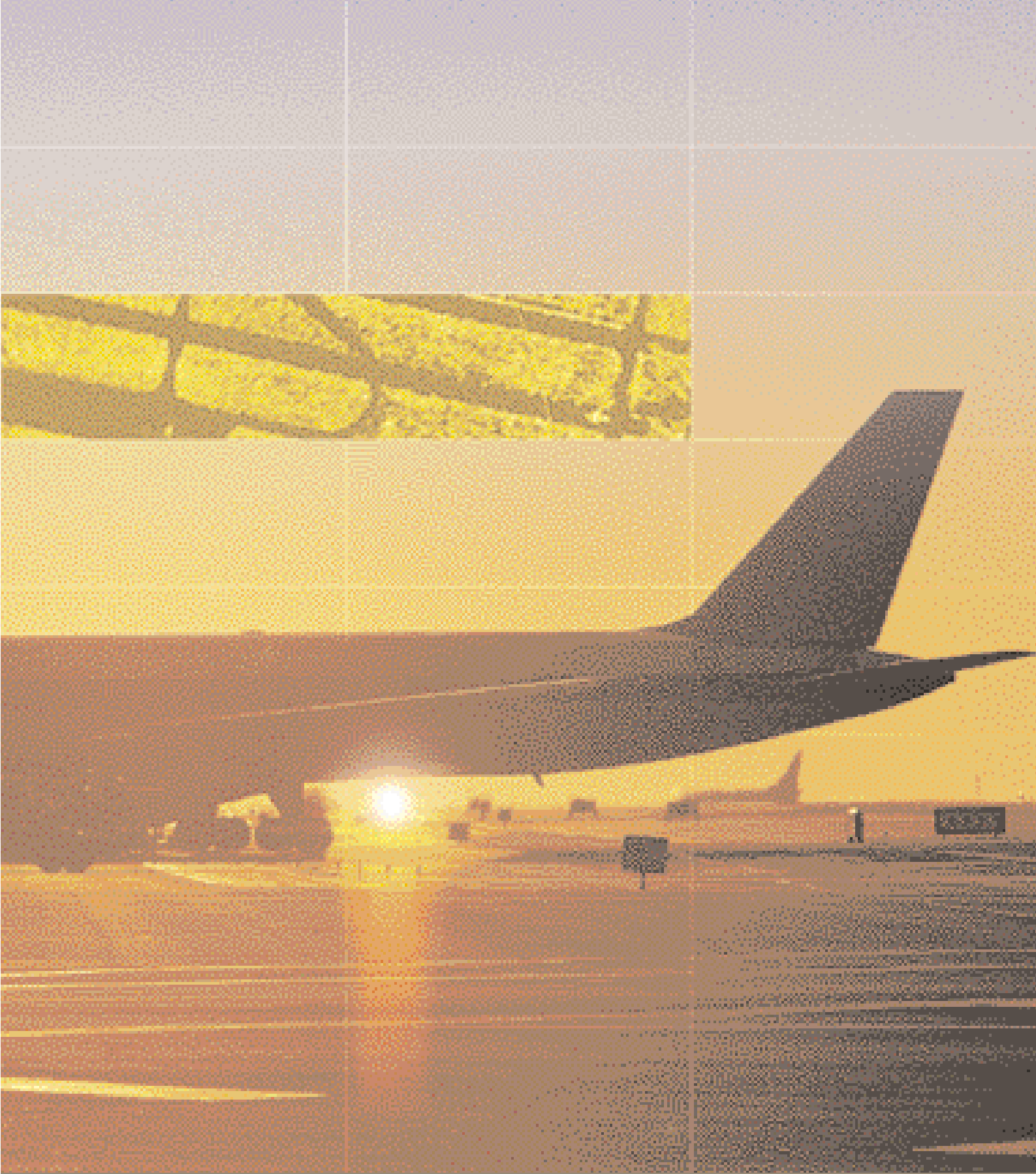


SCANTER

Surface Movement Radar

Surface Movement Radar

15 years of experience in the Surface Movement Radar market has made Terma a well-recognised product supplier. Being the supplier of radar systems for international airports in Europe, America and Asia heavy strain is put on Terma for keeping abreast with the latest technology and yet supplying thoroughly tested and reliable systems.

