easat®
RADAR SYSTEMS

Primary Surveillance Radar Systems

Advanced S-Band Solid-State Primary Surveillance Radar

- High performance fail-soft transmitter
- Extended range up to 120 NM
- Field proven wind-farm effect mitigation
- 4G networks interference mitigation
- CAP 670 approval

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RADAR SYSTEMS

Easat Radar Systems Ltd was founded in 1987 as an independent specialist Company to design and build high-performance radar antennas. Since then the Company, a subsidiary of Goodwin PLC, has established itself as market leader in the manufacture of complete radar systems.

Easat offers a full range of radar antennas, pedestals, towers and complete radar systems for Air Traffic Control (ATC) and Coastal Surveillance (CS) applications.

Easat's radar equipment is in service in over 60 countries worldwide, with more than 500 installations.

Products include:

- ATC using permanent or transportable radar systems, Primary Surveillance Radar (PSR) & Monopulse Secondary Surveillance Radar (MSSR).
- Air defence ATC using permanent or transportable systems.
- Airport Surface Movement Radar (SMR) and Advanced-Surface Movement Guidance and Control System (A-SMGCS).
- Automatic Dependent Surveillance - Broadcast (ADS-B) Systems.
- Precision Approach Radar upgrades (PAR).
- Offshore and Coastal Surveillance radar systems.

Easat is able to deliver complete turn-key packages, from site survey to final installation safety case approval of installed system. Scope of supply can include complete radar systems, civil engineering works, project management and long-term equipment support, ensuring the highest levels of support and maintenance.

Easat's Primary Surveillance Radar (PSR) System is intended for ATC surveillance of airport terminal control areas; the extended range feature also allows use for en-route applications.

With its fully solid-state technology this PSR is highly reliable. The integrated comprehensive built in test equipment BITE and modular design ensure that it is cost-effective to operate and maintain. Easat's PSR offers improved system stability, effective clutter attenuation and elimination of false targets with high probability of target detection out to 120 NM.

Advanced beam switching and algorithms mitigate dynamic high-speed clutter such as road traffic, wind turbines and railway trains.

Easat's PSR also includes an independent high-resolution weather channel providing precise information on weather conditions (US-NWS 6 level).

Easat's PSR radar system can be easily integrated with a MSSR, ADS-B or MLAT system.

Main Features

- Advanced solid state S band PSR
- High performance fail-soft transmitter with extra-long pulse feature
- Extended range up to 120 NM
- 4G networks interference mitigation
- Advanced moving target detection algorithms
- Field proven wind-farm effect mitigation
- Independent 6 level weather channel
- Advanced CMS with remote support capabilities
- CAP 670 approval

Antenna System

- Double-curvature antenna reflector with two beams provides cosec² coverage diagram.
- Dual polarizers with linear and circular polarization.
- EP1643 dual drive turning unit with dual azimuth encoders.
- The EP1643 has a comprehensive BITE system with numerous sensors (oil level, vibration, temperature etc.) displayed on the CMS.

Transmitter

- Fully solid-state, highly modular system with 12/24 amplifying units, allowing uninterrupted operation during maintenance procedures.
- Very long pulses up to 300 µs.
- Distributed BITE system with detailed diagnostics and online performance calculation.
- Fail-soft architecture with air cooling.
- Target detection characteristics guaranteed with one or two failed amplifiers.

Radar Data Display

- Multiple data (plots and/or tracks) input display including PSR, MSSR, ADS-B and MLAT.
- Weather maps display with up to 256 levels.
- Raw video display, geographical maps and air navigation charts.
- Surveillance data archiving and replay.

Signal and Data Processor

- Adaptive MTD with digital NLFM pulse compression.
- Doppler signal and CFAR adaptive filtering.
- US-NWS 6 level high-precision weather maps.
- Multiple input tracking and data combining.

Control and Monitoring System

- Fully redundant system.
- Any number of local and remote CMS terminals.
- Supports communication such as serial, optic, LAN, radio links etc.
- Information archiving, replay and analysis.
- Factory remote service support capability.

Receiver

- Super-heterodyne receiver with double frequency conversion.
- IF analogue-to-digital conversion provides extended dynamic range.
- Automated digital gain control guarantees high dynamic range stability.
- Digital sensitivity time control for expanding dynamic range in high-clutter regions.
- One set of local oscillators for generating and receiving signals guarantees high phase stability.
- Receiver parameters are monitored by sophisticated BITE system.

Frequency band	S-band, 2700 – 2900 MHz
Frequency diversity and agility	Full frequency diversity; frequency agility with 1 MHz step
Peak RF output power(12/24 modules)	16/28 kW
Pulse width	Short pulse: 1 µs Long pulse: adjustable, 40-300 µs
Antenna	Low/high beam gain: 34 / 33 dB Polarization: linear/circular
Elevation	0.3° – 45°
Rotation rate	6-15 RPM
Minimal range	0.5 NM
Instrumental detection range	60 / 80 / 100 / 120 NM
Accuracy	50m / 0.1°
Resolution	230m / 2°
Signal processor	A-MTD, MTAC and MTAT suppression, advanced beam switching and combining, interference suppression, advanced dynamic clutter maps
Sub-clutter visibility	> 55 dB
Post processor	Plot processing using weight-based algorithms and high precision maps
Tracking system	Multiple input processing supports more than 1000 tracks
Output format	ASTERIX or any other by request

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