PARADOX®
S E C U R I T Y S Y S T E M S

Motion Detectors

From outdoor and pet-friendly digital motion detectors to analog 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 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 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.

The Digigard series now includes an Outdoor High-Security Digital Motion Detector (DG85) that combines a special weatherproof design and the proven technology of our Digigard High-Security Motion Detector with Pet Immunity (DG75) to provide the same reliable protection—outdoors. With its patented optics and digital processing technologies, the world-renowned Digigard DG75 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 6)
- Digital Shield algorithm software with adjustable sensitivity (see page 6)
- Single or Dual Edge Processing (see page 7)
- Automatic Temperature Compensation (see page 6)
- Metal shield maximizes protection from EMI and RFI signals

Specifications: operates at 9 to 16Vdc; 0.2m to 3.5m/s (0.6ft to 11.5ft/s) walk speed; anti-tamper switch (150mA/28Vdc, N.C.); operates at -20°C to 50°C (-4°F to 122°F) except DG85 (see below)
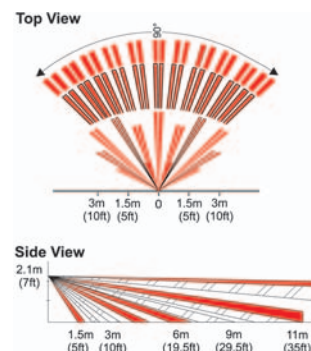
DG85:

Outdoor High-Security Digital Motion Detector
- Weatherproof design combined with the proven technology of the DG75 (see page 2)
- Impact and temperature resistant casing
- Operating temperature: -35°C to 50°C (-31°F to 122°F)
- Extremely reliable and false-alarm free
- Dual Optical Filtering System
- UV protected lens
- Patented Animal Immunity (up to 40kg/90lbs)
- Dual optics (2 dual opposed element sensors)
- Digital Dual Opposed Detection (see page 7)
- Multi-level sensitivity adjustment
- Two operational modes (addressable for Digiplex and DigiplexNE or conventional relay operation)
- 11m (35ft) X 11m (35ft); 90° viewing angle
- Features and specifications common to all digital motion detectors (see above)

Specifications: 30mA max current consumption; 10V/m rejection from 10MHz to 1GHz; 2.1m to 2.7m (7ft to 9ft) installation height; alarm output (form A relay 100mA/28Vdc, N.C. or optional form C relay 500mA/30Vdc, N.C./N.O.)

Top View

3m 1.5m 0 1.5m 3m
(10ft) (5ft) (5ft) (10ft)

Side View
2.1m
(7ft)

1.5m 3m 6m 9m 11m
(5ft) (10ft) (19.5ft) (29.5ft) (35ft)

DG75: **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 40kg (90lbs)
- Digital Dual Opposed Detection (see page 7)
- 11m (35ft) X 11m (35ft); 90° viewing angle
- Features and specifications common to all digital motion detectors (see page 1)

Specifications: 15mA maximum current consumption; 10V/m rejection from 10MHz to 1GHz; 2.1m to 2.7m (7ft to 9ft) installation height; alarm output (form A relay 100mA/28Vdc, N.C. or optional form C relay 500mA/30Vdc, N.C./N.O.)
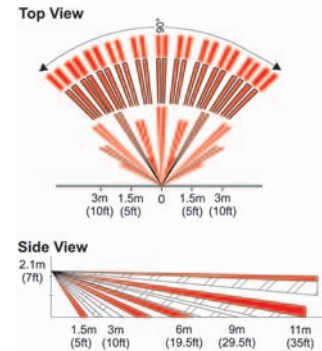
DG65: **Quad Element Digital Motion Detector**
- Digital Dual Opposed Detection (see page 7)
- Interlock Sensor Geometry (see page 7)
- Quad element sensor
- 12m (40ft) X 12m (40ft); 110° viewing angle
- Features and specifications common to all digital motion detectors (see page 1)

Specifications: 15mA maximum current consumption; 10V/m rejection from 10MHz to 1GHz; 2.1m to 2.7m (7ft to 9ft) installation height; alarm output (form A relay 100mA/28Vdc, N.C. or optional form C relay 500mA/30Vdc, N.C./N.O.)
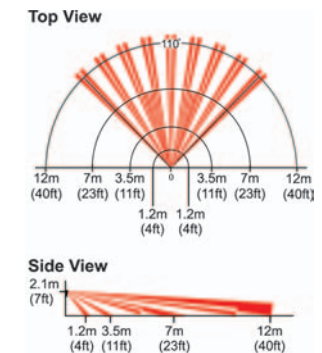
DG55: **Dual Element Digital Motion Detector**
- Dual element sensor
- 12m (40ft) X 12m (40ft); 110° viewing angle
- Features and specifications common to all digital motion detectors (see page 1)

