

VMD-1000

Operation Manual

Video Motion Detector
Revision 2.0

DIGI-SPEC[®]
CORPORATION

INTRODUCTION

Thank you for purchasing the VMD-1000 Video Motion Detector.

The VMD-1000 is primarily used for intrusion detection. It determines if movement has occurred within a camera image and provides an alarm output on the occurrence of any such activity. The alarm output provided can be used to trigger any number of other devices, such as time-lapse recorders, event recorders, video switchers, video printers, quads, multiplexors, or video transmission devices.

The VMD-1000 is a compact, affordable and reliable Video Motion Detector (VMD), easily outperforming similar devices available in the marketplace. With its state-of-the-art, microprocessor-controlled technology, it simultaneously analyzes 32,768 pixels to provide the correct output response. It can be used in both indoor and stable outdoor environments and with either color or black & white cameras. The fact that it is 12 V DC allows it to be used in variety of portable applications.

VIDEO INPUT/OUTPUT

The video input and output of the VMD-1000 are located on the rear of the unit (see Figure 1). The video input connects to the video source via a BNC connector (left). The video output connects to a display, recording device, switcher or other peripheral equipment via a BNC connector (right). Both the video input and output are 1 vpp into 75 ohms unbalanced EIA standard RS-170a/NTSC video format or CCIR/PAL video format.

BACK PANEL DIAGRAM

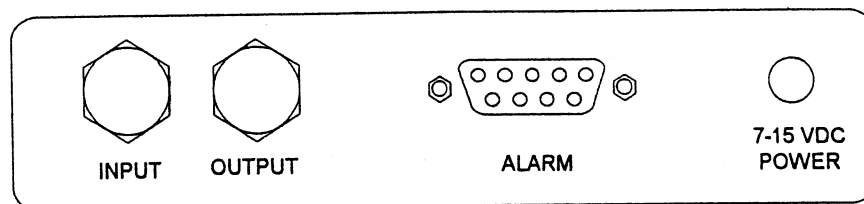


FIGURE 1.

ALARM OUTPUT

The unit has one alarm output in the normally open (N/O) configuration and will produce a closure whenever an alarm occurs. An alarm occurs when the VMD-1000 detects motion and the alarm has been enabled by pressing the ALARM ON-OFF button (red LED on). The contacts remain closed for the duration programmed in the Alarm Hold Time, between 1 and 99 seconds. The location of the alarm output connector is seen in Figure 1 and the pin-out configuration for the 9 pin DSUB connector is seen in Figure 2.

ALARM CONNECTOR

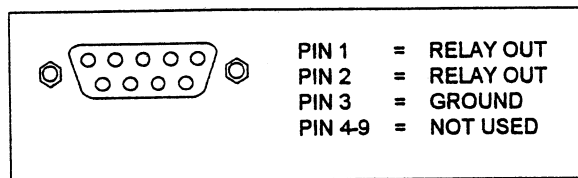


FIGURE 2.

There is an alarm connector cable provided with the unit. Attached to it are three wires; two wires are the relay contacts and the third wire is the ground. These wires are labeled accordingly.

Some equipment may require a dry contact closure (normally open). For such equipment, the two dry contact leads need only be run. There is no polarity; so these leads may be swapped around. Other equipment may require a closure to ground. In this case a ground connection will be provided on such equipment. Connect one of the dry contact leads to ground and the other dry contact lead to the input of the equipment. There is no voltage on the alarm connectors of the VMD-1000; so, no damage can be done by incorrect wiring.

POWER

The VMD-1000 is designed to operate from a DC supply range from 7 V to 15 V DC. The power input connector, a standard 2.1 mm power jack, must have positive (+) on the center and negative (- or ground) on the outer shell. The unit is reverse protected and correct polarity will be indicated by the green POWER LED being lit on the front panel.

For mobile operation a negative ground system is required, unless the video ground is isolated from the automobile chassis ground.

