

Perle – Device Networking Hardware

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ABOUT US

CENTER4 is a distributor of professional data connectivity and IT infrastructure products and components. We provide reliable, high quality computer accessories that enable your devices. Our suppliers rank amongst the world's technology leaders in each of their fields.

We cater for wide variety hardware platforms from legacy and standard PCs to PC/104 derivatives and Small Form Factor technologies, to CompactPCI and OpenVPX, and others yet to come. The areas of deployment cover the entire gamut of commercial and industrial applications. These range from relatively straightforward serial I/O wired connections to complex industrial and maritime applications. These include PLC automation, alarm systems, medical journaling, industrial flow control, rail and road signalling, voice recording, PBX, sewerage, oil & gas, UAVs, AUVs, ROVs, ATC, Space Research, aeronautics, and more.

Our portfolio incorporates regular commercial products as well as industrial equipment for rugged environments where there is a requirement for wide temperature ranges and in some cases consideration for vibration.

Several of our engineering partners offer custom design facilities. Among such clients to whom we have delivered equipment in recent years are [SAAB](#) (devices for monitoring UAVs and other aircraft as part of the EADS MIDCAS project), [Kongsberg Maritime](#) and [Kapsch TrafficCom](#).

ABOUT PERLE

Founded in 1976, Perle is a Canadian company based in Toronto. It's products include [Serial to Ethernet Adapters](#), [Terminal Servers](#), [Console Servers](#), [Device Servers](#), [Ethernet I/O Device Servers](#), [Serial Cards](#), [Ethernet Extenders](#), [Media Converters](#) and [Industrial Ethernet Switches](#) that are ideal for organizations that need to: establish network connectivity across multiple locations; securely transmit critical and sensitive information; remotely monitor and control networked devices and appliances, and more.

Among Perle's clients are many of the world's most recognizable names, including **Siemens, Fujitsu, GE, Alcatel, Lockheed Martin, Ticketmaster, Kennedy Space Center, Hewlett Packard, Marriott Hotels, Guangdong Development Bank, Heinz, Tesco**, and many global Telecom providers including Telefonica and France Telecom.

Authorized Reseller

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Product Overview

PRODUCT CATEGORIES

Ethernet Extenders

Ethernet I/O Device Servers

Ethernet Repeater

Industrial Ethernet Switches

Media Converters

- Fast Ethernet Converters
- Fiber Media Converters
- Gigabit Media Converters
- Managed Media Converters
- Serial to Fiber Media Converters

Modular Chassis System

Optical Transceivers

SFP & XFP Transceivers

Patch Panels

- DIN Rail Patch Panels
- PerleVIEW Central Management Software

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Power Supplies

- DIN Rail Power Supplies

Routers and Gateways

- 5G Routers
- LTE Routers & Gateways

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- Console Servers
- Device Servers
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Part Number Overview

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LTE Routers



Secure Enterprise-Class Edge Routers & Gateways with Dual SIM Fail-over. 600Mbps downlink and 150Mbps uplink.

Industrial Ethernet Switches



Compact Ethernet Switches designed for harsh temperature, vibration and shock environments



Link Fiber to Copper, Multimode to Single Mode, or extend Data Transmission Distances. 10/100/1000/2500/10G

Terminal Servers



Connect devices with a USB, RS232, RS422, or RS485 interface to a LAN for serial over Ethernet data transmission

Console Servers



Secure out-of-band management of any device with a USB or RS232 RJ45 serial console port

Device Servers



Connect devices with a USB, RS232, RS422, or RS485 interface to a LAN to transmit serial data over Ethernet



Ethernet Extenders



Extend 10Mbps, 100Mbps or 1G Ethernet links over Coax or any 2-wire 24 AWG twisted pair.

DIN Rail Power Supplies



Industrial AC/DC Power Supplies. 4 to 56V DC. 10 to 960 Watts. High Efficiency. No Load Power Consumption.



Mid-Span Injectors provide up to 100 Watts of power over Ethernet to devices such as IP cameras

SFP & XFP Transceivers



Hot-swappable, compact media connectors for any Cisco or [MSA SFF-8472](https://www.msa.com/usa/products/switches/sfp-modules/MSA-SFF-8472) compliant port.

Serial to Fiber Extenders



Serial over fiber data transmission. Connect RS232, RS422 and RS485 devices to fiber optic cabling.

Serial SHDSL Extender



Transmit serial data up to 20 km across copper wire. Supports RS232, RS422 and RS485 interfaces.



RS232 Serial Isolator



Electrical isolation of RS-232 (V.24) interfaces. 3-way EMI, RFI and Transient Surge Immunity.

Serial Interface Converter



Bi-directionally convert RS232 to RS422 or RS485 in point-to-point and point-to-multipoint networks



Amplify RS485 signals up to 1.2km. Add 32 nodes to an RS485 data circuit. 3-way isolation between all interfaces

DIN Rail Patch Panels



Ethernet patch panels simplify connecting field cabling to control cabinet cabling. ICD, Push-in, Screw, or RJ45.1

Surge Protectors



Protect CAT5/6/7 data lines and SHDSL interfaces from lightning, RFI, ESD, and transient surge

Central Management Software



Configure, manage, and troubleshoot Perle Media Converters, Industrial Switches, and LTE Routers with PerleVIEW Centralized Device Management Software.



I/O Device Servers



Access and control of remote digital I/O, analog I/O, pulse I/O, relays and temperature sensors

Remote Power Switches



Remotely power on/off/cycle Data Center equipment



Perle Modular Chassis' provide housing for any combination of Perle Fiber Media Converter or Ethernet Copper Extender slide-in cards.

Managed Media Converters



Managed Media Converters link copper to fiber, multimode to single mode, or extend the data transmission distance of a multimode network in environments where support of the existing network security system is critical.

Serial over Ethernet Terminology



[Click here to understand the differences between a Terminal Server, Serial Server, Device Server and Console Server.](#)

About Serial to Ethernet



Understanding the basics of Serial to Ethernet technology and its primary applications

About Ethernet over Fiber



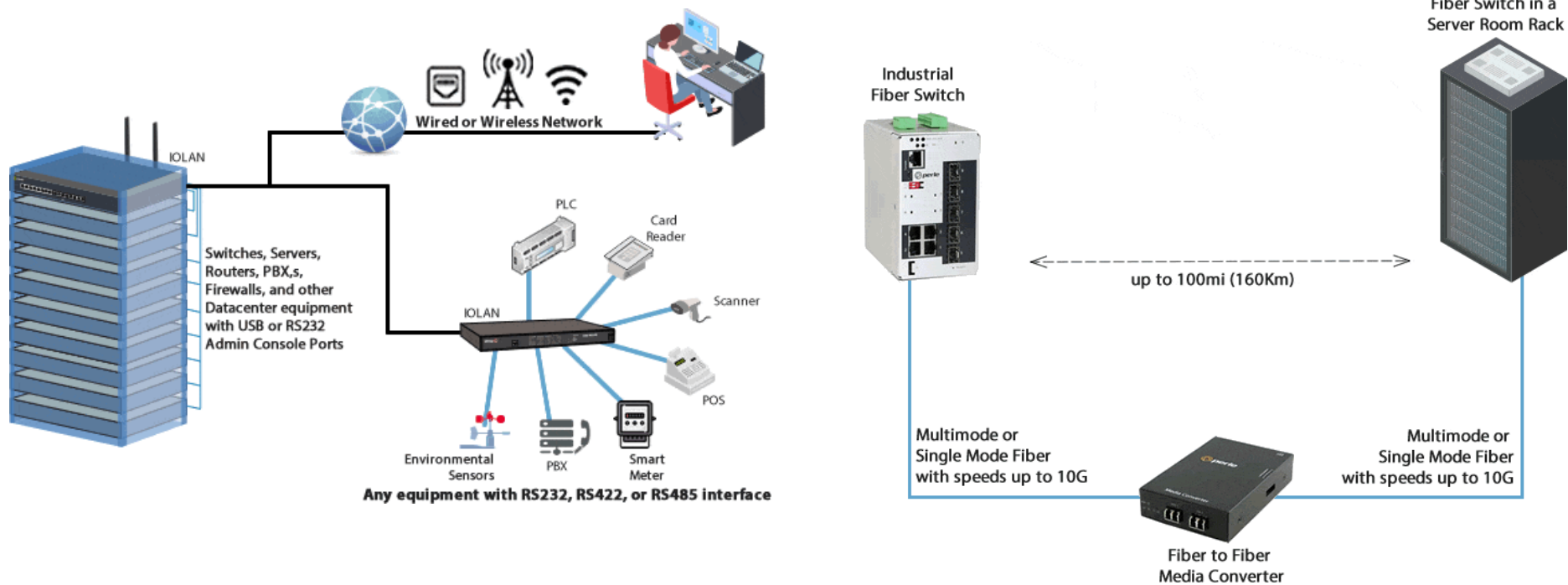
Understand the benefits of connecting UTP copper-based ethernet equipment over a fiber optic link

About Fiber to Fiber Conversion



Learn the benefits of extending multimode to single mode or multimode to multimode fiber connection





IOLAN Serial to Ethernet Network

A Fiber to Fiber Connection over 160 km



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- [Media Converters](#)
- [Ethernet Extenders](#)
- [Industrial Switches](#)





LTE Routers & Gateways

Enterprise-Class Edge Cellular Routers & Gateways

LTE Routers are used to minimize the cost of downtime, reduce service calls, and bring distributed sites online faster. Whether enabling secure financial transactions, or routing data in rugged outdoor environments for mass transit and industrial applications, **LTE Routers and Gateways** accelerate deployment of high-performance cellular networking with secure connectivity, location-based services, and remote management. **Perle IRG5000 LTE Routers** are certified for operation on 33 LTE bands internationally to deliver reliable LTE connectivity to any remote location or hazardous environment.

Easily configure as a Router, Gateway or Bridge to:

- Deploy and manage your network from the cloud
- Connect the distributed enterprise with primary or back-up LTE coverage for business-critical equipment to ensure you can continue to serve customers.
- Provide an out-of-the box, secure, managed LTE network for IoT/M2M applications such as IP Cameras, Security, Point-of-Sale terminals, and Smart Lockers.
- Connect industrial, remote data logging, and sensing equipment to process IoT data at the edge.
- Intelligently manage and monitor remote assets, machinery, critical infrastructure, Smart Grids, Pipelines, Meters, Smart City Infrastructure, Industrial Equipment, and Automation and Control Systems.
- Extend the total life of equipment deployed in today's wireless networks with an IRG5000 router that supports a broad range of protocols (including Modbus & DNP3)
- Connect mobile mission critical applications in public safety command centers, transit, field services, and in-vehicle applications. IRG5000 LTE Routers also support FirstNet Band 14.



RG5000 LTE Routers and Gateways



IRG5500 LTE Router

- 2-port or 4-port 10/100/1000 Ethernet
- Network connectivity via LTE, Wi-Fi, Ethernet, USB 3.2, and Serial
- RS232, RS485, Alarm Relay, and multiple I/O to connect equipment
- Models with Dual-band Wi-Fi can act as access point or client
- Models that are FirstNet Ready
- Die-cast aluminum IP54 enclosure for dust & water ingress
- Ultra-Low-Power consuming less than 1 Watt in idle mode and 53 mW in standby mode
- Vehicle Ignition Power Management

IRG5410 LTE Routers



- 1-port 10/100/1000 Ethernet
- Network via LTE, Ethernet, USB 3.2, and RS232 Serial
- Die-cast aluminum IP54 enclosure for dust & water
- Ultra-Low-Power consuming less than 1 Watt in idle mode and 53 mW in standby mode
- Vehicle Ignition Power Management

IRG5140 LTE Routers



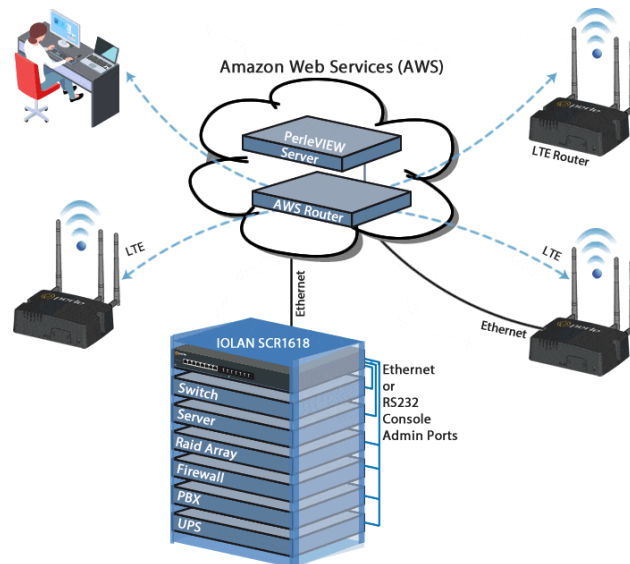
- 4-port 10/100/1000 Ethernet
- Network connectivity via LTE, Ethernet, and USB 3.2
- Alarm Relay and I/O to connect equipment
- Corrosion resistant aluminum case with an IP20 ingress protection rating



LTE Router Applications

Enterprise Networking

Distributed enterprises rely on a complex network of hundreds or thousands of regional locations. Each location is connected to headquarters via a critical Internet connection to support all sales and payment transactions. Downtime costs for a small office, restaurant, retail store, kiosk, or temporary location, even with 99.5% landline availability, can be more than \$1M per year. A Perle IRG5000 Router can supply primary or failover capability that is quick to deploy and simple to manage

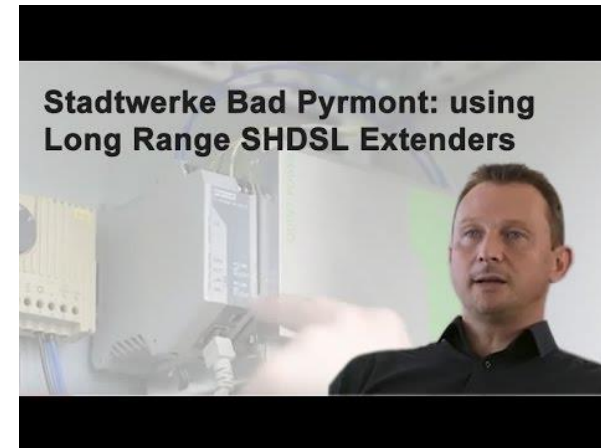


Industrial Networking

Remaining operational 24/7/365 is imperative in the industrial world. One minute of downtime can adversely impact customers, operations, and revenue. In unmanned remote areas undetected problems can be catastrophic. Therefore, deploying a high performance IoT solution is vital. A Perle IRG5000 Router can provide reliable and secure connectivity designed for harsh and hazardous environments, giving operations and IT real-time awareness with remote monitoring, control, and management to enhance operational efficiency and effectiveness

Vehicle Networking

Mobile workers in vehicles, or on the move at remote or temporary work sites, need anytime, anywhere access to the tools available in the office. At the same time, organizations operate more efficiently by knowing the location and status of their mobile assets. IRG5500 Routers have been developed specifically for mobile mission critical applications in public safety (including support for FirstNet Band 14), transit, field services, and in-vehicle applications





Industrial Ethernet Switches

5 to 10 Port Industrial Grade Switches



- industrial and factory automation
- outdoor applications
- rail and intelligent transportation systems (ITSs)
- marine
- oil and gas
- mining

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 are built to exceed the specifications of commercial switches with **industrial safety certification and approval for hazardous locations**, making them ideal for use at sites with harsh environmental conditions.

Rugged, yet easy to use, Perle has over **734 models** of Ethernet switches that feature **Industrial Protocol Management** support, superior reliability, advanced security, network redundancy, and easy installation and configuration. The IDS Switch portfolio includes support for **10/100/1000 Ethernet** and **fiber** in unmanaged switches, managed switches, and PoE switches

RELIABLE NETWORK CONNECTIVITY



ESSENTIAL TO THE SMOOTH RUNNING OF RAIL AND METRO SYSTEMS



Perle IDS Industrial Ethernet Switches

Layer 2 Managed Switches



Perle IDS Managed Switches have enterprise-grade features that include PROFINET and Modbus TCP Protocol Support, MRP IEC 62439-2 Ring protocol for <10ms recovery time, STP/RSTP/MSTP, IGMP Snooping, QoS, VLAN, TACACS+, RADIUS, IEEE 802.1X authentication, SSH, SNMPv3, HTTPS, and IEEE 1588 PTP

PoE Switches



Classified as Layer 2 Power Sourcing Equipment (PSE), Perle IDS PoE Switches can supply up to 100W Power over Ethernet (PoE) to standards-based 802.3af, 802.3at and 802.3bt compliant devices such as IP cameras, VoIP phones and wireless access points (WAPs).

Unmanaged Switches



Perle [IDS Industrial Unmanaged Switches](#) comply with the stringent standards required for operational reliability in the harsh environments found in industrial Ethernet infrastructures.

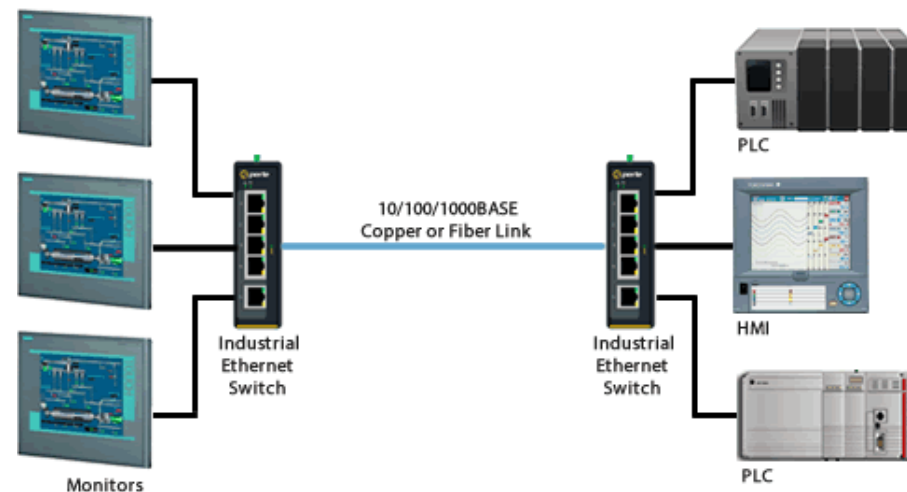


Fig. 1 Industrial Switch Diagram





Fiber Media Converters

Connect Dissimilar Cable Types

Fiber Media Converters are used to easily connect fiber cabling to different types of devices, cables or networks. While **linking fiber and copper** together is the most common application, Fiber Media Converters also enable users to link **Single Mode to Multimode** or **extend the data transmission distance of a Multimode network**. They are the perfect solution to **convert and extend various types of data signals** throughout your network. If you have two devices or LANs that do not match due to different speeds, operation types, modes, or cable types, keep reading.

Perle Fiber Media Converters

Copper to Fiber



Connect 10Mbps, 100Mbps, 1G, 2.5G or 10G Ethernet links over multimode or single mode fiber using SFP, Dual Fiber SC/ST/LC or Single Fiber SC/ST connections.

Fiber to Fiber



Link multimode to single mode or connect two multimode networks using SFP, Dual Fiber SC/ST/LC or Single Fiber SC/ST connections

Other Protocols to Fiber



Protocol transparent (Ethernet, Fibre Channel, ATM/SONET OC-X, SDH STM-X, FDDI, Video, etc.) links over Multimode or Single Mode fiber using SFPs that support speeds up to 4.25 Gb

Industrial



Certified components that will operate in the harshest environmental & temperatures of -40 C to +75 C

PoE



Connect copper to fiber while providing up to 100 Watts of PoE power to IP cameras, VoIP phones, wireless access points and more

Serial to Fiber



Transparently connect RS232, RS422 and RS485 devices to fiber optic cable

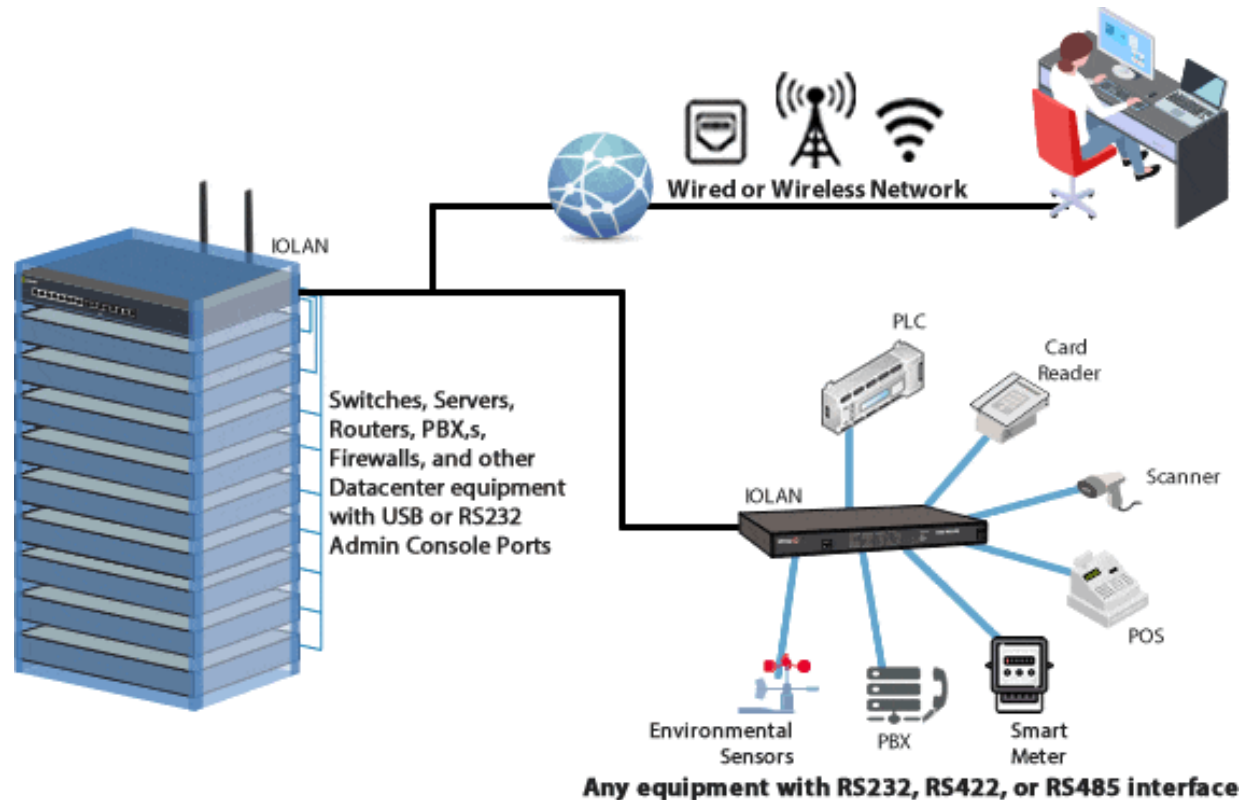




Terminal Servers

Transmit Serial over IP Ethernet

A Terminal Server, also known as Serial Server, connects devices with a USB, RS232, RS422, or RS485 serial interface to a local area network for transmission of serial data over Ethernet to network server applications. The most common application for Terminal Servers is out-of-band management of routers, switches, and firewalls as an efficient way to recover equipment when the network is down. It serves as a single hardware solution for a secure alternate route to monitor IT, networking, security, and power devices from multiple vendors. Terminal Servers have physical wired or wireless (LTE or WiFi) network connection on one side, and one or more serial ports on the other side. While some Serial Terminal Servers can be very simple devices, it is best practice to use a Terminal Server with advanced security functionality, data encryption, and user authentication to ensure network data transmissions, and access to network equipment, is protected.



