



FiberGuard SF Aquamesh Grid Perimeter Intrusion Detection Systems (PIDS)

The FiberGuard SF Aquamesh Grid PIDS

The FiberGuard SF Aquamesh Grid is an advanced outdoor Perimeter Intrusion Detection System (PIDS). It provides deterrence, detection and delay. The Aquamesh Grid is a very reliable and cost effective intrusion detection solution for specific challenges in perimeters and can operate in diverse and challenging environments including submerged under water.

The Aquamesh Grid has a fiber optic sensor cable in a polyurethane jacket that is embedded into its custom designed reinforced highly durable TDI Polyether polyurethane grid. Each FiberGuard SF Aquamesh Grid has a galvanized or stainless steel frame and is customized to its application. Spare fiber optic sensor cables can be supplied within the Aquamesh Grid. An alarm condition is initiated when the FiberGuard Aquamesh Grid is cut (the fiber optic sensor cable within is cut).

Integration & Control

The FiberGuard FG 1010 processor (Saber II) processes the signal from the FiberGuard Aquamesh Grid. Each FG 1010 Processor accommodates a single FiberGuard Aquamesh Grid zone (a zone may include several Aquamesh Grids). The FiberGuard SF Aquamesh Grid can be seamlessly controlled and annunciated by DeTekions' controllers or integrated with other sensor systems and controls. When used with DeTekions' controllers communication can be via the onboard RS485 digital communication port (copper or fiber optic communication) or by dry contact. The FG 1010 signal processor also provides dry contact outputs for integration with other controls and communication devices and can also accommodate dry contact outputs from other sensor systems into it's on board dry contact inputs and can communicate their status to the controller.

Advantages

- High Probability of Detection (POD).
- Very Low False Alarm Rate (FAR) and a very low Nuisance Alarm Rate (NAR).
- Very simple and reliable detection method
- Immune to EMI & RFI including lightning strikes.
- Intrinsically safe (the sensor cable). Can be installed in combustible areas (oil refineries, chemical plants etc.).
- Uniform detection along the entire zone.
- Can be mounted on various types of openings, vents etc.
- Can operate in extreme weather conditions.
- Minimal maintenance.
- Remote testing
- On board (local) and remote programming
- Local & remote diagnostics.



Principle of Operation

The principle of operation is based upon fiber optic continuity sensing. A laser diode on the FG 1010 processor transmits patterned light waves through the fiber optic sensor cable that is embedded within the Aquamesh Grid. The light waves are trapped by the process of "Total Internal Reflection" which facilitates the light waves to appear at the receiver end of the fiber optic cable which is connected to a photo diode that is on the FG 1010 signal processor. The light waves appear as a speckle of light and dark patches called an "Optical Interference Pattern" ("Interferogram"). Under steady conditions Optical Interference Pattern is relatively stationary. When the fiber optic cable is cut there is a significant / total signal loss. The loss of signal from the fiber optic cable is detected by the photo diode receiver and an alarm is initiated.

Since the FG 1010 signal processor will only alarm on significant / total signal loss the Probability of Detection (POD) is very high while maintaining a very low False & Nuisance Alarm Rate (FAR & NAR)

Specifications

General:

FG 1010 Processor	High performance microcontroller with integral digital signal processor (DSP) and Analogue-to-digital (A to D) converter.
FG 1010 Processor Size:	6.22" x 4.37" (158mm x 111mm).
Storage Temperature:	-40°F to 158°F (-40°C to +70°C) ambient.
Operating Temperature:	-40°F to 158°F (-40°C to +70°C). The FG 1010 -14°F to 158°F ambient
Operating Humidity (processor):	Up to 95% at 104°F (40°C), non condensing.
Max Zone Length	3280 ft (1000 M, several Aquamesh Grids combined, long pig tail)



Electrical & Optics:

Power	Input voltage: 11 – 14 VDC @ 300mA
Laser Type:	Class 3B
Fiber Optic Sensor Cable:	Multi-Mode 50/125 micron graded index (x2) protected by a 3.5mm PVC, Kevlar reinforced
Display & Indicators:	One (1) Green single 7 segment display & one (1) red dual seven segment display Eighteen (18) LEDs for various status and diagnostic notifications
Alarm Output Relay:	Up to 1A @ 12 VDC
Ancillary Outputs:	Two (2) Open Collector (100 mA @ 24VDC)
Inputs:	One (1) FiberGuard Aquamesh Grid zone Three Tamper protected for switches, relay contacts, open collectors or CMOS/TTL level digital signals
Maintenance Port:	1 non isolated RS-232 serial port for local high level diagnostics
Communication:	1 isolated RS232 / RS485 serial port for alarm transmission, remote setup or diagnostics
Switches (toggle & push button):	Fence or buried application, environmental compensation, static or moving event window, station address
Push Buttons:	Settings & Programming
Programming:	Remote or local. Can also be done with optional PC based programming and diagnostic software program (also facilitates high level test).

Electromagnetic Compatibility (EMC). The FG 1010 meets EN55022: 1998, EN50082-1: 1998 and Low Voltage Directive 93/68/EEC.

Connectors:

Communication Ports:	RG 45
Power:	Junction block with Screws.
Relay Outputs:	Junction block with Screws.
TTL's Inputs:	Junction block with Screws
Fiber Optic Sensor Cable	SMA Connectors

Mean Time to Repair: Less than 30 Min. (FG 1010 replacement).

Mean Time Between Failure: 150,000 Hours (FG 1010)

Warranty: 12 Months from date of approved Installation



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Specifications subject to change without notice