



VibraFon®

THE ULTIMATE WALL PROTECTION SYSTEM



detection
technologies

PROTECTING PERIMETERS GLOBALLY

The **VibraFon®** wall protection system from Detection Technologies closes a significant gap in the perimeter intrusion detection system marketplace by providing a solution specifically designed to protect walls which form all, or part of, the perimeter of a secure site. The VibraFon® system utilises point sensors capable of detecting mechanical vibration transmitted along the wall as an intruder (or escapee) attempts to climb over or break through the wall. These point sensors are deployed along the wall at intervals of typically 3 metres and are interconnected to form an interlaced phased sensor array capable of detecting hostile activity occurring on the structure of the wall.

Examples of such hostile activities might include unaided climbing, rope or ladder aided climbing, drilling, chiselling, or digging under the wall. Historically, protection of perimeter walls has relied on technologies such as active / passive infra-red detection, microwave detection, video motion detection, or systems requiring additional structures such as fences to be attached to the wall to achieve detection.

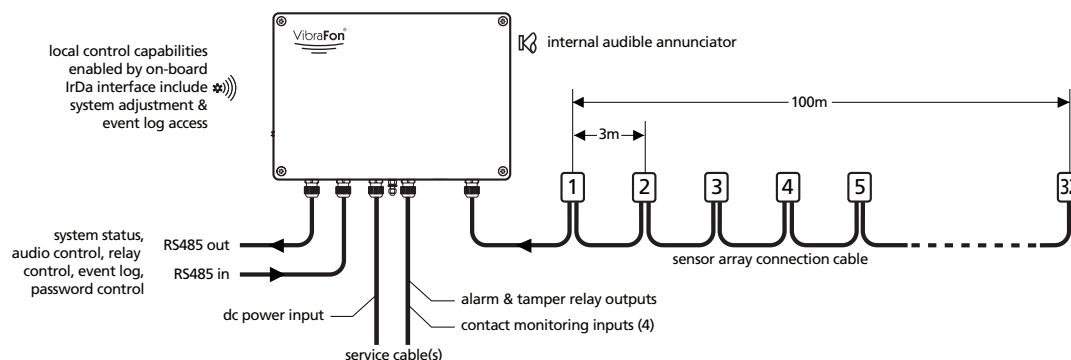
VibraFon® offers significant advantages over such technologies in that it is virtually covert and causes minimal aesthetic impact, it requires no power distribution along the perimeter wall, it is not limited to straight lines of detection as are infra-red, microwave, and video detection technologies, and it requires no maintenance of sterile areas adjacent to the wall.

Furthermore, as it forms an integral part of the perimeter wall structure, VibraFon® provides detection of hostile activity before the intruder manages to breach or climb over the wall. As all security professionals are aware, early detection of hostile activity reduces the probability of loss or damage as a result of the activity.

System Architecture & Advantages

A typical VibraFon® system comprises a linear phased array of sensors connected to a VibraFon® signal analyser module. The schematic diagram below depicts the options available applicable to a VibraFon® system.

Each VibraFon® signal analyser caters for zone lengths of up to 100 metres. Applied to a typical wall, this corresponds to an array of 32 detection sensors.



The VibraFon® signal analyser module may be located adjacent to the sensor array deployed on the wall. In such cases, DC power will be required to power the signal analyser and cabling must be provided to route the alarm signals generated by the analyser back to the operator interface or annunciation system.

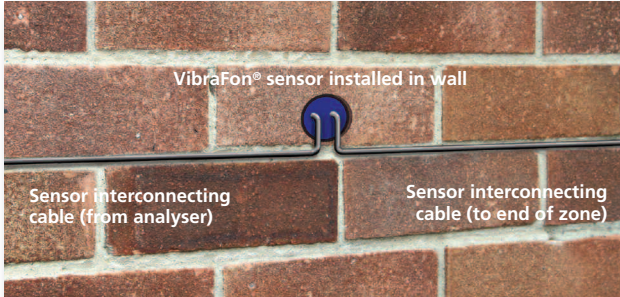
Alternatively, the signal analyser may be located up to 2500 metres from the wall, in which case a cable comprising two twisted pairs of conductors is used to interconnect the sensor array on the wall with the remotely located signal analyser. In many cases, the latter configuration is often preferable as the cost of installation of the twisted pair signal cable is generally much cheaper than providing cables suitable for power distribution and alarm signalling, particularly on larger perimeters.

VibraFon® sensor arrays can be supplied pre-wired or individually packaged to allow on-site wiring where there may be difficulty in deploying a pre-wired array along the perimeter wall.

Sensor Installation

Each sensor forming part of a phased array can be packaged, either to allow installation within the structure of the wall, or directly mounted on the surface of the wall.

Installation within the wall structure requires a hole to be drilled to accommodate each sensor.



Surface mounted sensors are fixed using proprietary wall fixings and remain visible after installation. Similarly, the interconnecting cable between individual sensors in an array may be clipped directly to the face of the wall, or installed within a groove cut into the wall for this purpose.