IOLAN Secure Terminal Servers

A Perle **IOLAN Terminal Server** is perfect for Engineers and Project Managers that require a high performance, IPv6 compatible, Serial to Ethernet solution. They have all of the advanced security functionality needed to perform **secure remote data center management** and [out-of-band management](#) of IT assets from anywhere in the world. In addition, with innovative [TrueSerial® Technology](#), Perle IOLAN Terminal Servers are the only products to guarantee authentic serial communications and maintain device protocol integrity across Ethernet. This makes them ideal for **networking async devices** such as POS terminals, PBX's, card readers, and a wide variety of industrial equipment to TCP/IP Ethernet.

- Secure console management of any device with a serial, USB, or Ethernet console management port
- Software selectable RS232/422/485 serial port interfaces
- 10/100/1000 RJ45 Copper or SFP Fiber Ethernet connection
- Built-in [Centralized Management Software](#) consolidates network and IT infrastructure into a single application for access and visibility.
- Advanced AAA security & SSH/SSL encryption to meet corporate compliance policies for seamless integration into existing IT & network management systems

IOLAN SCG



- 16, 32, or 48 RS232 RJ45 Serial Ports
- 10/100/1000 RJ45 Ethernet

IOLAN SCG R/U



- 18, 34 or 50 RS232 RJ45 or USB Ports
- Dual 10/100/1000 RJ45 or SFP Fiber

IOLAN Console Servers



- Advanced Console Servers with integrated LTE, WiFi, and/or Modem



IOLAN SCR



- 16 x RS232 RJ45 Serial Ports
- 16 x Ethernet Management Ports
- 2 x SFP Slots supporting 1G/2.5G Fiber or 10/1000/1000 Ethernet
-

IOLAN STG



- 4 or 8 RS232 RJ45 Serial Ports
- 10/100/1000 RJ45 Ethernet
- Desktop, Wall, or DIN Rail mount

IOLAN SDG



- 1, 2, 4, or 8 RS232/422/485 Ports
- DB9M, RJ45 or DB25F Connectors
- 10/100/1000 RJ45 Ethernet

IOLAN SDSC Rack



- 8, 16, or 32 RS232/422/485 RJ45 Ports
- Dual 10/100/1000 RJ45 Ethernet
- AC or Dual Feed 48v DC power options

IOLAN SDSC LDC



- 8, 16, or 32 RS232/422/485 RJ45 Ports
- Dual 10/100/1000 RJ45 Ethernet
- Dual Input 48v DC Power (18 to 72v DC)
- Operate in -40 C to +70 C
- NEBS Level 3 certified

IOLAN SDSC HV/DHV



- 8, 16, or 32 RS232/422/485 RJ45 Ports
- Dual 10/100/1000 RJ45 Ethernet
- 88-300v DC or 85-265v AC Power
- Operate in -40 C to +70 C
- NERC CIP substation compliance



Other Compact Device Servers



- 1, 2 or 4 RS232/422/485 Ports
- 10/100/1000 RJ45 Ethernet
- Operate in -40 C to +74 C
- Hazardous location certified models
- AC or PoE powered models

IOLAN STS Rack



- 4, 8, 16, or 24 RS232 Ports
- 10/100/1000 Ethernet
- AC power

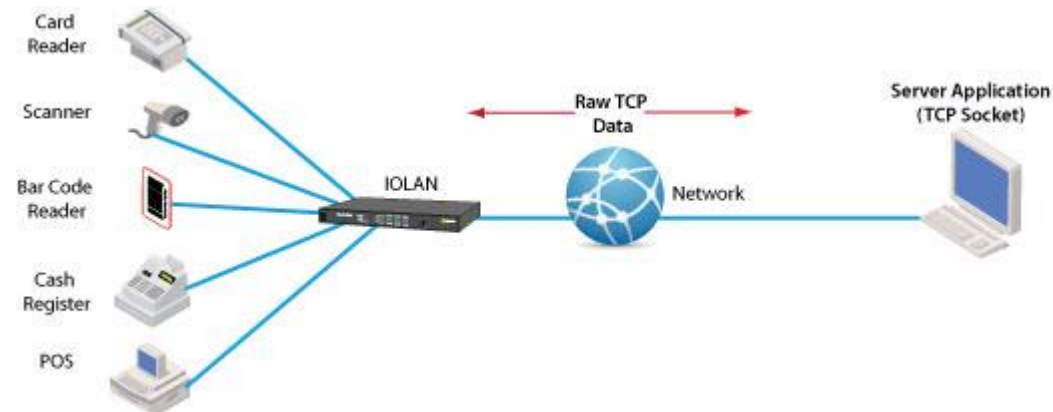
IOLAN SDS Rack



- 8 or 16 RS232/422/485
- 10/100/1000 Ethernet
- AC power

Terminal Server Applications

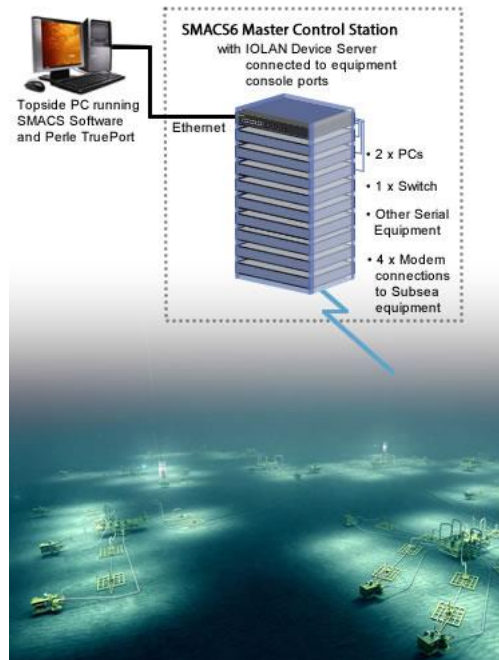
Learn more about [Serial to Ethernet Solutions](#)



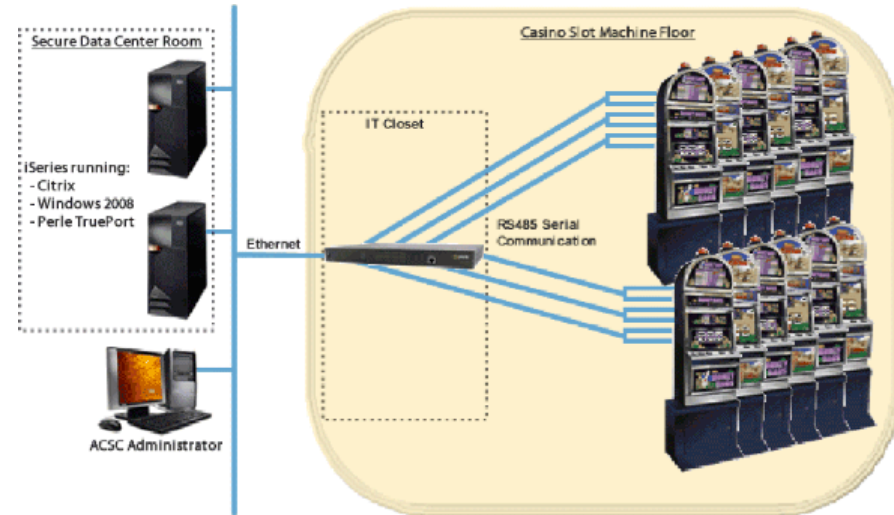
Serial data is encapsulated in Ethernet packets to best fit the type of data being transported. Use RAW TCP or UDP Sockets, Reverse Telnet or SSH, COM/TTY Port Driver, establish serial tunneling, or simulate a modem connection.



Provide high data throughput rates



Simplify IT structure



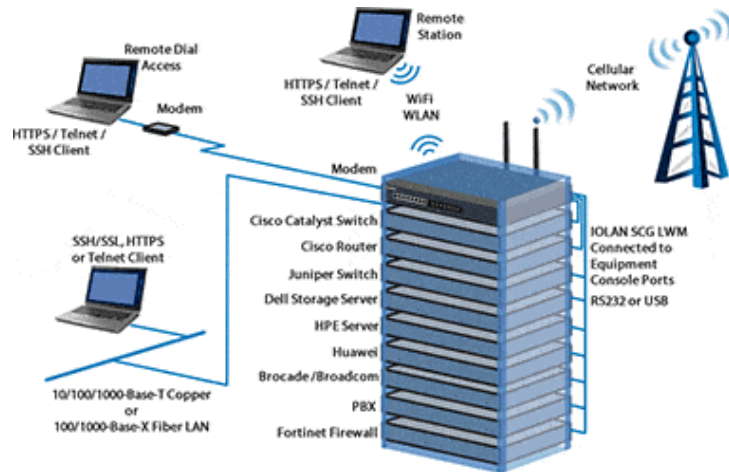
Bally Technologies use IOLAN Terminal Servers to reduce capital expense, improve automation, and minimizes network downtime.

IOLAN Terminal Servers integrated into Master Control Stations on oil platforms enable critical serial to Ethernet communication between topside and subsea equipment.

IOLAN SCG Interface Options

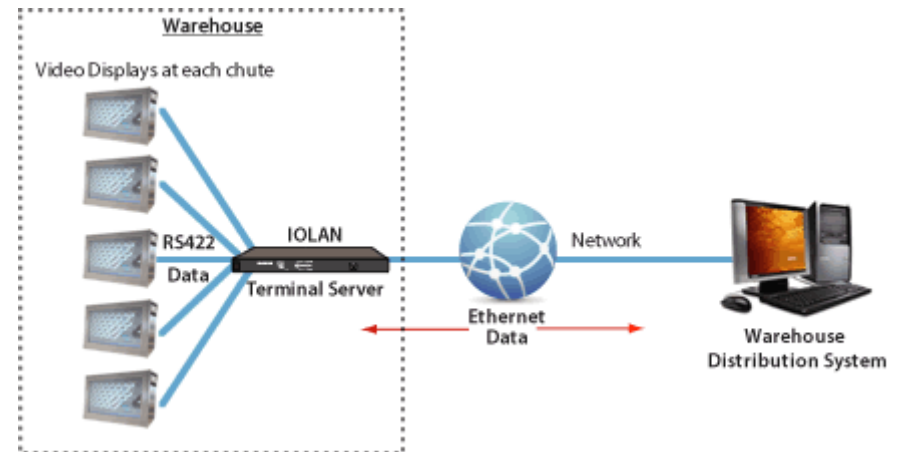


Provide Out-Of-Band Management in Data Centers



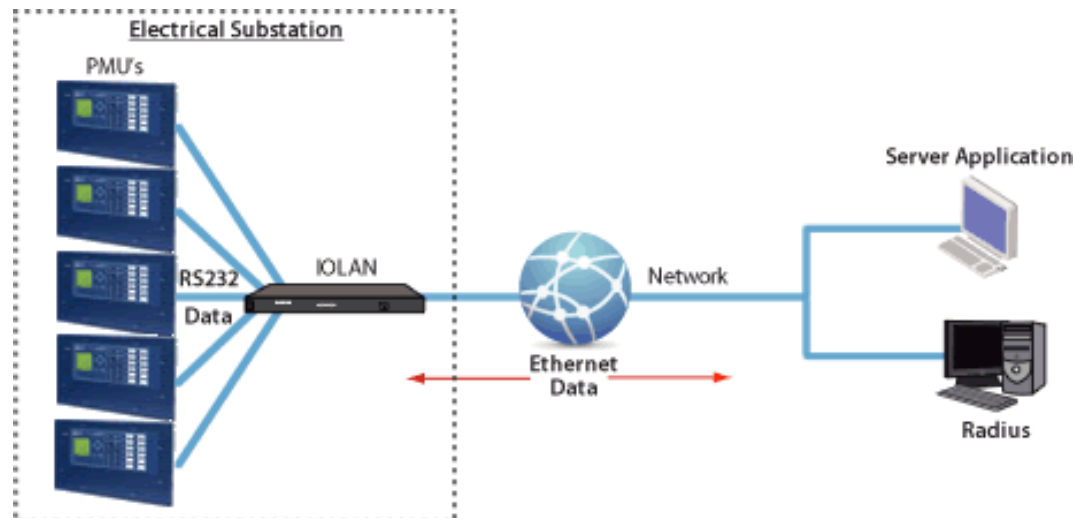
Reliable Out-of-Band Management and TACACS Authentication contribute to seamless network operation.

Optimize Warehouse Distribution Systems



Transmit Serial data from Video Display COM-Ports to a Warehouse Control

SystemManage devices in an Electricity Utility Substation



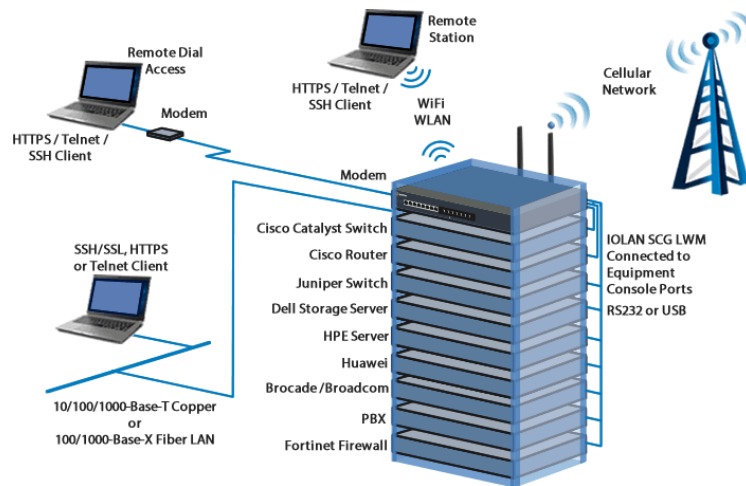
NERC CIP compliance means Perle Terminal Servers and provide secure remote user authentication and management capabilities for devices in a smart grid.





Console Servers

Secure Data Center & IT Infrastructure Manager



A Console Server, enables secure remote console management of any device with a serial, USB, or Ethernet console management port, including Cisco routers, switches and firewalls, Servers, PBXs and more. It is a single hardware solution that provides a secure alternate route to monitor IT, networking, security and power devices from multiple vendors. While software management tools can be used for performance monitoring, and some remote troubleshooting, they only work when the network is up. A Console Server, commonly used as an Out-of-Band Management Solution, ensures that on-site infrastructure is accessible, even during system or network outages. They can be used to reconfigure, reboot and reimagine remotely across the internet or WANs. Disruption and downtime are minimized by providing better visibility of the physical environment and the physical status of equipment. This ensures business continuity through improved uptime and efficiencies.

IOLAN SCG Secure Console Server

A Perle **IOLAN Console Server** gives your data center managers, IT professionals and network operations center (NOC) personnel the only serial console server on the market with all of the advanced security functionality needed to easily perform **secure remote data center management** and [out-of-band management](#) of IT assets from anywhere in the world. They are also the ideal solution for large, distributed enterprises with multiple branches such as banks, insurance companies, hospitals, utilities, retail, and schools, that may not have IT staff on-site.

- 18, 34 or 50 Console Management Ports
- Modular design supports **RS232 RJ45 and USB 3.0** Interfaces
- **Dual 10/100/1000** Ethernet connection for always-on redundant **copper and SFP fiber network access** with automatic failover when primary link goes down
- Optionally integrated **4G LTE Cellular** (with failback support), **WiFi or V.92 modem** for multiple alternate access methods when the network is down
- **Built-in [Centralized Management Software](#)** consolidates network and IT infrastructure into a single application for access and visibility.
- Advanced AAA security and SSH/SSL encryption to meet all data center compliance policies and seamless integration with your existing IT & network management systems.



Select the Console Server with the Out-of-Band access method of your choice:

IP/Ethernet over LAN or WAN
IOLAN SCG R/U



Integrated Cellular, WiFi & Modem
IOLAN SCG LWM



ZTP & Cloud Management
IOLAN SCR



RS232 & Ethernet Console ports

Integrated Cellular & WiFi
IOLAN SCG LW



Integrated Cellular & Modem
IOLAN SCG LM



Integrated Modem & WiFi
IOLAN SCG WM



Integrated Modem
IOLAN SCG M



IP/Ethernet
IOLAN SCG



Fixed RS232 RJ45 ports



Remote Branch Office

Integrated Cellular
IOLAN SDG L



RS232/422/485 serial ports

Integrated Wi-Fi
IOLAN SDG W



RS232/422/485 serial ports

IOLAN SCS



Fault tolerant Console Server
with fixed RS232 RJ45 Console Management Ports

IOLAN STS Rack



Advanced Console Server with fixed RS232 RJ45
Console Management Ports

IOLAN SDSC Rack



Fault tolerant Console Server with fixed
RS232/RS422/RS485 Ports

IOLAN SDS Rack



Advanced Console Server with fixed
RS232/RS422/RS485 Ports



IOLAN STS DC Rack



Console Server with Dual Feed 48v DC power

IOLAN SDSC LDC



NEBS Level 3 Certified Console Servers



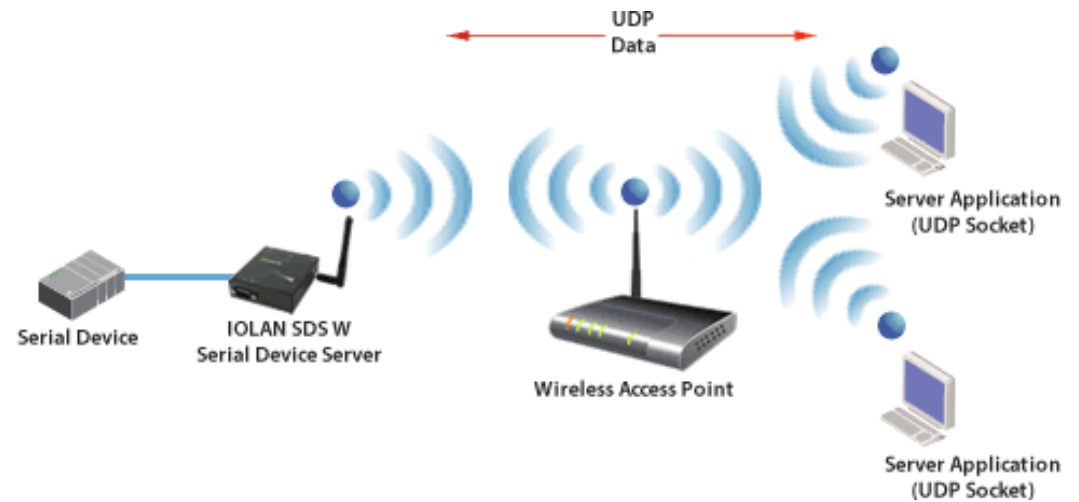
Console Servers certified for electric power substations

Desktop Console Servers



1, 2, 4, or 8 Console Management Ports

For use with UDP based applications, Perle IOLANs can convert serial equipment data for transport across UDP packets either on a point-to-point basis or shared across multiple devices.

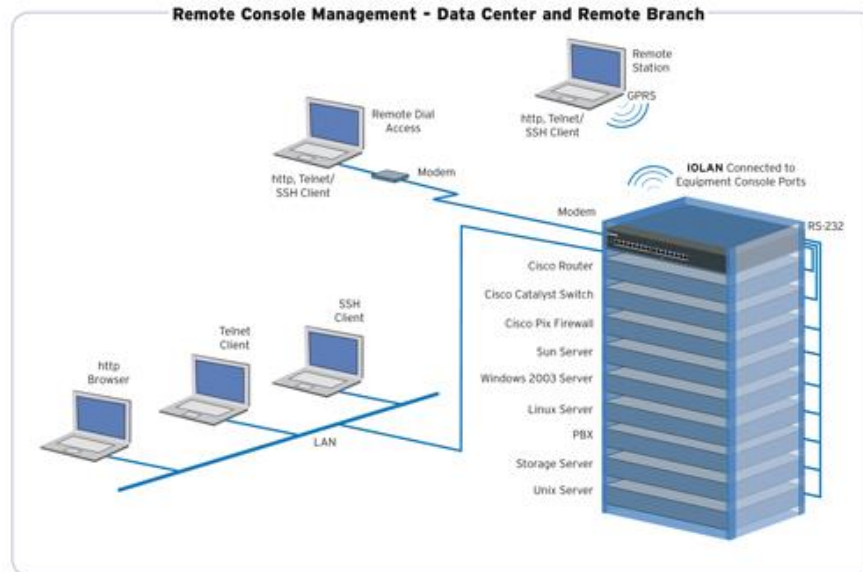


Using Raw UDP Sockets over Wireless LAN



Console Server Applications

Out-of-Band Management of Cisco Routers, Switches and Firewalls

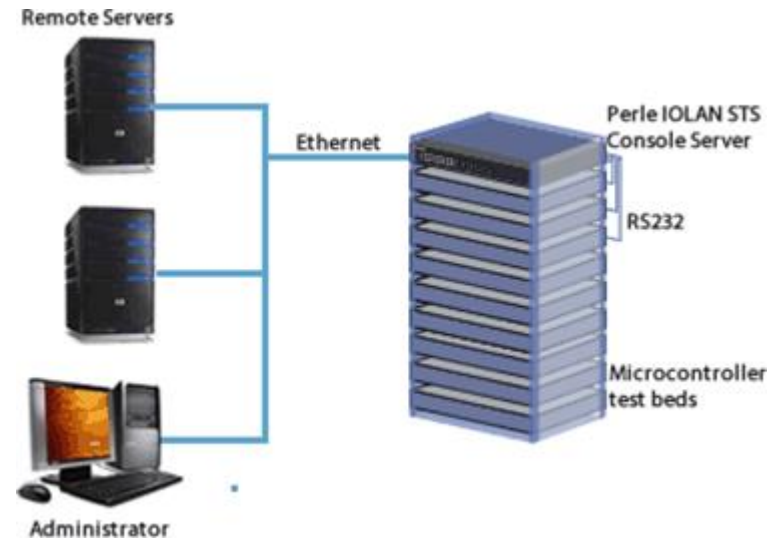


When the network is down how do you recover networking equipment? Out-of-band remote access to Cisco serial or USB console ports provide an efficient back door method for recovery.

Serial Tunneling over Wireless

Serial Tunneling enables you to establish a link across Ethernet to a serial port on another IOLAN. Both IOLAN serial ports must be configured for Serial Tunneling. Typically, one serial port is configured as a Tunnel Server and the other serial port as a Tunnel Client.

