ARITECH

GS 710 - GS 711

INERTIA SHOCK DETECTOR

INSTALLATION MANUAL

Installation Instructions for the GS 710 universal inertia sensor

The GS 710 is a low profile Inertia Shock Sensor, designed for the asthetically-conscious market. The GS 710 is used for the detection of forced entry through windows, doors, walls and roofs, etc.

The GS 710 sensor has a unique ability to be mounted on any structure throughout a 360 degree axis simply by fixing the base of the sensor to the structure either in the vertical or horizontal position and then aligning the sensor module so that the ARITECH name is in the readable orientation.

The GS 711 sensor is also available. This sensor incorporates a magnetic contact switch and is supplied with its own magnet. This affords complete protection for a window or door where the magnetic contact detects the opening and the Inertia Sensor detects forced entry through the wood or glass of the structure.

Operation
The GS 710 Inertia sensor is an electromechanical accelerometer which measures the high frequency stress signals generated in a solid structure when a thief tries to force entry. Low frequency background vibration patterns caused by wind, rain, etc are totally ignored by the Inertia sensor, however, the sensor is extremely sensitive to the higher frequency signals generated by intruder type instruments such as drills, saws, crowbars, etc.

An Inertia Sensor accelerometer is not a microphone and therefore is totally immune to airborne noise, the accelerometer feels high frequency signals as they travel through the material when the structure is under stress.

This patented state of the art design has produced an extremely compact and easily installed unit. The GS 710's unique design using twelve 24 carat gold-plated contact points, which provide the extremely low electrical contact resistance necessary for an extremely reliable sensor. The sensor is then assembled to a high degree of precision and is hermetically sealed in a rugged ABS plastic housing.

THE UNIVERSAL GS 710 - WIRING INFORMATION

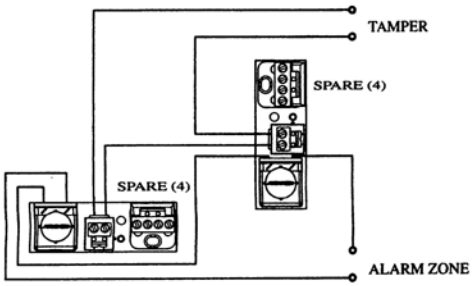
The GS 710 sensor is available in WHITE (GS 710) or in BROWN (GS 710 B) in high impact ABS plastic tamperproof boxes. The tamper connections are gold-plated to ensure a high reliability and long-working life.

The GS 710 is ideally suited for aesthetically sensitive applications where cable connections or large junction boxes cannot be shown.

In Figure 1:

The GS 710 sensors are wired in series and connected to the GS 615 Inertia analyser board, or they may be wired directly back to the alarm zone inputs on the ARITECH control panels with built-in Inertia analyser functions.

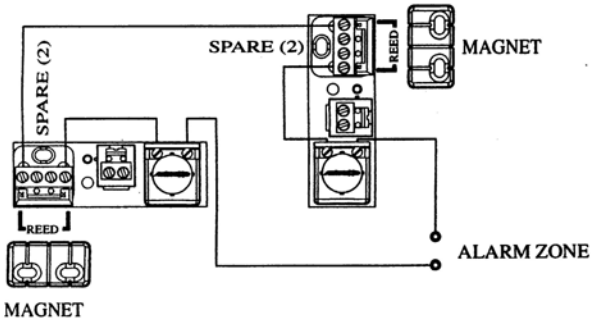
The tamper contacts are wired in series to the alarm control panel tamper circuit.



GS710 UNIVERSAL INERTIA SENSOR

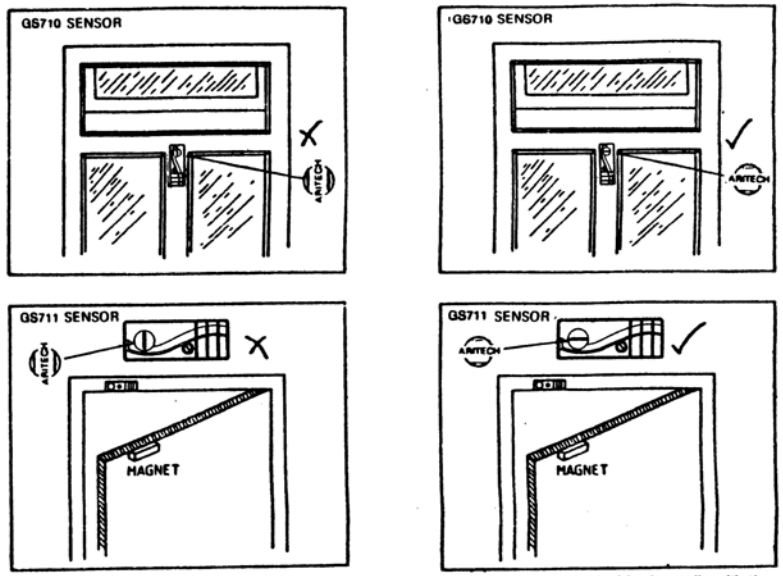
In Figure 2:

The GS 711 sensors are wired in series with the magnetic reed switches. This combination is used for the protection of structures with openings such as windows or doors. If required, the reed switches may be connected to their own alarm zone independent of the inertia sensor zones. The tamper contacts are wired in series to the alarm control panel tamper circuits (same as GS 710).



