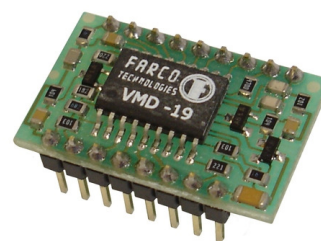# VMD-19 Technical Specifications

Version 1.4

Video Motion Detector Module with Detection Zones

Features

- Analyses video signal to detect motion in 3 zones
- Left, centre and right zones pre-programmed
- Using zones direction of movement can be detected
- Sensitivity to size and movement is adjustable
- Automatically adjusts to the scene light level
- Automatically adjusts to camera signal quality
- Surface mount module minimises space requirement
- Eliminates the effects of video noise to minimise false alarms
- Compatible with NTSC, PAL, EIA, CCIR and SECAM video standards
- Video loss detection and zone dependant motion output
- 50mW Low power consumption
- Once motion is detected, an output signal becomes active momentarily
- One output per zone, plus one output for motion in any zone
- Minimum circuit configuration requires just 1 external crystal
- Designed for CCTV security equipment, detection and counting of people, conveyor belt objects, vehicles etc
- Very easy to integrate with existing designs

Description

VMD-19 module is a 17 pin (18 pins with pin-9 missing), standard 0.6" wide IC board. It can be directly connected to a composite video and detect motion of objects within the video signal.

VMD-19 integrates out video noise and therefore has excellent noise immunity. This minimises the probability of false motion detection.

VMD-19 automatically adjusts to the video signal level. It can be used with cameras producing signal levels as low as 0.5Vpp to as much as 2Vpp (nominal signal level for composite video is 1Vpp).

VMD-19 is intended to be used primarily under controlled lighting conditions and for indoor use, however it includes a special algorithm which minimises false alarms when used in outdoor variable lighting conditions.

VMD-19 includes sophisticated state of the art image processing algorithms which minimise false alarms due to slow changes in ambient light such as cloud movements or day and night transition.

VMD-19 can be adjusted to 4 sensitivity levels using an external dip switch or under the control of an external microcontroller.

VMD-19 detects motion within 3 pre-configured zones; left, centre and right. Each zone has a specific output. Once motion is detected within a zone, its respective output is activated. (See figure 1 for zone layout)

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Once motion is detected in any of the zones, the "Alarm Out" (AO) pin of the VMD-19 also becomes active.

VMD-19 detects the loss of the video signal and activates the "Video Loss" (VL) pin, while the video signal is missing.
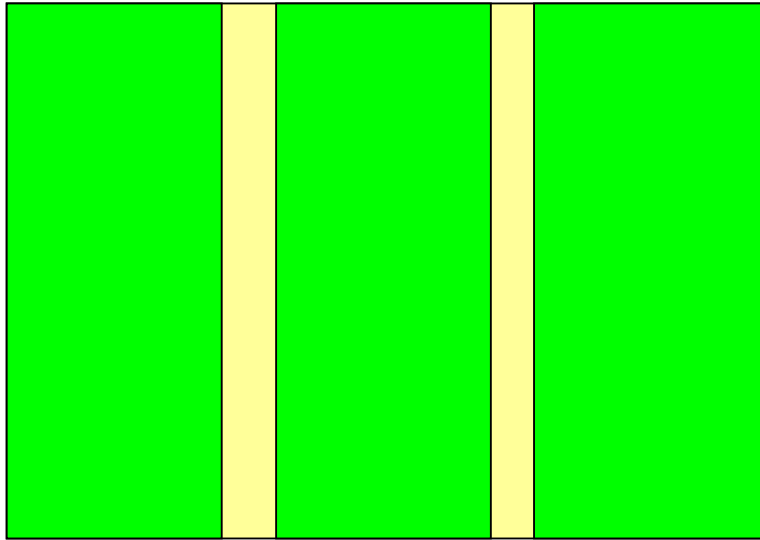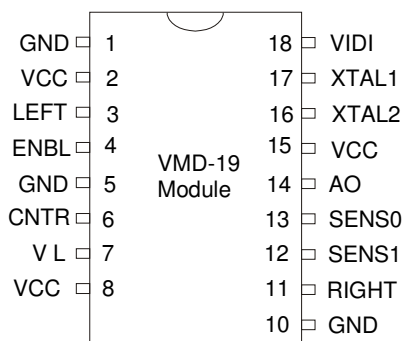

Figure 1- Detection zones within a video screen (Darker stripes)

VMD-19

Pin Configuration

GND ⊏ 1   18 ⊐ VIDI
VCC ⊏ 2   17 ⊐ XTAL1
LEFT ⊏ 3   16 ⊐ XTAL2
ENBL ⊏ 4   VMD-19   15 ⊐ VCC
GND ⊏ 5   Module   14 ⊐ AO
CNTR ⊏ 6   13 ⊐ SENS0
V L ⊏ 7   12 ⊐ SENS1
VCC ⊏ 8   11 ⊐ RIGHT
       10 ⊐ GND