Use Console Servers in Research and Development Labs

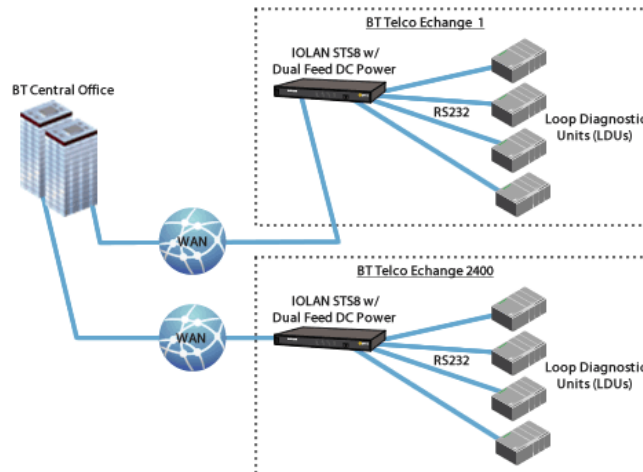


Console Servers transmit serial data from microcontroller test beds over Ethernet to remote servers

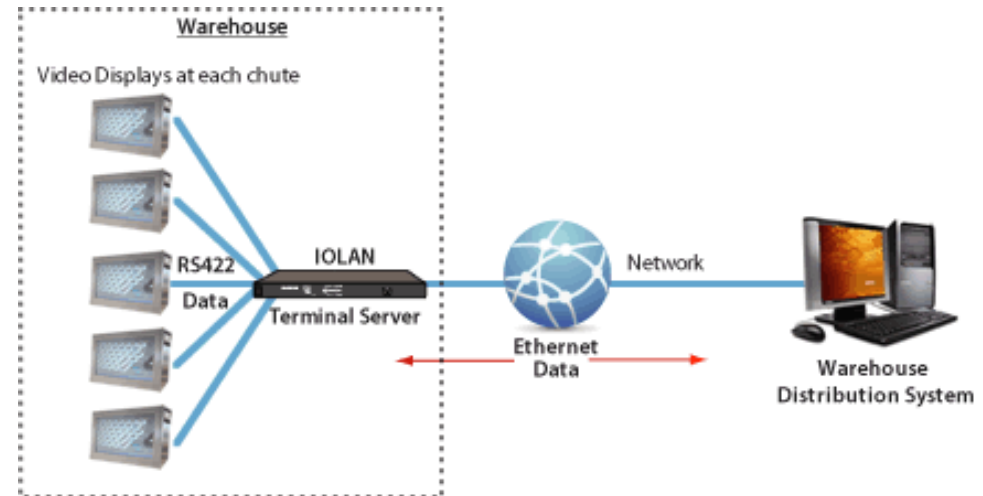


Console Servers for remote access and management of LDU's

**Perle IOLAN STS8 DC Terminal Servers were installed
in over 2400 BT Telco Exchanges throughout the UK**



Secure, reliable access and management of LDU's in hundreds of remote telephone exchanges results in faster and cheaper residential phone line support.



Provide seamless communication between chute displays and Warehouse Control Systems.

Virtual Modem

Enables the serial-Ethernet adapter to simulate a modem connection. When connected to the IOLAN and initiates a modem connection, the IOLAN starts up a TCP connection to another IOLAN serial-Ethernet adapter configured with a Virtual Modem serial port or to a host running a TCP application.

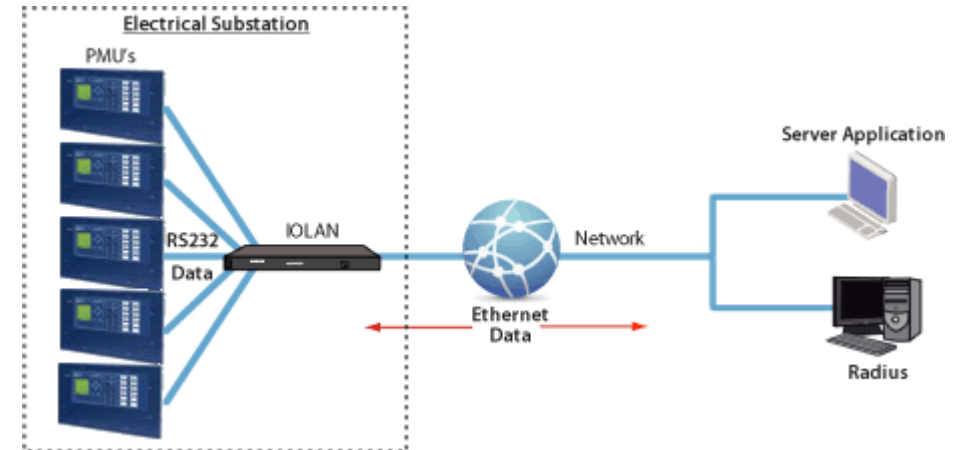


Console Servers for Remote Access and Management of ground-station equipment across the country

Console Servers provide secure remote user authentication and management capabilities



Operating an Air-to-Ground (ATG) 4G LTE In-flight Broadband Network



Provide different levels of password authentication to PMUs via RADIUS ensuring compliance obligations are met.

Fiber Media Converters Extend network distances up to 160km



Device Servers

Serial to Ethernet Converters

A **Device Server** connects devices with a USB, RS232, RS422, or RS485 serial interface to a local area network for **transmission of serial data over Ethernet**. With a physical wired Ethernet network connection on one side, and one or more serial ports on the other side, Device Servers enable network access to attached devices as if they were locally connected to the serial port. Device servers make it easy to put electronic equipment on an Ethernet network making **M2M communication** possible in a wide variety of applications by enabling client access independent of any operating system or proprietary protocol. While some device servers can be very simple devices, it is best practice to use a device server with advanced security functionality, data encryption, and user authentication to ensure network data transmissions, and access to network equipment, is protected.



IOLAN Secure Device Servers

A Perle **IOLAN Device Server** is perfect for Engineers and Project Managers that require a high performance, IPv6 compatible, Serial to Ethernet solution. With innovative [TrueSerial® Technology](#), Perle IOLAN Device Servers are the only products to guarantee authentic serial communications and maintain device protocol integrity across Ethernet. These advanced serial to Ethernet solutions are your best choice for **networking async devices such as POS terminals, PBX's, card readers, and a wide variety of industrial equipment to TCP/IP Ethernet**.

- Operate in 0 C to 55 C (32°F to 13°F) or -40 C to +74 C
- Hazardous location certified models
- AC or PoE powered models

IOLAN DG1 and TG2



- 1x RS232/422/485 or 2x RS232 Ports
- DB9M, RJ45, DB25F, or DB25M
- 10/100/1000 RJ45 Ethernet
-

IOLAN SDG



- 1, 2, 4, or 8 RS232/422/485 Ports
- DB9M, RJ45 or DB25F Connectors
- 10/100/1000 RJ45 Ethernet

IOLAN STG



- 4 or 8 RS232 RJ45 Serial Ports
- 10/100/1000 RJ45 Ethernet
- Desktop, Wall, or DIN Rail mount



IOLAN DG1 TX

Operate in -40 C to +74 C



- 1x RS232/422/485 Serial Port
- DB9M Connector
- 10/100/1000 RJ45 Ethernet

IOLAN SDG TX

Operate in -40 C to +74 C



- 1, 2, or 4 RS232/422/485 Ports
- DB9M or RJ45 Connector
- 10/100/1000 RJ45 Ethernet

IOLAN SDS4 HL

Certified for Hazardous Locations



- 4x RS232/422/485 RJ45 Serial Ports
- 10/100 RJ45 Ethernet
- Operate in -40 C to +74 C

IOLAN SDG L



- 1, 2, or 4 RS232/422/485 RJ45 Ports
- 10/100/1000 RJ45 Ethernet
- Integrated 4G LTE Network Access

IOLAN SDG W



- 1, 2, or 4 RS232/422/485 Serial Port
- 10/100/1000 RJ45 Ethernet
- Integrated WiFi Network Access

IOLAN Console Servers



- 18, 34 or 50 RS232 RJ45 or USB Ports
- Dual 10/100/1000 RJ45 or SFP Fiber
- Integrated LTE, WiFi, and/or Modem



IOLAN STG4 P



- PoE powered using 802.3af sources
- 4 RS232 RJ45 Serial Ports
- 10/100/1000 RJ45 Ethernet

IOLAN SDG P



- PoE powered using 802.3af sources
- 4 or 8 RS232/422/485 RJ45 Ports
- 10/100/1000 RJ45 Ethernet



- 8, 16, 32, or 48 Serial Ports
- AC or DC Power Options
- NERC CIP or NEBS Level 3 certification

IOLAN SDSM



- 1x RS232/422/485 RJ45 Serial Port
- 10/100 RJ45 Ethernet
- Integrated V.92 modem - RJ11 jack
- Operate in 0 C to 55 C

IOLAN DS1 and TS2



- 1x RS232/422/485 or 2x RS232 Ports
- DB9M, RJ45, DB25F, or DB25M
- 10/100 RJ45 Ethernet
- Operate in 0 C to 55 C or -40 C to 74 C

IOLAN SDS-D



- 1, 2, or 4 RS232/422/485 Ports
- DB9M, RJ45 or DB25F Connectors
- 10/100 RJ45 Ethernet
- Operate in 0 C to 55 C or -40 C to 74 C
- IOLAN SDS P can be PoE powered using 802.3af sources

IOLAN STS-D

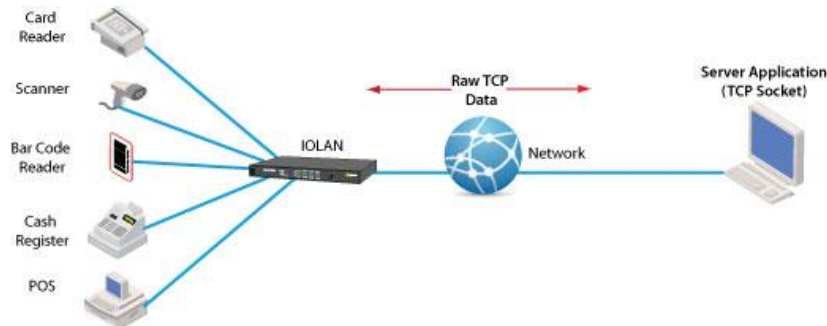


- 4 or 8 RS232 RJ45 Serial Ports
- 10/100 RJ45 Ethernet
- IOLAN STS4 P can be PoE powered using 802.3af sources
- Operate in 0 C to 55 C



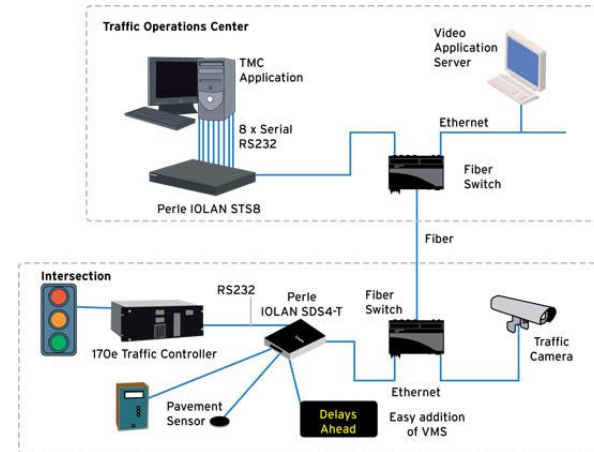
Some Device Server Application Examples

Learn more about Serial to Ethernet Solutions



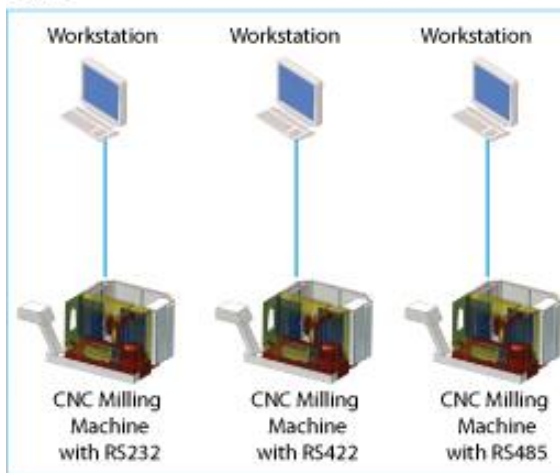
Serial data is encapsulated in Ethernet packets to best fit the type of data being transported. Use RAW TCP or UDP Sockets, Reverse Telnet or SSH, COM/TTY Port Driver, establish serial tunneling, or simulate a modem connection.

Department of Transportation Traffic Control Systems

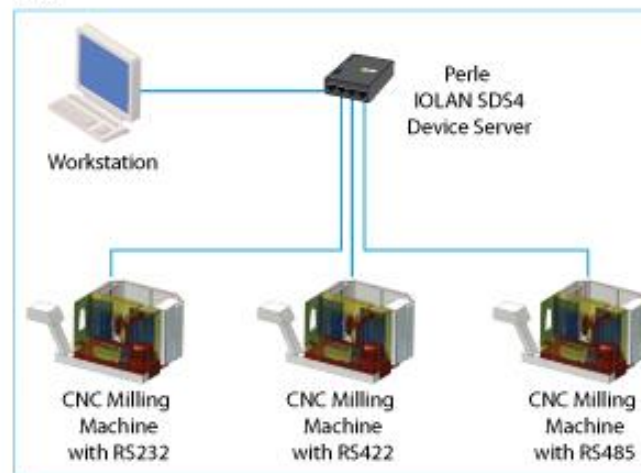


Transmit data from video surveillance technology, pavement sensors, and variable message signs to traffic operation centers

Before



After



Factory Floor Automation

Utilize the TCP Socket multi-host capability on IOLAN Device Servers to enable one workstation to simultaneously transmit data to multiple factory machines

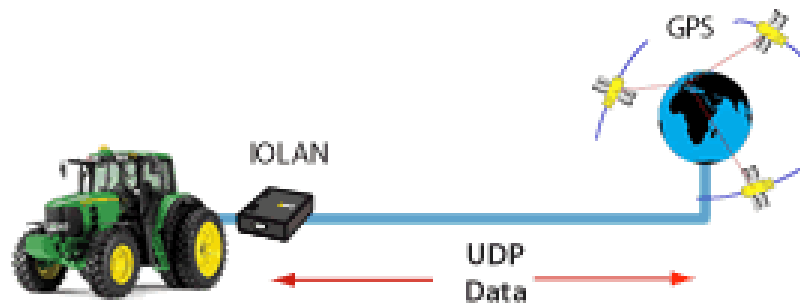


Set up a networked virtual serial port

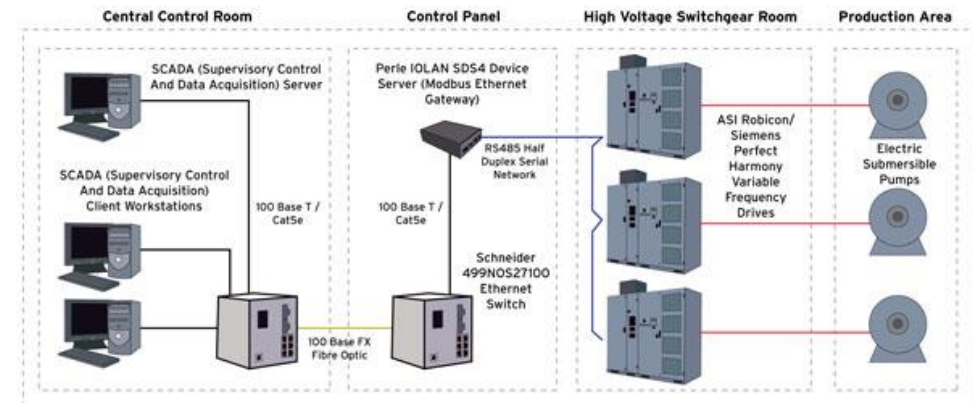
An IOLAN Device Server with TruePort makes remote serial ports appear as if they are directly connected COM or TTY ports to an application



Transmit GPS data



Interface with SCADA systems



Send data across the network to a SCADA system so personnel, on and offshore, can monitor and control the output of oil pumps

Custom Packet Forwarding allows the user to define the packet forwarding rules based on the packet definition or the frame definition.





Ethernet Extenders

Extend Ethernet Links over Coax or Copper Wire

Ethernet Extenders, also known as LAN Extenders or Network Extenders, enable the transmission of data **beyond 100m (328ft)** -- the general maximum cable length for copper Ethernet cables. The benefit of using an Ethernet Extender is that you can **use single twisted pair (CAT5/6/7/8), coax, or any existing copper wiring previously used in alarm circuits, E1/T1 circuits, RS-232, RS-422, RS-485, CCTV or CATV applications**. Whether you need to run Ethernet over a coax cable, provide PoE power to an IP camera, or provide data up to up to 20 km instead of 328 ft, Perle **plug-and-play** Ethernet Extenders are the most **efficient and cost-effective** way to expand and maximize network infrastructures.

- Extend network distances up to 20 km
- High-Speed: up to 200+ mbps aggregate bandwidth
- Options for operation in **Unmanaged or Secure Managed** Networks
- Transparent operation for all Ethernet protocols including 802.1Q VLAN packets, and IP video compression schemes
- Advanced features: Link Pass-Through, Interlink Fault Feedback, Auto-MDIX and Loopback

Perle Ethernet Extenders

10/100/1000 Ethernet Extenders



- Transmit Ethernet data up to 3km
- 10/100/1000Base-T RJ45 Ethernet Ports
- RJ45, Terminal Block, & BNC for copper wire
- Operating temperatures from -40C to +75C
- Metal chassis for desktop, wall-mount, DIN Rail or 19" rack

10/100 Ethernet Extenders



- Transmit Ethernet data up to 3km
- 10/100Base-TX RJ45 Ethernet Ports
- RJ45, Terminal Block, & BNC for copper wire
- Operating temperatures from -40C to +75C
- Metal chassis for desktop, wall-mount, DIN Rail or 19" rack

PoE Ethernet Extenders



- Transmit Ethernet data up to 3km
- 10/100/1000Base-T RJ45 Ethernet Ports
- Supply IEEE 802.3at (30W) PSE Power
- Reboot remote PoE devices
- Also operates as a PoE Powered Device
- Operating temperatures from -40C to +75C



Ethernet Repeater



Transmit Ethernet and additional 100m (328ft) over 4-wire twisted pair

- Rate conversion between 10Mbps, 100Mbps, and 1G network links
- Also operates as a PoE Powered Device
- Operating temperatures from -10C to +50C

Managed Ethernet Extenders



- Transmit Ethernet data up to 3km (1.9 mi)
- Supports AAA security services (TACACS+, RADIUS, LDAP...) and secure management sessions (SSH/SSL, SNMPv3, HTTPS...)
- Operating temperatures from 0C to +50C



- Transmit Ethernet data up to 20km (12 mi)
- 10/100Base-TX RJ45 Ethernet Port
- SHDSL via 4-pin terminal blocks
- Automatic SHDSL data rate detection
- Network & protocol transparent
- Operating temperatures from -20C to +60C

Coax to Ethernet Extenders

Transmit Ethernet data over Coax

Ethernet over Coax Extenders enable data transmission **beyond 500m by using existing coaxial wiring** to transmit data, video, and voice communications. Whether you need to provide PoE power to an IP camera, or transmit data up to up to 3 km, Perle **plug-and-play** Ethernet Extenders are the most **efficient and cost-effective** way to expand and maximize network infrastructures. Perle products are designed to be used in **commercial buildings, factories, and hospitality environments**.

- Extend network distance up to 3 km
- High-Speed: up to 200+ Mbps aggregate bandwidth
- For use in **Unmanaged or Secure Managed** Networks
- Transparent operation for all Ethernet protocols including 802.1Q VLAN packets and IP video compression schemes
- Advanced features: Link Pass-Through, Interlink Fault Feedback, Auto-MDIX and Loopback

10/100/1000 over Coax



- 10/100/1000Base-T RJ45 Ethernet Ports
- BNC, RJ45, & Terminal Block for copper wire
- Operating temperatures from -40 C to +75 C
- Metal chassis for desktop, wall-mount, DIN Rail or 19" rack



- 10/100Base-TX RJ45 Ethernet Ports
- BNC, RJ45, & Terminal Block for copper wire
- Operating temperatures from -40 C to +75 C
- Metal chassis for desktop, wall-mount, DIN Rail or 19" rack

PoE over Coax



- 10/100/1000Base-T RJ45 Ethernet Ports
- Supply IEEE 802.3at (30W) PSE Power
- Reboot remote PoE devices
- Also operates as a PoE Powered Device
- Operating temperatures from -40 C to +75 C

Managed Ethernet over Coax

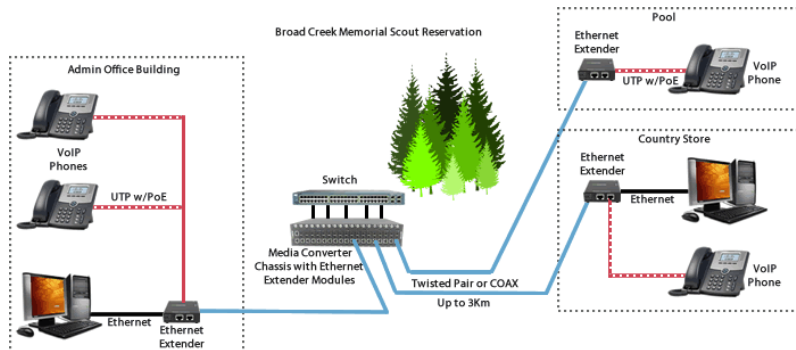


- Supports AAA security services (TACACS+, RADIUS, LDAP...) and secure management sessions (SSH/SSL, SNMPv3, HTTPS...)
- Operating temperatures from 0 C to +50 C

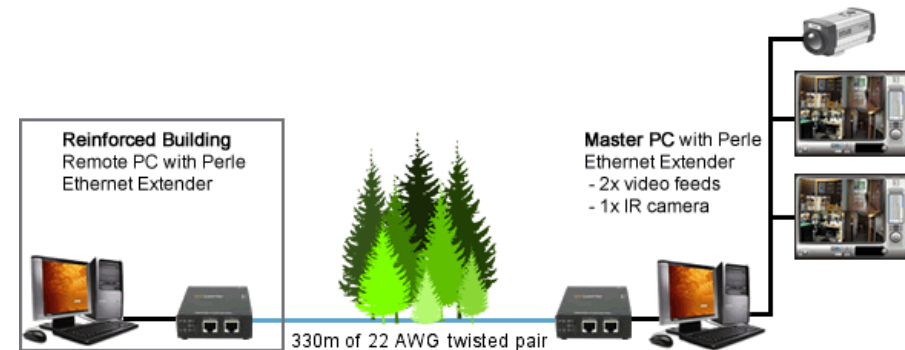


Ethernet Extender Applications

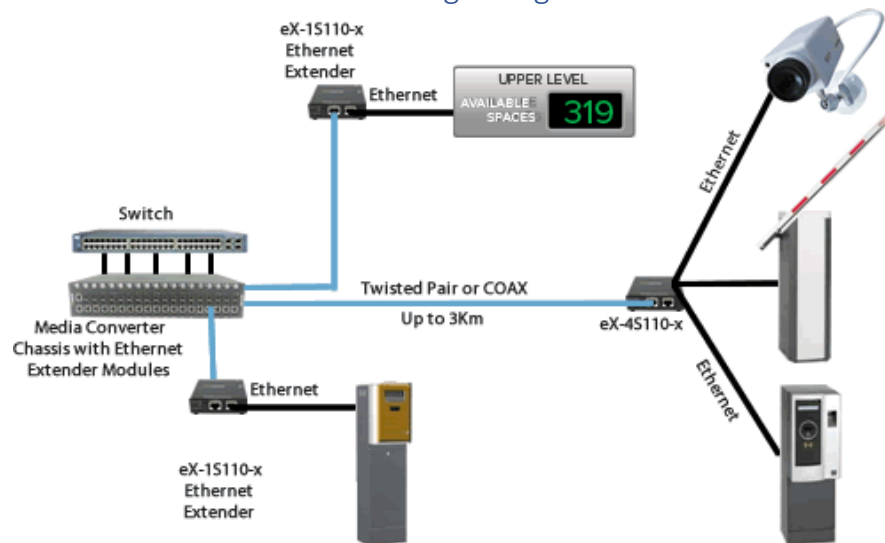
PoE VoIP phone communication using cat3 cabling over 2km