The unit may be operated off of the regular 110 or 220 V AC household supply using a transformer to supply the required 7-15 V DC.

OPERATION

The four buttons on the front panel of the VMD-1000 give full control of the unit. All settings are guided by on-screen prompts. Simply press the MENU button and follow the on-screen instructions.

The three LEDs indicate the state of the unit. The green POWER LED indicates the unit is getting appropriate power. The red ALARM LED indicates that the unit is armed when solid and alarmed when flashing. The yellow LED on the MENU button indicates the unit is in "set-up" mode.

FRONT PANEL DIAGRAM

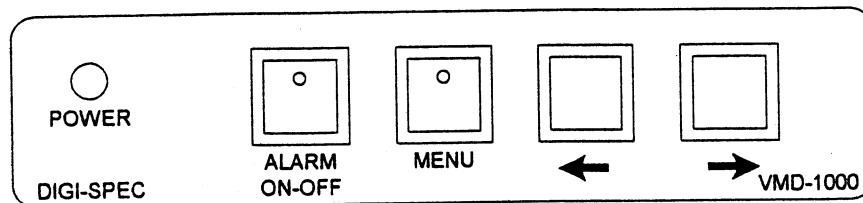


FIGURE 3.

BUTTON FUNCTIONS:

ALARM/ON-OFF Button: The ALARM button has four functions: 1) It turns the Alarming feature on (Red LED solid) and off (Red LED off), 2) It Clears the Alarm Memory (Red LED flashing), and 3) It turns functions and zones on and off during set-up.

MENU Button: The MENU Button accesses and sequences through the units 5 on-screen menu prompts. During set-up, the Yellow MENU LED will be lit.

LEFT ARROW Button: The LEFT ARROW button decreases the sensitivity during sensitivity set-up and moves the zone cursor left during the zone pattern set-up.

RIGHT ARROW Button: The RIGHT ARROW button increases the sensitivity during sensitivity set-up and moves the zone cursor left during the zone pattern set-up.

ARMING AND DISARMING:

To ARM and DISARM the VMD, press the ALARM button. The red LED on the button will be lit if the unit is armed and off if the unit is disarmed. The unit must be armed in order for it to detect motion and produce alarms. When the unit is armed and subsequently alarmed, it will produce a buzzer sound and output an alarm in the form of a relay closure for the duration programmed in the Alarm Hold Time set-up. To show the user that an alarm has occurred, the ALARM LED will flash and remain flashing. To clear this ALARM MEMORY feature, simply press the Alarm button. The unit will remain ARMED.

PROGRAMMING THE UNIT

Programming the VMD is extremely easy. On-screen prompts guide you through the set-up process. To view the on-screen prompts, a video source must be connected to the video input and a monitor must be connected to the video output. The on-screen prompts must be stepped through sequentially. To begin programming, press the MENU button.

ALARM OUTPUT TIME SETTING:

ALARM OUTPUT TIME - PROMPT 1

ALARM OUTPUT TIME

5 SECONDS

PRESS < > TO SET OR
MENU TO CONTINUE

Press the MENU button to access the first prompt, Alarm Output Time. The Alarm Output Time is the duration the VMD will output an alarm on the relay output and the buzzer. It can be set from 1 to 99 seconds. Press the LEFT and RIGHT arrow buttons to decrease or increase the Alarm Output Time displayed on the screen. After setting the Alarm Output Time, press the MENU button to advance to Prompt 2.

BUZZER ON-OFF SETTING:

BUZZER ON-OFF - PROMPT 2

BUZZER ON (OFF)

PRESS ON-OFF OR
MENU TO CONTINUE

The Buzzer On-Off prompt turns on and off the audible capability of the unit when a motion alarm occurs. If the buzzer is turned off, it will only silence the buzzer. The relay output will continue to output an alarm. Press the ALARM/ON-OFF button to toggle between on and off states. The state not in parenthesis is the valid state. Press the MENU button to advance to Prompt 3.

