

Industrial-grade standards for switches



AI Overview

Industrial-grade switches are designed to meet rigorous standards for durability, environmental resilience, and network reliability, including certifications like IEC 61850-3, EN 50155, and IEC 62443-4-2.

Key Standards and Certifications

- IEC 61850-3:** Ensures electromagnetic compatibility and operational reliability in power substation environments, protecting switches from electrical interference and ensuring stable data transmission.
- EN 50155:** Certifies switches for railway applications, covering resistance to temperature extremes, vibration, and shock, making them suitable for transportation and rail systems.
- IEC 62443-4-2:** Specifies technical security requirements for industrial automation systems, enhancing cybersecurity and protecting critical infrastructure from unauthorized access.

Environmental and Operational Requirements

Industrial switches are built to withstand harsh conditions that commercial switches cannot, including:

- Temperature extremes:** Operating ranges from -40°C to $+85^{\circ}\text{C}$ in some models.
- Humidity and dust resistance:** Often rated with IP30 or higher for protection against moisture and particulate ingress.
- Vibration and shock tolerance:** Designed for factory floors, railways, and other high-vibration environments.
- Electromagnetic interference (EMI) protection:** Ensures stable operation in electrically noisy industrial settings.

Technical Features

Industrial-grade switches often include:

- Rugged construction:** Metal housings, DIN-rail or rack-mountable designs.
- Power resilience:** Dual power inputs, wide voltage ranges (12–57 V DC), and failover mechanisms.
- Network redundancy:** Support for protocols like Rapid Spanning Tree (RSTP) and Ethernet Ring Protection (ERPS) to minimize downtime.
- Management and monitoring:** SNMP, remote diagnostics, and centralized management for efficient network oversight.
- Power over Ethernet (PoE):** Optional support to power devices directly through Ethernet cables, simplifying deployment.

Classification

Industrial switches are classified by layer and management type: Layer...

Article Content

Industrial Switch Selection Guide: Applicable to Different Industrial ...

In the field of IIoT, industrial switches are key network devices that connect various industrial equipment, sensors, and control systems. Their selection directly affects the stability and reliability of the entire

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

What is an Industrial Ethernet Switch?

An Industrial Ethernet Switch is a ruggedized switch designed to provide reliable, high-speed network connectivity in harsh industrial environments. Unlike commercial switches used in offices, an

International switch safety standards & information

Each country has different voltage conditions, weather conditions and safety concepts, and they all set safety standards. If the switches are certified for the

Panduit ICD11T2NTL2M M12 Male Male D-code, Straight, UTP, TPE,

Panduit IndustrialNet Series - M12 D-Code Category 5e Overmolded Cordsets: Industrial Ethernet cordsets shall be constructed of Category 5e, industrial grade, stranded, twisted pair cable for UTP

Distinguishing Industrial Switches from Regular Switches: An In

2. Port configuration flexibility: Industrial switches provide various port types and configuration methods to adapt to different industrial field needs. In contrast, regular switches mainly

Durable Industrial Switches

With their strong build, the whole family of DIS industrial switches are certified against vibration, shock and free-fall. We're so confident in the quality of their hardened build that they come with our D-Link

How should I choose an industrial grade Ethernet switch?

In modern industrial automation, Industrial Ethernet Switches (IES) have become a key component. Correctly selecting the right industrial grade

How to choose industrial switches

Blog January 6, 2025 How to choose industrial switches Industrial switch selection factors to ensure efficient and stable industrial networking In the application scenario of industrial IoT, it is crucial to

Industrial Ethernet Switches

Provides an overview of deploying PoE in an industrial environment, exploring how this sector can benefit from PoE technology and describing the

The difference between industrial-grade switches and enterprise-grade ...

Industrial-grade switches and enterprise-class switches exhibit notable differences in design philosophy, structural design and durability, data transmission performance and redundancy, anti-interference

Guide to implementing Industrial Grade Switches

In this blog post, we will walk you through the key steps and considerations involved in successfully implementing industrial grade switches to

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

Layer 2 Managed Switches

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

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.

Comprehensive Analysis of Industrial Switches

September 5, 2025 Comprehensive Analysis of Industrial Switches Comprehensive Analysis of Industrial Switches: An In-Depth Guide to Types, Pros and Cons, and Application Scenarios In the wave of the

Distinguishing Industrial Switches from Regular Switches: An In

May 31, 2024 Distinguishing Industrial Switches from Regular Switches: An In-depth Analysis Distinguishing Industrial Switches from Regular Switches: An In-depth Analysis In the rapid

Comprehensive Analysis of Industrial Switches

Unlike commercial switches, industrial switches must confront harsh environments such as extreme temperatures, strong electromagnetic interference, and dust corrosion. Their design must

The difference between industrial-grade switches and

Industrial-grade switches and enterprise-class switches exhibit notable differences in design philosophy, structural design and durability, data transmission

Industrial Switches (ISW) | Extreme Networks

Extreme Industrial Switches are a family of ruggedized Layer 2 switches designed to operate under harsh environments and extended temperature conditions. They provide continuous uptime,

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What Makes a Network Switch "Industrial Grade"?

Learn what makes a network switch industrial grade: durability, reliability, low latency and advanced features for mission-critical networks.

In-Depth Guide to Industrial Switch Selection

Key Indicators: Industrial switches need to pass international standard certifications such as IEC 61850-3 and IEEE 1613, with a wide operating temperature range of -40°C to 75°C, an IP67 protection

Types of Industrial Grade Network Switches

Learn about L2 and L3 Industrial Grade Network Switches, PoE vs non-PoE types, and how to choose the right rugged switch for your industrial setup.

Industrial Ethernet Switches

Westermo industrial Ethernet switches are designed to deliver reliable and secure communication in harsh and demanding environments. Our industrial Ethernet

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