AgilFence®

Perimeter Intrusion Detection System

A Product of ST Electronics

AGILFENCE
RAPIDS

Radar-based Perimeter
Intrusion Detection System

- Wide coverage perimeter protection
- Flexible detection zone setting
- Good performance and reliability
- Effective in all weather and light conditions

Aísthon
Lightspeed Industrial Sensing

ST Electronics
Satcom & Sensor
Systems
A member of ST Engineering

Empowering thru' Innovation

AgilFence RAPIDS

AgilFence RAPIDS uses proven solid-state Electronically Scanning Radar (ESR) technology. Its packaging and durability offers a game–changing system in "virtual" perimeter intrusion detection. This system is based on a multi-mode ESR that combines a wide field of view (FOV) at mid-range (instrumented range up to 60 m and 90° width horizontal coverage) and a long-range coverage (instrumented range up to 150 m and a narrow 20° width horizontal coverage) to provide range and Doppler speed information simultaneously using only a single radar.

Users can set an unlimited number of detection zones within the radar coverage area. When there is an intrusion, an alarm is triggered and the location of the intrusion is reported.

Benefits

AgilFence RAPIDS provides an effective substitute solution for areas that are unsuitable for conventional fence mount PIDS due to factors such as a need to preserve the physical aesthetics of the area or when perimeters do not have any kind of fencing.

Key Features

- Virtual Perimeter Detection
- Easy to deploy
- Long detection range (up to 100 m)
- User customisable alarm zones

Applications

- Government buildings
- Embassies
- High value buildings
- Sensitive buildings & land areas
- Museums
- Industrial & commercial sites
- Sites requiring maximum security

How it works

The AgilFence RAPIDS provides both Doppler and location information (range and angle), allowing better target discrimination compared to many motion-sensing microwave systems which only sense movement but do not provide target location information. This also offers superior false alarm control.

Ordinary pulsed radar detects the range to a target by emitting a short pulse and observes the time of flight of the target echo. This requires the radar to have high instantaneous transmission power and is often expensive. AgilFence RAPIDS achieves similar results by using a microwave antenna at 76~77 GHz V-band frequency. By continuously emitting periodic Frequency Modulated Continuous Wave (FMCW) pulses, it provides both accurate range and speed data for powerful target discrimination.

The maximum detectable area of AgilFence RAPIDS is illustrated in Figure 1. The chart on the left shows the detectable area (in blue) with 90% probability when human targets are walking towards the radar. The chart on the right shows the detectable area (in blue) with 90% probability when human targets are walking perpendicularly to the boresight of the radar.

With its flexible setting of alarm zones, AgilFence RAPIDS focuses only on the area of interest defined by the user. For example, in Figure 2, only the targets inside the alarm zone (the yellow polygon) will trigger alarms in AgilFence RAPIDS.

AgilFence RAPIDS is seamlessly integrated with AgilFence iPAMS (integrated PIDS Alarm Management System) as shown in Figure 3. Any alarms from AgilFence RAPIDS will be sent to AgilFence iPAMS, for intrusion location indication, alarm verification (with CCTV) and alarm resolution (by the operator).

Figure 1: Maximum Detection Area
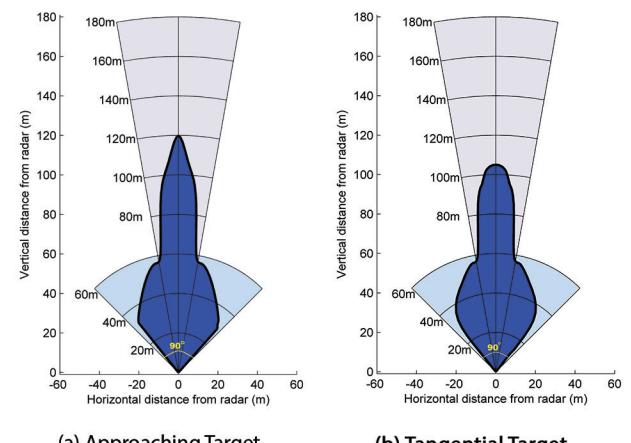
(a) Approaching Target   (b) Tangential Target

