

Motion Detectors

From pet-friendly digital motion detectors to analogue motion detectors, the Paradox series of motion detectors combine advanced features and patented technologies to provide a high level of detection and false alarm prevention.

The Digigard and Digital Vision line of motion detectors offer patented digital motion detection. Developed for high-security applications, this advanced circuit design performs direct analog to digital conversion of the PIR sensor's signal using a powerful, high-speed microprocessor-based digital IC. Completely software-driven, true digital motion detection converts, amplifies and processes the sensor's low-level signal in the digital domain without any analog circuitry (no saturation, no loss of data and no noise). This unique technology provides increased accuracy, reliability and superior false alarm immunity.

With its patented optics and digital processing technologies, the world-renown Digigard 70 is a reliable false-alarm free motion detector with unmatched pet immunity.

Our patented Auto Pulse Signal Processing transforms the signal energy to a pulse output to determine if the progression of the detected occurrence corresponds to an alarm condition. Energy from the signals are measured and stored in memory until a minimum level is reached. The processor then rejects signals that do not meet its required specifications for generating an alarm.

Whatever the application, there's a Paradox motion detector that will suit your needs and surpass your expectations.

Digital Motion Detectors



Features and Specifications Common to All Digital Motion Detectors

- Patented Digital Motion Detection (see page 5)
- Patented Auto Pulse Signal Processing (see page 5)
- Digital Shield algorithm software with adjustable sensitivity (see page 5)
- Single or Dual Edge Processing (see page 6)
- Automatic Temperature Compensation (see page 6)
- Metal shield maximizes protection from EMI and RFI signals

Specifications: operate at 10 to 16Vdc; 0.6ft to 11.5ft/sec. (0.2m to 3.5m/sec.) walk speed; 7ft to 9ft (2m to 2.7m) installation height; anti-tamper switch (150mA/28Vdc, N.C.); alarm output (form A relay 100mA/28Vdc, N.C. or optional form C relay 5A/28Vdc, N.C./N.O.); operate at -20°C to 50°C (-4°F to 122°F).

digigard™
50/60



402: Dual Element Digital Motion Detector

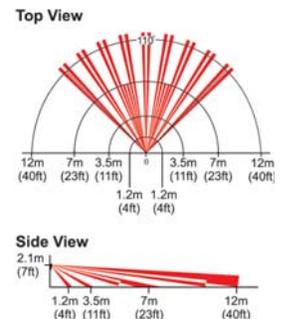
- Dual element sensor
- 40ft (12m) X 40ft (12m); 110° viewing angle

Specifications: 15mA maximum current consumption; 10V/m rejection from 10MHz to 1GHz.

404: Quad Element Digital Motion Detector

- Digital Dual Opposed Detection (see page 6)
- Interlock Sensor Geometry (see page 6)
- Quad element sensor
- 40ft (12m) X 40ft (12m); 110° viewing angle

Specifications: 15mA maximum current consumption; 10V/m rejection from 10MHz to 1GHz.



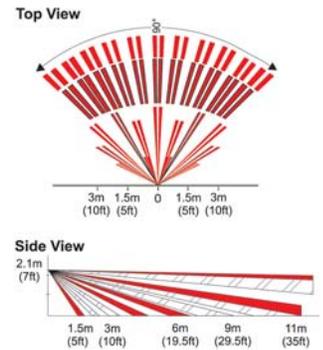


406:

High-Security Digital Motion Detector with Pet Immunity

- Extremely reliable and false-alarm free
- Dual optics (2 dual opposed element sensors)
- Provides superior pet immunity using a patented combination of advanced optics and digital processing technologies
- Immune to pets weighing up to 90lbs (40kg)
- Digital Dual Opposed Detection (see page 6)
- 35ft (11m) X 35ft (11m); 90° viewing angle

Specifications: 15mA maximum current consumption; 10V/m rejection from 10MHz to 1GHz.