Specifications: 15mA maximum current consumption; 10V/m rejection from 10MHz to 1GHz; 2.1m to 2.7m (7ft to 9ft) installation height; alarm output (form A relay 100mA/28Vdc, N.C. or optional form C relay 500mA/30Vdc, N.C./N.O.)
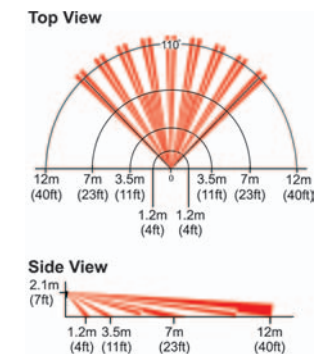
525D: **Microwave and Infrared Digital Motion Detector**
- Digital microwave detection
- Once the PIR validates that a signal meets alarm conditions, Digital Vision uses microwave signals to confirm the results before generating an alarm
- Adjustable microwave range
- 14m (45ft) X 14m (45ft); 90° viewing angle
- Features and specifications common to all digital motion detectors (see page 1)

Specifications: 30mA maximum current consumption; flat-strip microwave antenna with FET oscillator; 3V/m rejection from 10MHz to 1GHz; 2.1m to 2.7m (7ft to 9ft) installation height; alarm output (form A relay 100mA/28Vdc, N.C. or optional form C relay 500mA/30Vdc, N.C./N.O.)
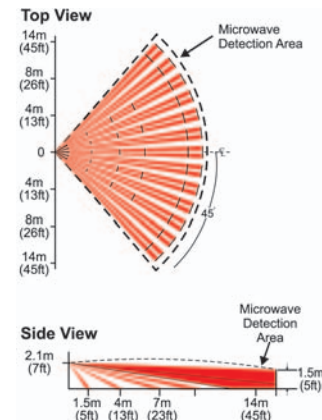
Features and Specifications Common to All Analog Motion Detectors
- Patented Auto Pulse Signal Processing (see page 6)
- Automatic Temperature Compensation (see page 6)
- Metal shield maximizes protection from EMI and RFI signals
- Dual element sensor

Specifications: anti-tamper switch (150mA/28Vdc, N.C.); alarm output (form A relay 100mA/28Vdc, N.C. or optional form C relay 500mA/30Vdc, 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
- 11m (35ft) X 11m (35ft); 110° viewing angle
- Features and specifications common to all analog motion detectors (see page 3)

Specifications: operates at 9 to 16Vdc; 30mA maximum current consumption; 10V/m rejection from 10MHz to 1GHz; 2m to 2.7m (7ft to 9ft) installation height; 0.2m to 4m/s (0.6ft to 13ft/s) walk speed; operates at -20°C to 50°C (-4°F to 122°F)
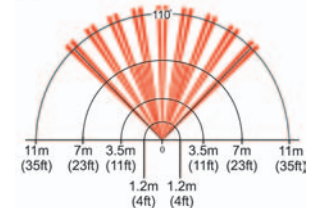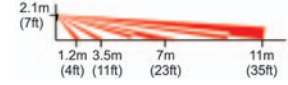
460:

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: 2.1m X 1.5m (7ft X 5ft)
- Detects body-sized objects for security applications: 6m X 4.5m (20ft X 15ft)
- Features and specifications common to all analog motion detectors (see page 3)

Specifications: operates at 9 to 16Vdc or 20 to 27Vdc (selectable); 18mA maximum current consumption; hand-sized detection from 2.1m (7ft); body-sized detection from 6m (20ft); 0.2m to 3.5m/s (0.6ft to 11.5ft/s) walk speed; operates at -10°C to 50°C (14°F to 122°F)
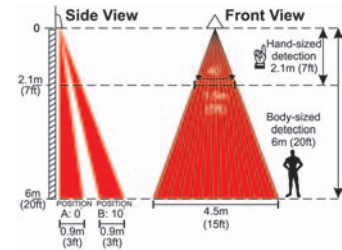
**465:**

