What are the types 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 Ethernet). In this article, we explore the four

Different Types Of Industrial Ethernet Switches | Key Guide

There are several types of Industrial Ethernet switches, designed to meet specific industrial needs. The main types include unmanaged switches, managed switches, and PoE (Power over Ethernet) switches.

Industrial Ethernet Switches: Benefits, Applications & Buying Guide

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Discover what industrial grade Ethernet switches are, their unique features, real-world applications, key differences from regular switches, and where to buy.

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: Features, Types, and Selection Guide

Choosing the right industrial Ethernet switch depends on specific operational needs, the types of switches available, and customized solutions tailored to unique industrial scenarios.

Core Switch vs. Distribution Switch vs. Access Switch

Core Switch vs. Distribution Switch vs. Access Switch: Understand Their Roles in Ethernet Networks Ethernet networks are growing and becoming more complex, with high-capacity WANs now being

What is a Network Switch and How Does it Work?

What is an Unmanaged Switch? A basic, plug-and-play network device called unmanaged switch permits automatic communication between Ethernet devices. Where the network design is

Ethernet Switches

Moxa provides a wide range of industrial Ethernet switches that feature industrial-grade reliability, network redundancy, strengthened security, easy management, and competitive price-to

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

Ultimate Guide to Ethernet Cables | Everything You Need to Know

Discover everything you need to know about Ethernet cables, including their types, construction, and best practices for installation. Learn how to choose the right cable for optimal

Industrial Ethernet

Industrial Ethernet PLANET Industrial Ethernet equipment is compliant with various industrial protocols and ITS certifications such as MQTT, Modbus, SCADA, EtherCAT EN50155 and E-Mark to meet all

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RUCKUS Ethernet Switches

Get the best of both worlds with our RUCKUS Ethernet Switches - the most secure and reliable ethernet switches for smart and secure wireless connectivity.

Industrial Internet of Things

Our industrial IoT networking portfolio Industrial Ethernet switches for modern operations Deliver high-performance, secure connectivity, and reliable power to

Every Switch Type You Need to Know for Industrial

7 Common Industrial Switch Types in Electronics Switches come in a variety of shapes, sizes, and current ratings. An industrial-grade switch can

Industrial Ethernet Switches – Cost-Effective, Redundant Network ...

Industrial Ethernet Switches WAGO''s range of switches ensures the scalability of your ETHERNET network infrastructure, while providing outstanding electrical and mechanical characteristics.

Industrial Ethernet Switches

Advantech''s industrial Ethernet switch solutions provide an abundance of options, including Gigabit Ethernet switches.

Industrial Ethernet Switches Market

The industrial ethernet switches market is expected to grow from USD 4.968 billion in 2025 to USD 6.462 billion in 2030, at a CAGR of 5.40%. The global industrial Ethernet switches

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