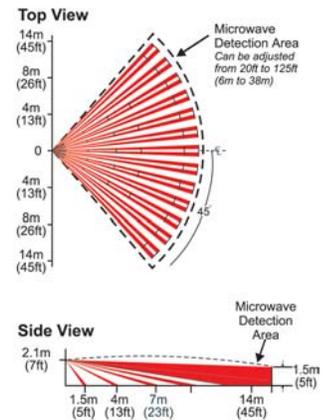


525D:

Microwave and Infrared Digital Motion Detector

- Digital microwave detection
- Once the PIR validates that a signal meets alarm conditions, Digital Vision uses microwave signals to confirm the results before generating an alarm
- Microwave range is adjustable from 20ft to 125ft (6m to 38m)
- 45ft (14m) X 45ft (14m); 90° viewing angle

Specifications: 30mA maximum current consumption; flat-strip microwave antenna with FET oscillator; 3V/m rejection from 10MHz to 1GHz.



Analogue Motion Detectors

Features and Specifications Common to All Analogue Motion Detectors

- Patented Auto Pulse Signal Processing (see page 5)
- Automatic Temperature Compensation (see page 6)
- Metal shield maximizes protection from EMI and RFI signals
- Dual element sensor

Specifications: anti-tamper switch (150mA/28Vdc, N.C.); alarm output (form A relay 100mA/28Vdc, N.C. or optional form C relay 5A/28Vdc, N.C./N.O.).

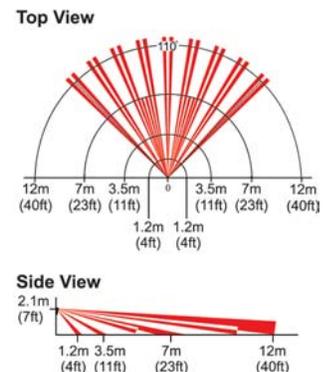


476+:

PIR with High EMI and RFI Rejection

- Extremely high EMI and RFI rejection
- PCB uses only surface mount components
- Solid-state relay
- 40ft (12m) X 40ft (12m); 110° viewing angle

Specifications: operates at 9 to 16Vdc; 30mA maximum current consumption; 7ft to 9ft (2m to 2.7m) installation height; 10V/m rejection from 10MHz to 1GHz; 0.6ft to 13ft/sec. (0.2m to 4m/sec.) walk speed; operates at -20°C to 50°C (-4°F to 122°F).



P ▲ R ▲ G ▲ D O O R

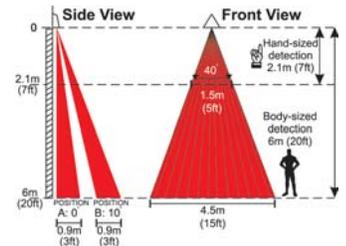


460:

Vertical View Motion Detector

- Adjustable lens position (0° or 10°)
- Selectable operational voltage (12Vdc or 24Vdc)
- Adjustable alarm signal duration
- Detects hand-sized objects for card access applications: 7ft X 5ft (2m X 1.5m)
- Detects body-sized objects for security applications: 20ft X 15ft (6m X 4.5m)

Specifications: operates at 9 to 16Vdc or 20 to 27Vdc (selectable); 18mA maximum current consumption; hand-sized detection from 7ft (2.1m); body-sized detection from 21ft (6.6m); 0.6ft to 11.5ft/sec. (0.2m to 3.5m/sec.) walk speed; optional 28Vdc/2A transistor output for electromagnetic locks; operates at -10°C to 50°C (14°F to 122°F).



