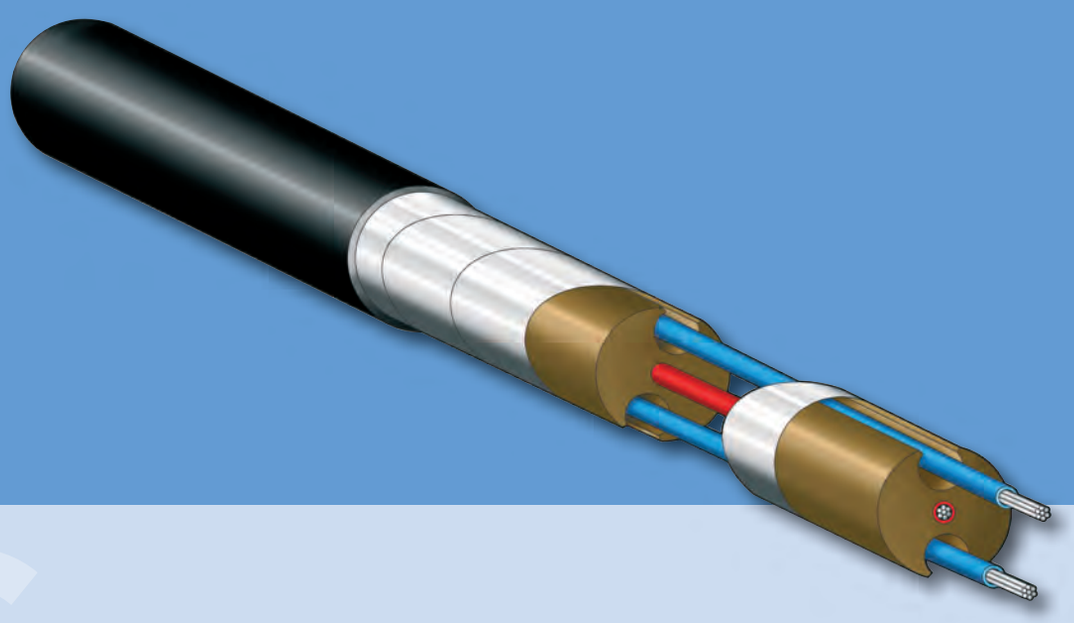
VibraTek® 3G

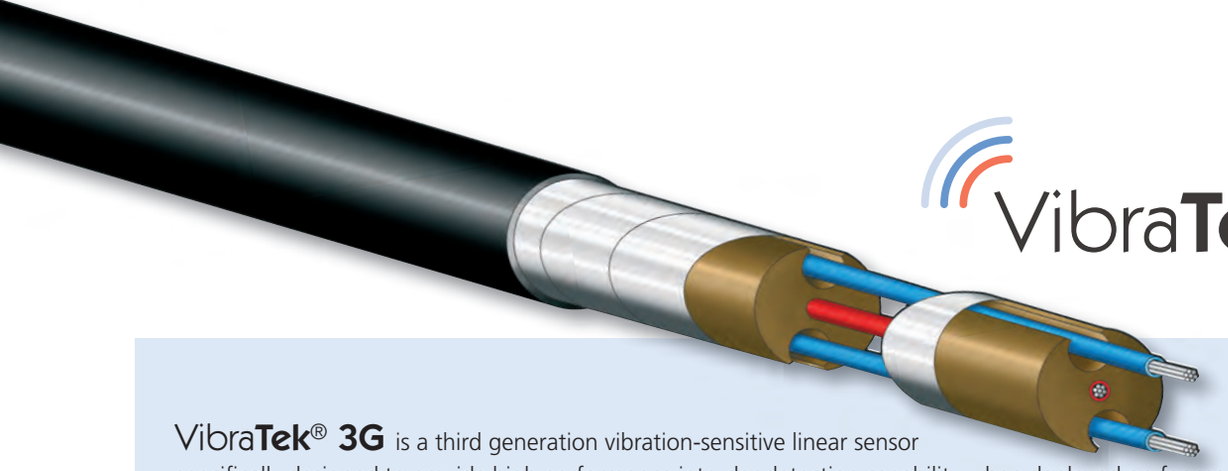


3G

THE ULTIMATE FENCE PROTECTION SENSOR

detection technologies

PROTECTING PERIMETERS GLOBALLY



VibraTek® 3G

VibraTek® 3G is a third generation vibration-sensitive linear sensor specifically designed to provide high performance intruder detection capability when deployed on fences or other barriers used to define the perimeter of a secure site.

