

Requirements for Ring Network Industrial Switches

Overview

These include protocol coexistence requirements for Modbus TCP, Profinet, and EtherCAT; environmental factors like electromagnetic noise and mechanical vibrations causing packet loss; and stringent real-time requirements where PLC communication delays must be kept under 1ms. Device Level Ring (DLR) is a Layer 2 protocol that enables redundancy in a ring topology, providing fast network fault detection and reconfiguration for industrial networks. DLR is an EtherNet/IP™ protocol that is defined by the Open DeviceNet® Vendors' Association (ODVA). DLR network includes at. In the realm of Industrial Internet of Things (IIoT), the significance of robust and reliable networking infrastructure cannot be overstated. Industrial switches, as the core components of this infrastructure, play a pivotal role in establishing and maintaining the integrity of industrial ring. This document provides basic background information regarding adding ring redundancy in your wired Ethernet networks. MRP Media Redundancy Manager (MRM) defines its maximum recovery times for a ring in the following. The fiber optic ring redundancy design for industrial Ethernet switches is precisely engineered to address this pain point—achieving millisecond-level fault self-healing through the synergy of physical ring architecture and intelligent protocols, thereby constructing the "self-healing heart" of. Media Redundancy Protocol (MRP), defined in IEC 62439-2, is a standardized industrial Ethernet ring redundancy protocol designed for high-speed network recovery.



Article Content

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IES-3240

Description The IES-3240 is a managed Redundant Ring Ethernet switch with 24x10/100Base-T (X) ports. It fully supports Ethernet

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

5. Redundancy and Reliability In industrial networks, redundancy design is an important means to ensure network stability. Network

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Detailed Explanation of the Ring Network Redundancy Function of ...

Behind these scenarios, a core proposition is being repeatedly validated: How can the ring network redundancy function of Ethernet

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Network Redundancy for Industrial Control Systems

Network redundancy in industrial control systems ensures continuous SCADA and DCS communication despite cable

Oct 28, 2025

Ethernet Ring Redundancy

N-Ring requires an N-Tron managed switch (700, 7000, NT5000, and NT24k) to be configured as a Ring Manager and

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X-Ring Plus Ethernet Industrial Ring Technology

X-Ring Plus resilient ring technology is provided with network operating system 2.0 & is an enhanced version of Case

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Ring Protocol MRP (IEC 62439-2) | Media Redundancy Protocol

In a ring network, each Ethernet switch is connected to a minimum of two other switches to form a ring. Ease of set-up and high

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IMS-6325-5

Industrial-grade Modular Switch for Versatile and Demanding Networks PLANET
IMS-6325-5 L3 DIN-rail Industrial Modular Ethernet

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Ring Redundancy Protocols for Industrial Ethernet Networks

In industrial automation, network reliability is critical to ensuring uninterrupted operations. Redundancy ring protocols provide fault

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Industrial Ring Networks | ERPS | Antaira Technologies

Industrial Ethernet switches are critical components in network infrastructures, often used in harsh environments and mission-critical

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Industrial Lan switch how to group ring network

September 19, 2024 Industrial Lan switch how to group ring network In the industrial Internet of Things, the Industrial Lan Switch

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Real-time Redundant Ring Switch Industrial Ethernet Switch

Introduction The Real-time Redundant Ring Switch offers fault-tolerant industrial Ethernet with ring network topology. The built-in ICP

Feb 13, 2026

How to pick the right Industrial Ethernet Switch for critical networks

Industrial Ethernet switches are comprised of managed and unmanaged switches with Gigabit, PoE, and various industry

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Fiber Optic Ring Network Design Explained:

Learn how to design a fiber optic ring network with practical diagrams, topologies, and

Feb 07, 2026

How Industrial Switches Build Industrial Ring Networks

The key features of industrial switches that contribute to the effectiveness of ring networks include their high

Feb 06, 2026

Redundancy Protocol Configuration Guide, Cisco Catalyst IE3x00,

All DLR ring nodes are required to have at least two Ethernet ports and incorporate embedded switch technology.