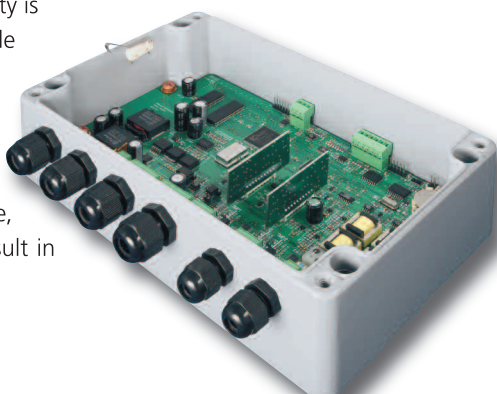
In the case of brick walls, the usual approach is to rake back a mortar joint to accommodate the interconnecting cable and then re-point the joint to retain the cable. For most applications, the sensor array is installed along the inside (secure) face of the wall close to the top of the wall.

VibraFon® Signal Analyser

Signals detected by VibraFon® sensor arrays are processed by the signal analyser module and classified as either of hostile origin resulting from intruder activity on the wall, or of non-hostile origin resulting from effects such as weather conditions, vehicular traffic adjacent to the wall, and low flying aircraft.

Signals classified as being of hostile origin cause the signal analyser to indicate an alarm event, while signals generated as a result of benign activity such as wind, rain, and similar effects are ignored.

The VibraFon® signal analyser incorporates powerful digital signal processing algorithms to ensure that this classification process is as accurate as possible so that reliable detection of hostile activity is ensured while at the same time, activity classified as benign, or non-hostile, does not result in false alarms.



The signal analyser is available in two configurations as follows:

Standalone Configuration

In this configuration, each analyser is a separate and self-contained module. Each analyser is powered by a 12v DC supply and provides relay contact outputs to indicate the occurrence of alarms and facilitate easy connection of these alarms to external annunciation / control equipment.

Adjustments to the detection settings within the VibraFon® analyser are made using a PDA loaded with Detection Technologies proprietary software, or by a laptop PC running similar proprietary software. In either case, communications between control device and analyser are facilitated by an IrDa infra-red communications port provided on the VibraFon® analyser.

Networked Configuration

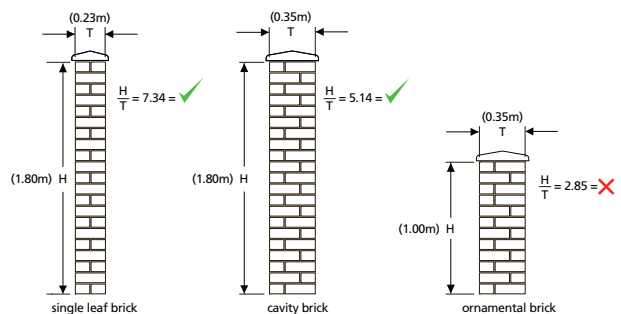
In this configuration, generally applicable to larger perimeters, each analyser is linked by a ruggedised RS485 communications bus which permits the transmission of alarm data from each analyser back to the site control room. All system adjustment and configuration commands are transmitted from the control room to each analyser as required.

Networked analysers are normally used in conjunction with a PC based management system and IP connectivity is provided to enable use of existing network infrastructures where available.

Typical Applications

The VibraFon® system may be applied to most types of walls including those constructed of brick, stone, concrete, and steel.

Ornamental fences comprising decorative steel panels supported on brick or stone pillars are an ideal application of the VibraFon® system where reliable detection of climbing on both the steel panels and support pillars is required.



As a general guide, walls with a slenderness ratio (Height/Thickness) of 5:1 or greater may be effectively protected by VibraFon®.



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VibraFon® Specification

Inputs

Power supply port:	(1) input voltage range	9 – 24v DC
	current drain @ 12v dc	60 mA (standalone analyser)
VibraFon® sensor port:	(2) VibraFon® sensor arrays	
Contact input port:	(4) dry (volt-free) contact inputs	

Outputs

On-board audio ports:	(2) non-isolated output (local diagnostic use only)	
Audible warning device:	(1) commissioning & system demonstration aid <i>(automatically disabled on enclosure lid replacement)</i>	
Alarm outputs:	(2) form A (NO) semiconductor relay	
	(2) form A (NO) semiconductor relay	
	<i>contact ratings</i>	
	<i>maximum voltage: 120V ac, 24V dc</i>	
	<i>maximum current: 500mA ac, 150 ma dc</i>	
	<i>maximum power: 10W ac, 2.5W dc</i>	

Local Control Port

Implementation:	(1) IrDa compatible infra-red communication port	
functionality:	system parameter adjustment, event log access, time & date setting.	

Remote Control Port (Networked Analyser Only)

Implementation:	(2) RS485 data bus with loop capability	
functionality:	As Local Control Port plus: digital audio transport, stored audio control, auxiliary contact status monitoring, alarm & tamper status monitoring.	

Environmental Specification

Operating temperature range:	- 30° to + 70° Celsius
Relative humidity:	90% non-condensing

Physical Specification

Enclosure material:	Pressure die-cast aluminium
Enclosure sealing:	IP65
Cable glands:	4 x M20 (Service Cables) 2 x PG9 (Sensor Array Cables)
Cable gland sealing:	IP66
Dimensions:	330 W x 220 H x 110 D
Weight:	1.8 kgs