The development of VibraTek® 3G draws on knowledge gained over more than 20 years operational experience of intrusion detection system design, and in particular, from the highly specialised external perimeter market sector where vibration sensing technology applied to fence structures constitutes by far the most widely used and cost-effective method of intrusion detection.

VibraTek® 3G is a sophisticated, yet easy to install sensing device, based on well established engineering principles carefully chosen to ensure maximum detection performance allied with an enviably low false alarm rate. Considerable design effort has been expended to ensure that the mechanical characteristics of the sensor cable closely match that of the range of fences it is designed to protect, thereby ensuring optimum performance.

VibraTek® 3G is manufactured as a cable form allowing easy installation and commissioning by any competent electrical technician and can be supplied to site in any length up to 1500 metres ensuring maximum utilisation and minimum wastage during the installation process.

The VibraTek® 3G sensor is designed to operate in conjunction with Detection Technologies range of signal analyers which fully exploit it's unique features to provide a wide range of system configurations capable of meeting the requirements of any perimeter security system design.

VibraTek® 3G is directly attached to fences or other perimeter barriers using cable ties, cable clips, or by installation in conduit attached to such barriers, so that mechanical vibration generated as a result of hostile activity is coupled into the sensor device and converted to representative electrical signals.

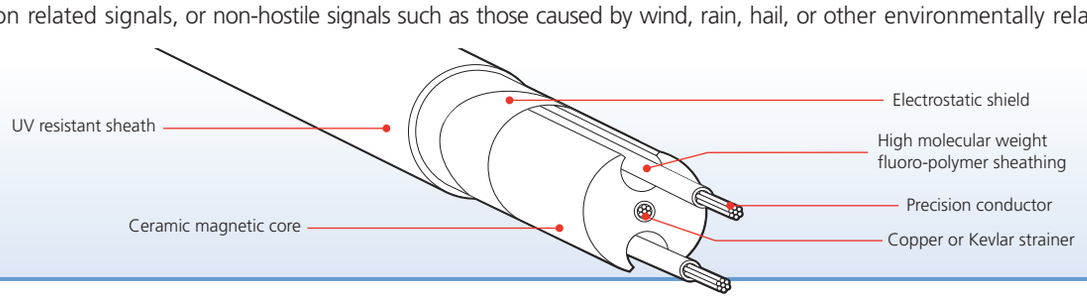
Theory of Operation

The VibraTek® 3G sensor operates as a linear induction generator whereby precision made concentric conductors within the sensor are arranged to vibrate within a static magnetic field generated by flexible ceramic magnetic profiles.

Mechanical vibrations resulting from intrusion activity are coupled into the sensor through direct contact between the sensor and the protected structure (fence, wall, railing, etc). The mechanical energy of vibration is converted to an electrical signal by the sensor by induction of electrical currents into the active conductors within the sensor.

VibraTek® 3G differs from other linear magnetic sensors in that it incoroprates mechanical damping designed to eliminate spurious responses that occur with undamped sensors of similar design. This key difference in the design of the sensor is fundamental in achieving significant improvement in detection performance without degrading the inherent resilience of the sensor to environmentally generated alarms.

The electrical signal created by the sensor is an accurate representation of the mechanical energy which created the signal. This enables the signal analyser module to which the sensor is connected to reliably classify the signals as either hostile, intrusion related signals, or non-hostile signals such as those caused by wind, rain, hail, or other environmentally related activity.



Technical Advantages

Unsurpassed Signal to Noise Performance

The smallest intrusion related mechanical activity detected by the sensor will generate a signal level typically 1000 times greater than the background electrical noise level generated by the sensor itself. This unsurpassed audio performance ensures that minute levels of intrusion related activity can be easily extracted and identified by Detection Technologies signal analyser systems without risk of losing such critical information within the high background noise levels that characterise many low performance sensors.