360° Ceiling-Mounted Motion Detector
- 7.3m (24ft) X 6m (20ft) at 2.4m (8ft)
- 10.7m (35ft) X 6m (20ft) at 3.7m (12ft)
- 360° viewing angle
- Features and specifications common to all analog motion detectors (see page 3)

Specifications: operates at 9 to 16Vdc; 18mA maximum current consumption; 2m to 4m (7ft to 14ft) installation height; 0.2m to 3.5m/s (0.6ft to 11.5ft/s) walk speed; operates at -10°C to 50°C (14°F to 122°F)
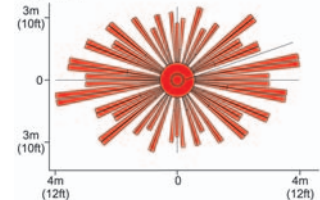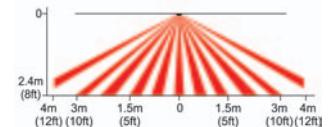
DG466: **Directional Ceiling-Mounted Digital Motion Detector**
- Two dual element sensors (determine if movement is incoming or outgoing)
- Ideal for protecting open balconies and patio doors
- One incoming detection relay output
- One outgoing detection relay output
- Adjustable return delay timer (exit and reenter without causing an alarm)
- 67cm (2.2ft) X 4.8m (16ft) and 60cm (2ft) X 4.8m (16ft)
- Features and specifications common to all digital motion detectors, except dual edge processing and metal shield (see page 1)
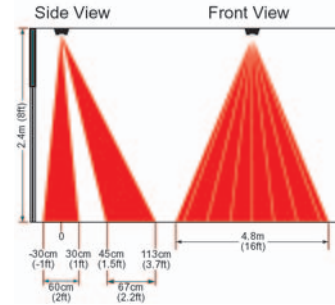
Specifications: 15mA maximum current consumption; 2m to 4m (7ft to 14ft) installation height; two alarm outputs (form A relay 100mA/28Vdc, N.C.)

Wireless Motion Detectors

Features and Specifications Common to All Wireless Motion Detectors
- For use with Omnia Wireless Expansion Modules and Spectra 1759EX control panels (see appropriate technical publication for more details)
- 3-minute energy save mode after two detections within a five-minute period
- Alive software (alarm LED continues to display when PIR is in energy save mode without compromising battery life)
- Patented Auto Pulse Signal Processing (see page 6)
- Fully supervised (low battery, tamper and check-in)
- Automatic Temperature Compensation (see page 6)
- Alarm, low battery and transmission LED
- Anti-tamper switch

Specifications: 0.2m to 3.5m/sec. (0.6ft to 11.5ft/sec.) walk speed; frequency of 433MHz or 868MHz; range of 150m (500ft) line of sight; Fresnel 2nd generation lens; operating temperature of 0°C to 49°C (32°F to 120°F); 2.1m (7ft) installation height
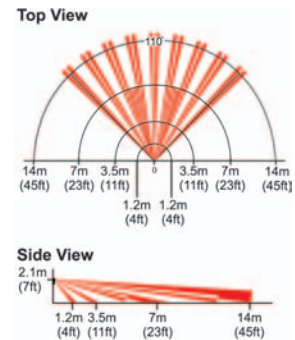
OMN-PMD1: **Omnia Wireless Motion Detector**
- Dual element sensor
- 14m (45ft) X 14m (45ft); 110° viewing angle
- Operates with three 1.5V "AA" alkaline batteries

Specifications: Battery life of 2 to 5 years (depending on the check-in setting and area traffic); dimensions: 12.7cm (5") x 6.3cm (2.5") x 5cm (2")

OMN-PMD75: **Digital Wireless Motion Detector with Pet Immunity**
- Dual optics (2 dual opposed element sensors)
- Immune to pets weighing up to 40kg (90lbs)
- Digital Dual Opposed Detection
- 11m (35ft) x 11m (35ft); 90° viewing angle
- Patented Digital Motion Detection
- Digital Shield algorithm software with adjustable sensitivity
- Single or Dual Edge Processing
- Operates with three 1.5V "AAA" alkaline batteries