P ▲ R ▲ D O M E

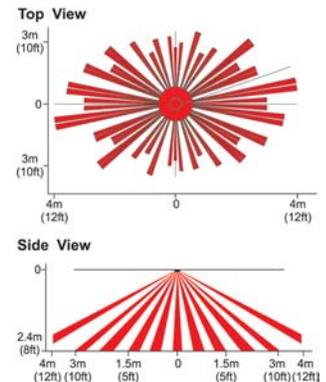


465:

360° Ceiling Mount Motion Detector

- 24ft X 20ft (7m X 6m) at 8ft (2.4m)
- 35ft X 20ft (10.7m X 6m) at 12ft (3.7m)
- 360° viewing angle

Specifications: operates at 9 to 16Vdc; 18mA maximum current consumption; 7ft to 14ft (2m to 4m) installation height; 0.6ft to 11.5ft/sec. (0.2m to 3.5m/sec.) walk speed; operates at -10°C to 50°C (14°F to 122°F).



Wireless Motion Detectors

Features and Specifications Common to All Wireless Motion Detectors

- Patented Auto Pulse Signal Processing (see page 5)
- Automatic Temperature Compensation (see page 6)
- Alive software (alarm LED continues to display when PIR is in energy save mode without compromising battery life)
- Low battery and alarm LED
- Dual element sensor
- 45ft (14m) X 45ft (14m); 110° viewing angle

Specifications: 0.6ft to 11.5ft/sec. (0.2m to 3.5m/sec.) walk speed; 7ft to 9ft (2m to 2.7m) installation height; anti-tamper switch; operates at 0°C to 50°C (32°F to 122°F).

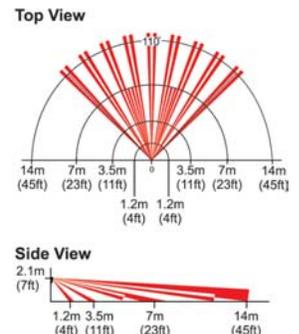
OMNIA™



OMN-PMD1:

Omnia Wireless Motion Detector

- For use with Omnia Wireless Modules and Spectra 1759EX control panels (see appropriate technical publication for more details)
- Frequency of 433MHz or 868MHz
- Range of 500ft (150m) line of sight
- Operates with three "AA" alkaline batteries
- 3-minute energy save mode after two detections

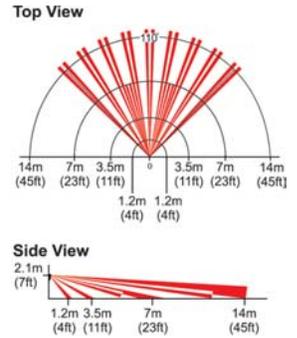




LIB-474B:

Liberator Wireless Motion Detector

- For use with Liberator Wireless Receivers (see appropriate technical publication for more details)
- 900MHz Spread Spectrum (902 to 928MHz)
- Range of 1000ft (300m) line of sight
- Operates with 9V alkaline battery (use lithium battery for longer battery life)
- 5-minute energy save mode after every detection



Specialized Detectors and Accessories

GlassTrek

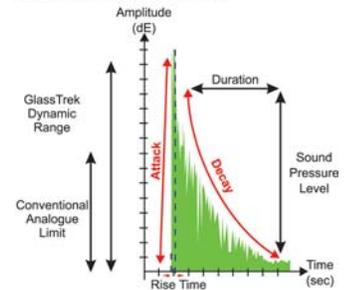


456:

Glassbreak Detector

- Precise detection of plate, tempered and laminated glass breakage
- Full audio and infrasonic spectrum analysis
- 7 frequency digital filters, digital amplifier gain and frequency fluctuation assessment
- Impact and shock wave analysis
- High-immunity to RFI and EMI signals with digital filtering
- Audio output to monitor the sound in the protected area (optional)
- Adjustable sensitivity: covers up to 30ft (9m) when set to high and up to 15ft (4.5m) when set to low
- TestTrek (459) for testing GlassTrek available separately

Signal Envelope Analysis



Specifications: operates at 9 to 16Vdc; 17mA maximum current consumption; 10V/m rejection from 10MHz to 1GHz; anti-tamper switch (150mA/28Vdc, N.C.); alarm output (form A relay 100mA/28Vdc, N.C. or optional form C relay 5A/28Vdc, N.C./N.O.); operates at -10°C to 50°C (14°F to 122°F).



