



SPEXER™ 2000 Coastal Security Radar for Coastal Surveillance

The SPEXER 2000 Coastal is a high-performance coastal surveillance radar for the automatic detection and classification of sea, ground and low-flying air targets. It was developed for the specific requirements of security threats; with its primary fields of application in coastal surveillance systems.

The SPEXER 2000 Coastal is the only available sensor on the market able to detect very small and slowly moving asymmetric threats that the maritime

sector is facing (e.g. swimmers and rubber dinghies). It is an optimal solution for coastal surveillance with the simultaneous surveillance of sea and ground areas.

The SPEXER 2000 Coastal can complement vessel traffic systems at points of special interest and in complex environments, where conventional radars cannot cope with challenging security surveillance scenarios (e.g. detection of a swimmer in front of a vessel).

The SPEXER 2000 Coastal is part of the SPEXER security radar family which has already proven its outstanding performance in integrated security systems in several regions of the world.

The radar combines the surveillance of sea, ground as well as low air space and is also capable of working under harsh climatic conditions, whereas other sensors such as cameras would fail. Therefore, the SPEXER 2000 Coastal is the most suitable solution for the protection against contemporary threats.



SPEXER 2000 Coastal

The SPEXER security radars represent the first operational land-based sea, ground and low air space surveillance radar family worldwide, which is utilising AESA (Active Electronically Scanned Array) technology. Due to the use of active phased array technology, the operational performance is much higher when compared to conventional reflector antenna radars. Based on the use of AESA technology, the SPEXER 2000 Coastal provides a quad beam capability which offers an advanced target detection in harsh sea clutter situations.

The multi-tasking capability of the SPEXER 2000 Coastal overcomes the classical limitations of mechanical moving systems and enables the simultaneous use of target tracking and sector surveillance. Due to the non-mechanical movement during processing, the SPEXER 2000 Coastal produces better operational performance and results for the detection of slowly moving targets such as swimmers (while they are in the water, or about to shift to moving on land).

The SPEXER 2000 Coastal is the only coastal security radar capable of performing the simultaneous surveillance of both sea and ground areas.

The SPEXER 2000 Coastal can be deployed as land-based fixed installed system (e.g. on a mast) or transportable system (on a tripod), optionally in combination with an air-conditioned radome (protection against storms and extreme temperature) or with a camera system.

Functional Data																			
Type	Pulse-Doppler Radar based on AESA technology																		
Frequency	X-band																		
Instrumented range	40 km (24.9 mi; 21.6 NM), optionally 80 km (49.7 mi; 43.2 NM)																		
Detection ranges	<table border="0"> <tr> <td>Swimmer (0.1 m² RCS):</td> <td>1 km (0.5 NM)</td> </tr> <tr> <td>Small boat, rubber dinghy, jet ski (1.5 m² RCS):</td> <td>20 km (10.8 NM)</td> </tr> <tr> <td>Vessel (100 m² RCS):</td> <td>40 km (21.6 NM)</td> </tr> <tr> <td>Pedestrian (0.5 m² RCS):</td> <td>18 km (11.2 mi)</td> </tr> <tr> <td>Light vehicle (2.0 m² RCS):</td> <td>22 km (13.7 mi)</td> </tr> <tr> <td>Truck (10.0 m² RCS):</td> <td>36 km (22.4 mi)</td> </tr> <tr> <td>Light aircraft (3.0 m² RCS):</td> <td>27 km (16.8 mi)</td> </tr> <tr> <td>Low-level helicopter (5.0 m² RCS):</td> <td>36 km (22.4 mi)</td> </tr> <tr> <td>UAV (0.2 m² RCS):</td> <td>9 km (5.6 mi)</td> </tr> </table>	Swimmer (0.1 m ² RCS):	1 km (0.5 NM)	Small boat, rubber dinghy, jet ski (1.5 m ² RCS):	20 km (10.8 NM)	Vessel (100 m ² RCS):	40 km (21.6 NM)	Pedestrian (0.5 m ² RCS):	18 km (11.2 mi)	Light vehicle (2.0 m ² RCS):	22 km (13.7 mi)	Truck (10.0 m ² RCS):	36 km (22.4 mi)	Light aircraft (3.0 m ² RCS):	27 km (16.8 mi)	Low-level helicopter (5.0 m ² RCS):	36 km (22.4 mi)	UAV (0.2 m ² RCS):	9 km (5.6 mi)
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Coverage	Electronic scanning 120° in azimuth (opt. mechanical rotation 360°) 4.3° elevation beam width; opt. +/- 20° mechanical elevation tilt																		
Dimensions	Width: 1.0 m (39.4 in), Height: 0.7 m (27.6 in), Depth: 0.6 m (23.6 in)																		
Interface	Data/Control: 1 Gbit Ethernet LAN electrical (fibre optical interface optionally) for radar control and data output of plots, tracks and equipment status; integrated LAN interface for camera control																		

Main Characteristics

- Surveillance of large areas / long distances
- Very early warning / high level of situational awareness
- Detection, tracking and automatic classification of even very small and slowly moving sea targets such as swimmers or rubber dinghies (due to high Doppler resolution)
- Multi-tasking and quad beam capability: one compact all-in-one SPEXER 2000 Coastal ensures the surveillance of both sea and land/ground sectors
- Multi-mode capability: Time-multiplex and parallel operation (multi-sector scanning, point surveillance, target tracking)
- Very high target location accuracy (in range and azimuth)
- High sea clutter suppression (due to signal-to-noise instead of signal-to-clutter ratio)
- Interface for easy integration into a C2 system
- Ready for multi-radar operation also in combination with cameras (in network)
- Very low average radiated power: 16 Watts
- Graceful degradation capability (solid state T/R modules) and very high MTBF in particular due to electronic instead of mechanical scanning
- Low lifecycle cost due to electronic scanning instead of a permanently rotating antenna
- For extreme climatic conditions (e.g. desert), an optional radome is available

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