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Guide to implementing Industrial Grade Switches

Choose between ring or star topologies based on the specific requirements of your

Sep 23, 2025

Redundancy Protocol Configuration Guide, Cisco Catalyst IE31xx

Media Redundancy Protocol (MRP), defined in International Electrotechnical Commission (IEC) standard 62439-2,

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What is ERPS and How It Prevents Network Loops

ERPS is one of the most widely used redundant ring protocols. This guide explains ERPS concepts, operating

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Fiber Optic Ring Redundancy Design for Industrial Ethernet Switches

The workshop deploys two independent fiber optic ring networks (Ring A and Ring B), each containing eight USR-ISG-8G industrial

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Embedded Switch Technology Reference Architectures

Prior to the embedded switch technology, the traditional EtherNet/IP network topologies were switch-centric, using Layer 2 access

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Redundant Ring Technology for Industrial Ethernet Applications

Products include industrial embedded computers, industrial Ethernet switches, serial device servers, multiport serial cards,

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How Industrial Switches Build Industrial Ring Networks

This article aims to provide a concise yet comprehensive overview of how industrial switches contribute to the

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Building Network Resilience: Redundancy Protocols and Design in ...

Leading industrial networks often combine multiple resilience strategies for enhanced protection. Multi-ring

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What Is Network Redundancy? Key Strategies for Industrial Switches

Learn what network redundancy is and why it matters for industrial communication systems. Explore device, link, ring,

Aug 16, 2025

Key Industrial Redundant Ring Protocols You Need to Know

Discover key industrial switch ring protocols, including STP, RSTP, MRP, and ERPS. Build a redundant industrial

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Industrial Ethernet Switches | Phoenix Contact

Our Industrial Ethernet Switch portfolio comprises Managed and Unmanaged Switches with Gigabit, PoE, IEC 61850 certification,

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Fiber Optic Ring Redundancy Design for Industrial Ethernet Switches

5. Redundancy Design as the "Lifeline" of Industrial Networks Fiber optic ring redundancy design represents not just a technical

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How to configure Ring network (ERPS) for industrial managed switch ...

ERPS is a standard ring network protocol, and it is the most popular function for

Jan 24, 2026

Redundancy Protocol Configuration Guide, Cisco Catalyst IE3x00,

Device Level Ring (DLR) is a Layer 2 protocol that enables redundancy in a ring topology, providing fast network fault

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X-Ring Ethernet Industrial Ring Technology

The diagram above shows the start-up sequence of an X-Ring network, where all the units are set to be a

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Industrial Switch: Understanding Industrial Ethernet Switch ...

Industrial automation engineers have created industrial Ethernet switches by adapting Ethernet to accommodate the stringent,

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Perle P-Ring Protocol | Industrial Managed Switches

For these reasons, ring topology networks are popular within industrial infrastructures (Fig 1). Caution! Storm Warning: However,

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Building Fault-Tolerant Industrial Ring Networks with Ethernet Ring ...

Industrial Ethernet switches are critical components in network infrastructures, often used in harsh environments and mission-critical

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Ring topology

Double redundant ring topology The double redundant ring topology can increase protection against failure and exceeds the

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Star vs Ring Topology for Industrial EtherNet/IP Networks – Industrial ...

Compare star vs ring topology for Allen-Bradley EtherNet/IP networks using Stratix switches, 1783-ETAPS, and Point

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How to choose industrial switches

When selecting, these factors should be considered comprehensively to choose the most cost-effective product. By

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Ring Redundancy Protocols for Industrial Ethernet Networks

Choosing the right protocol depends on factors such as recovery time, network size, interoperability, and industry requirements. As

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Proprietary Ring Topologies in Automation Networks

In fact, select manufacturers claim much better recovery times for their proprietary ring

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://www.iiss.co.za>

Email: sales@iiss.co.za

Phone: +27 63 174 2895

Address: Unit 8, Innovation Park, 15 Rivonia Road, Sandton, Johannesburg, 2196, South Africa

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