SPARKLES ON-OFF SETTING:

SPARKLES ON-OFF - PROMPT 3

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SPARKLES  ON  (OFF)

PRESS ON-OFF OR
MENU TO CONTINUE
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The Sparkles On-Off prompt turns on and off the Sparkles feature which flashes bright white dots around any moving object during normal operation. Turning the Sparkles feature on, gives the user a visual indication of where motion is occurring. Turning the Sparkles feature off, does not inhibit the device from detecting motion. The relay output will continue to output an alarm. Press the ALARM/ON-OFF button to toggle between on and off states. The state not in parenthesis is the valid state. Press the MENU button to advance to Prompt 4.

SENSITIVITY SETTING:

SENSITIVITY - PROMPT 4

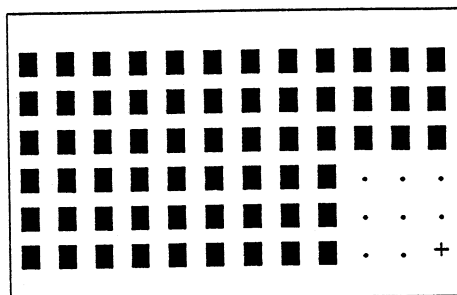
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SENSITIVITY

.....

PRESS < > TO SET OR
MENU TO CONTINUE
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The Sensitivity prompt allows you to adjust the sensitivity level of the unit. The sensitivity level serves two purposes: 1) it differentiates the target image from the background image and 2) it filters out induced noise in the camera image. A 16 position bar graph will display the sensitivity level, starting from the left (least sensitive) to the right (most sensitive).

Adjust the sensitivity level to the maximum (to the right) and then decrease it one step at a time until false alarms cease to occur. On a clean (not noisy) video signal, you should be able to set the sensitivity to a maximum. To increase and decrease the Sensitivity, use the LEFT and RIGHT arrow buttons. Press the MENU button to advance to Prompt 5.

ZONE PATTERN SETTING:**ZONE PATTERN - PROMPT 5**

The Zone Pattern prompt will display a grid of flashing blocks or zones. Each zone is comprised of 448 detection points. The screen is divided into a grid of 12 x 6 zones (NTSC) or 12 x 8 zones (PAL).

The purpose of the zone is to enable and disable certain areas of the image for motion detection. Motion occurring within areas with zones on will produce a motion alarm. Off zones will ignore motion. A large white flashing block indicates that the zone is on. A dot indicates that the zone is off.

To turn individual zones on or off, there is a cursor which can be moved around the grid to indicate the zone to be changed. The cursor will appear as either a "*" character over an "on" zone or "+" character over an "off" zone.

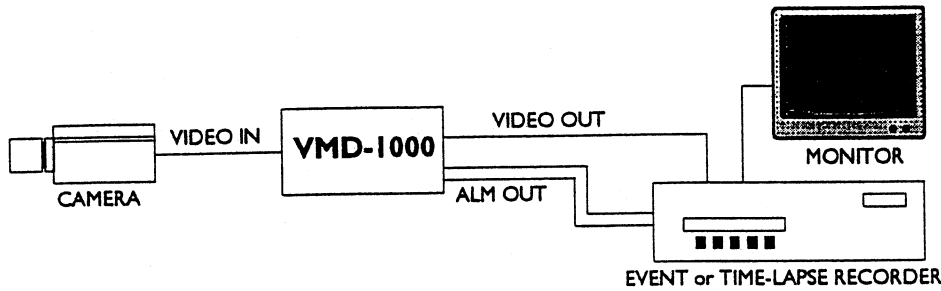
Press the LEFT or RIGHT arrow buttons to move the cursor left or right. When the cursor reaches the end of the line, it will wrap around to the beginning of the next line. Press the ALARM/ON-OFF button to toggle the zone on or off at the present cursor position. You will see the cursor toggle between a "*" and a "+" character. After setting the Zone Pattern, press the MENU button to end the prompt cycle.

