the disturbances caused by atmospheric effects, such as the image "swimming" seen when hot air currents cause air density changes in the path between the camera and what is being viewed.

Image interruption by snow, rain, and fog is obviously more frequent when the camera is a distance from the scene being viewed. All these factors affect the total distance that can be covered, the lens focal length and the usefulness of motion detectors on outdoor scenes. They must be judged by the installer after determining the camera operating environment.

A short focal length (wide angle) lens is used when the camera is close to the scene and a greater field-of-view is needed. Objects in the scene appear smaller on the monitor and to the motion detector. Very small objects are more difficult for the motion detector to sense. There is, therefore, a limit to the coverage advantage when using wide angle lenses.

The field-of-view and magnification of a focal length lens also depends on the image format (size) of the camera tube. Tables and formulas are often available from the camera or lens supplier to help determine what lens is best.

These factors can affect the number of cameras needed in an installation. They should be determined by calculation or experimentation during the initial design of the video system.

#### 4.7.2 Lens Aperture and Lens Control

The aperture (f-number) of a lens is a measure of the maximum lens opening available to pass light to the camera. It is also a measure of the relative performance of a camera and lens combination at low light levels. Low light level performance is affected by the camera type. Large apertures are indicated by small f-numbers (for example, f/1.4).

As the light level on a scene drops, the possibility of both increased picture noise and reduced video signal increases. Increased picture noise, especially low frequency noise, increases the probability of false alerts and may necessitate a reduction of the sensitivity setting. Reduced video signal directly reduces the apparent sensitivity of the motion detector. These factors limit the degree of scene darkness at which the motion detector will operate.

The performance of various camera and lens combinations at different light levels may be obtained from the manufacturer's data. For optimum performance, the MD2001 requires a moderately noise-free video signal at industry standard voltage levels. The camera and lens combination should be selected more conservatively than is normal in installations not using motion detectors.

Camera placement must be such that normal movements in the scene do not cause the lens auto-iris to open or close rapidly. This can usually be accomplished by mounting the camera high enough to obtain a neutral background scene.

The automatic iris lens should be adjusted for "average", rather than "peak", response to avoid overreaction of the iris to brief light changes. When adjustable, the time delay of the auto-iris should be set as long as possible.

Some auto-iris lenses are subject to "hunting" (a tendency to continuously open and close a small amount while searching for the optimum iris aperture). This effect is often visible as a slowly pulsating overall brightness of the monitor image. The MD2001 will tolerate a small amount of lens hunting. Excessive hunting usually indicates a problem with the iris control mechanism and should be corrected.

## 4.8 DETECTABLE TARGETS

The ability to detect a moving object is determined by its size, contrast with the background, and speed of motion. Once an object appears larger than approximately 3% of the monitor screen dimension, or 0.1% of the screen area, its ability to be detected will not increase greatly. Therefore, the best trade-off of area coverage against sensitivity occurs when the lens and camera position are selected to give this size for objects of interest. When maximum detection probability is desired, a slightly longer focal length lens may be used.

An object must have some visual contrast with the scene background in order to be detected. Contrast may be enhanced by improved lighting and by positioning the camera so that detection targets appear against a background of contrasting color. For most targets, a light background provides the highest contrast.

A target may move so slowly that its motion is not perceived by the unit. This problem may be corrected by using a longer focal length lens to magnify both the size and apparent speed of motion of the target.

A target may move through the scene so rapidly that its presence is missed by the camera and the system. This condition is very unusual, but often may be corrected by camera positioning and lens selection.

In any given installation, these factors should be determined during installation planning. If necessary, experiments under actual operating conditions should be conducted.

## 4.9 FALSE ALERTS AND MISSES

Common causes of excessive false alerts are:

- a. Sensitivity control set too high
- b. Loose or defective coaxial video connectors or cables
- c. Spurious moving objects or lights in the camera field-of-view
- d. Camera ALC set too high
- e. Unnoticed shadows
- f. Flickering fluorescent lights, etc.

Common causes of excessive misses are:

- a. Sensitivity control set too low
- b. Object in motion is too fast or too slow
- c. Object in motion is too small to create sufficient video change

If false alerts and misses continue to be a problem, the entire installation should be reexamined. Installation changes to improve performance may be possible. Such changes may include:

- a. Relocation of the camera
- b. Change of lens
- c. Change of lighting
- d. Addition, at different locations, of other cameras and motion detectors to cover a wider variety of motions

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## 5.0 MAINTENANCE

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| User maintenance of this unit is limited to external cleaning and inspection.