Specifications: Battery life of 1.5 to 3 years (depending on the check-in setting and area traffic); dimensions: 12.4cm (4.9") x 7.4cm (2.9") x 5.9cm (2.3")
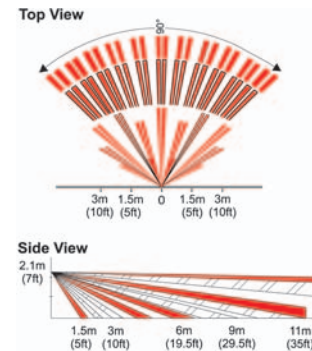
456: **Glassbreak Detector**
- Precise detection of plate, tampered and laminated glass breakage
- Full audio and infrasonic spectrum analysis
- 7 frequency digital filters, digital amplifier gain and frequency fluctuation assessment
- Impact and shock wave analysis
- High-immunity to RFI and EMI signals
- Sensitivity: High 9m (30ft) or Low 4.5m (15ft)
- TestTrek (459) for testing available separately

Specifications: operates at 9 to 16Vdc; 17mA max 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.; operates at -10°C to 50°C (14°F to 122°F)
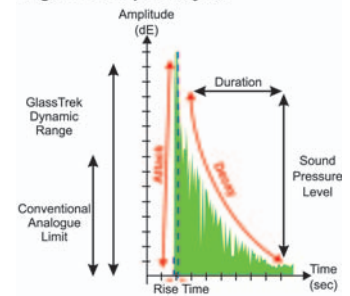
950: **Safe Protector**
- High-sensitivity piezoelectric element
- Five sensitivity settings
- 2.5m (8ft) protection range
- Tamper recognition

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.
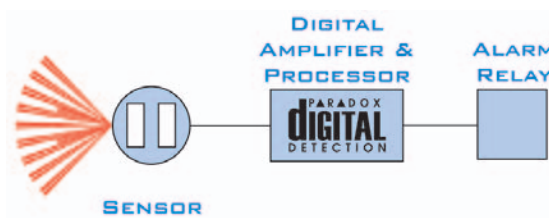
Conventional "Digital" Motion Detection:
Conventional "digital" motion detectors have an analog stage that is used to amplify the sensor's signal. The analog circuitry causes most of the signal to be lost due to the saturation of the amplifier. Therefore, there is no real benefit in adding a processor 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.
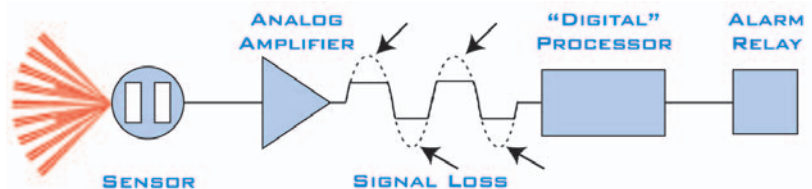
Digital Shield Algorithm

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.
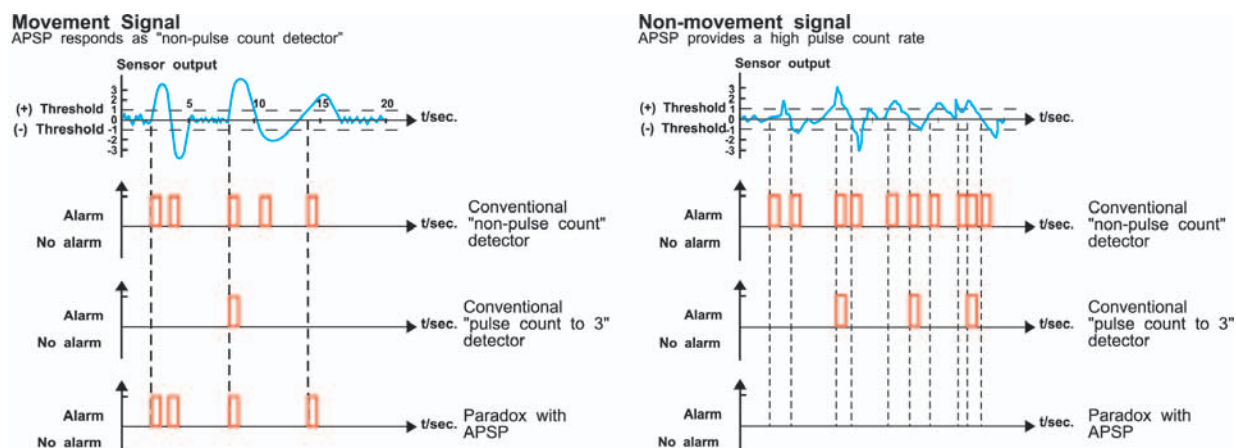

Automatic Temperature Compensation (ATC)

