

# Perimeter Intruder Detection System Buried Cable

Product Code: 6520-01

## Key Features



**Detect and locate threats to 1 metre accuracy**



**Linked multiple systems will cover thousands of kms**



**Low False Alarm Rate**



**Integration with security management systems**



**GPS integration with GIS mapping systems**



**Immune to RF and all EMI**



## Overview

The Perimeter Detection System – Buried Cable is a covert outdoor perimeter security intrusion detection sensor that generates an invisible radar detection field around buried sensor cables, if an intruder disturbs the field, an alarm is declared, and the location of the intrusion is determined. Targets are detected based on their conductivity, size and movement.

Cables can be buried into a variety of surfaces (ground, grass and concrete) approximately 23 cm below the surface and are completely covert; the cables are robust enough for direct burial in most surfaces.

The terrain-following, volumetric detection field is typically 1 metre high by 3 metres wide by up to 400 metres long. Systems can be standalone or networked for long perimeters whereby sensor cables are connected together to create a continuous perimeter

### Features

Cost-effective

Intruder location to  $\pm 1$  metre

Multiple intrusion detection

Low false alarm rate

Operates in grass, shrubs & tree areas

Can be Integrated with security systems

# Perimeter Intruder Detection System Buried Cable



WESTMINSTER  
GROUP PLC

## Applications

- Airports
- Communications sites
- Correctional facilities
- Critical commercial / industrial assets
- Government agencies and laboratories
- Important historic / cultural sites
- Military installations
- Nuclear materials storage
- Nuclear power plants
- Petrochemical
- Utilities
- VIP residences

## Standard Features

- Detects and accurately locates multiple simultaneous intrusions
- Determines the position of intruders to within  $\pm 1$  m with a 95% confidence
- Enhanced diagnostic tools, using WG Software
- Insensitive to wind, rain, snow, hail, sandstorms, fog, extreme temperatures, seismic vibration, acoustic, magnetic effects or blowing debris
- Low False and Nuisance Alarm Rate and high Probability of detection
- Operates through vegetation (grass, shrubs and trees)
- Sensor networking, power and data over cable reduces installation costs and provides inherent data security
- Up to 32 processors protecting up to 25.6 km of perimeter can be networked on one network loop
- Up to 7 processors protecting up to 5.6 km of perimeter for each power connection point
- Up to 800 metres (1/2 mile) per sensor processor

## Benefits

- A single processor covers twice the length of previous generation systems
- Alarm assessment and response can be focused exactly on the point of intrusion
- Completely covert
- Graded sensitivity cables, optimal performance
- Longer cables, fewer processors = cost-effective
- Lowest Vulnerability to defeat of any outdoor perimeter intrusion detection sensor
- Operates in wide range of soil conditions
- Site aesthetics left unchanged
- Tamper proof
- WG Network enhanced communications

## Ranging Technology

- Calibrated thresholding, separate threshold per metre of cable
- Flexibility for any environment
- Minimal sensor downtime, Pinpoint target location
- Precise diagnostics – locate faults and sources of nuisance alarms
- Simplified installation – fewer constraints, installation via cable plough possible
- Support analysis
- Uniform detection field reduces nuisance alarms

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## How it works

The system uses ported coaxial sensor cables to create an invisible electromagnetic detection field; the cables are designed with apertures in the transmit cable's outer conductor which allow energy to escape and be received by the corresponding parallel receive cable.

The system uses a coded pulse signal technique (patent pending) to determine the exact intrusion location, which can identify multiple intruders simultaneously. Detection is based on the intruder's electrical conductivity, size and speed. The probability of detection for an upright 35 kg, intruder, penetrating through the detection field and moving between 50 mm per second to 8 metres per second is greater than 99%, with 95% confidence.

Objects weighing less than 10 kg are rejected with a statistical confidence level of 95%. Separate detection thresholds are set on a per metre basis. Any attempt to tamper with the cables, the processor or its enclosure, causes an alarm.

The system calibration is simple, walking down the sensor cables while in calibration mode allows the system to automatically adjust to the sensitivity of each metre (3.3 ft.) and thus compensate for site variations. Buried cable installation has never been so easy with calibrated thresholding. Each processor can divide the perimeter protected by its two cable sets into as many as 50 alarm reporting zones, zones can be changed at any time by technical personnel using the software.

## Sensor Cables

Sensor cables carry alarm information and low voltage power throughout the perimeter, saving installation time and money. Cables can provide bi-directional power and communications to provide full redundancy in the event that a cable is cut or damaged.

### The Sensor Cables are available in 3 Configurations

**WG1** – Has transmit and receive cables buried in separate trenches and can be spaced from 1.5 to 2 metres apart, the maximum spacing results in a detection field of roughly 1 metre high by 3 metres wide.