950:

Safe Protector

- High-sensitivity piezoelectric element
- Five sensitivity settings
- 8ft (2.5m) protection range
- Tamper recognition

Specifications: operates at 10 to 16Vdc; 16mA typical current consumption; adjustable sensitivity (100%, 70%, 50%, 40% or 30%); anti-tamper switch (200mA/24Vdc, N.C.); alarm output (form A relay 100mA/28Vdc, N.C.); operates at -20°C to 50°C (-4°F to 122°F).



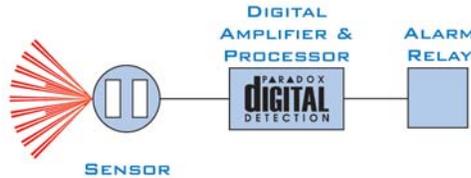
469:

Swivel Mount Bracket

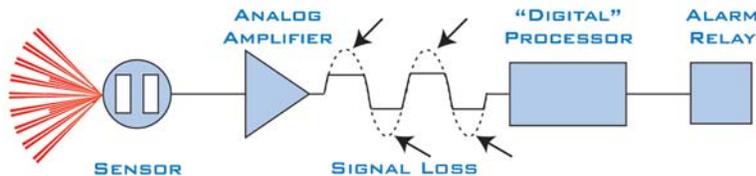
- 3 in 1: ceiling, wall or corner mount bracket
- ensures optimal coverage

100% Digital Motion Detection (Patented)

100% Digital Detection: Completely software-driven, true 100% digital motion detection completely converts, amplifies and processes the sensor's low-level signal in the digital domain without any analog circuitry. The sensor's entire signal is processed without any saturation or noise, which provides increased accuracy, reliability and superior false alarm immunity.



Conventional "Digital" Motion Detection: Conventional "digital" motion detectors have an analog stage that is used to amplify the sensor's signal. The analog circuitry causes most of the signal to be lost due to the saturation of the amplifier. Therefore, there is no real benefit in adding a processor to an analog motion detector since most of the signal is lost in the amplifier stage and there is no data to process over a conventional analog decision-making circuit.



Digital Shield Algorithm

Shield is a software algorithm that is comprised of three major parts:

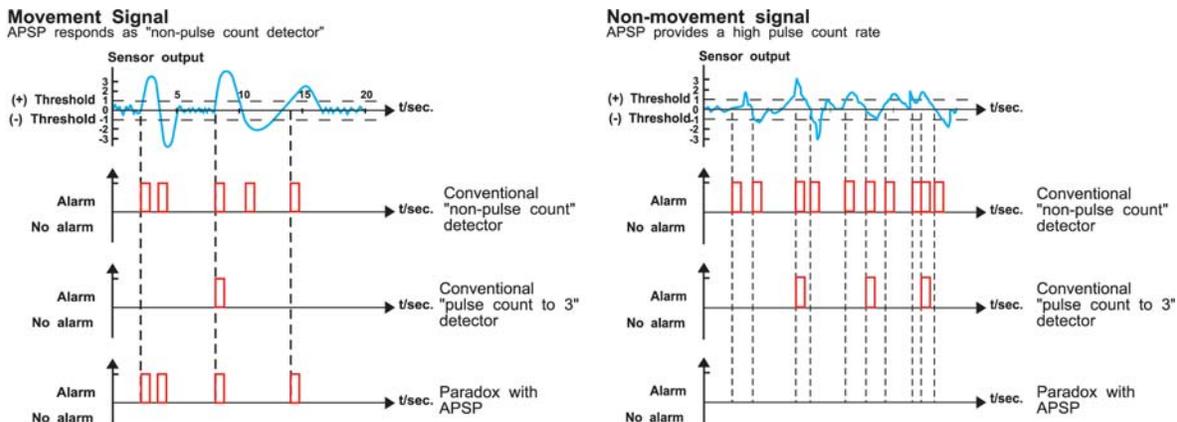
Real Time DSP (Digital Signal Processing): The DSP portion of the software digitally amplifies and filters the sensor signal in real time. Unlike analog filtering, digital filters are accurate, unaffected by temperature levels, have no phase distortion and do not add cost or hardware components. The result is a clean and accurate digital signal with maximum S/N ratio.