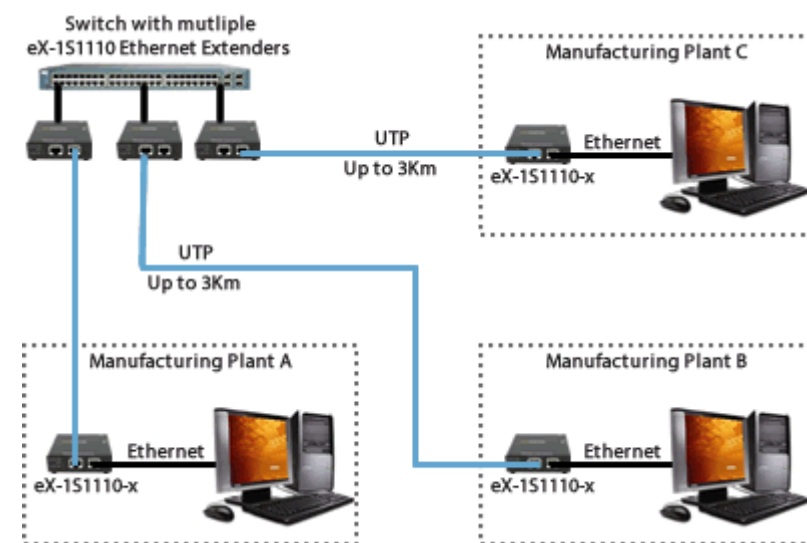
330m Safety Perimeter Gigabit Ethernet extension over twisted pair



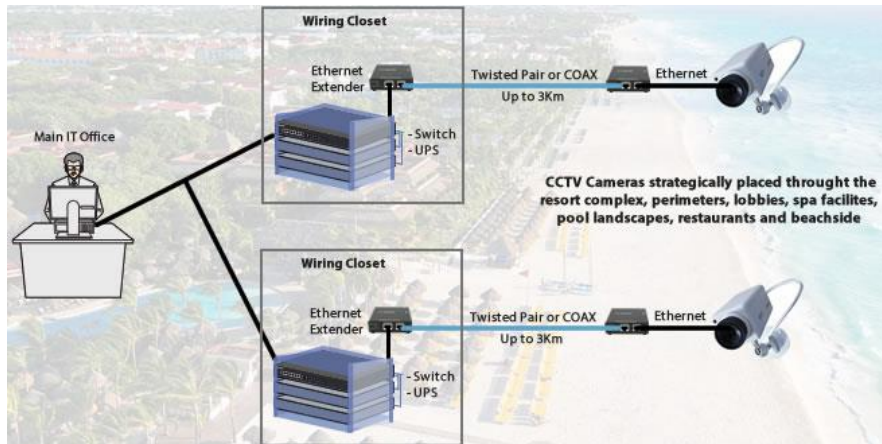
Extended Temperature Ethernet extension in Parking Garages



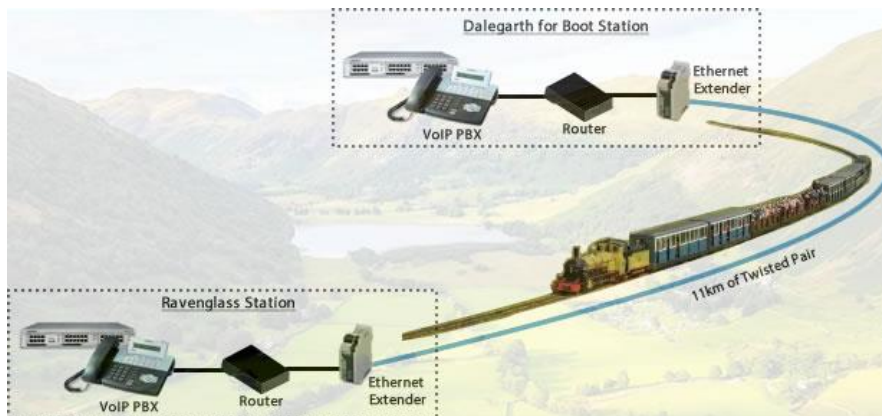
Connect Multiple Manufacturing Plants over a 2km radius



Connect IP CCTV cameras to networking closets
at 5-star resorts



Route VoIP calls over disused copper cabling
for crisp, clear telephone calls



Ethernet Extenders



Bridge 250m data transmission distance
at outdoor events



Transmission speeds of 25Mbps
reliably achieved over 1000m coax cable in pipelines

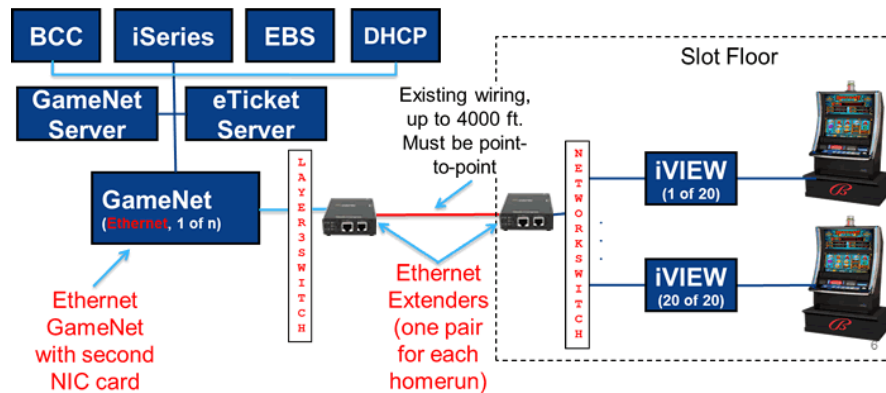


Ryonic Robotics integrate Perle Ethernet Extenders in Pipeline Inspections Vehicles

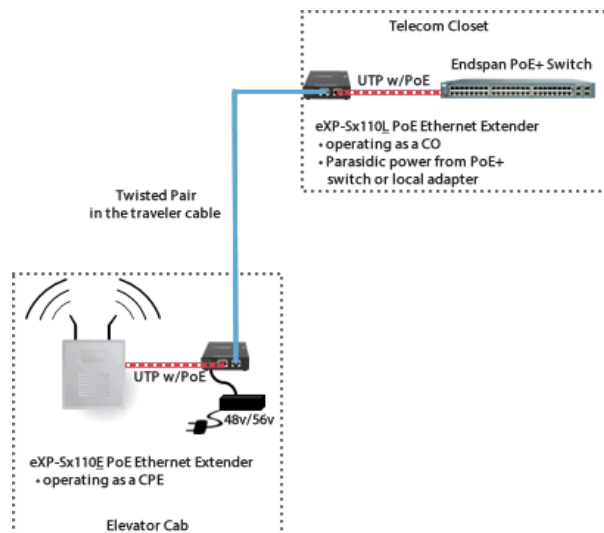
**High Speed Ethernet
over Copper or Coax up to 20km**



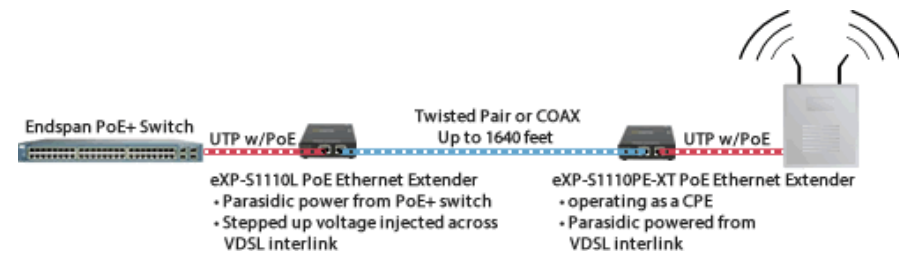
Ethernet Extenders penetrate
WiFi proof elevator cabs at Healthcare facility



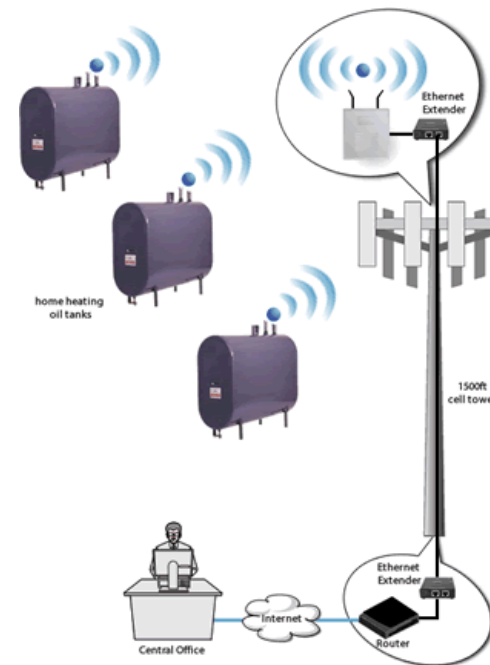
Convert Casino Serial Floors into High-Speed Floors



PoE Ethernet Extenders power Wireless Access Points (WAPs)



Reliable Ethernet extension to top of
450m cell phone tower





Industrial DIN Rail Power Supplies

Regulated AC to DC or DC to DC Conversion

UNO, STEP, TRIO and QUINT Switch Mode Power Supplies are designed to stand up to extreme temperatures, surges, vibrations, and shocks found in industrial automation, government, military, oil, gas, mining, and outdoor applications. They are used in a wide variety of sectors and industries, such as machine building, systems manufacturing, building automation, shipbuilding, and process engineering. With advanced functionality, performance classes, and designs, you will find the right DIN Rail Power Supply for your application.

- reliable sources of power designed stand up to harsh industrial environments.
- Compact size with standard DIN-Rail attachment
- High efficiency and low no load power consumption
- High MTBF values ensure superior system availability
- Extremely high-quality components ensure operational safety
- Wide temperature ranges of -25 C to +70 C, with some models operating at -40 C
- Adjustable output voltages and individually configurable settings on some models
- international approval package enables worldwide use



Single Phase DIN Rail Power Supplies

UNO-PS/1AC AC to DC Conversion



- Output Voltages: 5, 12, 15, 24, or 48 V DC
- Amps: from 1.25 Amps up to 10 Amps
- Watts: from 25 W power, up to 240 W
- Single-phase AC Input
- Input Voltage Range: 85 to 264 V AC
- Operating temperature of -25 C to +70 C
- LED indicator for voltage out failure

STEP AC to DC or DC to DC Conversion



- Output Voltages: 5, 12, 15, 24, or 48 V DC
- Adjustable Output Voltage Ranges: 4 to 56 V DC
- Amps: from .5 Amps up to 6.5 Amps
- Watts: from 10 W power, up to 100.8 W
- Single-phase AC or DC input
- Input Voltage Range: 43 to 305 V AC and 60 to 250 V DC
- Operating temperature of -25 C to +70 C
- LED indicator for voltage out failure
- Low profile design for flat control panels



eR-S1110 Ethernet 10/100/1000 Ethernet Repeater and Rate Converter

- Extend network distances an additional 100m / 328ft over 4-wire twisted pair
- Rate conversion between 10/100/1000 Mbps network links
- Transparent operation for all Ethernet protocols including 802.1Q VLAN packets and IP video compression schemes
- Advanced features: Link Pass-Through, Interlink Fault Feedback, Plug and Play, Auto-MDIX and Loopback
- Operates as a Powered Device (PD) under IEEE 802.3af so it can be used with a PoE Injector or Switch to eliminate the need to install AC power wiring



When you need to extend Ethernet services beyond the general IEEE 802.3 limits of 100m / 328ft, and new fiber cabling is cost prohibitive, the eR-S1110 Ethernet Repeater is the perfect solution. Transparently extend 10/100/1000 Ethernet connections across twisted pair (CAT5/6/7) to extend your network reach an additional 100m (328ft).

This simple and effective point to point Ethernet Repeater and Rate Converter is perfect for commercial buildings, residential units, hospitality environments or for connecting a remote office or private-network backbone to a corporate LAN. Use it anywhere you need Ethernet communication links between separated LANs or LAN devices (i.e. PCs, digital sensors, VoIP phones, WiFi APs, IP cameras and more).

The eR-S1110 Repeater can also operate as a Powered Device (PD) under IEEE 802.3af supporting end-span and mid-span power sources (PSE). This makes it ideal for organizations that need to deploy equipment in locations that are difficult or too costly to have separate AC power installed such as ceilings, walls and kiosks.

Perle's advanced features such as Link Pass-Through, Interlink Fault Feedback, and Loopback allow network administrators to "see everything" for more efficient troubleshooting and less on-site maintenance. These cost and time saving features, along with a lifetime warranty and free worldwide technical support, make Perle Ethernet Repeaters the smart choice for IT professionals.



QUINT-PS/1AC AC to DC or DC to DC Conversion



- Output Voltages: 12, 24, or 48 V DC
- Adjustable Output Voltage Ranges: 5 to 56 V DC
- Amps: from 1.3 up to 40 Amps
- Watts: from 31.2 up to 960 W
- Single-phase AC or DC input
- Input Voltage Range: 85 to 264 V AC and 90 to 350 V DC
- Operating temperature of -25 C to +70 C
- 125% Static and 200% Dynamic Power Boost
- Preventative function monitoring
- SFB (Selective Fuse Breaking) Technology
- Adjustable signaling and settings using Near Field Communication (NFC)
- Integrated gas-filled surge arrester for high noise immunity

QUINT-PS/1AC/CO AC to DC or DC to DC Conversion



- 24V DC Output Voltage
- 18 to 29.5 V DC Adjustable Output Voltage Range
- Amps: 5, 10, or 20 Amps
- Watts: 120, 240, or 480 W
- Single-phase AC or DC input
- Input Voltage Range: 85 to 264 V AC and 96 to 430 V DC
- 125% Static and 200% Dynamic Power Boost
- Preventative function monitoring
- SFB (Selective Fuse Breaking) Technology
- Adjustable signaling and settings using Near Field Communication (NFC)
- Integrated gas-filled surge arrester for high noise immunity
- Operating temperature of -40 C to +70 C
- ATEX and ANSI/ISA 12.12 Class 1 Division 2
- Protective PCB coating

TRIO-PS-2G/1AC AC to DC or DC to DC Conversion



- Output Voltages: 12, 24, or 48 V DC
- Adjustable Output Voltage Ranges: 12 to 55 V DC
- Amps: from 3 up to 20 Amps
- Watts: from 60 up to 480 W
- Single-phase AC or DC input
- Input Voltage Ranges: 85 to 264 V AC and 99 to 275 V DC
- Operating temperature of -25 C to +70 C
- 150% Dynamic Power Boost
- Contact signal output and LED indicator for voltage out failure



2 & 3-Phase Power Supplies

UNO-PS/2AC AC to DC Converter



- 24V DC Output Voltage
- 3.75 Amps
- 90 Watts
- Dual-phase AC Input
- Input Voltage Range: 264 to 575 V AC
- Operating temperature of -25 C to +70 C
- LED indicator for voltage out failure

TRIO-PS-2G/3AC AC to DC Conversion



- 24V DC Output Voltage
- 24 to 28 V DC Adjustable Output Voltage Range
- Amps: 5, 10, 20, or 40 Amps
- Watts: 120, 240, 480, or 960 W
- 3-phase AC Input Voltage Range: 400 to 500 V AC
- Operating temperature of -25 C to +70 C
- 150% Dynamic Power Boost
- Contact signal output and LED indicator for voltage out failure

QUINT-PS/3AC AC to DC or DC to DC Conversion



- Output Voltages: 24 or 48 V DC
- Adjustable Output Voltage Ranges: 18 to 56 V DC
- Output Amps: 10, 20 or 40 Amps
- Output Watts: 240, 480 or 960 W
- 3-phase AC Input Voltage Range: 320 to 575 V AC
- 2-phase AC Input Voltage Range: 360 to 575 V AC
- DC Input Voltage Ranges: 226 to 800 V DC
- Operating temperature of -25 C to +70 C
- 125% Static and 200% Dynamic Power Boost
- Preventative function monitoring
- SFB (Selective Fuse Breaking) Technology
- Adjustable signaling and settings using Near Field Communication (NFC)
- Integrated gas-filled surge arrester for high noise immunity

QUINT-PS/3AC/24DC/20/CO AC to DC or DC to DC Conversion



- 24 V DC Output Voltage
- 18 to 29.5 V DC Adjustable Output Voltage Range
- 20 Amps
- 480 Watts
- 3-phase AC Input Voltage Range: 320 to 575 V AC
- 2-phase AC Input Voltage Range: 360 to 575 V AC
- DC Input Voltage Range: 450 to 800 V DC
- 125% Static and 200% Dynamic Power Boost
- Preventative function monitoring
- SFB (Selective Fuse Breaking) Technology
- Integrated gas-filled surge arrester for high noise immunity
- Operating temperature of -40 C to +70 C
- Protective PCB coating



DC to DC Converters

QUINT-PS DC to DC Converters



- Output Voltage: 12, 24 or 48 V DC
- 5 to 56 V DC Adjustable Output Voltage Ranges
- Amps: 5, 8, 10 or 20
- Watts: 96, 120, 240 or 480 W
- Wide DC input voltage ranges of 9 V DC ... 154 V DC
- Operating temperature of -25 C to +70 C
- 125% Static Power Boost
- Preventative function monitoring
- SFB (Selective Fuse Breaking) Technology

QUINT-PS/2AC/1DC/24DC/20 DC to DC Converter



- 24 V DC Output Voltage
- 18 to 29.5 V DC Adjustable Output Voltage Range
- 20 Amps Output
- 480 Watts Output
- Dual-phase AC or DC Input
- Input Voltage Range: 360 to 575 V AC or 450 to 840 V DC
- Operating temperature of -25 C to +70 C
- 125% Static Power Boost
- Preventative function monitoring
- SFB (Selective Fuse Breaking) Technology

UNO-PS/350-900DC/24DC/60W DC to DC Converter



- 24V DC Output Voltage
- 2.5 Amps
- 60 Watts
- Wide input voltage range of 300 V DC ... 1000 V DC
- Operating temperature of -25 C to +70 C

TRIO-PS/600DC/24DC/20 DC to DC Converter



- 24V DC Output Voltage
- 22.5 to 29.5 V DC Adjustable Output Voltage Range
- 20 Amps Output
- 480 Watts Output
- Input Voltage Range: 450 to 840 V DC
- Operating temperature of -25 C to +70 C
- 125% Static Power Boost





Power over Ethernet (PoE) Injectors

PoE / PoE+ / Hi-PoE Injectors

PoE Injectors are used to simultaneously send data while providing up to 100 Watts of PoE to connected devices in locations where AC or DC power not available. Security Cameras and Wireless Access Points (WAPs) are often installed in locations where electrical wiring and outlets do not exist, such as exterior walls, ceilings, light posts, pipelines, and kiosks. Hiring an electrician to hard wire electrical outlets in these hard-to-reach locations is not a feasible option. A PoE Injector provides the ideal solution by serving as the Power Sourcing Equipment (PSE) for attached Powered Devices (PDs). The PSE provides the power, and the PD accepts the power. There are many options to choose from depending on the needs of your network.

Perle PoE Injector Options

PoE Mid-Span Injectors

Add PoE capability to regular non-PoE network links. These plug-and-play PSEs provide up to 60 Watts PoE to an attached device while simultaneously transmitting and receiving data.



- 1 x 10/100/1000 Mbps Ethernet Port
- Provide 4 to 60 Watts of PoE power
- 802.3bt, 802.3at, and 802.3af compliant
- Support PDs Class 1 to 6 & Type 1, 2 and 3
- Operating temperatures from -40C to +75C

Industrial PoE Switches

Network switches with a built-in PoE Injector. These PSEs provide up to 100 Watts PoE to multiple attached devices while offering complete managed or unmanaged switch capabilities.



- Up to 8 x 10/100/1000 Ethernet Ports
- Provide 4 to 100 Watts of PoE power
- 802.3bt, 802.3at, and 802.3af compliant
- Support PDs Class 1 to 8 & Type 1, 2, 3, and 4
- Support for Single-signature or Dual-signature PDs
- Isolated power and Ethernet lines
- Operating temperatures from -40C to +75C
- Industrial safety certification and approval for hazardous locations



PoE Media Converters

Fiber to copper Ethernet converter with a built-in PoE Injector. These PSEs provide up to 100 Watts PoE to two attached devices while linking copper Ethernet networks to fiber cables such as multimode, single mode, or single strand fiber.



- Up to 2 x 10/100/1000 Ethernet Ports
- Provide 4 to 100 Watts of PoE power
- 802.3bt, 802.3at, and 802.3af compliant
- Support PDs Class 1 to 8 & Type 1, 2, 3, and 4
- Support for Single-signature or Dual-signature PDs
- Operating temperatures from -40C to +75C

PoE Ethernet Extenders

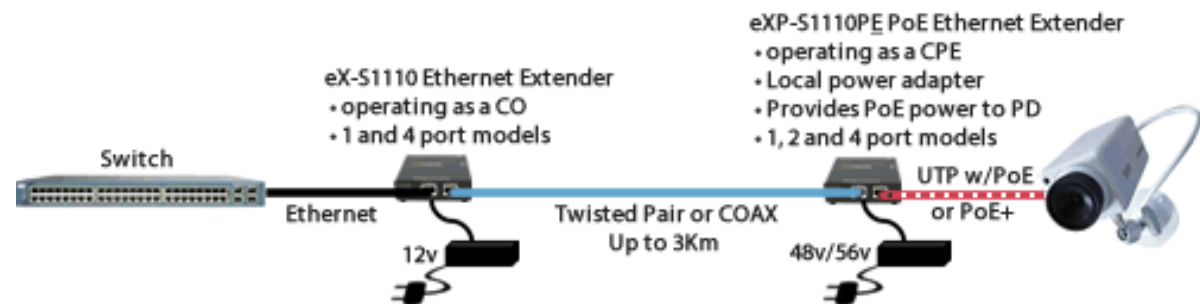
Ethernet Extenders with a built-in PoE Injector. These PSEs provide up to 30 Watts PoE to one or four attached devices while transmitting Ethernet data over Coax or any 2-wire 24 AWG twisted pair up to 3km)



- Up to 4 10/100/1000 Ethernet Ports
- Provide 4 to 30 Watts of PoE power
- 802.3at and 802.3af compliant
- Support PDs Class 1 to 4 & Type 1 and 2
- Reboot remote PoE devices
- Also operates as a PoE Powered Device
- Operating temperatures from -40C to +75C

Extend 10/100/1000 Ethernet across Twisted Pair or Coaxial Cable to a Remote PoE+ device

Extend an Ethernet link to a PoE+ device beyond the 100m limit using Ethernet Extenders. Distances of up to 3 km can be achieved over twisted pair Cat 5,6 or 7 or Coaxial cable. For long reach applications, the remote extender provides power to PoE devices such as IP cameras and Access Points. A locally attached AC Adapter is used.



