Classification of Ethernet Industrial Switches



Overview

Types of Industrial Grade Network Switches When selecting an industrial switch, network architects often classify them by protocol layer (Layer 2, Layer 3).

Key Takeaways

Industrial Ethernet switches are classified by management capability, protocol layer, PoE support, mounting style, and speed to meet the demands of harsh industrial environments. Classification by ManagementUnmanaged Switches: Plug-and-play devices requiring no configuration, ideal for simple networks. They are cost-effective but lack advanced features like traffic monitoring, VLANs, or QoS.

Managed Switches: Provide full control over network settings, including configuration, monitoring, VLANs, SNMP, and QoS. They support redundancy protocols and enhanced security, making them suitable for critical industrial applications. Classification by Protocol LayerLayer 2 Switches: Operate at the Data Link Layer, forwarding data based on MAC addresses.

They are commonly used for connecting devices within the same network segment. Layer 3 Switches: Operate at the Network Layer, capable of routing between subnets using IP addresses. They support static routes, RIP, and VRRP, providing better fault isolation and traffic management.

Po

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E (Power over Ethernet) SupportPoE Switches: Deliver both data and electrical power over a single Ethernet cable, useful for powering IP cameras, VoIP phones, and wireless access points without separate power sources. Mounting OptionsDIN Rail Switches: Compact switches designed for mounting on standard DIN rails in control cabinets, saving space. Rack Mount Switches: Designed for 19-inch racks, suitable for larger industrial control rooms or data centers.

Wall Mount Switches: Built for vertical surfaces in space-constrained environments.

Speed and Port Types

Fast Ethernet: Supports speeds up to 100 Mbps. Gigabit Ethernet: Supports speeds up to 1 Gbps, commonly used in modern industrial networks. 10 Gigabit Ethernet: Supports speeds up to 10 Gbps for high-bandwidth applications.

Copper, Fiber, or Mixed Ports: Industrial switches may use copper, fiber, or a combination to meet distance and environmental requirements.

Specialized Industrial Switches

Railway Ethernet Switches: Comply with EN 50155 standards for railway applications. Ruggedized Switches: Designed to withstand extreme temperatures, vibration, dust, humidity, and electromagnetic interference, often with IP67 ratings and dual power inputs for redundancy. Industrial IoT/IIoT Switches: Support connectivity for distributed sensors and devices in smart factories or process automation, often with advanced monitoring and low-latency features.

Industrial Ethernet switches are essential for reliable communication in factories, transportation systems, utilities, and other harsh environments, and selecting the right type depends on network complexity, environmental conditions, and device requirements.

Article Content

Types of Industrial Grade Network Switches

When selecting an industrial switch, network architects often classify them by protocol layer (Layer 2, Layer 3) and by whether they support PoE (Power over

Cisco Industrial Ethernet Switching Portfolio Brochure

Designed to fit into a standard 19-inch rack, Cisco rack-mount switches offer several models with options for 1 Gigabit Ethernet, Multigigabit, and 10 Gigabit Ethernet ports, supporting up to 28 ports for

Ethernet Switches

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We offer toughened, industry-specific products with multiple industry certifications, such as parts of the EN 50155 standard for rail applications, IEC 61850-3 for power automation systems, and NEMA TS2

Comprehensive Analysis of Industrial Switches

This article will systematically review the core knowledge of industrial switches from three dimensions—classification logic, technical characteristics, and application scenarios—and analyze

Industrial Ethernet Switches

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

Industrial Ethernet Switches | Industrial Network Switch | Perle

Industrial-grade Ethernet Switches are specifically designed to connect devices in network environments that are subject to extreme operating temperatures of -40°C to 75°C, vibrations, and shocks. They

An expanded line of versatile industrial Ethernet switches

This company has added three options to their Ethernet Switches product line. The first option is an Industrial ECO 16-port switch specifically designed for use with WAGO controllers and

L2+ Managed Industrial 8-Port 1000T 802.3at PoE + 4-Port 1G/2.5G

The UTP UF-MIS6408GP-2FBP is the highly reliable managed industrial Bypass PoE switch with 8-port 10/100/1000-T PoE, 4-port 1G/2.5GBase-X fiber SFP and 2 channels single LC Bypass or 1 channel

Industrial Ethernet Switches

Modernize your operations with Cisco Industrial Ethernet switches: Increase productivity, boost security, and empower industrial AI.

SCALANCE

SCALANCE offers a comprehensive portfolio of industrial communication solutions. Find the perfect connection for every industrial application – across automotive, chemical, manufacturing and more.

Industrial Ethernet Switches | WAGO

Industrial Switches WAGO''s switch portfolio provides scalable Ethernet network infrastructure with excellent electrical and mechanical performance. These rugged devices are designed for industrial

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Industrial Switch: Understanding Industrial Ethernet Switch ...

An industrial Ethernet switch is a type of network switch designed to operate in harsh industrial environments. Oil rigs, railways, manufacturing plants, and similar applications require industrial

Industrial Ethernet Managed Switch: Composition, Classification, and ...

Types of Industrial Ethernet Managed Switches An industrial Ethernet managed switch is a ruggedized networking device designed to operate reliably in harsh environments such as factories, power

How to pick the right Industrial Ethernet Switch for

Industrial Ethernet switches are comprised of managed and unmanaged switches with Gigabit, PoE, and various industry certifications. Featured industrial-grade

Classification and Application Fields of Industrial Ethernet Switches ...

Conclusion: Industrial Ethernet switches have diverse classifications and can meet the needs of different industrial application scenarios. Based on factors such as functionality, number of ports, network

Industrial Ethernet Switches: Features, Types, and Selection Guide

Conclusion Industrial Ethernet switches are indispensable in creating robust, efficient, and scalable industrial networks. By selecting switches based on durability, management

Comprehensive Analysis of Industrial Switches

Classification Logic of Industrial Switches: Diverse Segmentation Based on Scenario Requirements The classification of industrial switches is not one-dimensional but rather a multi

Ethernet Switches

Industrial switches are DIN rail and screw-mountable and accommodate a wide range of temperatures, humidity, ingress, shock and vibration. They come in unmanaged, managed, Fast Ethernet or Gigabit

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