Unaffected by moisture penetration

The low impedance design characteristics of the sensor ensure that the performance of the sensor is unaffected by water ingress resulting from cable sheath damage or poorly sealed terminations or joints.

Immune To Electromagnetic Interference (EMI)

The sensor is configured as a twisted pair of conductors which are balanced with respect to ground thereby ensuring rejection of externally generated electromagnetic intereference sources.

Resilient To Lightning Induced Damage

The sensor cable design allows electrical isolation of the sensor from the signal analyser system using custom made transformers to ensure maximum resilience to lightning strikes in the vicinity of the sensor.

Simple Termination & Repair Procedures

Since the sensor relies on only two copper wires for it's operation, terminating and splicing the cable is a simple task readily accomplished by any competent electrical service technician using readily available, non-specialist tools. A typical Mean Time To Repair (MTTR) figure of 15 minutes is easily achievable.

Ultra-High Quality Audio Signal

The low impedance design of the sensor ensures high quality audio signals which, in turn, allows accurate and unambiguous verification of hostile activity by security personnel.

UV Resistant Sheathing Material

The sensor cable is sheathed in a low density polyethylene polymer which is heavily loaded with carbon powder to provide the highest possible protection against sheath degradation by the ultra-violet radiation present in sunlight.

Highly Reliable

The sensor cable components are carefully chosen to ensure the highest reliability possible so that a typical Mean Time Between Failure (MTBF) figure in excess of 80,000 hours is achievable. Subject to correct installation, the performance of the sensor will not degrade over time, even in extremes of heat and cold.

No Signal Loss In Interconnecting Cables

The low impedance characteristics of the sensor ensures that no significant signal loss occurs even when long interconnecting cables are used between the sensor itself and it's signal analyser. This powerful capability allows the signal analysers to be 'clustered' at strategic points on site where power and communications may be more easily provided. A secondary benefit of this capability is that the requirement for power and signalling cabling along the site perimeter is dramatically reduced with consequent reductions in installation cost.

VibraTek® 3G

Applicable to virtually all perimeter fence constructions

VibraTek® 3G THE ULTIMATE FENCE PROTECTION SENSOR

Physical Specification

Cable Diameter:	7.0 mm
Sheathing Colour:	Black
Sheathing Material:	Low Density Polyethylene (LDPE)
Sheathing Material UV Lifespan:	Greater than 15 years (equatorial exposure)
Continuous Available Length:	1500 metres maximum
Active Elements:	Concentrically constructed tinned copper conductors
Active Element Sheathing:	High molecular weight fluoro-polymer
Electrostatic Shield:	Aluminium/mylar composite tape
Longitudinal Strength Element:	Multi-strand tinned copper wire (insulated)
Operating Temperature Range:	-40°C - +90°C
Relative Humidity Tolerance:	100% condensing
Installation Temperature Range:	0°C - +40°C
Weight:	82 g/metre
Ultimate Tensile Strength:	1kN
Minimum Bend Radius:	100 mm
Maximum Applicable Tensile Force:	60 Newtons (6kgf)

Electrical Specification

Bandwidth (-3dB):	10Hz – 3.8 kHz [1]
Typical Signal Voltage Level:	1mV
Active Element Impedance:	8 ohms per 100 metres
Static Magnetic Field Strength:	200 Gauss (0.02 Tesla) minimum
Electrostatic Shielding Factor:	100%
Mean Time To Repair (MTTR):	15 minutes [2]
Mean Time Between Failure (MTBF):	Greater than 80,000 hours [3]

Typical Maximum Zone Length vs Fence Type [4]

Chain Link Fencing (plastic coated):	150 metres
Chain Link Fencing (galvanised):	200 metres
Welded Mesh Fencing:	275 metres
Expanded Metal Fencing:	275 metres
Palisade Fencing:	300 metres

1. OEM test procedure
2. Using OEM approved/supplied repair kit
3. Subject to OEM approved maintenance schedule
4. Subject to fence condition

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