GS 711 UNIVERSAL INERTIA SENSOR

The Aritech universal sensor can be mounted vertically or horizontally as required, provided that the internal sensor housing is in the correct orientation. Correct orientation is achieved when the Aritech name is mounted in the readable position.



This sensor is incorrectly mounted because the Aritech name is not in its readable orientation.

The same sensor mounted horizontally with the Aritech name in correct orientation.

Note that the Aritech universal sensor can be mounted on a horizontal plane e.g. on a flat ceiling or under a door lintel.

INSTALLATION PROCEDURE

The maximum number of inertia sensors connected to an analyser board is only limited for the reasons of:

A. Alarm standards
B. Zoning
C. Maintenance and service.

15-20 sensors in one zone are common and more can easily be connected.

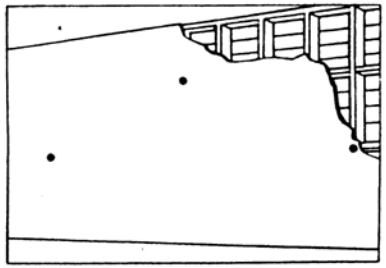
Where possible it is recommended that sensors on the same type of structure are connected together and wired to the same analyser for ease of sensitivity adjustment.

A. Connect sensors on windows to their own analyser.
B. Connect sensors on roofs to their own analyser.
C. Connect sensors on walls of similar types of materials to their own analyser.

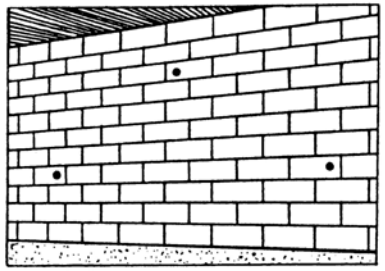
This is an ideal situation, however, and sensors on different structures connected to the same zone are common. With an installation of this type, the installer should decide which window or door in this zone is of the weakest construction and he should adjust his sensitivity levels to detect a break in at this point. Because the other doors and windows on this zone are of a more solid construction, the intruder will have to generate high levels of energy to force entry which will be readily detected with the sensitivity levels set to detect a break-in through the weakest point.

SENSOR APPLICATION — Walls

Sensors can be specified at 3-4m spacing on walls with a maximum spacing from all corners, floors and ceilings of 1m. This spacing should detect entry by means of drilling or gentle attempts to break through the structure.
In many instances, where conductivity is good, such as girders or mass concrete, spacings of up to 6m should be acceptable. Where there is doubt about the continuity of signals through the wall such as those caused by cracks in the plaster or broken blockwork behind the plaster, it will be necessary to place a sensor on the wall each side of the suspected break.



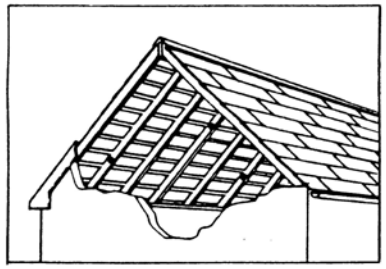
Mount all sensors horizontally or vertically as required with sensor housing in correct orientation.



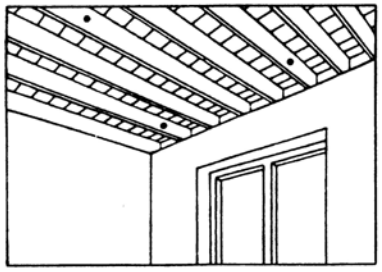
See Test Procedure for Optimum Spacing.

SENSOR APPLICATION — Roofs

The GS 710 sensor is particularly suitable for roof installations because of its unique automatic equilibrium stabilisation feature. When mounting sensors on roof, ensure that structures are free from excessive vibration and are in a good state of repair. Mounting the GS 710 sensors to roof frames gives exceptionally good coverage, and spacings up to 6m can easily be obtained.



Mount sensors horizontally or vertically with sensor housing in correct orientation.



See Test Procedure for Optimum Spacing.