Movement Analysis: Movement generates a unique sequence of signals. For each signal, Shield measures and calculates the signal's parameters (amplitude, duration, peak level, polarity, rise time and shape) in real time and then stores them in memory. Each signal is compared with a reference bank of movement and non-movement signals. If the signal does not meet movement criteria, it is immediately rejected.

RFI/EMI Protection: The high dynamic range of the digital samples and high sampling rate, allow high level RF signals to be recorded without clipping or any other distortion. Shield recognizes RFI/EMI conditions and effectively distinguishes interference signals from movement signals without compromising the detection of movement.

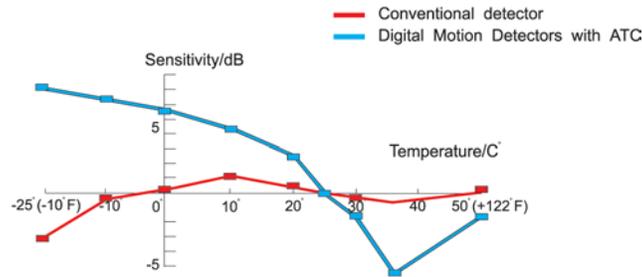
Auto Pulse Signal Processing (Patented)

Auto Pulse Signal Processing (APSP) measures energy from each detected signal and stores it in memory. To generate an alarm, the memory must reach a required minimum level. Thus, in the presence of high-level signals (very low risk of false alarms) the detector immediately generates an alarm, functioning as a "non-pulse count" detector, while low level signals (presenting a high risk of false alarms) will cause the detector to automatically switch to a very high pulse count mode - resulting in excellent protection against false alarms. Pulse counting rate depends on signal energy levels and can go much higher for RFI signals.



Automatic Temperature Compensation (ATC)

ATC automatically adjusts the motion detectors sensitivity according to the room's temperature. This helps maintain the same operation in its operational temperature range without any loss of coverage or decrease in false alarm rejection.



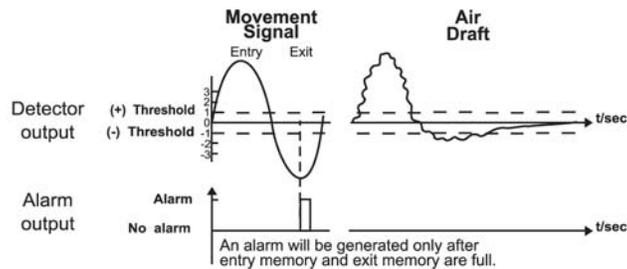
Interlock Sensor Geometry (Patented)

The Interlock Sensor Geometry's (ISG) interlaced pattern provides greater coverage over longer distances more effectively than conventional sensors. Standard quad detectors lose effectiveness as they reach their maximum coverage since a human body will not cross both detector beams at the same time.



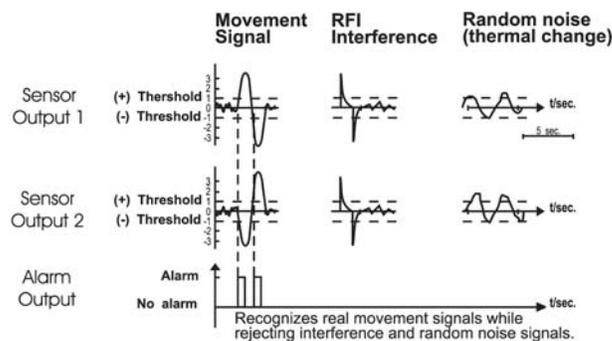
Dual Edge Processing (Entry and Exit Analysis)

Dual edge processing separates the entry and exit signals so each signal must reach the required level. If the entry and exit signals do not reach required energy levels, an alarm is not generated dramatically increasing false alarm immunity. Single edge processing (found in most PIRs) adds the entry and exit signals until the required energy levels are reached before an alarm is generated.