Figure 2: Alarm Zone

Figure 3: AgilFence iPAMS
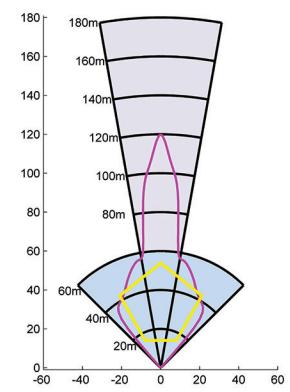
Typical Configuration

Monitor   Server   Media Converter (A)   LAN Cable   Optical Fibre   LAN Cable   Wire   Media Converter (B)   Data Protocol Converter
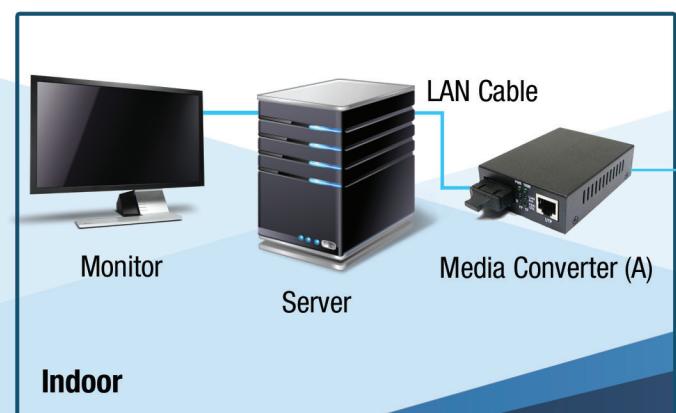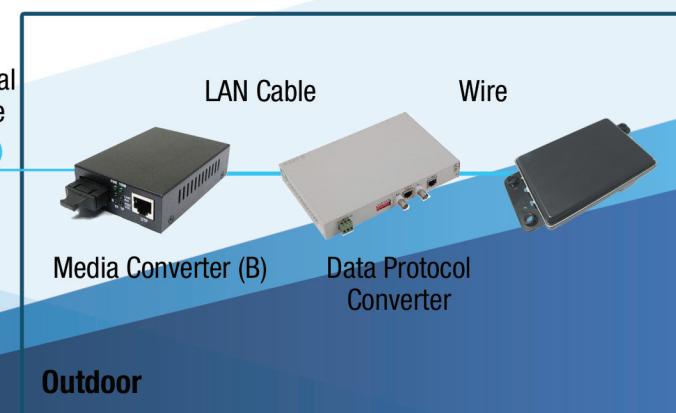
Indoor   **Outdoor**

Performance Specifications

Parameter	Long-Range	Mid-Range
System Attributes • Radar • Waveform • Beam Forming Technique	Electronically Scanning Phased Array Radar Simultaneous Transmit Receive Pulse Doppler Receive Digital Bram Forming (RDBF)	
Number of Target Tracks	64 max, created through merging of LR, MR detections	
Accuracy • Range • Angle	±0.5 m ±0.5°	±0.25 m ±1°
Multi-Target Discrimination • Range • Azimuth Angle	2.5 m 3.5°	1.3 m 12°
Beamwidth (on Boresight)	3.5° Az 4.5° El	12° Az 4.5° El

Technical Specifications

Technology	Electronically Scanning	Simultaneous • Long-range detection • Mid-range wide coverage detection
	Operating Frequency	76 – 77 GHz (V-band)
Detection Area	Horizontal Area	• Long-range: 120 m / ±10° • Mid-range: 60 m / ±45°
	Vertical Area	±2°
Power Supply	Radar	0.68 A / 12V DC
	Data Protocol Converter	0.21 A / 12V DC
	Media Converter	0.16 A / 12V DC
Size	Radar (mm)	173.7 (L) × 90.2 (W) × 49.2 (H)
	Data Protocol Converter (mm)	105 (L) × 84 (W) × 28 (H)
	Media Converter (mm)	135 (L) × 105 (W) × 36 (H)
Applied EMC Standard		EN 301 489: 2011-09 (Willow Run Test Labs, LLC Test Report No : 20120924-01)
Operating Temperature Range		-30 °C ~ +75 °C
Physics Interfaces		RJ45 / Optical Fibre
Data Update Rate		50 ms
Data Transmission		Over IP
Transmission Range		10 km (through optical fibre)
Protection Index		IP65
Responding Time		From 300 – 500 ms
Relative Humidity		0 – 95% without condensation
Weight		1.4 kg