



# AIRPORT SURVEILLANCE RADAR

SCANTER 4002



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ALLIES IN INNOVATION



# Airport Surveillance Radar

Our airport surveillance radar (SCANTER 4002) is designed for detection, separation, and tracking of small air targets and large surface targets and is operational in several international airports.

## Primary Surveillance Radar

The SCANTER 4002 is a fully solid state radar for air surveillance in airport terminal control areas, providing enhanced small target detection out to 42.5 NM. Operation in X-band gives the SCANTER 4002 superior coverage against low flying air targets and provides a high angular accuracy and resolution while reducing the antenna size and tower requirements. Due to multipath effects, gaps in the detection coverage volume are significantly minimized when X-band is used.

Compared to lower frequencies, X-band provides higher antenna gain and better resolution, for a given antenna size, and eliminates 4G/LTE impacts on performance.

### Wind Turbine Clutter Mitigation

Wind turbines can have a significant effect on air surveillance radars as the spinning blades reflect a large amount of radar energy. Wind turbines can appear on a radar screen as false air targets or lead to track seduction of legitimate radar tracks. The interfering radar echoes generated by the wind turbines can desensitize a radar in the vicinity of the wind turbines, causing legitimate radar tracks to disappear from the radar screen. These issues have an impact on a safe and reliable radar surveillance, which in turn affects the deployment of wind farms.

The SCANTER 4002 is the first non-terrain shielded radar with wind farm mitigation to become operational in an air traffic control environment.

## Product Characteristics

### Confident Situational Awareness

The transmitter is a fully modular, fault tolerant solid state amplifier with 8 power modules using the latest Gallium Nitride (GaN) technology. Each power module is designed for 24/7 operation and provides increased reliability with graceful degradation and hot-swap functionality.

The receiver has two channels in order to support simultaneous reception of two frequency bands. Optimum signal-to-noise ratio (SNR) performance is ensured by low noise amplifier(s) located up-mast at the antenna. A very high instantaneous dynamic range of the receiver enables detection of small targets without saturation from large targets/reflections like wind turbines.

After down conversion to intermediate frequency (IF) in the receiver, the signal is sampled with 14 bit at 400 MHz, demodulated, pulse compressed, and moving target indication (MTI) processed. Video processing is performed on both normal radar video and MTI video and includes automatic adaptation to the environment, channel combining, interference filtering, and Doppler processing to suppress stationary targets as well as moving clutter.



### Control and Monitoring

Control and monitoring (CMS) can be performed from any number of local or remote stations using the Terma radar service tool / radar status indicator (RST/RSI) applications or via simple network management protocol (SNMP). Extensive built-in test equipment (BITE) is continuously monitoring performance parameters such as: Mains-on time, transmitter/receiver status, internal voltages and temperatures, turning unit status, etc. An advanced error handling system gives a quick overview as well as a detailed description of any error in the system. All measurements and errors are stored in a log for inspection and later reference.

### Proven and Reliable

Most of the world's largest ports and airports are already relying on a Terma surveillance or security solution, given our 60 years of experience in detecting very small land, sea, and air targets in extreme weather and sea conditions. The SCANTER 4002 is operational in several international airports, providing reliable air surveillance in areas with severe wind farm clutter.

### Key Benefits:

- Wind farm tolerant
- Small target detection
- Low life cycle cost

### SCANTER 4002 specifications

Frequency band	9000-9200 MHz
Frequency management	Time/frequency diversity (4-6 frequencies)
Transmitter (8 modules)	6 kW, fault tolerant solid state (GaN)
Instrumented range	42.5 NM
Minimal detection range	0.15 NM
Antennas	15' or 18' with linear/circular polarization
Rotation rate	12-20 RPM (default 15 RPM)
Accuracy range	< 25 m bias (< 60m sigma)
Accuracy azimuth	< 0.1° bias (< 0.15° sigma)
Resolution range	< 36 m (measured at 10 dB SNR)
Resolution azimuth	< 1°
Interface	Ethernet UDP/TCP IP
Interface format	ASTERIX (Cat. 010, 034, 048, 240)





Operating in the aerospace, defense, and security sector, Terma supports customers and partners all over the world. With more than 1,600 committed employees globally, we develop and manufacture mission-critical products and solutions that meet rigorous customer requirements.

At Terma, we believe in the premise that creating customer value is not just about strong engineering and manufacturing skills. It is also about being able to apply these skills in the context of our customers' specific needs. Only through close collaboration and dialog can we deliver a level of partnership and integration unmatched in the industry.

Our business activities, products, and systems include: command and control systems; radar systems; self-protection systems for ships and aircraft; space technology; and advanced aerostructures for the aircraft industry.

Terma has decades of hands-on know-how in supporting and maintaining mission-critical systems in some of the world's most hostile areas. Terma Support & Services offers through-life support of all our products to maximize operational availability, enhance platform lifetime, and ensure the best possible cost of ownership.

Headquartered in Aarhus, Denmark, Terma has subsidiaries and operations across Europe, in the Middle East, in Asia Pacific as well as a wholly-owned U.S. subsidiary, Terma Inc., with offices in Washington D.C., Georgia and Texas.