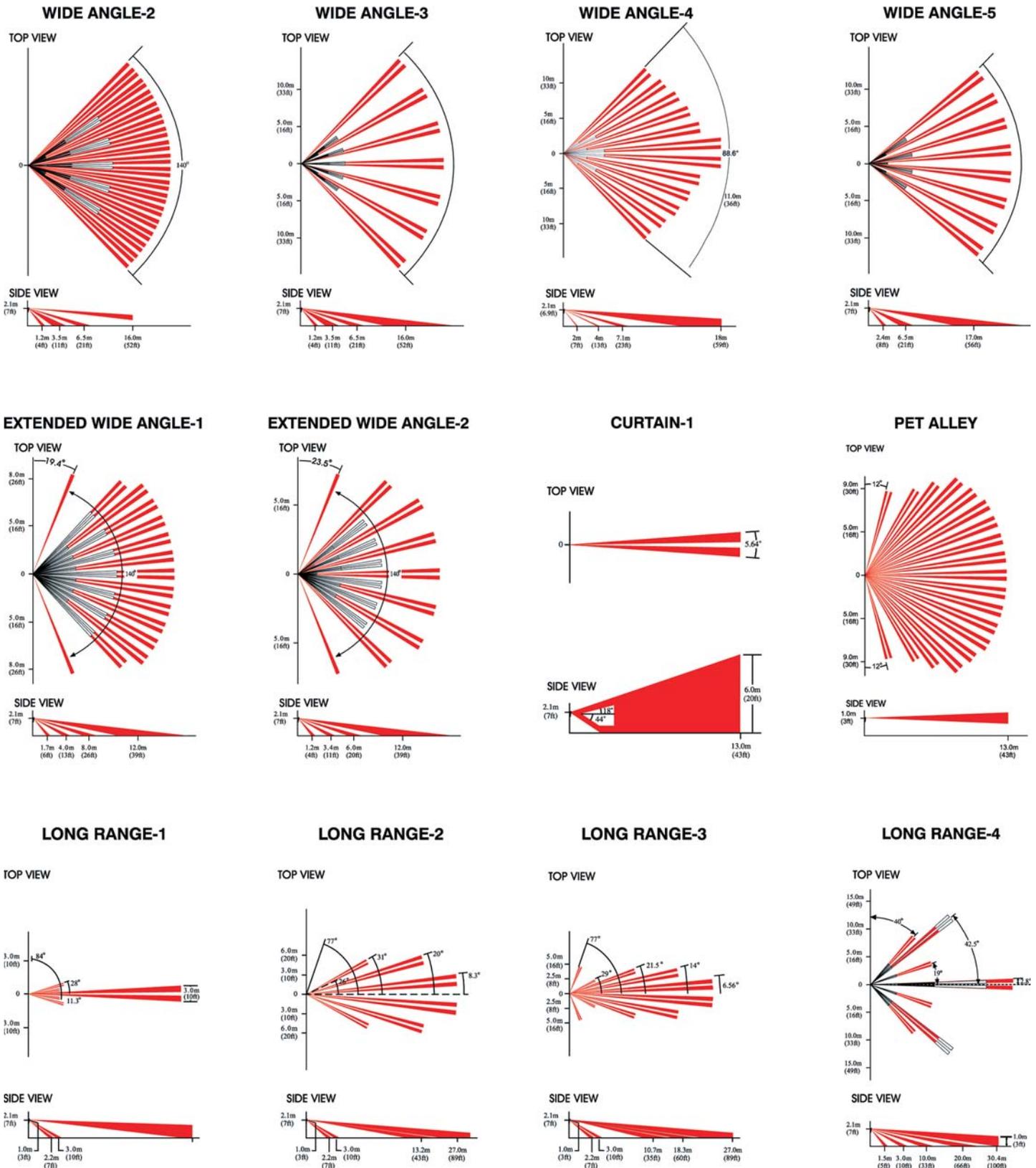
Dual Opposed Detection (DOD)