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## 6.0 SERVICE

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Do not attempt to service this video product yourself. It contains no user-serviceable parts. Opening or removing covers may expose you to dangerous voltages or other hazards. Refer all servicing to qualified personnel.

Refer to Section 8, WARRANTY AND RETURN INFORMATION before returning a unit for service.



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## 7.0 SPECIFICATIONS

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### GENERAL

Environment:	Indoor only	
Operating Range:	32° to 120° F (0° to 49° C)	
Weight:	<u>Unit</u>	<u>Shipping</u>
	2 lbs (0.9 kg)	4 lbs (1.8 kg)
Construction		
Chassis:	Steel, galvanized	
Cover:	Steel, black polyester powder coat	
Front Panel:	Aluminum, black polyester powder coat	
Rear Panel:	Steel, black polyester powder coat	
Dimensions:	See Figure 5	

### MECHANICAL

Alert actions:	Two-tone beeper, flashing LED (red), relay contacts, and logic output (active ground)
Sensitivity:	Adjustable
Auto On Timer:	Dip switch with timer settings. See Table B, Setup Time Table.
Display Adjustment:	Window outline from white to gray (rear panel adjustment)

### ELECTRICAL

Video Input:	Passive looping: 525 lines, 60 Hz; 625 lines, 50 Hz
Power:	4.7 vA at 120 VAC, 50/60 Hz (dedicated isolated power supply.) 120 VAC wall transformer provided with unit (230 VAC with MD2001-X)
Relay Contacts	
Voltage:	40 VDC or RMS maximum
Current:	0.8 amps DC or RMS maximum (resistive load)
Logic Output:	When activated, a ground level signal is at Pin 5. When inactive, there is a +10 VDC level signal at Pin 5 (referenced to Pin 4, ground). (Must be connected to high input impedance devices; more than 50k ohms.)
Connectors:	Two (2) video BNC connectors (Video In/Video Out) One (1) 6-pin mating plug (supplied for the 6-pin connector) One (1) 12 VAC power jack (wall transformer power input)

## CONTROLS

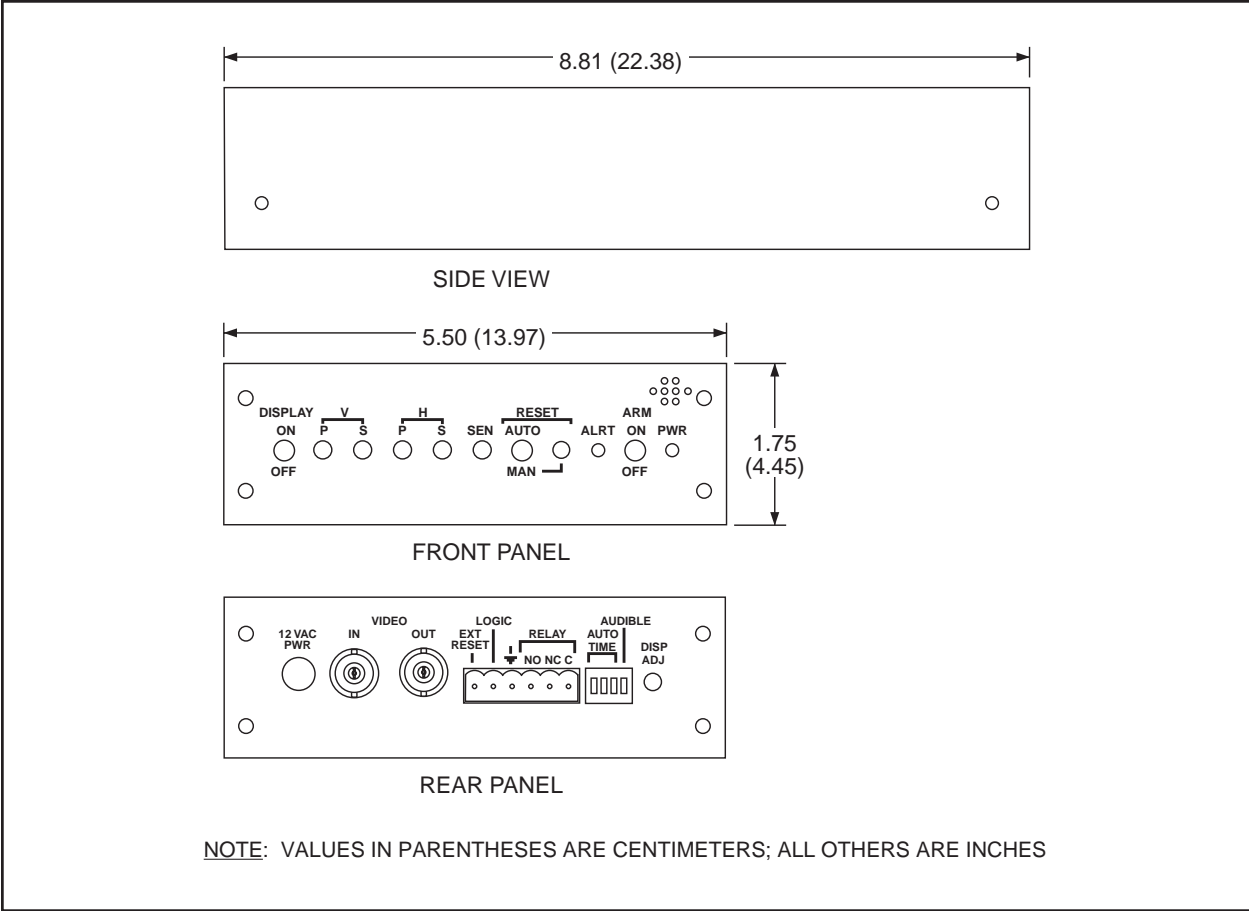
### **Front Panel Controls and Indicators**

