

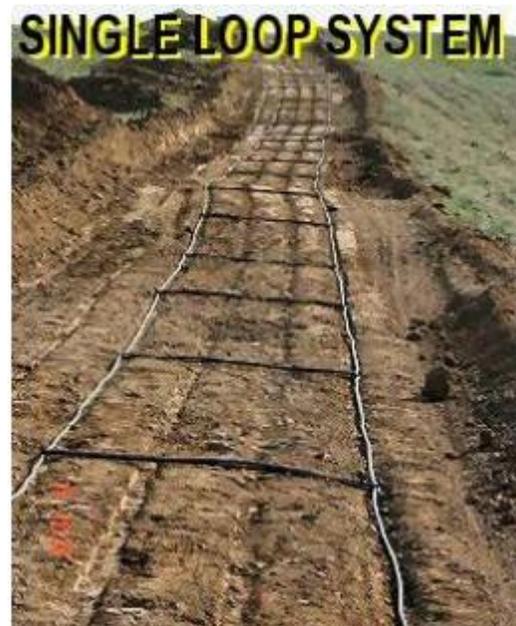
# G-MAX- UPDS Loop Detection

Underground Passive Magnetic Detection System

WHITE PAPER



*UPDS Field Controller*



## **G-MAX- UPDS Loop Detection**

### **INTRODUCTION**

The Underground Passive Magnetic Detection System (UPDS) is specifically designed for perimeter protection of critical infrastructure facilities, correctional institutions, governmental and military sites as well as other such high risk facilities.

USPDS utilizes concealed sensors based on magnetic-technology which detects penetration attempts by burglary and breaching tools. The system creates a “virtual fence”, 3 meters high by 3 meters deep. The fence operates by mapping fluctuations of the Earth's magnetic field. Consequently it is not affected by the movement of animals or changes or growth of vegetation.

### **OVERVIEW**

Detection is based on the principle of Magnetic Anomaly Detection (MAD) through emplaced loops of cables. This system will also operate effectively under any type of ground, concrete roads and runways, between trees, under vegetation, under water, ice, snow and on the top of a wall. All global or local disturbances are filtered out by the adaptive algorithms of the Field Controller.

Basically, the UPDS is able to measure and detect moving ferromagnetic materials (iron or steel) because such action causes a local flux to the magnetic field of the earth. There is a high probability of detection because intruders carry weapons, military equipment, cameras, wire-cutters, keys, cellular telephones, or other instruments of crime. When these and other items which contain ferromagnetic material are passed over the buried detection system a measurable current is induced in the systems detector loops.

The system utilizes passive detection. Electromagnetic radiation is not generated by or through the loops of cables so no power is required.

A typical security perimeter is divided into zones, each of which can be as short as 10 meters (33 feet) or as long as 600 meters (1,968 feet). Up to 3 zones can be connected to a field unit analyzer and related alarm circuitry. All sensors, field units and control cables are concealed underground. Should the protected perimeter be crossed by an intruder, an audio-visual alarm is instantly activated at the control center.

UPDS serves either as a stand-alone system or can be integrated with any other type of sensor, to provide dual technology detection at a given perimeter.

## SYSTEM DETAILS

The UPDS sensor is a concealed, passive buried cable designed to detect and locate intruders moving over unseen boundary lines and perimeters.

The magnetic sensor of UPDS can be installed in multiple configurations:

1. **Single Loop:**

An armored sensor cable with multiple strands. Sensor coverage for each loop can extend from 10 meters (33 feet) up to 600 meters (1,968 feet) with a sub loop detection width of 1.2 meters (4 feet). The detection zone above and below the buried loops is 3 meters (10 feet).



2. **Double Loop:**

An armored sensor cable with multiple strands configured in a double loop configuration of two loops in parallel. Each loop creates an alarm zone and the double loop configuration giving more probability of detection and reduced likelihood of false alarms. Sensor coverage for each loop can extend up to 300 meters (984 feet) per alarm channel with a width of 2.8 meters (9 feet). The detection zone above and below the buried loops is 3 meters (10 feet).



3. **Pole Detection:**

A 2 meters length and 32 mm diameter cable with gray solid PVC outer jacket. A maximum of 65 units per channel can be installed. There is a total possible maximum length of 130 meters (426 feet) for each detection channel.



## System Advantages

- **Appearance and landscaping :** because the sensor cables are buried an invisible fence is created which does not detract from the aesthetics of the location.

- **Fully concealed & passive:** intruders are unaware of the presence or exact location of the UPDS detection field, avoiding any attempts by them to tamper with or defeat the system.
- **Installation under any substrate:** The UPDS hidden magnetic sensor can be installed in harsh environments and under any type of surface: soil, concrete, asphalt, water, snow, ice.
- **Low maintenance costs & Highly durable:** System lifetime is very high. The buried cables have demonstrated high durability and longevity (some 30 years or more). Electronics typically require only upgrades, if desired, rather than repairs.
- **Low false alarm rate:** The rate of false alarms is extremely low because UPDS is not affected by animals, vegetation, rain, snow or fog.
- **Reducing the costs of large projects:** Large projects can acquire locally produced magnetic sensor cable (which meets specifications) in order to save the expense of importing.
- **Integration:** The UPDS system can be integrated with integrated intelligent communication modules of all scales including the G-Max4000 and existing CCTV systems.
- **Protection of water channels:** UPDS magnetic sensors can be configured to protect water channels at a depth of up to 10 meters in order to detect divers or submersible vehicles.
- **Simple installation**

## SYSTEM APPLICATION

- **Underground concealed detection system.**
- **Underwater concealed detection system.**
- **Wall mounted concealed detection system.**



## SPECIFICATIONS

**CMS communication:**

Computerized Multiplex  
System G-MAX4000 RS-485  
Communication

**Detection Configuration:**

Double Loop – Two zones  
Double line Pole detection – Two  
zones

**Length of Detection Line:**

Detection Loops up to  
600meters, Depends on type of  
Sensor Cable. Poles  
Units up to 150meters.

**Typical Detection Area:**

Volumetric Detection above and below the  
ground. With Loops Detection 2 meters  
radius each Loop. With Pole Detection  
1meters radius each Line.

**Environment Conditions:**

All weather operation (365 days per year).  
Max operating temperature +70°C  
Minimum operating temperature -30°C or -  
50°C with additional Internal 5W heater  
((special 32VAC power line will be  
required).

**International Standard:**

EMC directive of CE standards.

**Signal Processing:** Special  
adaptive algorithm.

**Power:** 3 Watt max. 18-48VDC  
(20-72VDC option by special  
order)

**Sealing:** IP 67 Protected against  
immersion in  
water.

**Dimension:** Diameter 150mm  
Height 180mm.  
Net weight: 2 kg.