ATC automatically adjusts the motion detector's sensitivity according to the difference between the room temperature and body temperature. This helps maintain the same operation in its operational temperature range without any loss of coverage or decrease in false alarm rejection.
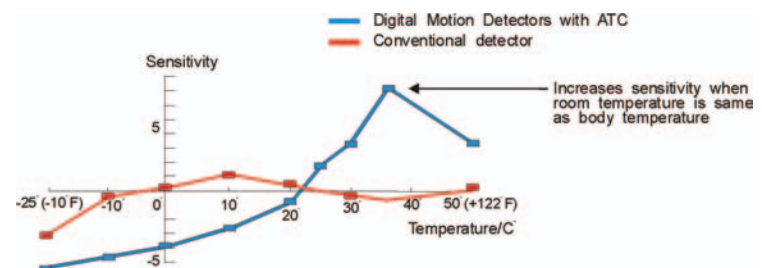
Interlock Sensor Geometry (Patented)

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.
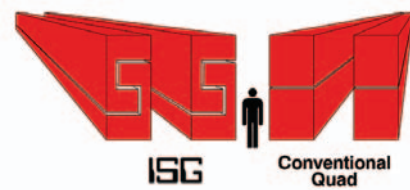

Dual Edge Processing (Entry and Exit Analysis)

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.
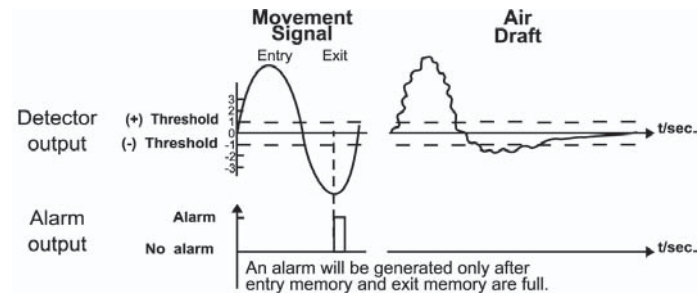
Dual Opposed Detection (DOD)

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.
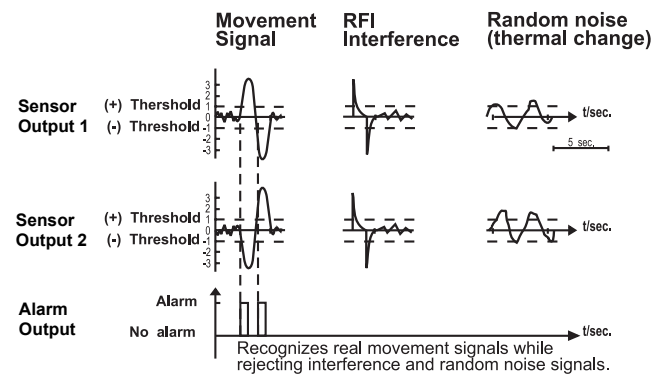