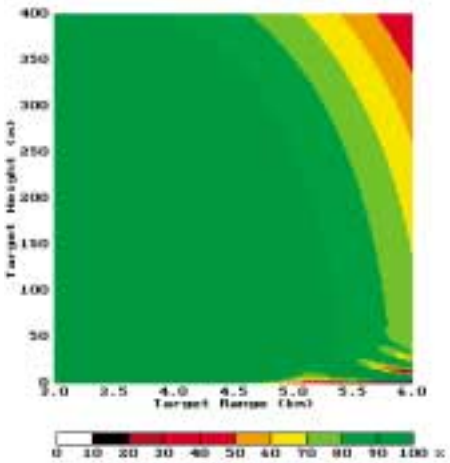
The SCANTER 21' antenna represents the latest antenna technology and in combination with the SCANTER transceivers make out the ultimate choice for SMR installations. For airport applications, circular polarised are recommended

Highly qualified and dedictated developers, production staff, logistics department and service technicians ensure precise and smooth handling and on-time delivery of the equipment at every installation site.
The SCANTER 2001 Radar System provides a clean picture of on-ground movements given any weather conditions for Airport Surface Movement applications.
Terma A/S offers a cost-effective, high-performance X-band radar sensor for Surface Movement Radar (SMR) applications at airports, in accordance with customer requirements and ICAO recommendation.
The aim is to obtain target detection and resolution as good as that achievable by the use of much more expensive Ku-band technology. As an additional benefit, the SCANTER 2001 Radar System features better rain penetration.

The newly developed SCANTER 2001 transceiver, available in six configuratitions, entails so far unseen high-quality and sharp radar images, thus enhancing on-ground flight security

Safe and reliable operation is of the utmost importance; and each individual SCANTER product is designed bearing that in mind. Redundancy and fall-back modes are designed to keep single point failures simple and at the same time include full redundant parallel processing.
The transmitter, receiver, and signal processing technology is configured to ensure optimum performance of the SCANTER Radar Sensor Systems for continuous operation in all weather conditions.
Consequently, the system is characterised by high resolution, a wide receiver dynamic range, noise reduction facilities, built-in test equipment, and the ability to perform remote servicing activities.
The SCANTER 2001 Transceiver product range supports 6 system configurations; ranging from a basic single Transceiver unit to a Dual Redundant Frequency Diversity configuration.
Antennas can be selected from a range of Terma slotted Waveguide antennas. For airport applications, circular polarised antennas are recommended.

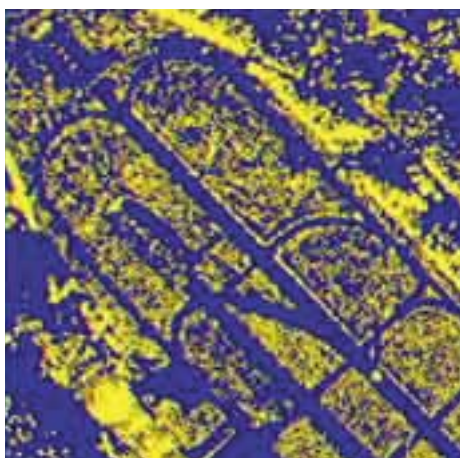
Terma SMR systems are developed and manufactured observing ICAO recommendations. The performance chart represents a simulted requirement detection probability



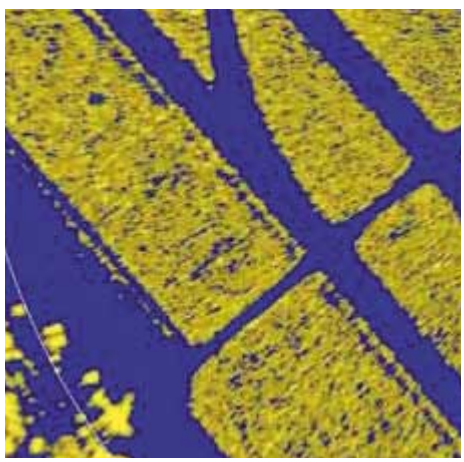
Peripheral units such as maintenance displays and switch units are, to the extent possible, configured for use throughout the product line, independent of the actual configuration. This table lists the features included in Terma's production line for airport surface movement radar applications.