SENSOR APPLICATION — Windows

When using sensors on windows ensure that the window frame does not rattle in the closed position or in a desired secured open position. Sensors can be used on windows in a partially "Locked Open" position to allow for ventilation without any loss of security, provided that theopening is not large enough to allow entry.

Using sensors on exposed windows

Where windows are exposed to the general public the following action is recommended when using sensors.

1) Connect all sensors on these windows to the same analyser (do not connect sensors on other structures to this analyser board).
2) Adjust analyser board sensitivity pot to activate analyser board only when the shock on the window is sufficiently strong enough to break the glass.
3) **Remove the plug of pulse counter, to ensure that the analyser only responds to gross attack.**

Even with the pulse counter plug removed, theL.E.D. will still light when small shocks are seen by the sensor on the window. However, these shocks are not counted and are now ignored by the analyser board.

Using sensors on unexposed windows

When using sensors on windows not exposed to the general public the analyser can be set to respond to more gentle attempts at entry over longer periods of time.

Windows situated in unexposed positions provide the intruder with two options:

a) He can gain entry by breaking the glass with gross attack
b) He can attempt to gently force open the window.

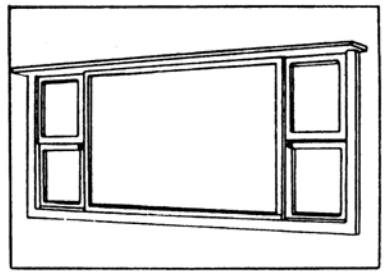
To detect situation (a): The sensitivity pot setting is adjusted to activate the relay on the analyser board when a shock is seen that is sufficiently strong enough to break the window.

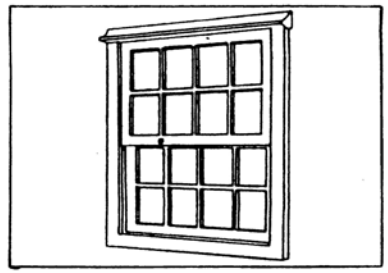
To detect situation (b): The board is programmed to activate the alarm at any number of shocks seen between 2 and 9, by placing the pulse counter selector plug over the appropriate pins. Shocks are caused by the intruder gently forcing the structure or by attempts to gain entry with a glass cutter.

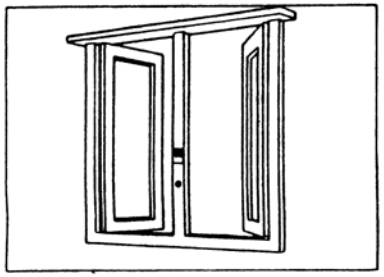
Shocks are counted at one-second intervals and are stored in the memory for 30 seconds. If the programmed number of shocks are seen within 30 seconds the board will activate. If a shock is received, however, that is greater than the sensitivity setting of the potentiometer, the relay on the analyser board will immediately activate.

SENSOR APPLICATION — Windows

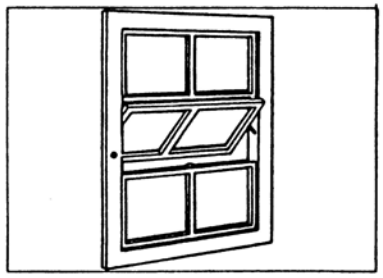
a) One sensor can cover up to 4 sq.m. on a single pane of plate glass.
b) Sensors mounted on plate glass should be mounted on the glass at least 15 cm from frame.
c) Sensors mounted on frames of multi-paned windows should be placed as close as possible to the centre of the frame. The best response is usually obtained where two window beams cross (see diagram).







Mount all sensors horizontally or vertically with sensor housing in correct orientation.



See Test Procedure for Optimum Spacing.

SENSOR APPLICATION — Doors

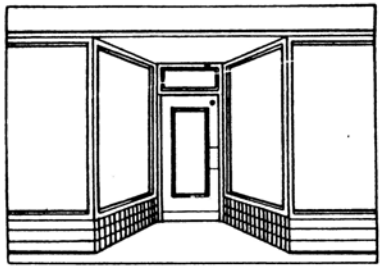
The GS 611 sensor with magnetic reed contact is ideal for providing protection to doors and windows.
On doors, the sensor provides protection against breaking, forcing open or cutting through the door, while the magnetic reed contact provides protection against the gentle opening of an unlocked door.

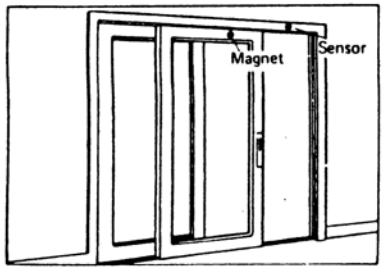
Ensure that the doors on which the sensors are placed are free from rattling and that the door is securely locked to avoid accidental opening during unattended hours.