DISPLAY:	Toggle switch activates/deactivates detection window display
V (P and S):	Adjusts vertical positioning and size of detection window
H (P and S):	Adjusts horizontal positioning and size of detection window.
SENS:	Adjusts sensitivity
RESET (AUTO/MAN):	Toggle switch toggles automatic/manual reset Reset push-button for manual reset
ALRT:	Red LED flashes with motion detection
ARM:	Toggle switch activates/deactivates relay logic output and audible alert functions
PWR:	Green LED lights with power on

### **Rear Panel Controls and Connections**

EXT RESET:	External reset connection
LOGIC:	Logic Out connection
Ground Symbol:	Ground connection for LOGIC output or EXT RESET
RELAY:	Normally Open (NO) relay contact connection Normally Closed (NC) relay contact connection Common (C) relay contact connection
AUTO TIME:	Dip switch for auto reset timer settings
AUDIBLE:	Dip switch activates/deactivates audible buzzer
DISP ADJ:	Adjusts detection area window outline from white to gray

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



**Figure 5.** MD2001 Dimension Drawing

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## 8.0 WARRANTY AND RETURN INFORMATION

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### 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:

- Five years on FT/FR8000 Series fiber optic products.
- Three years on Genex® Series products (multiplexers, server, and keyboard).
- Three years on Camclosure® and fixed camera models, except the CC3701H-2, CC3701H-2X, CC3751H-2, CC3651H-2X, MC3651H-2, and MC3651H-2X camera models, which have a five-year warranty.
- Two years on standard motorized or fixed focal length lenses.
- Two years on Legacy®, CM6700/CM6800/CM9700 Series matrix, and DF5/DF8 Series fixed dome products.
- Two years on Spectra®, Esprit®, ExSite™, and PS20 scanners, including when used in continuous motion applications.
- Two years on Esprit® and WW5700 Series window wiper (excluding wiper blades).
- Eighteen months on DX Series digital video recorders, NVR300 Series network video recorders, and Endura™ Series distributed network-based video products.
- One year (except video heads) on video cassette recorders (VCRs). Video heads will be covered for a period of six months.
- 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).

All merchandise returned for credit may be subject to a 20% restocking and refurbishing charge. Goods returned for repair or credit should be clearly identified with the assigned CA or RA number and freight should be prepaid. Ship to the appropriate address below.

If you are located within the continental U.S., Alaska, Hawaii or Puerto Rico, send goods to:

Service Department  
Pelco  
3500 Pelco Way  
Clovis, CA 93612-5699

If you are located outside the continental U.S., Alaska, Hawaii or Puerto Rico and are instructed to return goods to the USA, you may do one of the following:

If the goods are to be sent by a COURIER SERVICE, send the goods to:

Pelco  
3500 Pelco Way  
Clovis, CA 93612-5699 USA

If the goods are to be sent by a FREIGHT FORWARDER, send the goods to:

Pelco c/o Expeditors  
473 Eccles Avenue  
South San Francisco, CA 94080 USA  
Phone: 650-737-1700  
Fax: 650-737-0933

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