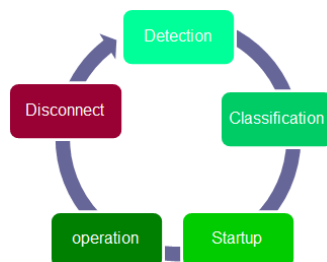
PoE Applications and Information

Choosing the right Power Sourcing Equipment



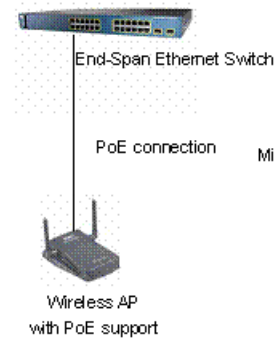
As devices that require power (PDs) are upgraded, it is important to ensure the Power Source Equipment (PSE) that you choose will not need to be replaced. Here are some things to consider.

PoE Power Management Controller Benefits

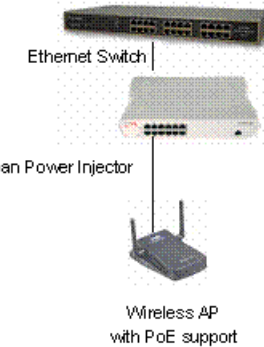


To fully comply with IEEE 802.3af/at standards, properly designed PoE PSEs will have built-in PoE Management Controllers to meet the low voltage requirements of the SELV (Safety Extra Low Voltage) as defined in ISO/IEC 60950

End-Span Power Source



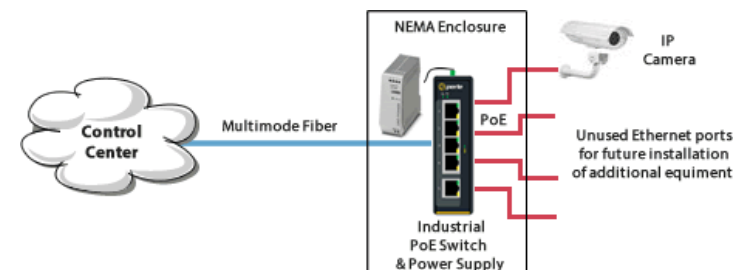
Mid-Span Power Source



A Background on Power Over Ethernet

Learn about the evolution of IEEE 802.3bt, 802.3at, and 802.3af standards as well as understanding the differences between PSEs, Single-signature PDs, and Dual-signature PDs

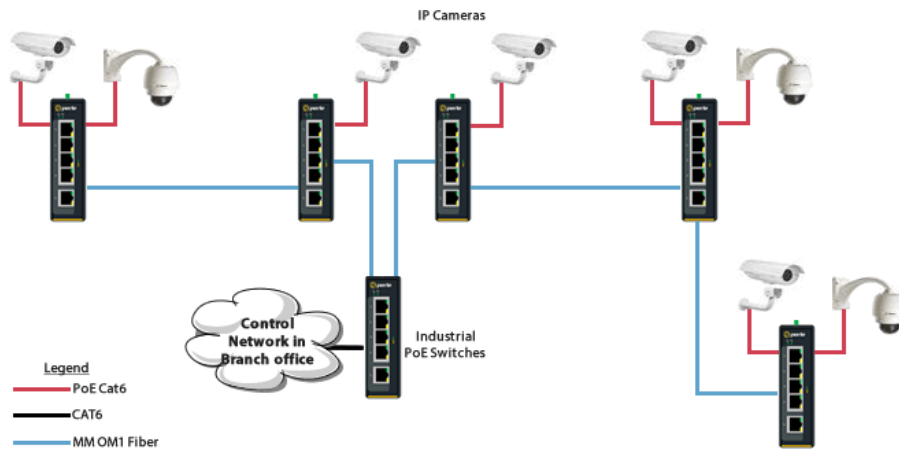
City of Colorado Springs use Perle PoE Switches



Colorado Springs power new Security Cameras with Perle PoE Switches. Industrial Switches provide PoE and Copper to Fiber conversion for city-wide IP camera installation.

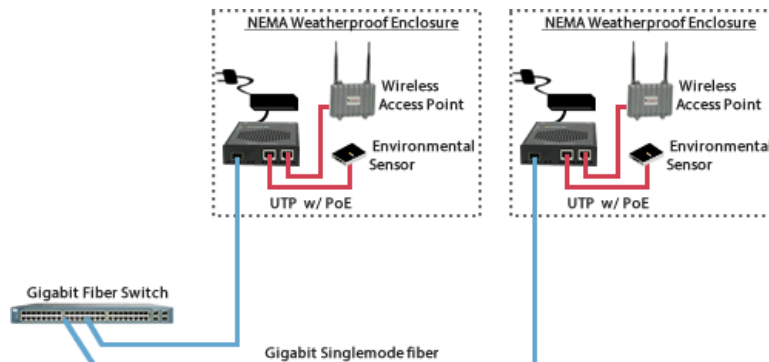


Central Bank of Nigeria use Perle PoE Switches



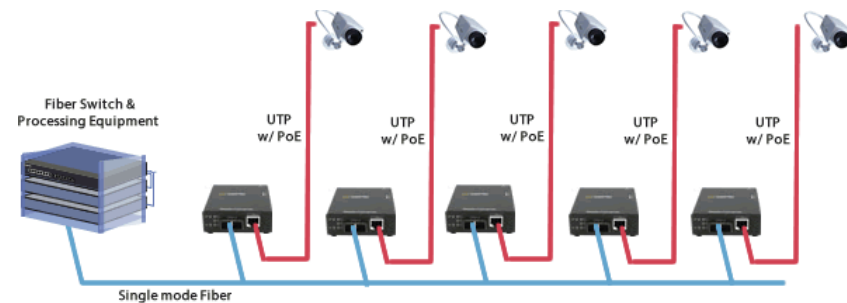
PoE Industrial Switches provide connectivity and power for new security camera installation operating in a high-temperature environment.

York University use PoE Media Converters



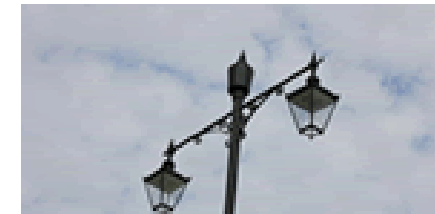
York University uses Perle Media Converters in Field Robotics Research Network to provide fiber to copper conversion and POE+ to WLAN Access Points inside NEMA Weatherproof Enclosures

VER use Perle PoE+ Media Converters for Coldplay Tour



PoE+ Media Converters integrate Panasonic Cameras into Single mode Fiber Networks for Coldplay Tour

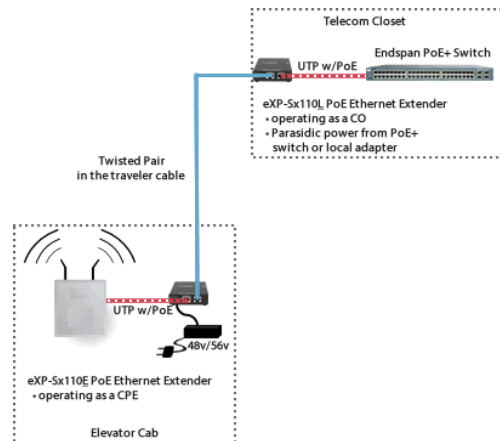
Cambridge University use PoE+ Media Converters



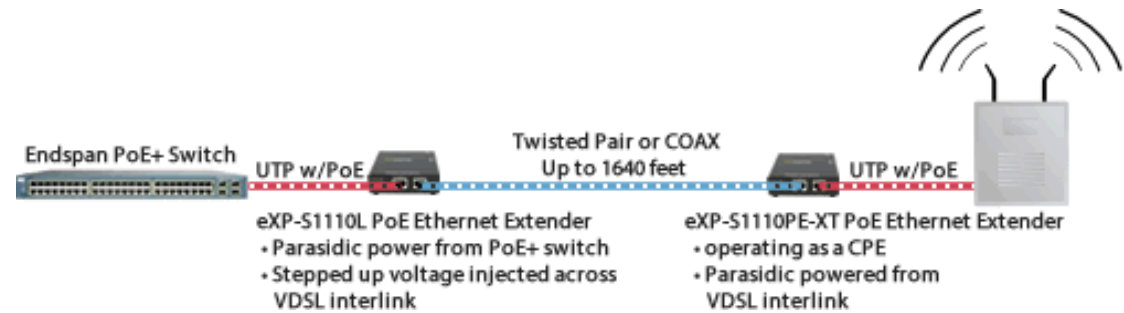
Wireless access points installed in the top of lamp posts and powered by PoE Media Converters enable free WiFi access in open spaces for students and the public



St. Joseph's Healthcare use PoE Ethernet Extenders



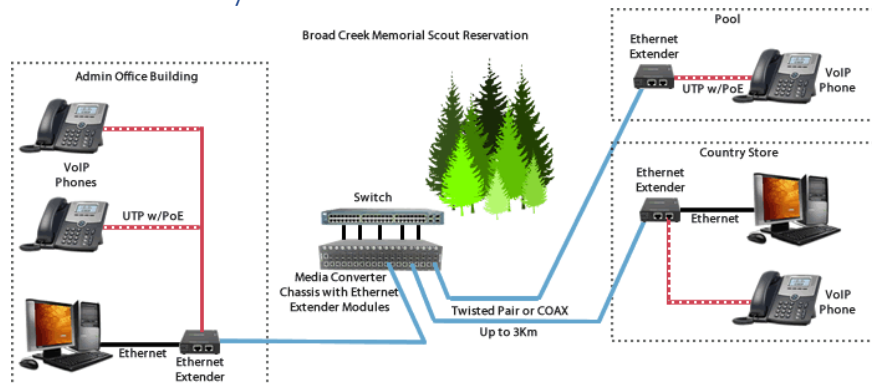
Sonic Automotive uses PoE Ethernet Extenders



Sonic Automotive use Perle PoE Ethernet Extenders to transmit data up to 485 m and power Wireless Access Points in car dealerships.

Ethernet Extenders provide PoE power to WAPs located inside elevator cabs and enable WiFi coverage while inside the previously signal proof boxes

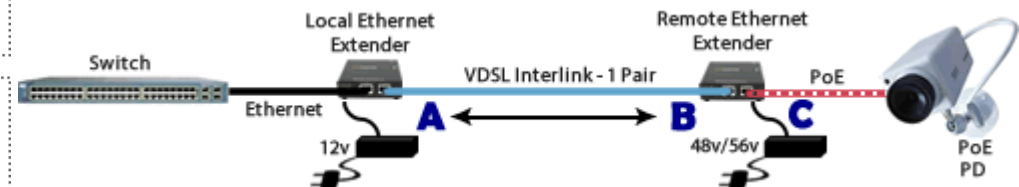
Boy Scouts use PoE Ethernet Extenders



Ethernet Extenders enable PoE VoIP phone communication at remote poolside locations.

Power Reach Installation Planning

Technical Note about taking advantage of the power



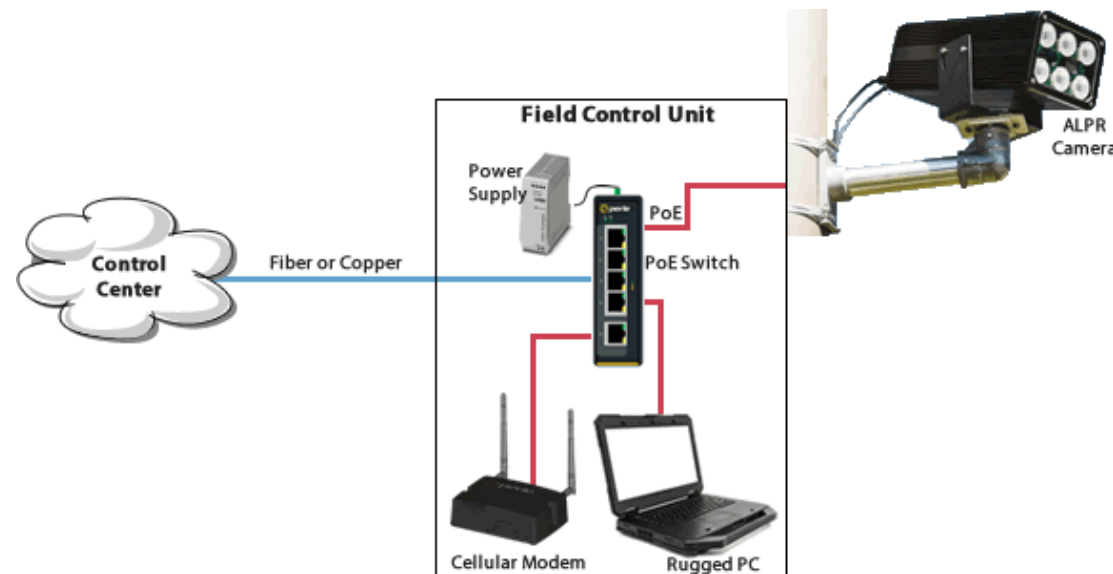
capabilities of Ethernet Extenders when deploying PoE Devices.



Using PoE Switches to power ALPR cameras

Automatic License Plate Recognition (ALPR) systems, love them or hate them, are here to stay. But, when mounting cameras along highways, bridges, tunnels, and overpasses, a handy power outlet will not be readily available. When Leonardo designed the Elsag® Fixed Plate Hunter ALPR System, they needed a PoE Switch to solve this problem and had five main requirements:

1. able to provide up to 30 watts PoE to the attached cameras
2. have at least 3 ethernet ports
3. have output connections for Twisted-Pair Copper or SFP Fiber
4. be rugged enough to operate in -40C to +75C
5. be small enough to fit inside a Field Control Unit (FCU).



Follow this link to read more about this Case Study:

https://www.perle.com/applications_solutions/government/elsag-use-industrial-poe-switches.shtml

To understand more about how Power of Ethernet (PoE) works Perle has prepared a Technical Note which can be found at this address:

https://www.perle.com/supportfiles/poe_background_technical_note.shtml





SFP Optical Transceivers

Small Form Pluggable Optical Modules

- Multimode and single-mode fiber
- Gigabit Ethernet, Fast Ethernet, Fiber channel, ATM/SONET, SDH
- Hot-pluggable with durable metal enclosure
- Can be installed in any Cisco or MSA SFF-8472 compliant port
- Enhanced digital diagnostic information
- CWDM modules available supporting standard wavelengths defined by ITU-T G.694.2
- 0 C to 70 C and -40 C to +85 C SFP case operating temperatures

Perle SFP Transceiver Features

Broad range of Fiber applications	Popular networking protocols such as Ethernet, Fibre Channel, ATM/SONET OC-X, SDH STM-X can be used with these modules	Safety	EN 60950-1:2006+A11+A1+A12+A2
Cisco IOS Compatible	All Perle SFPs can be installed in all Cisco SFP-based routers and switches and are fully compatible with Cisco's IOS software.	Emissions	CISPR 32:2015 + COR1:2016 (Class B) / EN55032:2015+AC:2016 (Class B) EN55011 (CISPR11)
MSA SFF-8472 Compliant	All SFPs fully comply with the Multi Sourcing Agreement (MSA).	EMC and Immunity	CISPR 24:2010/EN 55024:2010
Enhanced digital diagnostic information (DOM or DMI)	Provides readable digital diagnostic information for managed gear to assist network administrators with network maintenance and management	Laser Safety	Fiber optic transmitters on this device meet Class 1 Laser safety requirements per IEC-60825 FDA/CDRH standards and comply with 21CFR1040.10 and 21CFR1040.11. EN 60825-1:2014 EN 60825-2:2004+A1+A2
Industrial Temperature models	Industrial -40 C to 85 C case temperature models are available for extended temperature environments	Environmental	Reach, RoHS and WEEE Compliant
CWDM models	CWDM Pluggable Optical Transceivers increase network capacity by transmitting multiple data channels using separate optical wavelengths (1470nm to 1610nm) on the same fiber pair. These wavelengths are compliant to the ITU G.694 CWDM standard.	Other	ECCN: EAR99 HTSUS Number: 8517.62.0020 Warranty - 2-year return to factory



Overview

Perle SFP Optical Transceivers are hot-swappable, compact media connectors that provide instant fiber connectivity for your networking gear. They are a cost-effective way to connect a single network device to a wide variety of fiber cable distances and types.

By eliminating the need to maintain surplus units/ devices of various fiber types for network repairs or upgrades Small Form Pluggable Optical Transceivers reduce network equipment inventories. SFPs allow one product the flexibility to expand by speed (Fast Ethernet and 1, 10, or 40 Gigabit), and/or distance (220 m to 80 km). Network upgrades are also made easier because SFPs are interchangeable fiber connectors that can adapt to any existing network. For example, by simply replacing the pluggable optical transceiver, a media converter that was originally used in a multimode network can be re-configured to operate over a CWDM network. Perle SFP Optical Transceivers can be used and interchanged on a wide variety of Cisco or MSA compliant SFP products. They can be intermixed in combinations of 1000BASE-SX, 1000BASE-LX/LH, 1000BASE-EX, 1000BASE-ZX, or 1000BASE-BX10-D/U on a port-by-port basis.

Perle SFP Optical Transceivers are designed for use with [Perle SFP Media Converters](#), [Industrial Ethernet Switches](#), [IOLAN SCG Console Servers](#) and third party equipment that supports SFP transceivers. Select the appropriate tab below to view:

[SFP-Duplex](#)

[SFP-Simplex \(BiDi\)](#)

[SFP-CWDM \(Coarse Wavelength Division Multiplexing\) Models](#)

[10G SFP+ & XFP](#)

Perle SFP Media Converters

Perle offers an extensive range of SFP Media Converters that support SFP transceivers with data rates up to 10Gbps. Click here to use the Product Selector to find the one that is right for you.



- -40C to +75C operating temperature support
- Options to supply up to 100W PoE PSE power
- Advanced Features: Link Pass-Through, Far-End Fault, Auto-MDIX and Loopback
- Use in Managed or Unmanaged environments





Serial to Fiber Media Converters

Connect serial devices to fiber optic cable

PSI-MOS Serial to Fiber Converters transparently connect RS232, RS422 and RS485 devices to fiber optic cable. By transmitting data over optical fiber, these serial media converters provide an economical path to extend the reach of serial devices.

- Extend serial data up to 45 km with extremely high data rate
- High-quality electrical isolation between the devices makes transmissions immune to EMI, RFI and transient surges
- Point-to-point, star, linear, tree and redundant network environments supported
- Integrated optical diagnostics via bar graph display
- Floating switch contact for early warning alarm issued in the event of a drop in transmission quality
- Approved for zone 2 for use in potentially explosive areas



EMI, RFI and Transient Surge Immunity

Electromagnetic interference (EMI) is a common phenomenon in typical environments like industrial plants, warehouses and factory floors. This interference can cause corruption of data over serial or copper-based Ethernet links. Data transmitted over fiber optic cable however is completely immune to this type of noise, thus preventing the negative effects of voltage equalization currents and electromagnetic interference on the data cables. A Serial to Fiber Media Converter therefore enables you to inter-connect your serial devices over fiber ensuring optimal data transmission, increased availability of the system, and improved network design.

PSI-MOS Serial to Fiber Media Converter Applications

- near heavy electrical equipment
- in environments with electrical (EMI) or radio (RFI) interference
- in environments with transient surges
- in industrial plants, warehouses and factory floors
- enabling asynchronous serial equipment to communicate at full or half duplex, with rates up to 2Mbps, over optical fiber

High Quality Features and Support

The PSI-MOS Serial to Fiber Converters are equipped with comprehensive diagnostic functions to increase system availability, simplify start-up and permanently monitor the optical transmission quality. This allows for more efficient troubleshooting and less on-site maintenance. These cost and time saving features, along with free worldwide technical support, make the PSI-MOS Serial to Fiber Converters the smart choice for IT professionals.



PSI-MOS-RS232/FO 850 E
RS232 to fiber



- 1 x DB9M serial port
- 1 x duplex ST multimode fiber 850nm
- Extend up to 4.2km

PSI-MOS-RS232/FO 850 T
RS232 to fiber



- 1 x DB9M serial port
- 2 x duplex ST multimode fiber 850nm
- Extend up to 4.2km

PSI-MOS-RS232/FO 1300 E
RS232 to fiber



- 1 x DB9M serial port
- 1 x duplex SC multimode or single mode fiber 1300nm
- Extend up to 45km

PSI-MOS-RS422/FO 850 E
RS422/485 4-wire to fiber



- 1 x Terminal block serial connector
- 1 x duplex ST multimode fiber 850nm
- Extend up to 4.2km

PSI-MOS-RS485/FO 850 T
RS485 2-wire to fiber



- 1 x Terminal block serial connector
- 2 x duplex ST multimode fiber 850nm
- Extend up to 4.2km

PSI-MOS-RS485/FO 1300 E
RS485 2-wire to fiber



- 1 x Terminal block serial connector
- 1 x duplex SC multimode or single mode fiber 1300nm
- Extend up to 45km



PSI-MOS-RS485/FO 850 E RS485 2-wire to fiber



- 1 x Terminal block serial connector
- 1 x duplex ST multimode fiber 850nm
- Extend up to 4.2km

PSI-MOS-RS485/FO 850 T RS485 2-wire to fiber



- 1 x Terminal block serial connector
- 2 x duplex ST multimode fiber 850nm
- Extend up to 4.2km

PSI-MOS-RS485/FO 1300 E RS485 2-wire to fiber

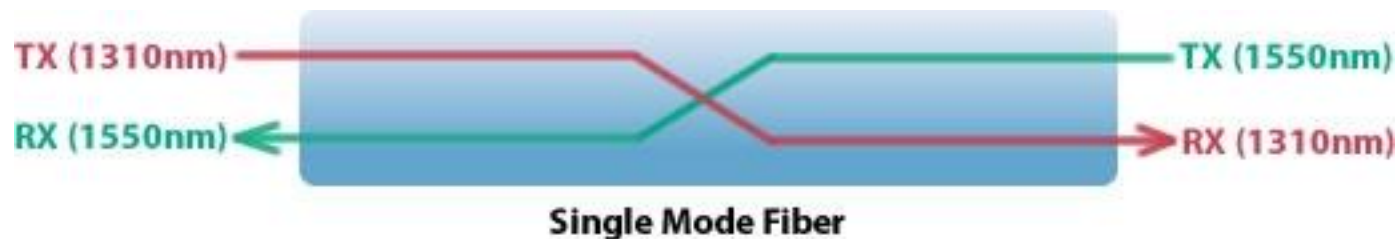


- 1 x Terminal block serial connector
- 1 x duplex SC multimode or single mode fiber 1300nm
- Extend up to 45km

Single Mode / Single Strand (WDM) Fiber

Connecting devices over a single fiber strand (also referred to as “Bi-Directional” BiDi or Simplex)

To reduce costs, or where there are limits on available fiber, Wavelength-Division Multiplexing (WDM) technology may be utilized. WDM uses separate transmit and receive frequencies to communicate on a single fiber strand. WDM technology relies on the fact that optical fibers can carry many wavelengths of light simultaneously without interaction between each wavelength. Thus, a single fiber can carry many separate wavelength signals or channels simultaneously. WDM systems are divided into different wavelength patterns, conventional/coarse (CWDM) and dense (DWDM).



When Single Strand fiber is used, you will need an “Up” side and a “Down” side when interconnecting fiber devices. Perle offers a wide variety of Single Fiber (“Up/Down”) [Ethernet Switches](#) and [Media Converters](#) for use with single strand of fiber.





