Able to detect even the worst weather conditions

Friendly user interface to manage all configuration parameters

Supplying ATM systems around the world for more than 30 years
AIR TRAFFIC MANAGEMENT

SURFACE MOVEMENT RADAR

Supplying ATM systems around the world for more than 30 years

Indra reserves the right to modify these specifications without prior notice.
SMR SURFACE MOVEMENT RADAR

Introduction

Indra’s SMR is a continuous-wave radar system of the air-traffic control to provide air traffic surface movement information, which offers great flexibility to adapt to customer needs. The radar is designed to detect and locate stationary, moving, individual and multiple targets located in airport manoeuvre and ramp areas at extended range even in low visibility conditions caused by fog or rain. It’s designed to detect and locate targets located in airport manoeuvre and stationary, moving, individual and multiple targets located in ramp areas at extended range even in low visibility conditions caused by fog or rain. Its continuous wave technology to improve detection of targets in rain and clutter conditions, having the same performance in rain and clutter conditions.

Main technical features

Various technical parameters and technical features are shown in the tables below.

System description

The SMR radar consists of a linear array of antenna elements, each driven by a separate signal. The signals are transmitted by the radar system and received by the antenna system. The radar system is designed to detect and locate targets in airport manoeuvre and stationary, moving, individual and multiple targets located in ramp areas at extended range even in low visibility conditions caused by fog or rain. Its continuous wave technology to improve detection of targets in rain and clutter conditions, having the same performance in rain and clutter conditions. The radar is designed to detect and locate targets located in airport maneuvres and stationary, moving, individual and multiple targets located in ramp areas at extended range even in low visibility conditions caused by fog or rain. Its continuous wave technology to improve detection of targets in rain and clutter conditions, having the same performance in rain and clutter conditions.

SMR SYSTEM

- Radar high resolution enables observation and obtain shape of aircrafts
- Digital extraction of I and Q signals from baseband signal
- Use of latest-generation signal and data processing technology (Direct Digital Synthesis)
- Automatic reconfiguration of radar system on the basis of clutter map
- High gain antenna with an inversed square law beam pattern
- Digital field of view (FOV) control
- Gaussian noise generation using DDS technology (Direct Digital Synthesis)
- High level of integration thanks to the use of semiconductor technology
- Use of electronic control technology and state of the art electronics
- Use of intelligent BITs (Built In Test Equipment) feature
- System availability 99.99%

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Continuous wave technology to improve highly reliable airport manoeuvres

Introduction

Indra’s SMR is a continuous-wave radar system able to meet customers’ needs. The radar is designed to detect and locate stationary, moving, individual and multiple targets located in airport manoeuvre and ramp areas at extended range even in low visibility conditions caused by fog or rain. Its continuous wave technology allows highly reliable operation with very simple maintenance.

This SMR system provides a high resolution compared with other SMRs. The continuous wave technology allows the system operating efficiency and performance to be the best in its class. The SMR is designed to be deployed as a stand-alone system or integrated as part of an ATM/GSICS system.

System description

This SMR radar consists of a linear array of antenna elements and additional sub-systems mounted on the top of a building or tower and the base station. The system is designed to allow a single channel for reception, transmission process, calculation, tracking and formatting targets in Eurocontrol Archimedes format. The system is supplied with two redundant and half-quad local area networks (LAN).

All these are housed in a single 19" rack and comply with current and future telecommunications standards. The system is designed to detect and locate stationary, moving, individual and multiple targets located in airport manoeuvre and ramp areas at extended range even in low visibility conditions caused by fog or rain. Its continuous wave technology allows highly reliable operation with very simple maintenance.

Friendly parameters configuration display

• Air traffic demand and protection areas
• The information displayed in the airport map is used to adjust and improve the performance of the monitoring system
• Specific areas are defined to isolate, filter and adjust the system parameters.
• System parameter configuration
  - Bandwidth selection configuration
  - Parameter control configuration
  - Clutter map management
  - Radio frequency map back-up

• Use profiles configuration
  - LIC configuration
  - Help windows
  - Configuration of switches
  - Configuration of FFT blocks

System features

• Solid state transceiver fault resistant
• Very low transmitter output power
• High level of integration: Fully modular transceiver/receiver/processor with automatic reconfiguration
• Dual transceiver channel for the transmit/receive process with automatic reconfiguration
• Digital signal processing (C/DSP): Signal processing in the base band, improving detection of targets in vanilla clutter
• AESA generation using DDS technology (Direct Digital Synthesis)
• High gain antennas such as WavePiP (Waveform Processing in Parallel)
• Signal processing for clutter suppression and CFAR
• Fast reconfiguration of clutter
• High gain generation for the evaluation of targets
• Automatic tracking capability of a high number of targets
• Local and remote control and test functions

Main technical features

- Frequency coverage: X Band (9.0 to 9.5 GHz)
- Transmitter output power: 5 watts, continuous wave
- Frequency diversity: 4 frequencies
- Antenna: Circular polarization

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Indra’s SMR is a continuous wave radar system of high class that is fully manufactured in solid-state technology which offers great flexibility to adapt to customer needs. The radar is designed to detect and locate stationary, moving, individual and multiple targets located in airport manoeuvre and stationary, moving, individual and multiple targets located in airport guidance, with the capability to support area movement radar systems and adapt to the needs of each airport without the need for major maintenance.

Indra’s SMR system provides high resolution compared with other SMR. The continuous wave technology together with the solid-state technology and the solid-state low power design allows highly reliable operation with very simple maintenance.

The SMR radar consists of a single pair of antennas and additional sub-systems mounted on the top of a building or tower, and the system is equipped with a powerful computer channel for reception, transmission processes, automatic reconfiguration and steering of the beams in Euromed’s Archimedes format. The system is supplied with two redundant and high-speed Local Area Networks (LAN).

**System description**

The SMR radar consists of a single line array antenna and a single sub-system located on the top of a building or tower, and the system is equipped with a powerful computer channel for reception, transmission processes, automatic reconfiguration and steering of the beams in Euromed’s Archimedes format. The system is supplied with two redundant and high-speed Local Area Networks (LAN).

All of these are focused in a single T/R module, which also includes two L/R units for the transponder, as well as the power conditioning required to operate the radar equipment by means of a powerful BITE (Built-In Test Equipment) feature.

The focused beam continuous operating system are based on CMS products. The SMR system is fully digital, state-of-the-art technology with automatic reconfiguration and steering of the beams in Euromed’s Archimedes format. The radar site contains a local display where radar data are displayed for support maintenance, supervising and adjustment tasks.

**System features**

- Solid-state transducer fault resistant
- Vary low transmitter output power
- High level of integration: Fully modular station infrastructure
- Dual redundant channel for the fixed transmitter/receiver/processor with automatic reconfiguration
- Continuous wave technology with high resolution
- Automatic reconfiguration to maintain the performance and accuracy of the system
- Improving detection of targets in rain
- Azimuth accuracy of less than 0.044°
- Azimuth resolution of 15 m
- Range coverage with 16 mm/h rainfall
- Min/max oblique range coverage
- System availability

**Features of integration**

- Automatic tracking capability of a high number of targets
- Intelligent BITE (Built-In Test Equipment)
- Local and remote control and monitoring system
- Availability, reliability and maintainability
- Solid-state technology provides high MTBF and MTTR values that simplify maintenance, adjustment tasks and costs

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