TECHNICAL DATASHEET

ARRESTO INTELLIGENCE OSRS – AI-ENHANCED RADAR SYSTEM WITH IP CAMERA INTEGRATION

MODEL AI-OS-R-IP

DEVELOPED BY:

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1. Product Overview

The Arresto Intelligence OSRS is a compact, high-precision Doppler radar system integrated with advanced AI capabilities. It offers real-time multi-object tracking, speed estimation, and direction discrimination across multiple lanes. Leveraging deep learning algorithms, the OSRS delivers robust performance in diverse environmental conditions, making it ideal for traffic monitoring, speed enforcement, and intelligent transportation systems.

2. Key Features

- Operating Frequency: 24.00 GHz
- Speed Detection Range: 15 – 150 km/h
- Maximum Detection Distance: Up to 250 m
- Speed Accuracy: ±1 km/h
- Distance Accuracy: ±0.5 m
- Direction Detection: Differentiates approaching and receding vehicles
- Beam Width: 7° (Azimuth), 28° (Elevation)
- Response Time: 50 ms
- Interfaces: RS485, RS232, Wi-Fi
- Power Consumption: 1.6 W
- Operating Temperature: -40°C to +85°C
- Protection Class: IP66
- Lane Coverage: 2-3 Lanes
- AI Capabilities: Real-time multi-object tracking and speed calculation
- IP Camera Integration: Seamless compatibility with IP camera modules for enhanced visual verification

3. Technical Specifications

Parameter	Specification
Transmit Frequency	24.00 GHz
Transmit Power (EIRP)	20 dBm
Response Time	50 ms
Frequency Error	±40 MHz
Speed Detection Range	15 – 150 km/h
Speed Accuracy	±1 km/h
Distance Detection Range	15 – 250 m
Distance Accuracy	±0.5 m
Direction Detection	Approaching and receding
Beam Width (Azimuth)	7°
Beam Width (Elevation)	28°

Communication Interfaces	RS485, RS232, Wi-Fi
Working Voltage	9 – 16 V DC
Working Current	0.13 A @ 12 V DC
Power Consumption	1.6 W
Operating Temperature	-40°C to +85°C
Operating Humidity	10% – 95% RH
Protection Class	IP66

4. AI Capabilities

- Multi-Object Tracking: Simultaneous tracking of up to 64 objects across multiple lanes.
- Speed Calculation: Real-time speed estimation for each tracked object with high accuracy.
- Object Classification: Differentiation between various object types (e.g., vehicles, pedestrians) using radar signatures.
- Trajectory Prediction: Utilization of advanced algorithms for accurate motion prediction.
- Sensor Fusion Ready: Compatible with additional sensors for enhanced perception.

5. IP Camera Integration

The OSRS system is designed to seamlessly integrate with IP camera modules, enhancing situational awareness and providing visual verification of detected objects.

Integration Features:

- Visual Verification: Correlate radar-detected objects with real-time video feeds for confirmation and assessment.
- Data Synchronization: Align radar and video data streams for comprehensive analysis and reporting.

Compatibility:

- IP Camera Standards: Supports integration with IP cameras adhering to ONVIF standards.
- Network Protocols: Utilizes standard network protocols (e.g., TCP/IP, RTSP) for communication and data exchange.
- Scalability: Accommodates integration with multiple IP cameras for extensive coverage.

6. Applications

- Traffic Speed Monitoring: Real-time detection of vehicle speeds on highways and urban roads.
- Speed Feedback Systems: Integration with display systems to inform drivers of their current speed.
- Traffic Flow Analysis: Collection of traffic data for congestion management and planning.
- Smart Transportation Systems: Enhancing intelligent transportation infrastructure with accurate speed and object data.
- Security and Surveillance: Monitoring of restricted areas for unauthorized vehicle movement.
- Perimeter Protection: Detecting and tracking intrusions along facility boundaries.
- Wrong lane Detection: Detect the violation.

7. Advantages

- High Precision: Utilizes advanced radar technology for accurate speed and distance measurements.
- AI Integration: Enhanced object tracking and classification through deep learning algorithms.
- Robust Performance: Maintains accuracy in adverse weather conditions such as rain, fog, and snow.
- Multi-Lane Coverage: Capable of monitoring multiple lanes simultaneously.
- Flexible Integration: Supports various communication interfaces for seamless system integration.
- Enhanced Situational Awareness: Combining radar data with visual feeds provides a comprehensive understanding of monitored areas.