PSI-MODEM-SHDSL/SERIAL Copper Extender

RS232/422/485 over copper wire

The PSI-MODEM-SHDSL/SERIAL to Copper Extender transparently extends serial data transmission up to 20 km across single twisted pair (CAT5/6/7), coax or any existing copper wiring previously used in alarm circuits, E1/T1 circuits, CCTV and CATV applications.

Transmit serial data up to 20km [12.4 mi]

- Two SHDSL ports for symmetrical data transmission
- Supports RS232, RS422 and RS485 interfaces
- Protocol Transparent

Long Distance Serial Data Transmission over Copper

SHDSL is the technology of choice for the transmission of digital **data over long-distance copper wires** of a network. Although performance depends on the characteristics of the cable used, the reach of SHDSL is much further than any other DSL technology currently available. In addition, upload and download bandwidth is symmetrical boasting data rates as high as **15.3 Mbps over 2-wire copper** and **30 Mbps over 4-wire copper**.

The PSI-MODEM-SHDSL/SERIAL to Copper Extender is **protocol transparent** and supports **RS-232, RS-422 and RS-485** interfaces. With two SHDSL ports you can easily set up point-to-point, redundant point-to-point, linear and star topology networks.

Two software configurable digital outputs are available for external device alarm generation.

Although these devices are **“plug and play”**, should additional device configuration be needed during set-up, power can be supplied via a computer USB cable. The easy configuration software provides online diagnostics, logbook function, individual project configuration and saving of project configurations. Furthermore, to provide on-site technicians with quick device diagnostics, the PSI-MODEM-SHDSL/SERIAL has integrated diagnosis functions, a logbook and clearly visible LEDs.



PSI-SHDSL Calculator

Calculation of SHDSL data rates for more reliability while planning your SHDSL project





Serial Isolator

PSM-ME-RS232/RS232-P

Interface converter for the electrical isolation of RS-232 interfaces



- 3-way isolation up to 2 kV
- Transmission speed of 115.2 kbps
- Integrated surge protection
- Transmit TxD/RxD data channels and RTS/CTS control lines

For the electrical isolation of RS-232 (V.24) interfaces, the PSM-ME-RS232/RS232-P is the ideal solution.

3-way EMI, RFI and Transient Surge Immunity

The RS-232 interface is an asymmetric voltage interface with common signal ground for all signals. In addition to its very low signal power, a characteristic feature of the interface is that the signal ground is connected to the grounded chassis housing. This results in very little immunity to interference and a maximum range of 15 meters. Using the PSM-ME-RS232/RS232-P Serial Isolator, considerably higher immunity to interference in industrial applications can be achieved.

By isolating the TX/RX data channels and the RTS/CTS control lines the PSM-ME-RS232 Serial Isolator effectively protects your RS232 devices from transient surges, lightning strikes, ground loops and noise issues.

With their high-grade 3-way isolation between both interface sides the PSM-ME-RS232 provides a floating and interference resistant RS-232 interface for the supply and ground potential. Expensive termination devices are also protected against damage by this decoupling.

Any additional potential EMI can be removed from the transmission path by using additional PSM-ME-RS232 Serial Isolators on both device interfaces.

The PSM-ME-RS232 Serial Isolators can be wall mount AC powered or snapped onto standard DIN rails supplied with 24V DC or AC. In the case of variable cable lengths, the RS-232 connection on the field side can be established conveniently using plug-in screw terminal blocks



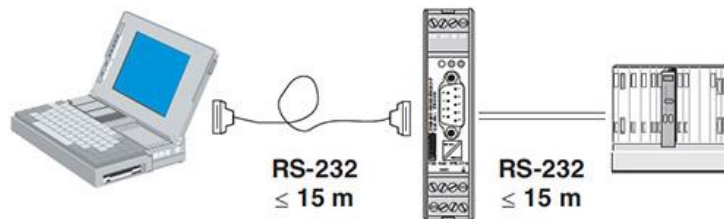
Serial Isolator Features

- Maximum transmission speed of 115.2 kbps
- High-quality 3-way isolation up to 2 kV (VCC, V.24 (RS-232), TTY)
- Integrated surge protection with transient discharge to the DIN rail
- Transmission speed up to 115.2 kbps
- Transmission of TxD/RxD data channels and RTS/CTS control lines
- Active data transmission indicated by separate data indicators for the transmit and receive channels
- 24 V DC or AC power supply suitable for the control cabinet

Sample Application Diagrams

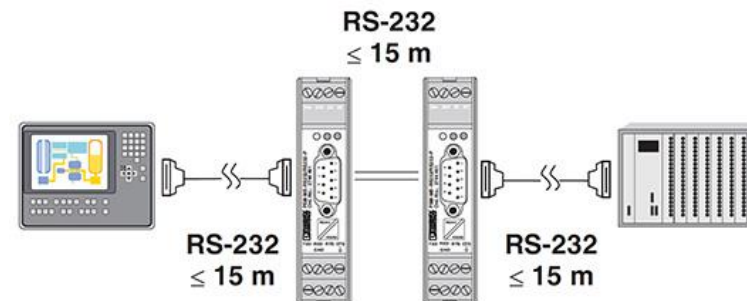
Interference-free RS-232 interface

Use the PSM-ME-RS232/RS232-P Serial Isolator for considerably higher immunity to interference in industrial applications.



Electrical isolation

Use a PSM-ME-RS232/RS232-P Serial Isolator on both device interfaces to remove any potential EMI.



Learn what 12V / PoE Means

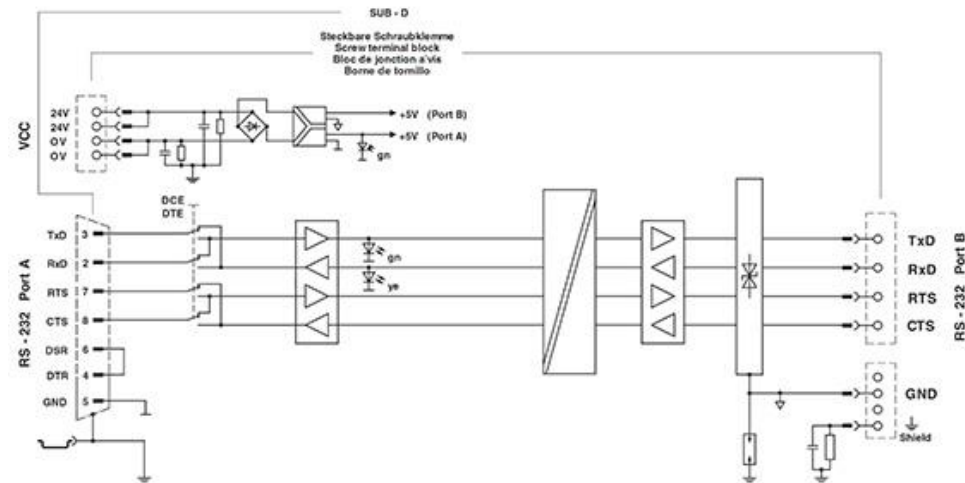
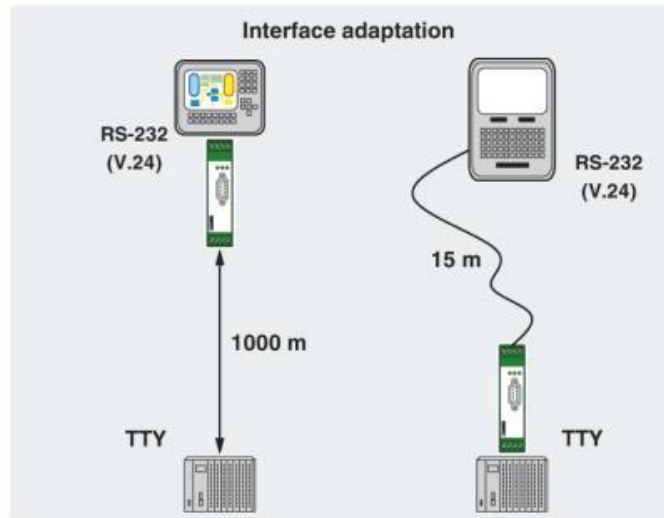


Do you have a device that specifies "INPUT 12V / PoE", like in the image above? 12V / PoE means that device can be powered by a 12 VDC wall adapter OR a PoE Ethernet port. If you don't have an electrical wall outlet nearby, you need a 48V PoE Switch, that is compliant to the IEEE 802.3bt/af/at standard, to provide power to these devices.



Interface Converter

Block Diagram





Serial Interface Converter

PSM-ME-RS232/RS485-P

RS232 to RS485 Converter with electrical isolation



- Convert RS232 to RS422 or RS485
- Transmission speeds up to 115.2 kbps
- Supports full duplex and half duplex
- 3-way electrical isolation

The PSM-ME-RS232/RS485-P bi-directionally converts RS-232 interface signals to the RS-485 2/4-wire and RS-422 standard.

With support for 4-wire balanced full duplex communication, or 2-wire half-duplex, the PSM-ME-RS232/RS485-P is suitable for most applications, including industrial, commercial and any general office computer device. Transmission speeds of 1.2 kbps up to 115.2 kbps can be applied to point-to-point and point-to-multipoint networks.

Use the PSM-ME-RS232/RS485-P in all common bus systems with UART/NRZ data format and character length of 10/11 bits. This is the best “plug and play” solution for converting RS-232 (V.24) to RS-422 (V.11) and RS-485, with electrical isolation.

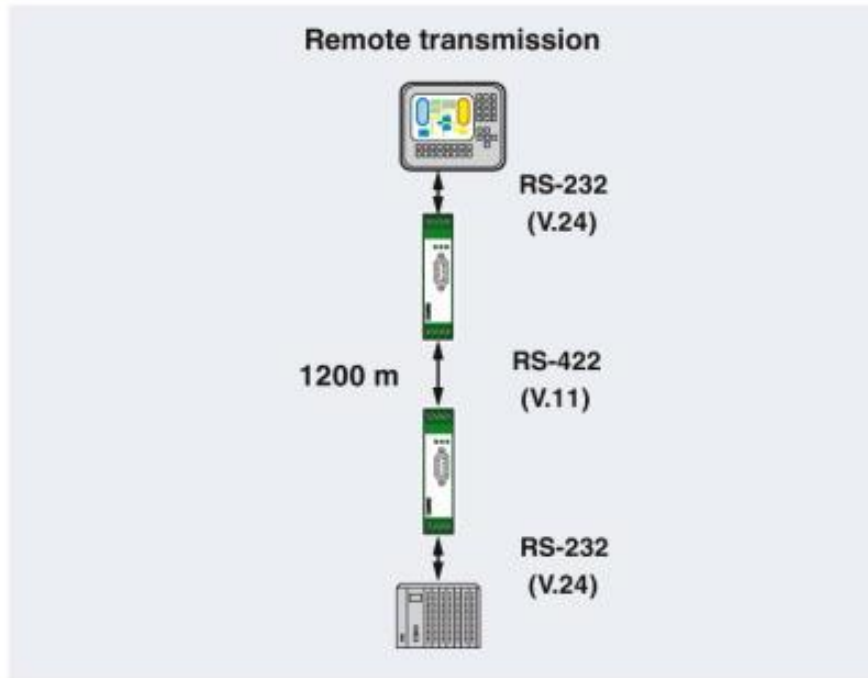
RS232 to RS485 Converter Features

- RS-422 4-wire for point-to-point operation
- RS-485 2-wire operation, half duplex
- RS-485 4-wire operation, full duplex
- Automatic transmit/receive changeover
- Transmission speed from 1.2 kbps up to 115.2 kbps
- Integrated data indicator for dynamic indication of transmit and receive data
- High-quality 3-way isolation between power supply, V.24 (RS-232), and RS-422/485 for reliable decoupling of the potentials with 1.5 kV
- Integrated surge protection with transient discharge to the DIN rail
- Shipbuilding approval per DNV

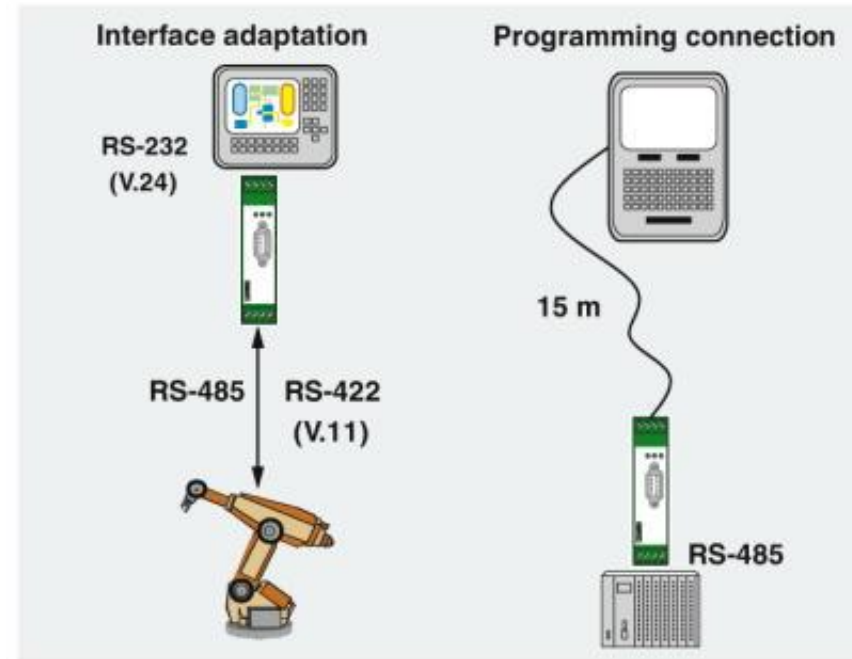


Point-to-point connection between two RS-232 interfaces via RS-422

Use the RS-422 standard to implement rapid, interference-free point-to-point connections. Connections between two RS232 devices covering up to 1200 m can be established using a shielded, twisted pair 4-wire cable.

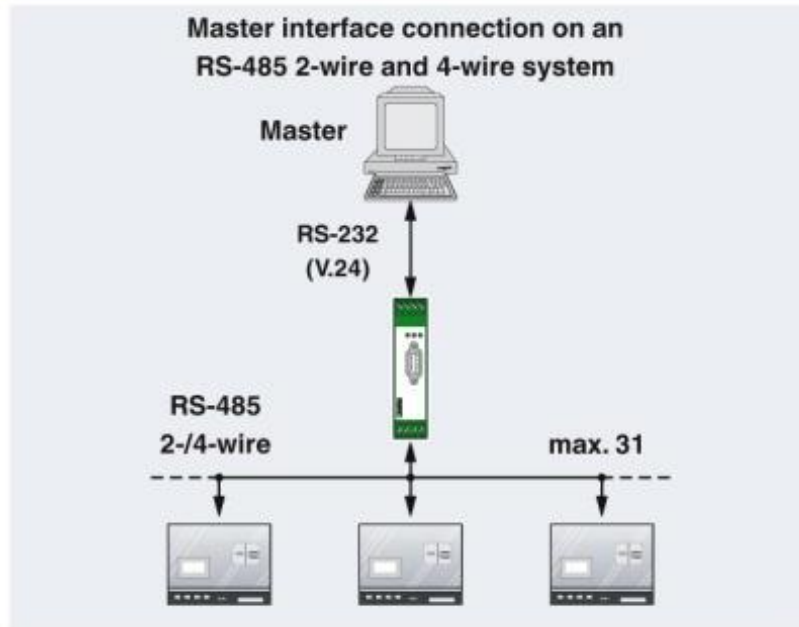


The RS-485 standard allows more than two devices to communicate with one another. By converting the RS-232 point-to-point interface into the bus-capable RS-485 standard, you can network up to 32 devices via a 2 or 4-wire cable.

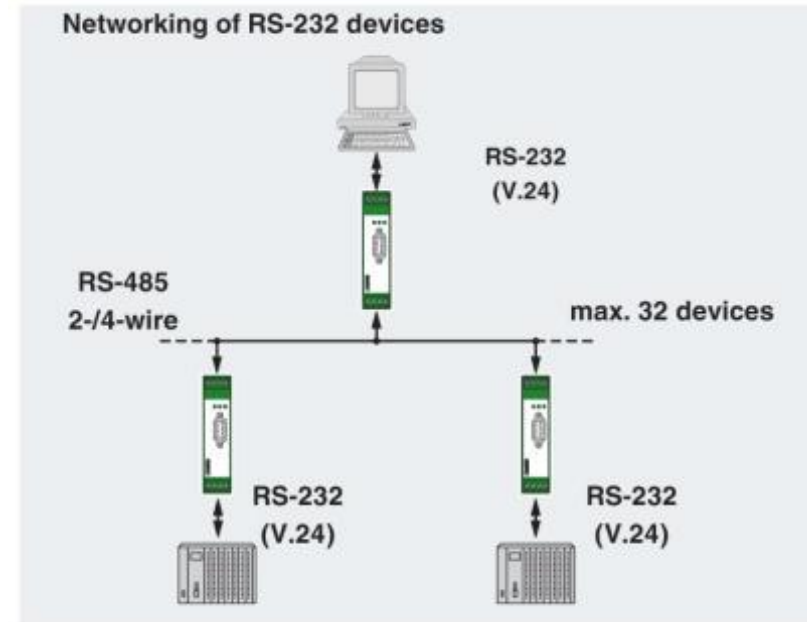


Interface adaption or programming connection



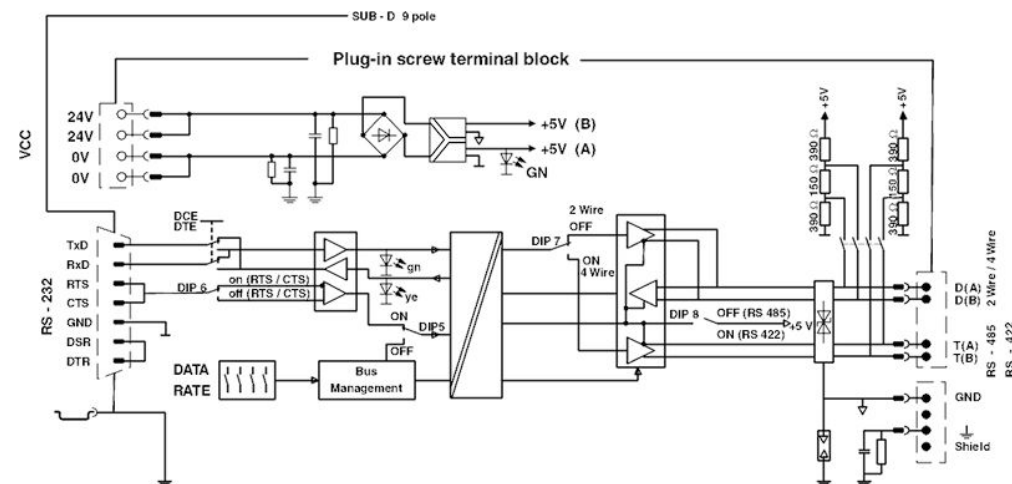


Master interface connection



Networking of RS-232 devices

Block Diagram





RS-485 Repeaters

PSM-ME-RS485/RS485-P Repeater – RS485 to RS485 Repeater



- Amplify RS485 signals up to 1.2km [4000 feet]
- Add 32 nodes to an RS-485 data circuit
- Transmission speeds up to 1.5 Mbps
- 3-way isolation between all interfaces

RS485 Repeater Features

- Supports all popular 10/11-bit UART data formats
- Automatic transmit/receive changeover
- Transmission speeds of 1.2 kbps up to 1.5 Mbps
- Integrated, connectable termination resistors
- High-quality 3-way isolation between all interfaces
- Integrated surge protection with transient discharge to the DIN rail
- Supply voltage of 24 V DC or AC to suit the control cabinet
- Plug-in screw connection terminal blocks
- Space-saving slim 22.5 mm device
- Shipbuilding approval per DNV

Boost, or amplify, RS-485 signals to cover longer distances with the PSM-ME-RS485 Repeater. By using differential voltage lines for data and control signals RS-485 repeaters overcome the limitations of standard serial ports. This allows you to add 1.2 km and 32 nodes to an RS-485 data circuit. In addition, 3-way isolation protects devices from transient surges and ground loops on the data line.

The PSM-ME-RS485 repeater was developed for the high requirements of fieldbus systems. The device can be powered by wall-mount AC or snapped onto standard DIN rails and supplied with 24 V DC or AC.

The PSM-ME-RS485 repeater can be used in all common 2-wire bus systems: Modbus, RACKBUS (Endress & Hauser), SUBCONET-K (Moeller), UNI-TELWAY (Telemecanique), DANBUS (Danfoss), RS-BUS (Landis & Staefa), NET 2000 (B&R), INSUM (ABB), J-BUS (Merlin Gerin), ET-WAY (Jetter), S-BUS (SAIA) and around 60 more company-specific bus systems.

For potential separation and range increase in RS-485 2-wire bus systems, the PSM-ME-RS485 repeater is the optimal solution

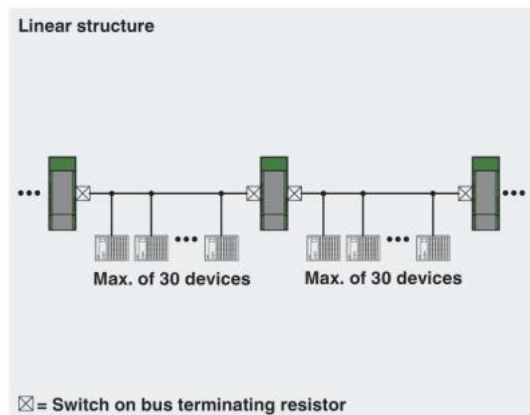


PSM-ME-RS485/RS485-P Repeater Applications

- Electrical isolation and bus segmentation
- Increasing system availability
- Increasing the range
- Increasing the transmission speed
- Extending the number of devices
- Creation of mixed and network structure

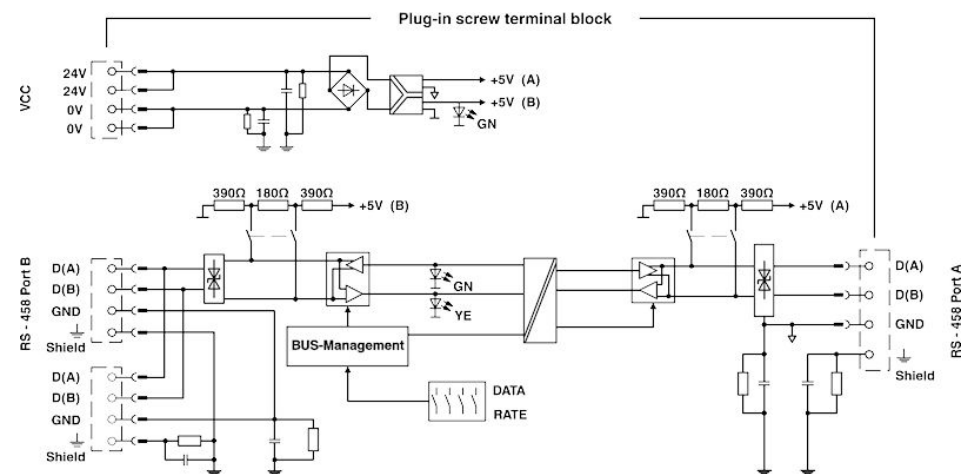
Linear Network Diagram

The PSM-ME-RS485 repeater can be used to create network structures that are tailored to the relevant application. The limits set by the RS-485 standard are therefore extended. The standard defines the following basic specifications:



- Up to 32 devices per potential segment
- Only line structures
- Maximum bus cable length: 1200 m
- Maximum branch line length without termination resistor: 5 m, depending on the transmission speed
- Bus cable termination at the start and end of the bus cable

Block diagram





DIN Rail Patch Panels

Easily connect field and control cabinet cabling

Ethernet patch panels make the connection between field cabling and control cabinet cabling quick and easy. **PP DIN Rail Patch Panels** are ideal for installation inside control panels and distribution cabinets where **one-to-one simplified connections** need to be made. A standard Ethernet patch cable is used between the patch panel and the control cabinet equipment, such as switches, PLCs and routers. Through ICD, Push-in, Screw or RJ45 connectors, field wiring is easily connected to the patch panel and protected inside a covered wiring space. The cable shielding is connected quickly and easily, without tools, while simultaneously ensuring strain relief.