Lenses

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 55 (DG55), Digigard 65 (DG65), Digital Vision (525D) and Omnia (OMN-PMD1) motion detectors. Distances shown may vary according to the selected motion detector; please verify the motion detector's specifications.
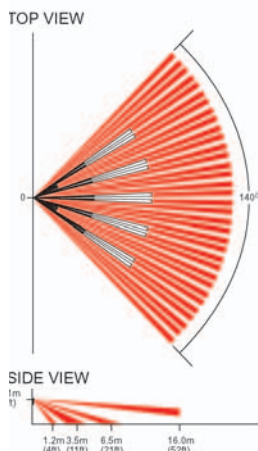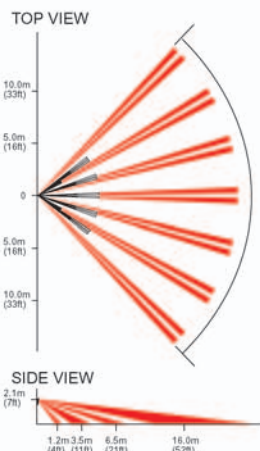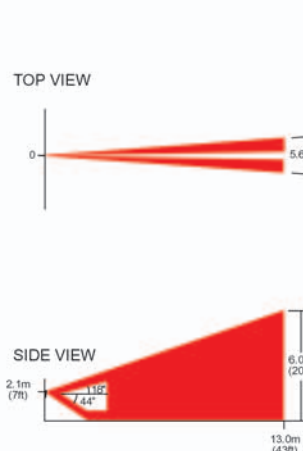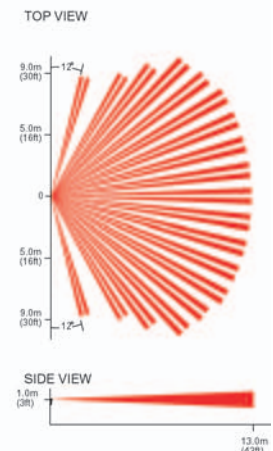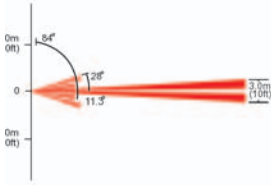
LONG RANGE-1 (LR-1) — TOP VIEW / SIDE VIEW
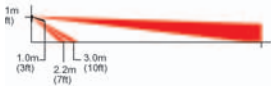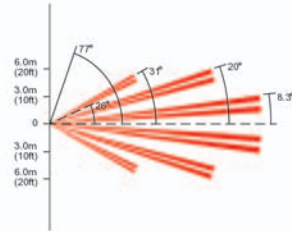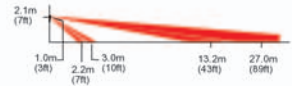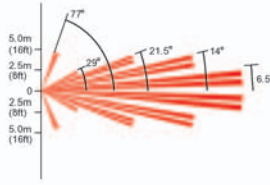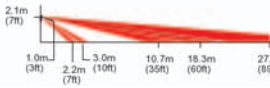LONG RANGE-2 (LR-2) — TOP VIEW / SIDE VIEW
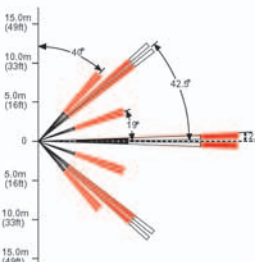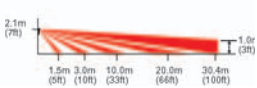LONG RANGE-3 (LR-3) — TOP VIEW / SIDE VIEW
LONG RANGE-4 (LR-4) — TOP VIEW / SIDE VIEW

Comparison Chart

Features	DIGIGARD DG85/DG75	DIGIGARD DG65/DG55	Digital Vision	PARADOME DG466	PRO Plus	PARADOOR	PARADOME 465	OMNIA
Digital Detection	✓	✓	✓	✓	-	-	-	OMN-PMD75 only
Auto Pulse Signal Processing	✓	✓	✓	✓	✓	✓	✓	✓
Auto Temperature Compensation	✓	✓	✓	✓	✓	✓	✓	✓
Shield Algorithm	✓	✓	✓	✓	-	-	-	OMN-PMD75 only
Dual Edge Processing	✓	✓	✓	-	-	-	-	OMN-PMD75 only
Dual Opposed Detection	✓	DG65 only	-	-	-	-	-	OMN-PMD75 only
Interlock Sensor Geometry	-	DG65 only	-	-	-	-	-	-
Outdoor	DG85 only	-	-	-	-	-	-	-
Pet Immunity	40kg (90lbs)	-	-	-	-	-	-	OMN-PMD75 only: 40kg (90lbs)
Metal Shield	✓	✓	✓	-	✓	✓	✓	-
Microwave Technology	-	-	✓	-	-	-	-	-
Wireless	-	-	-	-	-	-	-	✓
Sensor	Two Dual Opposed Elements	Dual (DG55) Quad (DG65) Element	Dual Element	Two Dual Elements	Dual Element	Dual Element	Dual Element	(OMN-PMD75) Two Dual Opposed Elements (OMN-PMD1) Dual Element
Coverage	m: 11 x 11 ft: 35 x 35	m: 12 x 12 ft: 40 x 40	m: 14 x 14 ft: 45 x 45	special (see page 4)	m: 11 x 11 ft: 35 x 35	special (see page 3)	special (see page 3)	(OMN-PMD75) m: 11 x 11 ft: 35 x 35 (OMN-PMD1) m: 14 x 14 ft: 45 x 45
Viewing Angle	90°	110°	90°	special (see page 4)	110°	0° or 10°	360°	(OMN-PMD75) 90° (OMN-PMD1) 110°
Optional Lenses	-	✓	✓	-	✓	-	-	OMN-PMD1 only

The GlassTrek glassbreak detector, safe protector and swivel mount bracket are not in the comparison chart, for more information refer to page 5. Note: For the latest information on product approvals, such as UL and CE, please visit our Web site at www.paradox.ca.

PARADOX®
SECURITY SYSTEMS
www.paradox.ca