When used on a door, the sensor can be placed on the door or on the door frame whichever is convenient, however, always ensure that best sensitivity is achieved. When using on a sliding door, mount the sensor on the frame and the magnet on the door (see Diagram).

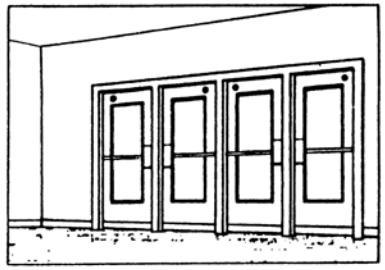
It is recommended for optimum sensitivity that the sensor be mounted on the door and the magnet in the frame.

Ensure that the distance between magnet and sensor does not exceed 10mm.





Mount all sensors horizontally or vertically with sensor housing in correct orientation.



See Test Procedure for Optimum Spacing.

TEST PROCEDURE FOR DETERMINING OPTIMUM SPACING FOR ARITECH SENSORS

As building structures are manufactured from different materials, their ability to transmit high frequency shocks differ.

Materials such as glass, metal, concrete and hard wood are relatively dense and therefore have good conductivity characteristics and provide for good sensitivity. Softer materials such as plaster, plasterboard and softwood are less dense in their composition because of the high content of air, therefore high frequency shocks in these materials are damped reducing the sensitivity range. Sensors on these structures must be mounted closer together. It is necessary therefore to test each structure for optimum spacing.

A. Mount sensor horizontally or vertically in the required position. Ensure that the sensor name is in the correct orientation.
B. Connect to GS 615 analyser board, ensure that if an end of line resistor is supplied with the analyser board, that this is connected in series with the sensor.
C. When the sensor loop is closed, the LED (lamp) on the analyser should go out.
D. Create small sharp shock signals on the structure to be protected using a screwdriver handle.
E. The LED on the analyser should light indicating that it is receiving signals from the sensor.
F. If the LED does not light, move sensors closer together and use more sensors where necessary.
G. Adjust sensitivity pot on the analyser to trip the relay when one large shock is made on the structure. This shock should be just below the level necessary to smash the structure.
H. Select the pulse count number required by means of the selector plug. These small shocks are counted at one-second intervals and stored in a digital memory for 30 seconds. Each time a small shock is seen the LED will light for one second. This pulse count facility is designed to detect a thief gently forcing entry.
I. When the analyser board receives either the large gross attack signal or the programmed number of pulse counts, the LED will latch on for five seconds and the alarm relay will drop out activating the alarm.

THE GS 615 ANALYSERS

The GS 615 gross attack and pulse count analyser board is designed to interface between Inertia sensor loops and the burglar alarm control panel. The Analyser provides sensitivity adjustment for the single shock gross attack level and a pulse count facility which detects small shocks and counts them at one-second intervals storing them in a digital memory for 30 seconds. The GS 615 Analyser has the following features:

A. Double pole end of line resistor which gives greater security through the alarm loop and also provides for the common mode noise rejection, this makes the GS 615 ideal for use in industrial applications where the sensor loop may pick up induced voltage pulses from the electrical mains, electric motors, radio frequency interference etc. The common mode noise rejection filters out this interference while still retaining high sensitivity to sensor pulses.

B. On board voltage regulation, which means that the supply voltage to the analyser board can vary between 10-15 volts without effecting the gross attack sensitivity level.
C. A LED (Lamp) is provided on the board to supply test and alarm indication to the alarm installer.
D. The pulse counter plug can be removed to ensure that the analyser only responds to gross attack.

NOTE:

Alarm installers should use caution when selecting the electronic analysing units for use with GS 710 Inertia Sensors. The current and voltage necessary for reliable operation is best achieved by the use of Aritech sensors with Aritech electronic analysers or control panels. Other manufacturers of inertia analyser electronics may not be aware of the correct levels of current and voltage necessary for inertia sensor operation, this is because they are not sensor manufacturers. The incorrect electronics could therefore damage the inertia sensor resulting in false alarms and rendering the sensor guarantee invalid.

SENSOR TECHNICAL SPECIFICATION

CONSTRUCTION

Junction Box	High impact ABS plastic.
Sensor Module	Gold-plated contact parts in a hermetically sealed housing.
Electrical resistance	Less than 300 milli OHM
Life Expectancy	Under proper use greater than 10 years.
TamperBerilium	copper leaf spring gold-plated.
Operating temperature	Minus 40 degrees to plus 50 degrees celsius.
Operating voltage and current	The sensor loop voltage and current are critical for reliable sensor operation and are provided by the ARITECH range of inertia analysers and control panels.