The actual field size will depend on burial depth, burial medium, cable separation and the threshold settings of the sensor, the cables are graded to extend the cables' range to 400 metres in length, the longest offered by any buried cable system.

WG1 comes with 30 metres of integral lead in and 20 metres of integral lead out cables, the cables can be cut to fit any application. WG1 is typically used in applications that allow for longer cables, cost savings and / or require wider detection fields compared to WG2 cable. These cables are available in active lengths of 300 metres and 400 metres.

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## Sensor Cables contd.

**WG2** – Has transmit and receive cables in a single jacket, these cables are used in single trench or single slot applications, thus reducing installation time and expense.

The resulting detection field is typically 1 metre high and 2 metres wide, the actual field size will depend on burial depth, the burial medium and the threshold settings of the sensor. WG2 cables are offered in 50 metre increments up to 200 metres.

**WG3** – Has transmit and receive cables buried in separate trenches and can be spaced from 1.5 to 2 metres apart, the maximum spacing results in a detection field that is typically 1 metre high and 3 metres wide. The actual field size will depend on burial depth, burial medium, cable separation and the threshold settings of the sensor.

WG3 cables are offered in 50 metre increments up to 200 metres. WG3 is typically used in applications that require wider detection fields compared to WG2 cable but do not require longer WG1 sensor cables.

## Software

The easy-to-use software tool provides real-time feedback for use during calibration and setup. It is Windows® based and can be used on a personal desktop or laptop computer.

It is connected directly to the processor, this eliminates the need for specialised electronic measurement equipment, greatly reduces the configuration time and effort, and facilitates factory support with its enhanced diagnostic tools.

## Network

The processors can communicate alarm, status, and configuration information to and from a central control point using an integral networking capability referred to as WG Network.

WG Network uses a loop topology with separate Transmit and Receive point-to-point links between each processor or other connected WG Network-compatible equipment.

WG Network is designed to be polled from both ends of the loop, thus providing redundant data paths to the field equipment. Point-to-point links can be RS-422, single or multi-mode fibre, or over the sensor cables.

The data signal is completely regenerated at each node in the loop to ensure proper signal integrity and reliable data transmission.

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**WESTMINSTER**  
GROUP PLC

## Specifications

### Performance

- False Alarm Rate (FAR) – Fewer than 1 per zone per month alarms from unknown causes with full visual assessment
- Nuisance Alarm Rate (NAR) – Site dependent
- Probability of detection – Optimised for the detection of an upright 35 kg, or larger person moving between 50 cm per second to 8 m per second, with a probability of detection of 99% with 95% confidence. This is based on penetration of the intruder through the detection zone

### Auxiliary Power Supply

- Accepts 18 to 56 VDC
- Output 12 VDC, 150 mA

### Network Repeaters for Long Network Runs

- Accepts 10 – 52 VDC
- Built-in battery charger
- Multi-mode fibre to multi-mode fibre
- RS-422 to multi-mode fibre
- RS-422 to RS-422

### Packaging / Environmental

- Processor on a base plate in a white aluminium NEMA 4 (or equivalent) enclosure: Size – H40 x W23.5 x D16.5 cm
- –40°C to +70°C – Relative humidity to 95% non-condensing
- Protective telecom enclosure accepts NEMA 4 enclosure: Size – H98.4 x W42.5 x D27.3 cm, Light green enamel over steel – Protection IP33

### Sensor cable WG1

- Active cable length 400 metres or 300 metres
- Cable jacket diameter 12.07 mm
- Contiguous graded design with lead-in, active cable and lead-out
- Each cable set comes with a kit of 6 TNC connectors and 40 ferrite beads for field installation
- Lead-in length 30 metres
- Lead-out length 20 metres
- Two pairs of sensor cable per processor (A and B)

### Input / Output Card

- Mounts on processor expansion header
- Relay output card: 8 Form C relay outputs (1.0 A, 30 VDC max)
- The WG processor can accept 1 optional input / output card in addition to a communications card
- Universal input card: 8 inputs with configurable thresholds and supervision modes

### WG Network

- Alarm data including pinpoint target location
- Diagnostic data to support remote UCM operation
- Facilitates fail safe communication
- Point-to-point interconnection provides reliable communication – no signal degradation as with multi-drop networks
- WG Network Interface Unit – reliable lightning protected computer interface
- WG Network Manager – software interface to “head-end” Security Management System

### General Accessories

- 12 V outdoor-rated single processor supply
- 48 V indoor-rated dual redundant network power supply
- 48 V outdoor-rated network power supply
- Lightning arrestor kit