

ATCR-33S NG

ELECTRONICS DIVISION



NEW GENERATION S-BAND SOLID STATE PRIMARY SURVEILLANCE RADAR

ATCR-33S NG provides superior air traffic surveillance in departure/arrival phases, up to extended Terminal Management Area. ATCR-33S NG is an S-band system part of the company family of primary radars.

THE SOLUTION

Realised to comply with international standards for Primary Surveillance Radar (PSR) systems and to guarantee a high degree of maintainability, the ATCR-33S NG system meets the requirements issued by ICAO and EUROCONTROL in terms of functional and performance characteristics.

It provides enhanced processing capabilities and extended performance monitoring in order to support 24 hour operations.

Monitor and control activities can be performed from local or remote stations with userfriendly operator's interface.

High operational flexibility and system availability are also guaranteed through cutting edge technological choices.

The ATCR-33S NG system employs a wide range of processing techniques, which automatically optimise the operational performance under the most severe environmental conditions.

The receiving section is fully redundant, with the two separate and independent receiving channels included within a single cabinet, allowing to adapt the equipment to the most critical installation requirements.

The processing is controlled on a cell-by-cell basis, by a very sophisticated geographical mapping system. An integrated weather channel is included, providing six levels of weather information according to the U.S. National Weather Service recommendations.

The transmitter is modular and fault tolerant, with 8 power modules included in a single cabinet. The RF power stage employs the latest Gallium Nitride (GaN) transistor technology, allowing to increase at the same time transmitted power, efficiency and reliability.

Each module can be removed on line during operation and is provided with a separate power supply for improved maintainability.

The ATCR-33S NG system interfaces with the S-Band antenna group, which includes the G-33 S-Band antenna, a well proven reflector antenna system, extensively used in civil and military air traffic applications all over the world and the S-Band automatic antenna base with duplicated motors and azimuth encoders.

SYSTEM FEATURES

Enhanced Capabilities

- › Digital pulse compression with enhanced peak-to-sidelobe ratio for high radar sensitivity and improved range resolution;
- › Fully coherent Adaptive Moving Target Detection (A-MTD) using from 6 to 12 Doppler filters;
- › Adaptive selection among four MTD filter sets according to ground clutter intensity;
- › Extensive mapping techniques employed to adaptively maintain CFAR in presence of natural and artificial (e.g. Windfarm areas) clutter with different time and spatial characteristics;
- › High resolution maps updated separately for each MTD filter, to provide super-clutter visibility and tangential target detection;
- › New Gallium Nitride (GaN) transistor technology for improved reliability and transmission characteristics.

High Operation Flexibility

- › Operation mode in fixed frequency or frequency diversity;
- › Emission control function to reduce or disable RF radiation on given azimuth sectors;
- › Automatic antenna beam switching (between Low and High beams) for ground clutter suppression;
- › Map Programmable and Auto-Adaptive STC, against high level clutter and saturating signals;
- › Linear/circular polarization, for optimum target detection in all weather conditions;
- › Anomalous propagation rejection, with automatic polarization selection capability;
- › Asynchronous Interference Blanking (AIB);
- › Raw video streaming on LAN;
- › In case of special operations, a transportable configuration of the ATCR-33S NG is also available;
- › Availability of optional 4G/WiMax filtering kit.

TECHNICAL DESCRIPTION

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|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------|
| › Frequency band | From 2700 to 2900 MHz; | › Conversion type | A/D Conversion @ IF level; |
| › Maximum range | 60/80/100 NM; | › Signal Processor | Adapting Moving Target Detector (A-MTD) including up to 2 FIR filters; |
| › Antenna rotation rate | 15/12/10 rpm; | › Radar Processor Platform | COTS architecture based on last generation processors with use of standard interfaces; |
| › Transmitter architecture | Modular, with fail soft capability at module and transisto level:

8 modules (Dual Power output) > 17 KW;
16 modules (Dual Power output) > 32 KW; | › Use of C language algorithms running on LINUX OS; | › Large plot processing capability; |
| › Transmitted waveforms | Short Pulses: 1 /10 us;
Long Pulses: 10/100/150 us; | › LAN connections | 3 for each channel; |
| › Frequency management | Burst to burst frequency diversity with capability of frequency selection over the S - Band; | › RMA | High reliability with a critical MTBF;
MTBF > 40.000 hours;
MTTR < 20 minutes; |
| › Cooling | Air Cooling; | › Avaliability | Better than 99,999 %; |

For more information:
infomarketing@leonardocompany.com



Electronics Division
Via Tiburtina
Km 12.400
00131 Rome - Italy
T +39 06 41501
F +39 06 4131133

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