Compares the entry and exit signals' polarity. Only movement signals will generate opposed polarity signals, which will be processed by the software. Any interference signals will generate same polarity signals, which will be rejected by the software providing unmatched RFI and EMI immunity.



Lenses

All motion detectors come equipped with a 2nd generation LODIFF® lens by Fresnel Technologies Inc. The following beam patterns represent the optional lenses that are available for the Pro+ (476+), Digigard 50 (402), Digigard 60 (404), Digital Vision (525D), Omnia (OMN-PMD1) and Liberator (LIB-474B) motion detectors. Distances shown may vary according to the selected motion detector; please verify the motion detector's specifications.



Comparison Chart

Features	DIGIGARD™ 50	DIGIGARD™ 60	DIGIGARD™ 70	DIGITAL <i>Vision</i>	PRO <i>Plus</i>	PARADOOR	PARADOME	OMNIA™	LIBERATOR™
Digital Detection	✓	✓	✓	✓	-	-	-	-	-
Auto Pulse Signal Processing	✓	✓	✓	✓	✓	✓	✓	✓	✓
Auto Temperature Compensation	✓	✓	✓	✓	✓	✓	✓	✓	✓
Shield Algorithm	✓	✓	✓	✓	-	-	-	-	-
Dual Edge Processing	✓	✓	✓	✓	-	-	-	-	-
Dual Opposed Detection	-	✓	✓	-	-	-	-	-	-
Interlock Sensor Geometry	-	✓	-	-	-	-	-	-	-
Pet Immunity	-	-	90lbs (40kg)	-	-	-	-	-	-
Metal Shield	✓	✓	✓	✓	✓	✓	✓	-	-
Microwave Technology	-	-	-	✓	-	-	-	-	-
Wireless	-	-	-	-	-	-	-	✓	✓
Sensor	Dual Element	Quad Element	Two Dual Opposed Elements	Dual Element	Dual Element	Dual Element	Dual Element	Dual Element	Dual Element
Coverage	ft: 40 x 40 m: 12 x 12	ft: 40 x 40 m: 12 x 12	ft: 35 x 35 m: 11 x 11	ft: 45 x 45 m: 14 x 14 Microwave ft: 20 to 125 m: 6 to 38	ft: 40 x 40 m: 12 x 12	special (see page 3)	special (see page 3)	ft: 45 x 45 m: 14 x 14	ft: 45 x 45 m: 14 x 14
Viewing Angle	110°	110°	90°	90°	110°	0° or 10°	360°	110°	110°
Optional Lenses	✓	✓	-	✓	✓	-	-	✓	✓

The GlassTrek glassbreak detector, safe protector and swivel mount bracket are not in the comparison chart, for more information refer to page 4.

Note: For the latest information on product approvals, such as UL and CE, please visit our Web site at www.paradox.ca.



One or more of the following US patents may apply: 6215399, 6111256, 5287111, 5119069, 5077549, 5920259, 5886632 (Canadian and international patents may also apply)
Digigard, Digital Vision, Pro+, Paradoor, Paradome, Omnia, Liberator and GlassTrek are trademarks of Paradox Security Systems. LODIFF is a registered trademark of Fresnel Technologies Inc.
Specifications may change without prior notice. © 2002 Paradox Security Systems.
Printed in Canada - 06/2002 - MOTION-ET00