This simplifies installation of the field cable and saves a great deal of time during installation. PP DIN Rail Patch Panels provide the perfect mix of density and flexibility to decrease network risk and improve cable organization in scalable deployments with constricted spaces.

PP-RJ DIN Rail Patch Panels



- 10/100/1000 Mbps
- RJ45 to RJ45, IDC, Push-in or Screw Terminal Block
- Wiring space covered with front panel cover
- Tool-free shield contacting with strain relief
- Compact design with quick and easy mounting
- Extended temperature range of -40 C to +75 C

PP-RJ-F DIN Rail Patch Panels



- 10/100/1000 Mbps
- RJ45 to RJ45, IDC, Push-in or Screw Terminal Block
- Wiring space covered with front panel cover
- Tool-free shield contacting with strain relief
- Compact design with quick and easy mounting
- Extended temperature range of -40 C to +75 C
- [Integrated surge protection](#) to ensure high system availability
- Shield current monitoring for diagnostics in the event of shield currents caused by EMC or differences in potential





Surge Protectors

Lightning Surge Suppressors

Various types of surge voltages occur in electrical plants and electronic systems. Depending on the cause, the duration and amplitude of each surge can vary greatly. The direct or indirect consequences of lightning strikes are one particular cause of surge voltages. Here, during the surge voltage, high surge currents with amplitudes of up to ten thousand amperes can occur. In this case, largescale equipment failures and data loss can occur. This failure is often not covered by insurance and, within a short period of time, can become a heavy financial burden – especially in comparison to the cost of installing a Surge Protection Device (SPD).

Protect against the causes of surge voltage

- Lightning strikes
- Switching electromagnetic pulse (SEMP)
- Electrostatic discharges (ESD)

DT-LAN-CAT6 Surge Protector



- CAT5/6/7 Data Line Surge Protector
- Transmission speeds up to 10 Gbps
- Protect PoE equipment

DT-TELE-SHDSL Surge Protector



- Protection for SHDSL telecommunication interfaces
- Two SHDSL ports





PerleVIEW Device Management System

Enterprise-grade Central Management Software

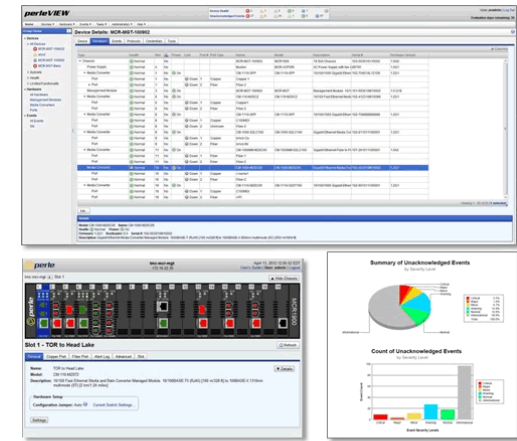
- Centralized management package to manage 10's, 100's or thousands of Perle devices
- [Cloud Hosting](#) -- Deploy and manage your network from the cloud
- Scalable Enterprise-grade SNMP platform built on Windows Server and SQL functionality
- Secure clientless internet browser multi-user access
- Complete visibility of the health and performance of your Perle device network
- Powerful event notification and handling: on-screen, email, text messages and Twitter feed

Managing large numbers of deployed network equipment poses unique challenges to the network administrator. It requires a centralized solution with efficiencies found in a platform that uses standard client tools, databases, and protocols.

PerleVIEW Device Management System is an Enterprise-grade, multi-user, Windows server-based **centralized management package** that simplifies the **configuration, administration, monitoring, and troubleshooting** of Perle products in medium to large-scale deployments. Network Administrators, using their Internet Browser, can securely access PerleVIEW and manage 10's, 100's or thousands of Perle devices from a centralized server. There is no user client software required to be installed on administrator's PCs. The management of the Perle device network is simplified by using PerleVIEW to:

- See all network problems at a glance and take appropriate action
- Track inventory and display how the devices are performing
- Gather statistics and run reports from network data stored in the SQL database
- Schedule, or issue on-demand, mass deployment of firmware updates and configuration files
- Backup and restore configuration
- Automatically check the latest firmware levels
- and much, much more!!

PerleVIEW is the most complete centralized management package for a managed device installation. It enables your IT organization to focus less on daily maintenance and more on meeting future business needs.



perleVIEW





Ethernet I/O

IOLAN DS I/O Device Server

IOLAN SDS I/O Secure Device Server



- Remote access and control of digital I/O and relays
- Universal Digital I/O, Analog input, RTD/Thermocouple temperature sensor input & RS-232/422/485
- 10/100 Ethernet interface with 1.5kv isolation (802.3 standard)
- Terminal block connectors for power and I/O

Perle's **Ethernet I/O** technology (IOLAN DS I/O Device Servers) enables comprehensive access and control of remote digital I/O, analog I/O, pulse I/O, relays, and temperature sensors as well as connections of remote serial equipment on any IP network. The IOLAN DS I/O has the ability to monitor environmental alarms, intrusion detection, relay contact closures and equipment failure. Through remote operator or application control, opening and closing of integrated relay contacts or activation of digital output signals can be incorporated into any response of a critical event.

Management, Monitoring and Control of High-Value Distributed I/O Assets

Ideal for the monitoring and protection of high value **distributed I/O** assets and access to its data. This also involves the protection and control of the physical environment along with the ability to take corrective action when necessary. Digital and analog sensors, proximity and mechanical switches, relays, pushbuttons, temperature and humidity sensors can assist in determining the integrity of the asset's local environment. Information from these sent back to a central support location over a network can help an enterprise react more quickly to an important event or failure.

Why IOLAN DS I/O Device Servers are the preferred choice:

- Universal Digital I/O, Analog input, RTD/Thermocouple temperature sensor input and EIA/RS-232/422/485 offer flexibility for a wide range of applications
- [Digital I/O Extension](#) provides a cable replacement solution by transmitting digital input signals to a remote output peer over an IP/ Ethernet network
- [Models with AES or 3DES encryption are also available](#)
- Attached I/O devices can be **Modbus UID addressable** for operational compatibility
- Plug & Play installation utility eliminates configuration hassles for all IOLAN's on your IP network
- Advanced event management using Syslog, and SNMP V3 event notification
- Central management capabilities via a Perle Device Manager for Windows
- Access IOLAN DS units using common web browsers or command line interface
- [Software Development Kit](#) available to develop powerful custom applications



Access I/O Devices over Ethernet using Popular Central Applications

An IOLAN I/O Device Server is ideal for remote I/O management using common SCADA or OPC Servers using Modbus/TCP protocol as well as Network Management Systems (NMS) utilizing SNMP.

Flexible and Reliable COM/TTY Access to Ethernet I/O

An IOLAN I/O Device Server is ideal for connecting COM/TTY based applications such as **Modbus ASCII/RTU** to **remote I/O devices**. Perle's [TruePort re-director](#) provides COM port or fixed TTY connections across an IP network.

An Application Program Interface (API) is also available so that custom applications can be developed to access **distributed I/O** channels attached to remote IOLAN I/O Device Servers. Common serial applications such as Visual Basic can be used to send IOLAN API commands to remote IOLAN I/O Device Servers across an IP network. This API is available for the most popular operating systems today.

Universal I/O

The IOLAN DS I/O device server connects to a wide variety of **distributed I/O** devices. For examples [click here](#).

Universal I/O on IOLAN I/O Device Servers provides flexibility when used across a wide array of environments. Individual digital channels can be configured as either inputs or outputs. Analog Inputs can support a broad range of voltage or current type devices including industrial grade temperature sensors such as thermocouples and RTDs.

Models with integrated solid state relays can be used to control remote contact closures.

Automated response to alarm conditions

IOLAN DS I/O Device Servers have the capability of measuring input conditions and intelligently alerting enterprise resources such as central TCP/IP based applications, Syslog or SNMP. By instantly generating alerts when pre-defined threshold levels have been exceeded, alarm notifications can be passed along when needed. This eliminates the packet-based overheads associated with polled environments.

Rugged Industrial-Grade Design

Compact and protective metal enclosure for wall mount or DIN rail mounting environments. Industrial grade unit protection is provided through optical isolation of I/O channels of 2000 Vrms, Ethernet isolation of 1500 Vrms, open/short detection logic on RTD/Thermocouple inputs and 15,000 volts electrostatic discharge protection across all serial pins.



Advanced IP Technology

With support for Next Generation IP (IPv6) the IOLAN range provides organizations with investment protection to meet this rapidly growing standard.

Demand for IPv6, which is compatible with IPv4 addressing schemes, is driven by the need for more IP address. With the implementation and rollout of advanced cellular networks, a robust method is needed to handle the huge influx of new IP addressable devices on the Internet. In fact, the US Department of Defense has mandated that all equipment purchased be IPv6 compatible. In addition, all major Operating Systems such as Windows, Linux, Unix and Solaris, as well as routers, have built-in support for IPv6.

It is therefore important for end users and integrators to select networking equipment that incorporates the IPv6 standard. The IOLAN line with support for IPv6 already built in, is the best choice in serial to Ethernet technology.

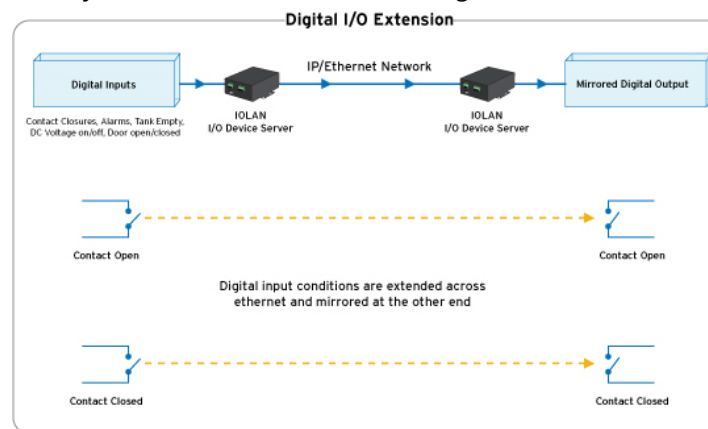
Lifetime Warranty

The Perle IOLAN DS is backed by the best service and support in the industry including Perle's unique lifetime warranty. Since 1976 Perle has been providing its customers with networking products that have the highest levels of performance, flexibility, and quality.

Digital I/O Extension – I/O Tunneling

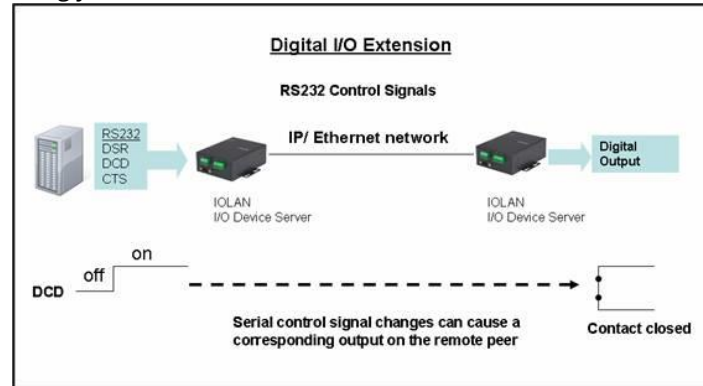
The IOLAN's Digital I/O extension feature, sometimes referred to as I/O tunneling, provides a cable replacement solution by transmitting digital input signals to a remote output peer over an IP/ Ethernet network from PLC controllers, DCS systems or OEM equipment. Applicable to all [IOLAN Ethernet I/O Device Server](#) digital models, this feature can be used in various modes of operation.

Pass the state of a digital I/O input on one end and mirror this condition on the digital output on the other end. For example, a dry contact closure at one remote location can, in effect, be duplicated via a closure of a relay contact at another location using an IP Ethernet network



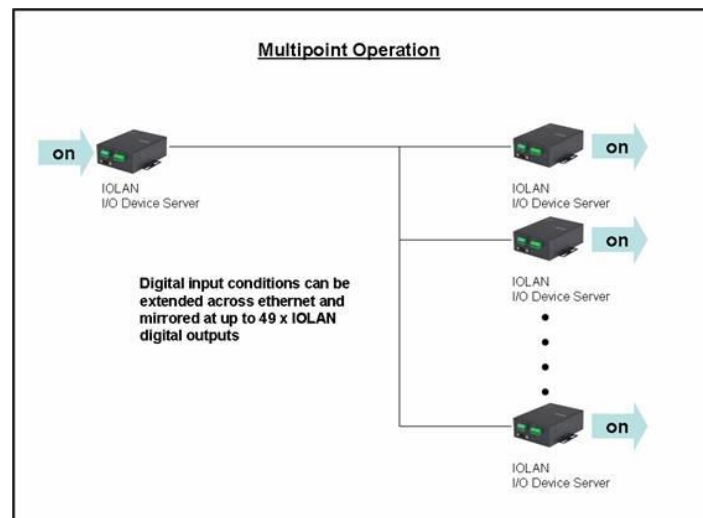
Digital I/O Extension – RS-232 Control

RS232 control signals such as DSR, DCD and CTS can also be used as digital extension inputs to the IOLAN I/O Device Server. This is ideal where a contact closure is required at a remote location, but the source end point has an RS232 serial port instead of a pure digital I/O output. With a connection to its DB9 serial port, the IOLAN will pass the state condition to its remote peer accordingly.



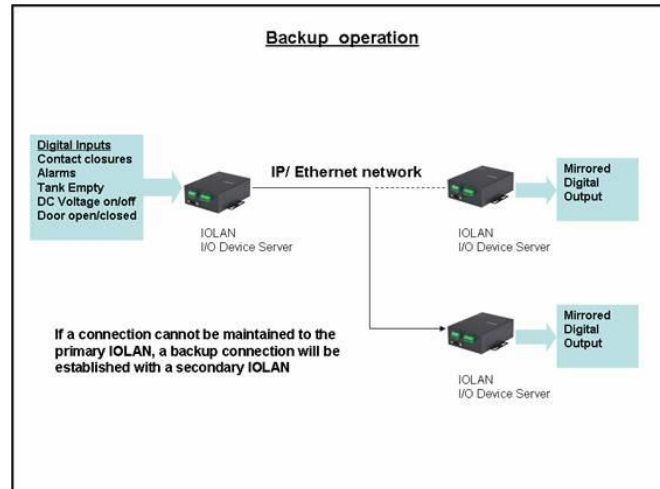
Digital I/O Extension – Multipoint Operation

[IOLAN Ethernet I/O Device Servers](#) can also be configured for multipoint operation where a single digital input condition can be duplicated or mirrored across up to 49 IOLAN digital outputs. This is ideal for redundancy applications where critical remote digital conditions need to be visible to multiple pieces of monitoring equipment simultaneously.



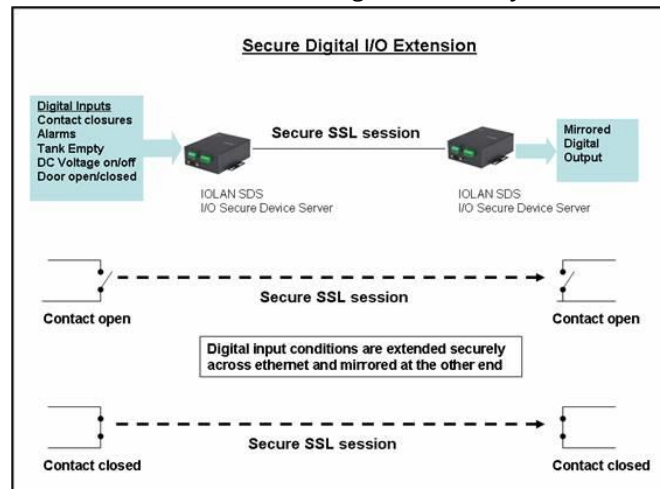
Digital I/O Extension – Automatic Backup

When a backup digital output location is required, the IOLAN Ethernet I/O Device Server automatic backup feature can be used. Whenever the primary session fails, the IOLAN will automatically seek to establish a session with a secondary IOLAN device. Once the primary session resumes, the source IOLAN will terminate the secondary session and resume sending events on the primary.



Digital I/O Extension – Secure Digital SSL

This exclusive feature, available only on secure [IOLAN SDS I/O Device Servers](#), enables encrypted SSL sessions to be established for passing along digital state changes across an unsecured network. This prevents sensitive I/O state conditions from being monitored by unauthorized users or hackers.



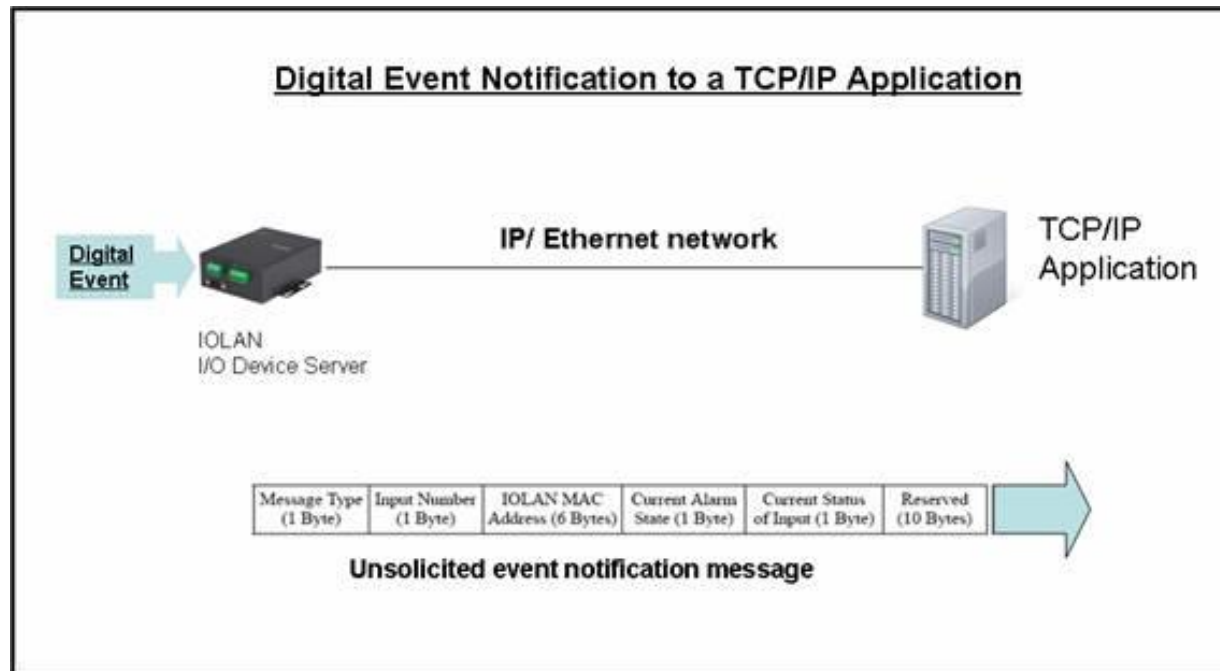
Digital I/O Extension – Event Notification

Ethernet I/O Event Notification to a TCP/IP Application

Custom TCP/IP applications can be created to receive digital events from remote digital inputs such as alarms and contact closures. These applications can then record, notify, and react to the digital event notification accordingly.

The Digital I/O extension feature's event driven notification message is a simple 20 byte format enabling programmers to quickly develop an interface to remote [IOLAN Ethernet I/O Device Servers](#).

IOLAN Event Notification Message Format



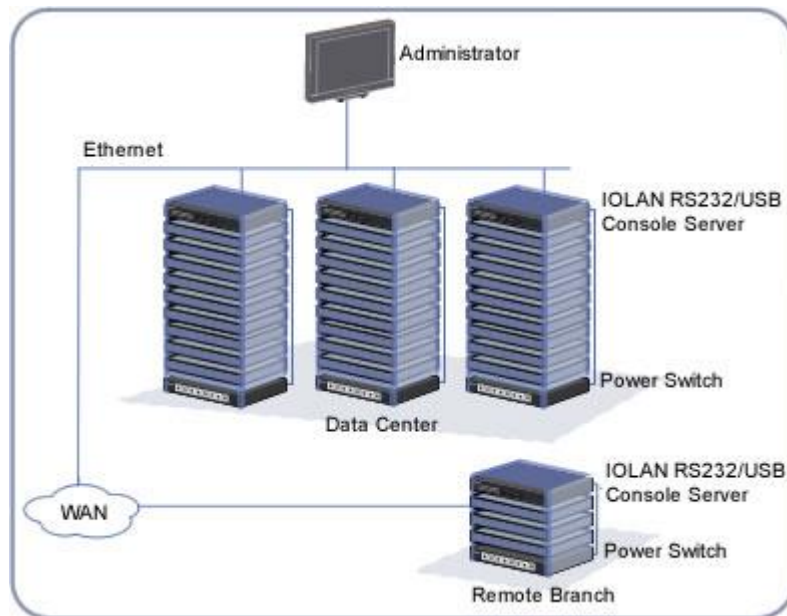


Remote Power Switches

Perle's **Remote Power Switches (RPS)** enable you to remotely power on/off/cycle Data Center equipment to reduce downtime, service costs and resources. Operate as an integrated solution with IOLAN Console Servers or as a standalone device over Ethernet.

The **RPS** offers the following benefits:

- Improve administrative efficiencies with integrated multi-outlet power control, all from a single vendor
- Increase uptime
- Maintain Business Continuity
- Proactively identify and manage problems to improve mean time between failure (MTBF)
- Restore IT assets without dispatching service personnel to remote Data Centers



Complex IT infrastructure server platforms such as Windows 2003, networking and telecom equipment are sometimes prone to entering states that are not recoverable through normal remote administrative commands even at the BIOS level. The last resort activity is a hard reboot, which requires the administrator to physically power cycle the equipment. This is not only an inconvenience to the administrator, especially if it is remotely located or if it happens in the middle of the night, which lengthens the downtime, disrupts business continuity and increases service costs.

The Perle **RPS**, an intelligent power switch located near the equipment, can remotely power cycle the equipment to restore functionality resulting in decrease risks by reducing mean time to recovery (MTTR).

Integrated Management with Perle IOLAN Console Servers

When used with our IOLAN console servers, Perle Remote Power Switches form an integral part of a total Data Center management solution. Remote power management of equipment takes advantage of the extensive security such as SSH/SSL encryption, RADIUS, TACACS, Kerberos, LDAP, NIS and SecurID authentication schemes provided by IOLAN console servers.

