RAJANT

RAJANT KINETIC MESH®

Onyx CFS-5250CS
Features / Benefits / Value

The Rajant Onyx CFS-5250CS delivers high-performance Kinetic Mesh® networking for demanding industrial and mission-critical environments. Combining AX performance, ultra-low latency, multi-band operation, and resilient controller-less mesh architecture, the platform enables scalable, mobile connectivity for real-time industrial operations.

Description

The Onyx CFS-5250CS is Rajant's advanced Kinetic Mesh® node designed to support high-throughput, low-latency wireless communications across dynamic industrial environments. Built with 802.11ax technology, multi-band radios, and accommodating a variety of add-on module options, the platform enables reliable data, voice, and video connectivity for mission-critical applications.

Supporting combined throughput up to 2.98 Gbps and advanced spectral efficiency with 1024-QAM, the CFS-5250CS is engineered to maintain uninterrupted communications in environments with constant movement, obstructions, and changing network conditions. Powered by Rajant InstaMesh® technology, the network continuously adapts in real time without manual intervention.

Unlike traditional infrastructure-based wireless systems, the CFS-5250CS operates as a fully distributed, controller-less mesh node, eliminating single points of failure while simplifying deployment and enabling seamless scalability across industrial operations.

Problems Solved (Benefits)

Provide Seamless Upgrade Path
Drop in replacement for Hawk and Sparrow products. Backward compatibility with existing Rajant systems reduces transition risk and protects prior investments.

Ensure Mission-Critical Connectivity
Resilient mesh networking maintains continuous communication even in dynamic, obstructed, or mobile environments.

Future proof hardware
Add-on modules provide the flexibility to add new functionality over time while keeping the core hardware in a long product life-cycle.

Enable High-Performance Industrial Networking
High throughput and low latency support real-time applications such as video, automation, and remote operations.

Simplify Deployment and Scalability
Software selectable radios allow users to utilize the same product in multiple deployment scenarios. Self-configuring mesh eliminates the need for complex infrastructure planning and allows rapid expansion.

Support Mobility and Dynamic Environments
Maintains connectivity across moving vehicles, equipment, and personnel without network disruption.

Enable Industrial IoT and Edge Applications
Supports data, voice, and video for IoT devices, sensors, and edge computing platforms.

Improve Network Reliability and Uptime
Distributed architecture removes single points of failure and adapts instantly to network changes.

Reduce Operational Complexity
Single platform replaces multiple networking components, simplifying management and maintenance.

Key Features

Connectivity and Performance

- Dual transceivers with up to ~2.98 Gbps combined throughput 802.11ax radios with 1024-QAM for improved spectral efficiency
- Multi-band operation: 2.4 GHz, 4.9 GHz, and 5 GHz
- High uplink capacity for data-intensive applications
- Ultra-low latency for real-time communications

Flexibility & Modularity

- Add-on modules for field installed devices to add new functionality
- Software-selectable radio configurations (2.4 / 5 GHz)
- Backward compatibility with existing Rajant BreadCrumb® deployments

Positioning & Location Awareness

- Integrated GNSS receiver (GPS, GLONASS, Galileo, BeiDou)
- Meter-level accuracy for asset tracking and network optimization

Interfaces and Integration

- 2.5 GbE Ethernet (M12 X-code connector)
- USB interface for Modbus, serial, and firmware updates
- Wi-Fi Access Point capability for client devices
- VLAN, QoS, NAT, DHCP, and gateway functionality

Industrial Design & Deployment

- Common fit to adapt to Hawk and Sparrow installations.
- IP67-rated enclosure for dust and water protection
- Ruggedized for shock, vibration, and extreme temperatures Compact, lightweight form factor for mobile and fixed deployments
- Flexible mounting with compatibility across existing platforms

Mesh Networking & Intelligence

- InstaMesh® protocol for autonomous, self-healing networking
- Layer 2 operation with no controller or root node required
- Dynamic path selection for mobile and rapidly changing environments
- Mesh clustering for segmented, application-specific networks

Security

- Up to AES-256-GCM, WPA2/3, NSA Suite B algorithms (implementation not certified)
- Per-hop, per-packet authentication
- Secure mesh communications across all nodes

Value Proposition

Future-Proof High-Performance Platform

Combines high-speed radios, advanced processing, and modular flexibility into a single device, reducing the need for future hardware upgrades.

Lower Total Cost of Ownership

Reduces infrastructure requirements by eliminating the need for controllers, lowers maintenance and IT overhead, and consolidates multiple networking functions into a single device.

Reduced Deployment and Upgrade Costs

Backward compatibility helps minimize replacement costs, while the flexible mounting options and modular design reduce installation complexity.

Increased Operational Efficiency

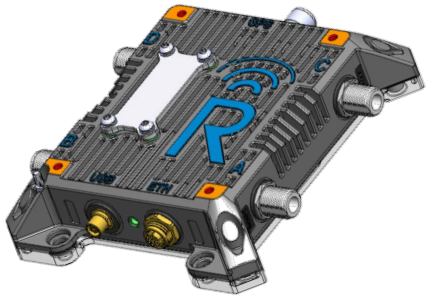
Real-time data enables faster decision-making, while reliable connectivity helps reduce downtime and operational risk.

Mission Continuity in Harsh Environments

The ruggedized design ensures reliable performance in extreme conditions, while the self-healing mesh keeps systems online despite disruptions.

Markets Served

- Mining
- Construction
- Ports
- Oil and Gas
- Utilities
- Airports
- Railroads



Get the edge over other fault-tolerant networking options.

Discover how Rajant can help you stay connected--no matter how your team operates. Our technology means Reliability, Redundancy, and Resiliency. Learn more about Rajant's one-of-a-kind technology at www.rajant.com

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Enabling Industrial AI