ZONE PATTERN CONFIGURATION HINTS:

- 1) Turn the zones off at points where the camera is directly facing fluorescent lighting, especially if you are using a crystal controlled or DC powered camera. Line-locked cameras are best to use around fluorescent lights due to irregular ionization of fluorescent tubes, as they strobe at the mains frequency rate.
- 2) Turn the zones on at points that create greater contrast between a human and the normal background.
- 3) Turn the zones off at points where there are flashing lights such as a telephone or FAX machine.
- 4) Turn zones off near outside windows or any area where normal activity is allowed.

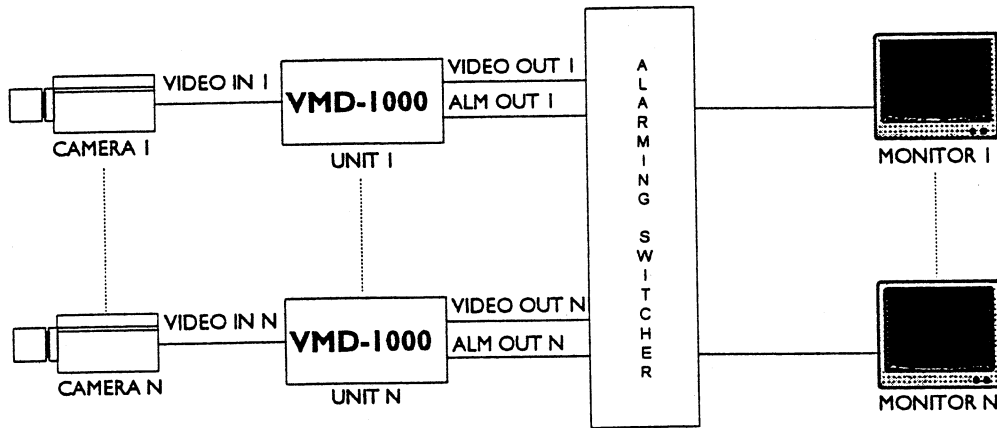
TYPICAL CONFIGURATIONS

BASIC SINGLE CHANNEL SYSTEM:



The VMD-1000 can be used in conjunction with a camera, monitor and recording device as a basic security system. Since it is portable and 12VDC, it can be used for covert surveillance or applications where size constraints are an issue.

VMD-1000 SYSTEM WITH ALARMING SWITCHER:



Dedicated VMD-1000 units can be used in conjunction with an Alarming Switcher to provide an integrated system with digital video motion detection capabilities.

SPECIFICATIONS

UNIT SIZE	4.5"(w) x 1.5"(h) x 6.7"(d)	DETECTION METHOD	Proprietary pipeline processing of full digitized image
UNIT WEIGHT	1 lb. (.45 kg)	DETECTION POINTS	32,768 per channel
CHASSIS	Aluminum with black-baked enamel finish	ZONE PATTERN MATRIX	12 horizontal x 6 vertical (NTSC) 12 horizontal x 8 vertical (PAL)
VIDEO FORMAT	NTSC/RS-170A or PAL/CCIR 0.5-2Vpp, 75 ohm termination	SYSTEM CTRL. & SETUP	Manually programmable via front panel w/on-screen prompts or RS-232 with PC w/DOS 2.1+
DIGITIZATION	64 gray scale	MICROPROCESSOR	8-bit embedded
VIDEO INPUTS	1 BNC	MICROPROCESSOR FREQ.	7.37 MHz
VIDEO OUTPUTS	1 BNC	BACKUP MEMORY	EEPROM (non-volatile)
ALARM OUTPUTS	1 N/O (normally open)	POWER REQUIREMENTS	7-15V DC, 250 mA
ALARM OUTPUT TIME	0-99 seconds	FACTORY WARRANTY	1 year parts & labor
CONTACT RATING	250V DC @ 1.5A		