

## Embedded Module for Industrial Switches



### Overview

Hirschmann Embedded Ethernet Switches Concentrate on your area of expertise and use preconfigured, pre-tested, embedded Ethernet systems to Embedded Product.

### Key Takeaways

Embedded modules for industrial switches are compact, rugged Ethernet solutions designed to integrate into industrial devices, providing reliable connectivity, protocol support, and high-performance networking in harsh environments.

Embedded Ethernet switch modules are specialized networking components designed to be integrated directly into industrial equipment or systems. They allow manufacturers to rapidly deploy Ethernet-enabled devices without designing a full switch from scratch, supporting both expansion and upgrade of automation equipment. These modules are particularly suited for industrial IoT, robotics, aerospace, defense, and harsh environmental applications.

#### Key Features

- **Compact and Rugged Design:** Many embedded modules are ultra-compact, sometimes as small as two-thirds the size of a business card, and are engineered to withstand extreme temperatures, shock, and vibration.
- **High-Speed Connectivity:** Modules support Gigabit Ethernet and, in some cases, 10-Gigabit Ethernet (10GE) for high-throughput applications.
- **Protocol Support:** They often support all major Industrial Ethernet protocols, including time-sensitive networking (TSN) features, ensuring compatibility with a wide range of industrial controllers and processors.

- **Managed Switching Capabilities:** Many embedded modules provide managed switch functions, such as VLANs, QoS, and security features, enabling robust network control and monitoring .

- **Energy Efficiency:** Designed for low power consumption, making them suitable for space- and energy-constrained applications .

#### Applications

- **Industrial Automation:** Embedded switches can be integrated into robots, PLCs, and other automation devices to provide reliable internal and external network connectivity .

- **Mission-Critical Systems:** Modules like the Cisco Catalyst ESS9300 are optimized for defense, mining, and oil & gas, offering ruggedness and security for extreme environments .

- **IoT and Edge Devices:** They enable compact, high-performance networking for edge computing devices and industrial IoT systems .

- **Aerospace and Defense:** Some modules are available as mezzanine cards conforming to OpenVPX standards, suitable for aircraft or ground vehicle integration .

#### Integration and Deployment

Embedded modules are designed to interface with various processors and SoMs (System on Modules) via standard interfaces like SPI or PCIe, allowing quick development and deployment of field devices and controllers . They can be preconfigured and pre-tested, reducing development time and ensuring reliable operation in harsh conditions .

#### Examples of Embedded Modules

- **Hirschmann Embedded Ethernet Switches:** Preconfigured systems for rapid deployment in automation equipment .

- **Moxa Ethernet Embedded Modules:** Designed for high reliability in harsh industrial environments .

- **Cisco Catalyst ESS9300 Embedded Series:** High-performance, rugged modules for mission-critical applications with 10GE support and advanced security .

- **ADI Embedded Industrial Switches:** Multi-protocol support with TSN features for flexible industrial networking .

- **Maisvch Embedded Industrial Switches:** Ultra-compact, energy-efficient modules for space-critical automation and robotics . Embedded modules for industrial switches provide a scalable, reliable, and compact networking solution for modern industrial systems, enabling manufacturers to integrate Ethernet connectivity efficiently while meeting the demands of harsh and space-constrained environments.

## Article Content

### Hirschmann Embedded Ethernet Switches

Concentrate on your area of expertise and use preconfigured, pre-tested, embedded Ethernet systems to

Embedded

Product Number: EES25-0600UHIHPH2E Embedded Ethernet Switch with redundancy function PRP Managed Fast

### Industrial IoT Embedded Networks

Addressing the needs of mission-critical applications, Cisco and Curtiss-Wright combine strengths to build the new VPX3-623 switch

### 3onedata | Ethernet Switch Modules

Ethernet Switch Module 3onedata's "first of its kind" embedded switch module is compact, highly integrated and feature-rich in design.

### Cisco Embedded Services 3300 Series Switches

The Embedded Service 3300 Series (ESS 3300) lets third-party partner integrators build custom Gigabit

### EOM-104 Series

The EOM-104 Series is designed for device manufacturers who would like to embed Ethernet modules in their products to enhance

### Ethernet Switches

Our range of ethernet switches feature industrial-grade reliability, network redundancy, multi-layer security, and simple management.

### Industrial Gigabit Ethernet System on Module | Renesas

The Industrial gigabit Ethernet system on module (SoM) enables high-speed data transmission, ensuring large data packets - like

### Embedded Ethernet switch module

Find your embedded ethernet switch module easily amongst the 16 products from the leading brands (Maisvch, Hirschmann,

### SCALANCE

SCALANCE network components form the basis of communication networks in manufacturing and process

Cisco Catalyst ESS9300 Embedded Series Switch

The Catalyst ESS9300 Embedded Series Switch is designed for custom networking for mission-critical

Ethernet Switches

Moxa provides a wide range of industrial Ethernet switches that feature industrial-grade reliability, network redundancy, strengthened

Embedded Ethernet Switches

Designed specifically for battlefield and industrial applications, our range of switches features advanced firewalls, encryption, and

Embedded

Industrial Ethernet Cable and Connectivity Solutions EES Hardware Integration Guide Manual Collection - EES HiOS

Embedded Ethernet Switch

Explore our range of embedded industrial switches designed for robust performance in harsh environments. These compact devices

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Ethernet Embedded Modules

Our Ethernet embedded modules are designed for device manufacturers who want to enhance the performance and reliability of their

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