Electrical Specification

Parameter	min	max	unit
Supply voltage	4.75	5.25	V
Current*	8	10	mA
Video Input	0.5	2	Vpp
Operating Temp.	0	75	°C
Input Low Voltage	GND	0.2Vcc	V
Input High Voltage	0.8Vcc	Vcc	V
Output Low Voltage	-	0.6	V
Output High Voltage	Vcc-0.7	-	V
XTAL1,2	20	20	Mhz

Pin Description (Relates to the module not the IC)

Pin	Symbol	I/O	Function
1, 5, 10	GND	-	Ground
2, 8, 15	VCC	-	VCC, 5VDC ± 250mv
3	LEFT	O	Left zone output. Normally at GND level. When motion is detected at left side of the screen, goes to high impedance float.
4	ENBL	I	Enable pin. Connect to VCC to enable operation. When changed from enable to disable, outputs will stay at their current state.
9	NC	-	Is not fitted on board
6	CNTR	O	Centre zone output. Normally at GND level. When motion is detected at the centre of the screen, goes to VCC.
7	VL	O	Video Loss signal output. VCC when video signal is not present at the VIDI pin, otherwise at GND level.
11	RIGHT	O	Right zone output. Normally at GND level. When motion is detected at right side of the screen, goes to VCC.
12	SENS1*	I	Sensitivity setting bit1. Includes internal pull up resistor.
13	SENS0*	I	Sensitivity setting bit0. Includes internal pull up resistor.
14	AO	O	Alarm output. Normally at GND level. When motion is detected in any of the zones, it goes to VCC.
16	XTAL1	I	Crystal connection (20MHz). Includes 27pF internal capacitor load.
17	XTAL2	O	Crystal connection (20MHz). Includes 27pF internal capacitor load.
18	VIDI	I	Video input NTSC, PAL, EIA, CCIR and SECAM video standards. All coupling circuitry included. Just connect a composite video signal directly to this pin.

NOTES:
- * Sensitivity is set between 0 (least sensitive) and 3 (most sensitive). To set to 0, connect both pins to GND. If not connected externally, it will default to 3 (most sensitive).

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Application Example
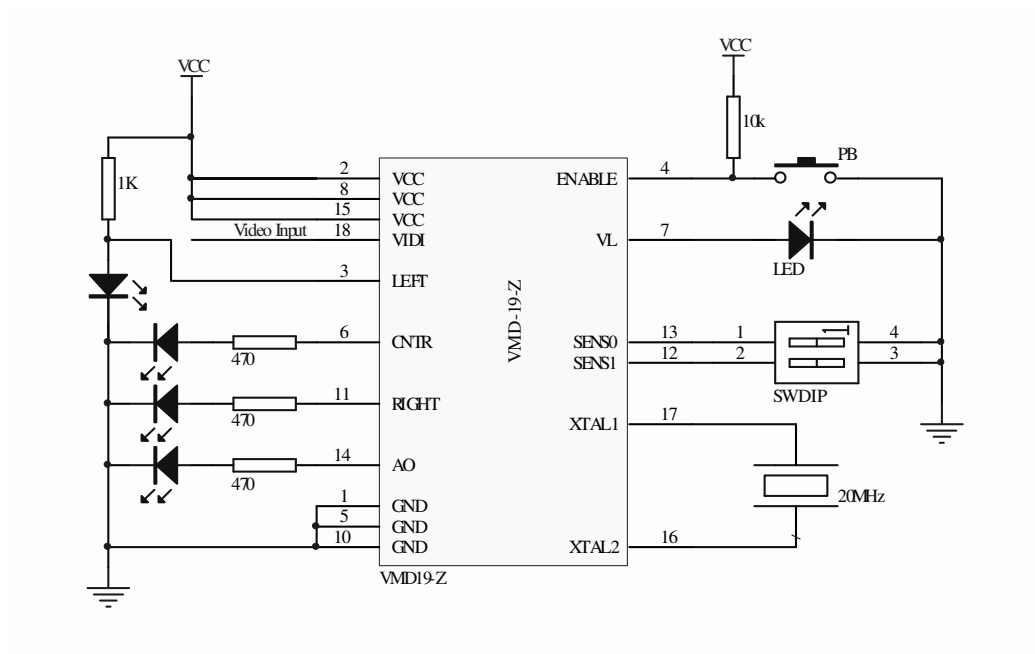
NOTES:

- The only necessary part is the 20 MHz crystal (Includes 27pf internal capacitor loads)
- Video input format any of NTSC, PAL, EIA, CCIR and SECAM
- PB- When pressed operation is disabled. Normally enabled.
- LEDs- On when motion is detected. Normally off (Pin 3 is open collector output and needs 1K pull up)
- Dip Switch- Least sensitive when both switches are on. Most sensitivity when both switches set to off position. No switch defaults to most sensitivity.
- VL output includes a 180 ohm internal resistor for current limiting.

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