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Ring network type industrial switch



Overview

How Industrial Switches Build Industrial Ring NetworksIn a ring network configuration, industrial switches are interconnected in a circular fashion, creati.

Key Takeaways

Industrial-grade switches for ring networks provide high resilience, rapid fault recovery, and reliable connectivity in harsh industrial environments.Overview of Ring Network Switches

A ring network is a closed-loop topology where each switch connects to two others, forming a circular path. This design ensures continuous data transmission even if a single link fails, as data can reroute in the opposite direction automatically . Industrial-grade switches in such networks are designed to withstand extreme temperatures, dust, vibrations, and electrical surges, making them suitable for factory automation, utilities, transportation, and IIoT applications .

Key Features of Industrial Ring Switches
• Redundancy and Fault Tolerance: Industrial switches often support Ethernet Ring Protection (ERP), Rapid Spanning Tree Protocol (RSTP), or proprietary ring recovery technologies. These protocols detect link failures and reroute traffic, maintaining uninterrupted communication . Recovery times can be as fast as 1 millisecond in some models like the PLANET IFGS-624PTF .

• Rugged Construction: Metal housings with IP40 or higher ratings, DIN-rail or rack-mountable designs, and wide operating temperature ranges (e.g., -40°C to 75°C) ensure durability in industrial settings .

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• Power over Ethernet (PoE): Many industrial switches provide IEEE 802.3af/at/bt PoE, delivering up to 90W per port to power devices like cameras, sensors, and wireless access points without additional cabling .

• Redundant Power Inputs: Dual power inputs and failover mechanisms enhance uptime and reliability .

• Scalability and Modularity: Modular designs allow adding ports or uplinks as industrial networks expand, supporting both copper and fiber connections .

Examples of Industrial Ring Switches

• PLANET IFGS-624PTF: A DIN-rail unmanaged Fast Ethernet PoE+ switch with 4 PoE ports and 2 SFP fiber uplinks. It supports super-fast ring redundancy, PROFINET traffic pass-through, and dual power inputs, making it ideal for factory automation .

• Extreme ISW Series: Rugged Layer 2 switches with full redundant ring technology, flexible PoE options, and Fabric Attach for zero-touch edge provisioning in virtualized networks .

• Cisco Industrial Ethernet Switches: Modular switches with high-speed 10-GE uplinks, advanced resiliency protocols, PoE options, and industrial AI-ready features for secure, high-performance industrial networks .

Deployment Considerations

When selecting a ring network switch for industrial applications, consider:

• Network Size and Topology: Ensure the switch supports the number of nodes and the desired ring protocol.

• Environmental Conditions: Match the switch's temperature, vibration, and IP rating to the deployment site.

• Power Requirements: Evaluate PoE needs for connected devices.

• Recovery Speed: Choose switches with fast ring recovery to minimize downtime.

• Management and Monitoring: Decide between managed, unmanaged, or modular switches based on network complexity and monitoring requirements. Industrial-grade ring switches are essential for reliable, high-availability industrial networks, supporting critical IIoT and automation systems while ensuring minimal downtime and robust performance in challenging environments .

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In response to the growing demand for IIoT (Industrial Internet of Things) infrastructure, the IFGS-620TF is

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Built for diverse industrial applications, these switches feature all-gigabit, high-density, all-copper or mixed copper and fiber ports,

Ethernet Ring Redundancy

This document provides basic background information regarding adding ring redundancy in

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