DESCRIPTION	SINGLE	DUAL Redundant RxTx	DIVERSITY Redundant RxTx
Antennas			
21' SWG Fan beam Circular polarised	Option	Option	Option
21' SWG Inv csc² Circular polarised	Option	Option	Option
Antenna Control Units			
Motor Control (Inverter)	Option	Option	Option
RxTx Units			
RS-422 communication channels (each RxTx unit)	3	3	3
Automatic Channel Switch Over on Failures	N/A	Standard	Standard
40 ns PW @-3dB	Standard	Standard	Standard
Sector Tx + 3 channel signal distribution	Standard	Standard	Standard
Static Clutter Map and Blanking Map	Option	Option	Option
Built-in power and NF meter	Standard	Standard	Standard
Digital Video Processing	Option	Option	Standard
External Bi-Directional Couplers	Option	Option	Option
Selection of transmitting frequency			
9.170 GHz 30 kW magnetron	Option	Option	Standard (Unit#1)
9.375 GHz 25 kW magnetron	Standard	Option	N/A
9.410 GHz 25 kW magnetron	Standard	Option	N/A
9.438 GHz 30 kW magnetron	Option	Option	Standard (Unit#2)
9.490 GHz 30 kW magnetron	Option	Option	N/A
System Control, Remote and Local			
Remote/Local control BITE Service SW	Option	Option	Option
Open protocol	Standard	Standard	Standard
LAN access (TCP/IP) incl. HMI clients	Standard	Standard	Standard
Miscellaneous			
3-Year Warranty	Option	Option	Option
Full support	Standard	Standard	Standard
Castell Interlock System	Option	Option	Option

Typical airport raw radar images showing overview of runway area



Close-up detail clearly showing runways, runway lights and an airplane



X-BAND ANTENNAS

Azimuth encoders	Digital azimuth encoders	
	21' CP-F	21' CP-I
Horizontal BW @-3dB	≤ 0.37°	≤ 0.37°
Vertical beam	11° fan	inv. Coseq^2
Gain	≥ 38 dB	≥ 37 dB
Rotation speed @ 50 Hz		
Standard, ±10%,	60 rpm	60 rpm
Wind speed (operational)	≤ 35 m/s	≤ 35 m/s
Dimensions		
Swing diameter	≤6600 mm	≤6600 mm
Weight	≤375 kg	≤375 kg
Drive motor		
Power	2.2 kW	2.2 kW

ENVIRONMENTAL SPECIFICATIONS

IEC-68-2
EN 60945
CSA, CE, VDE

RECEIVER-TRANSMITTER

Transmitter	
Frequency	
Single or Dual configuration	9.170, 9.375, 9.410, 9.438 or 9.490 GHz
Frequency Diversity configuration	Simultaneous transmission on 9.170 and 9.438 GHz
Magnetron	25 to 30 kW X-band
Output Power	17 kW ±2 dB at output flange
Pulse width	40 ns
PRF	Programmable: 800 - 8.000 Hz.
PRF characteristics	
Accuracy	±2%
Stagger	0, 2, 4 or 8%

Receiver	
Noise figure	2.0 dB nominal (LNFE)
Overall	3.5 dB nominal, ≤ 4.7 dB (0 - 55°C)
IF frequency	100 MHz
Bandwidth	50 MHz
Image rejection	≥ 18 dB
Analogue video outputs	
Level	4-6 V positive
Impedance	75 Ω
Bandwidth	30 MHz
Retimed video	
Retiming factor	1, 2 or 4
Digital video	8 bit parallel + clock + data enable
Analogue video	
Level	4-6 V positive
Impedance	75 Ω
Trigger outputs	
Level	8 ±1V positive
Timing	Programmable
Impedance	75 Ω
Mains	115-242VAC, 47-63 Hz.
Sector transmission up to 4 sectors	
Sector centre	0-359°
Sector width	10-350°
Resolution	1°
Communication/Control	
Protocol	Remote Control and BITE/Service
Interface	Serial RS-422A, 9.600 bit/sec
Channels:	3
LANInterface	TCP/IP
Phases	3

TERMA

The SCANTER 2001 Radar System concept features

Modular open-end system architecture
High system performance, including a low-noise, high dynamic range receiver
Advanced signal processing
Easy operation due to Predefined settings (Profiles)
Remote control
High reliability entailing low maintenance costs and long life
Built-in Test Equipment (BITE) including output power and Noise Figure (NF) measurement
Preparations for integration of future modules/functions

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