Through a power hot-key tool on the IOLAN, administrators can power cycle equipment while they are still in their serial console session, enabling them to monitor equipment start-up messages as it is restored.



Features - Remote Power Switch

- **Independent Control of Power Ports**

Each AC power plug can be independently powered on, off or cycled giving complete control over when and in which sequence equipment is restored.

- **Dual AC Power Bus Architecture**

Perle RPS models are the only remote power switches with a dual AC Power bus architecture providing better equipment protection than single power bus systems.

When used with redundant power systems such as the Dell Poweredge 6850, Perle's Remote Power Switches are able to draw power from separate AC sources ensuring that at least one source of AC power is always up and running thereby maximizing equipment uptime.

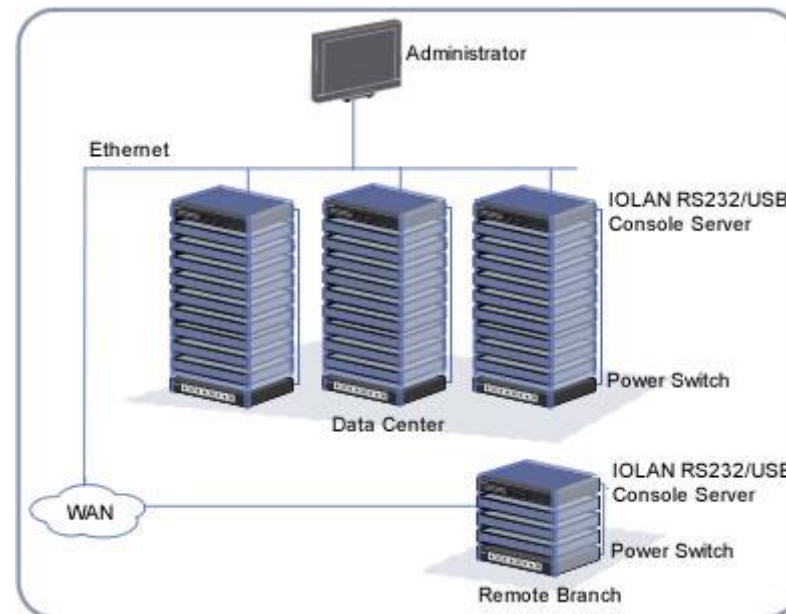
Both power buses are protected by separate breakers. If a breaker does trip, only the associated bus will be turned off, leaving the other bus operational. Single bus power switches that come with single or dual breaker systems will shut down the entire power switch when there is a breaker-tripping event.

- **Horizontal Form Factor Models with NEMA or IEC Plug standards**

Perle Remote Power Switches are available in a configuration to meet your data center power needs. Various models are available in horizontal (1U or 2U) form factors as well a choice of North American NEMA or international IEC power plug standards

- **Emergency Manual Power Switch**

This gives an IT administrator in the vicinity the ability to power on or off the switch in an emergency. Other vendors require the unplugging of power input cords which would cause potentially dangerous arcing or having run to the main power panel to trip a breaker.



MCR200 Media Converter Chassis

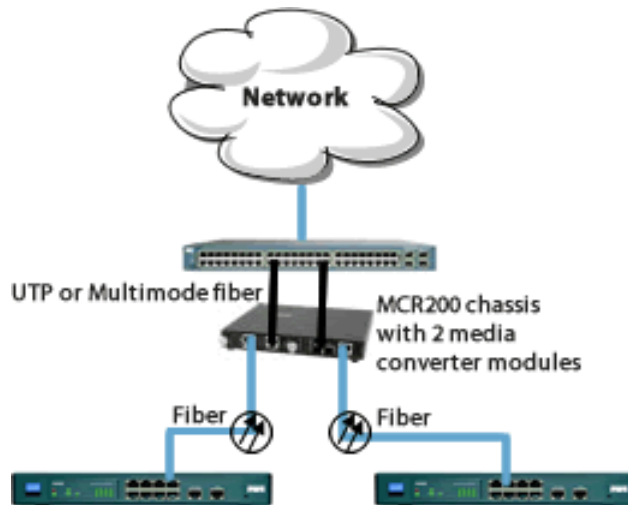
Compact 2-module chassis

- Slim, low-profile size
- High reliability with no internal fan
- Wall-mount or desktop for flexible installations
- 2-slot chassis that accepts Perle hot-swappable fiber and copper modules for mix and match flexibility



The **MCR200 Media Converter Chassis** is a compact 2-slot chassis that provides housing for any combination of **Perle Ethernet Copper Extender** and **Fiber Media Converter Modules**. This mix and match flexibility enables the chassis to support a wide variety of network structures where, in low to mid-density applications, a limited number of copper extenders and/or fiber converters need to be quickly implemented. For a high-density solution, please check out the MCR1900 Media Converter Chassis.

Two unmanaged media converter modules or Ethernet extenders can be installed in an MCR200 chassis. Sharing the same chassis power source, this cost effective solution eliminates the need for two power sources required by separate standalone media converters or Ethernet extenders.



When equipped with a managed media converter and MCR-MGT management module, the **MCR200 2-slot Chassis** provides a securely managed media converter solution for Enterprise and Service Provider networks. Perle supports all authentication, authorization, and accounting (AAA) security services used in corporate networks, including **TACACS+**, **RADIUS**, **LDAP**, **Kerberos**, **NIS** and **RSA**. To further protect ID's and passwords from someone 'snooping' on the network,

Perle Managed Media Converters provide secure management sessions by supporting **SSH**, **SNMPv3**, **Telnet** and **HTTPS**. And advanced features enable users to optimize network traffic and resource allocation. Perle also offers a wide variety of Stand-alone Managed Media Converters with copper to fiber modules already integrated into the MCR200 Media Converter Chassis.

For those environments requiring a medium to large-scale deployment of media converters, a centralized platform that simplifies the configuration, administration, monitoring, and troubleshooting of this gear is recommended. PerleVIEW Device Management software is a multi-user, Windows server-based application that delivers this level of Enterprise-grade solution.



MCR200 Media Converter Chassis Features

2-slot chassis

- Insert up to 2 copper or fiber modules into a single chassis. The modules share a common power source. A management module can also be installed with managed media converter modules.

Fan-less design

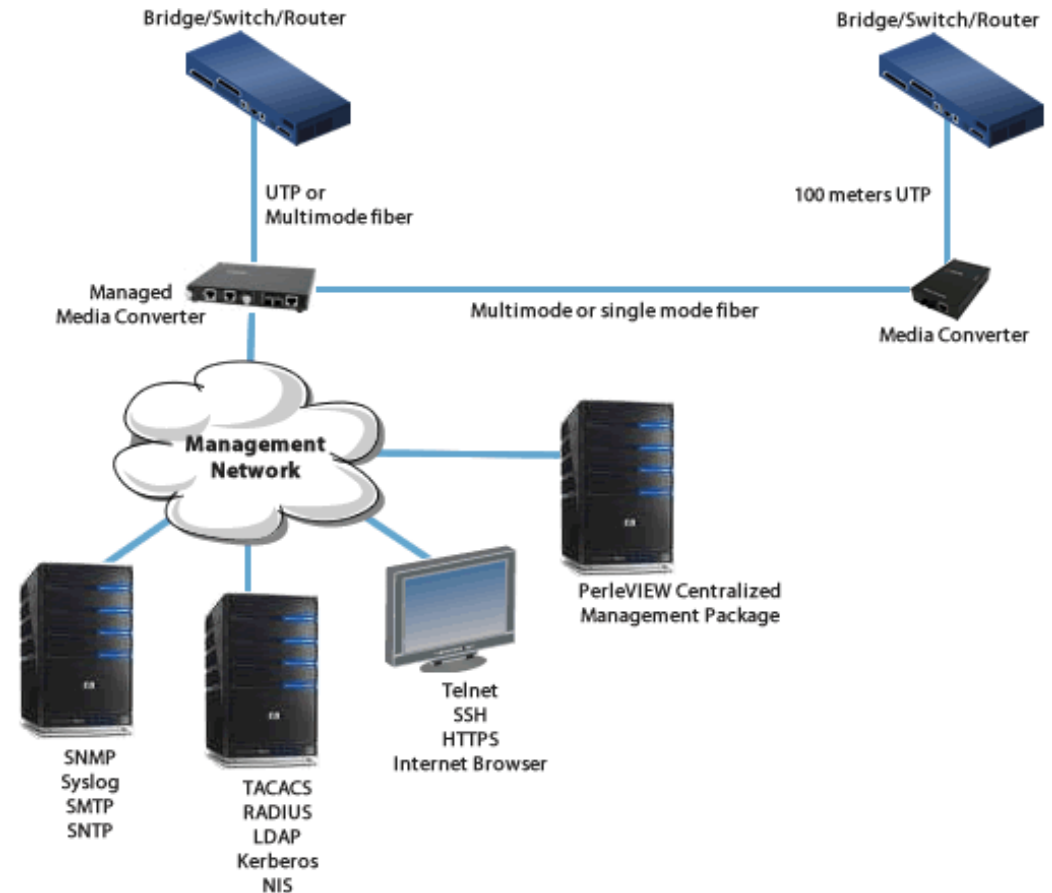
- A high reliability design that does not require an internal fan

Hot-Swappable modules

- Modules can be inserted and removed with no impact to the rest of the system. Upon insertion the module will automatically be powered up and begin functioning. Modules can be placed in any slot and in any order.

Rugged Chassis Design

- Unified design between chassis slot and module faceplates provides additional chassis strength.
- Redundant horizontal supports ensure that slot alignment remains accurate enabling easy card insertion and removals over time.
- Advanced card guide design along with 32 pin DIN 41612 connectors offer better card mating accuracy for reliable module additions and changes.
- Made with zinc coated cold-rolled steel offering excellent corrosion resistance.





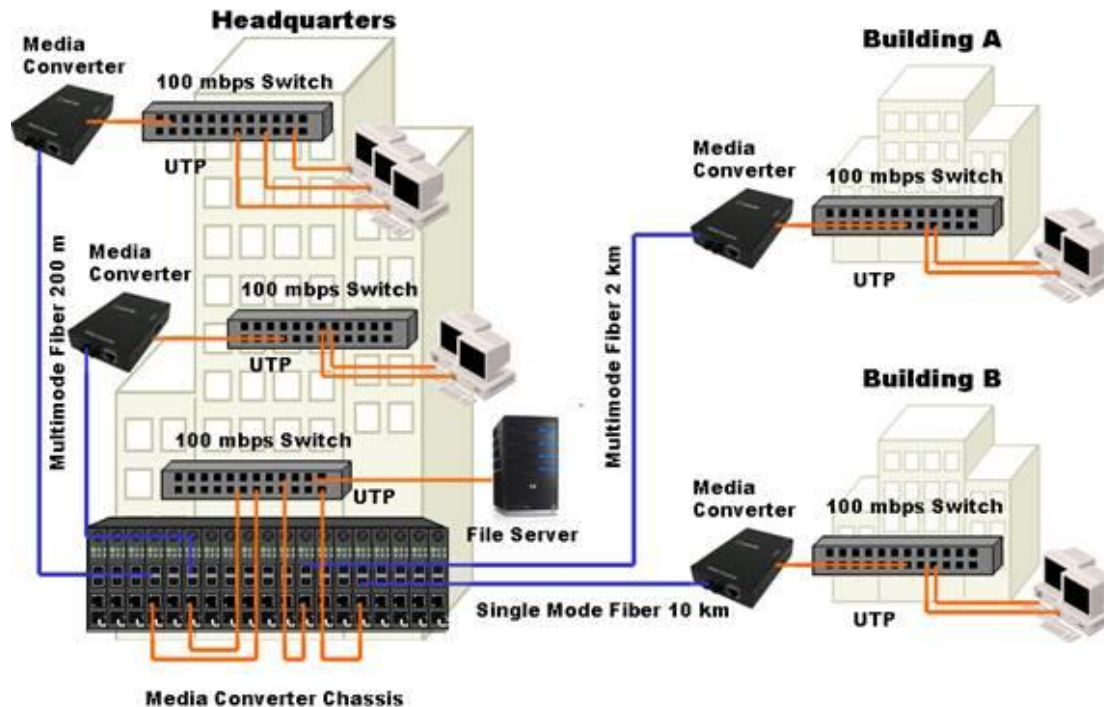
MCR1900 Media Converter Chassis

19-module chassis for Media Converters and Ethernet Extender

- High density 19-slot system
- Fits a standard 19" or 23" rack – 2U height
- Hot-swappable Media Converter Modules
- Hot-swappable Managed Media Converter Modules
- Hot-swappable Ethernet Copper Extender Modules
- Redundant hot-swappable AC and 48v DC power supplies



Campus Network



The Perle MCR1900 Media Converter Chassis is the most reliable high density modular chassis system available today. It is ideal for enterprise and campus environments where multiple points of copper and/or fiber integration are essential. An end-to-end **copper to copper, copper to fiber, multimode to single mode** or **multimode to multimode** solution can be achieved by pairing modules in this high density chassis with another Perle MCR1900 chassis standalone media converters, or standalone Ethernet extenders. Management of Media Converter Modules and chassis can be performed with the addition of a chassis management module. For a low to mid density solution, please check out the MCR200 Media Converter Chassis.

For those environments requiring a medium to large-scale deployment of media converters, a centralized platform that simplifies the configuration, administration, monitoring, and troubleshooting of this gear is recommended. PerleVIEW Device Management software is a multi-user, Windows server-based application that delivers this level of Enterprise-grade solution.



MCR1900 Media Converter Chassis Features

High Density Media Converter Platform

- Insert up to 19 modules into a single 2U chassis. The modules share a common power source.

Power Supply Failover

- On dual power supply configurations, the load sharing power supplies provide instant failover should a power supply or power source fail. A single power supply can provide more than sufficient power for a fully loaded system.

Hot-Swappable modules

- Modules can be inserted and removed with no impact to the rest of the system. Upon insertion the module will automatically be powered up and begin functioning. Modules can be placed in any slot and in any order.

Intelligent Alarm Relay

- A backplane controller provides continuous monitoring of vital chassis resources. The built-in, normally open/closed, dry contact relay will engage on the following fault conditions:
 - High internal temperature
 - Power supply Failure
 - Fan speed failure
 - Backplane voltage error

Rugged Chassis Design

- U-channelled card cage provides high torsional rigidity
- Unified design between chassis slot and module faceplates provides additional chassis strength
- Redundant vertical supports ensure that slot alignment remains accurate enabling easy card insertion and removals over time
- Advanced card guide design along with 32 pin DIN 41612 connectors offer better card mating accuracy for reliable module additions and changes
- Made with zinc coated cold-rolled steel offering excellent corrosion resistance
- Extra ventilation slots on module face plates provide cooler operation and longer life
- Multi-channel air flow for improve card cooling
- Auto-Thermal Shutdown Protection should internal temperature threshold be exceeded



Managed Media Converters

Link Copper and Fiber Networks

Managed Media Converters link **copper to fiber**, **multimode to single mode**, or **extend the data transmission distance of a multimode** network in environments where support of the existing network security system is critical. Perle **Managed Media Converters** support all [authentication, authorization and accounting \(AAA\) security](#) services used in corporate networks, including **TACACS+**, **RADIUS**, **LDAP**, **Kerberos**, **NIS** and **RSA**. To further protect ID's and passwords from someone 'snooping' on the network, Perle Managed Media Converters provide [secure management sessions](#) by supporting **SSH**, **SNMPv3**, **Telnet**, and **HTTPS**. These types of features are used when managing your corporate firewalls, switches and routers. It should be expected that they are also available in your Managed Media Converter.

- Link 10Mbps, 100Mbps, 1G, 2.5G, or 10G Copper to Multimode or Single Mode fiber
- Convert Single Mode to Multimode (SM to MM)
- Extend Multimode an additional 2km
- Supports Dual Fiber and Single Fiber (SX, FX, LX, EX, ZX, BX) connections and data transmission
- Advanced features enable users to optimize network traffic and resource allocation

This is just a minor selection of the companies that use Perle Managed Media Converters



Why Choose a Perle Managed Media Converter?

Robust Media Converter



Perle only uses **high-end components** from leading chip manufacturers to ensure product reliability. Perle's advanced implementation of Link Pass-Through includes an onboard processor that continuously monitors the status of the links and sends a notification if the fiber connection is broken or disconnected.

Cisco Compatible Media Converter



Perle Media Converters are compatible with Cisco switches and routers. As a key component in the reliability and stability of your network, you need dependable Media Converters with seamless interoperability.

Secure Media Converter



Perle Managed Media Converters support all **AAA security services** (TACACS+, RADIUS, LDAP, Kerberos, NIS and RSA) used in corporate networks, as well as SSH/SSL, SNMPv3, Telnet, and HTTPS **secure management sessions**. And, PerleVIEW Central Management Software simplifies the configuration, administration, monitoring and troubleshooting

Trust



Perle has been providing reliable device connectivity solutions **since 1976. That's over 40 years** of experience that businesses around the globe have come to trust to deliver superior connectivity technology for mission critical applications

Reliable Media Converter

Most Media Converter manufacturers do not publish



(or make very difficult to find) their MTBF's. Perle is proud to publish the high MTBF rates on the Hardware Specs for each product. In addition, we provide the best-in-class Lifetime Warranty.

Technical Support



Perle has sales and technical support staff around the globe to support you. If you need help choosing the best Media Converter for your application, they provide technical consultation by phone or email. And, even though Perle Fiber Converters are extremely easy to install and configure, their post-sales support team is easy to contact.

Media Converter Chassis related products

- Unmanaged Media Converter Modules
- Managed Media Converter Modules
- Ethernet Copper Extender Modules
- Chassis Management Module



Managed Fiber Media Converters

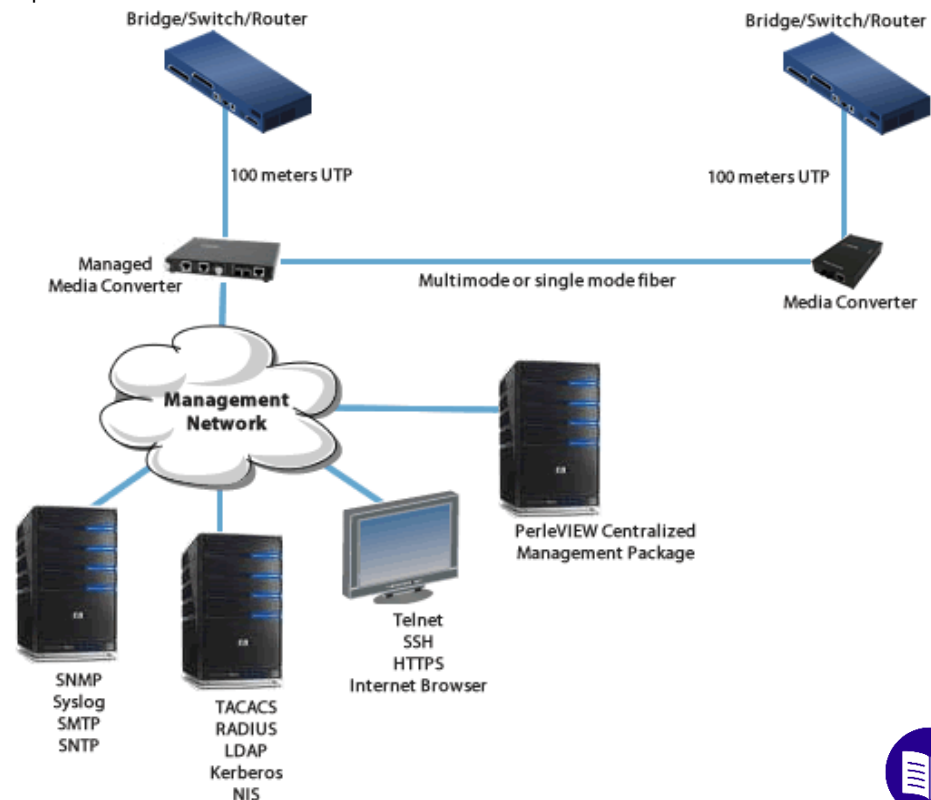
Fiber to Copper and Fiber to Fiber Conversion

Managed Media Converters link **copper to fiber**, **multimode to single mode fiber**, or **extend the data transmission distance of a multimode** network in environments where support of the existing network security system is critical. Perle **Managed Media Converters** support all authentication, authorization and accounting (AAA) security services used in corporate networks, including **TACACS+**, **RADIUS**, **LDAP**, **Kerberos**, **NIS** and **RSA**. To further protect ID's and passwords from someone 'snooping' on the network, Perle Managed Media Converters provide secure management sessions by supporting **SSH**, **SNMPv3**, **Telnet**, and **HTTPS**. And, advanced features enable users to optimize network traffic and resource allocation.

- Link 10Mbps, 100Mbps, 1G, 2.5G, or 10G Copper to Multimode or Single Mode fiber
- Convert Single Mode to Multimode (SM to MM)
- Extend Multimode an additional 2km
- Supports Dual Fiber and Single Fiber (SX, FX, LX, EX, ZX, BX) connections and data transmission
- Advanced Features: Link Pass-Through, Far-End Fault, Auto-MDIX and Loopback
- Metal desktop, DIN rail, or wall-mount chassis
- Manage via SNMP, CLI - Telnet/SSH, Internet browser, or PerleVIEW Centralized Management Package

Managed Ethernet to Fiber Links'

Manage your copper to fiber link with a Managed Standalone Media Converter. Ideal for use in managed networks with low density fiber applications. A Managed Standalone Media Converter is connected across a fiber link to a remote media converter. The copper and fiber link on the managed standalone unit can provide vital information and status to network management tools such as SNMP.



SMI-10GR-STS Managed Media Converters

1G to 10G Fiber and Rate Converters



- Fiber to Fiber, copper to fiber and copper to copper conversion
- Conduct 1G to 10G rate conversion
- 2 empty slots that use a variety of transceivers supplied by Perle, Cisco or other MSA compliant SFP+ and XFPs
- Advanced features: Cut-Through Forwarding, Smart Link Pass-Through, Fiber Fault Alert, Built-in Link Test Generator and Loopback
- Support for Power Level 1 and 2
- Optical signal regeneration: 3R (re-amplify, reshape, and retiming)
- Manage via SNMP, CLI - Telnet/SSH, Internet browser, or PerleVIEW Centralized Management Package

The Perle **SMI-10GR-STS Managed Media Converter** transparently connects 1G and 10G Ethernet links over multimode or single mode fiber in **environments where network security is critical**. Each Media Converter comes with two pluggable transceiver ports that support fiber to fiber, copper to fiber or copper to copper media conversion.

The SMI-10GR-STS Managed Media Converter supports key features for ultimate network flexibility and growth.

- 1G and 10G rate conversion can be enabled to automatically detect Ethernet port speed and do a rate conversion between the two ports if the Ethernet speed is different. This is ideal in scenarios where disparate networks need to be connected.
- Cut-Through Forwarding can be configured for environments where throughput speed is critical. This will increase the media converter's throughput and reduce latency by performing packet forwarding in the most efficient manner possible.

SMI-10GR-STS Managed Media

Converter support all authentication, authorization and accounting (AAA) security services used in corporate networks, including TACACS+, RADIUS, LDAP, Kerberos, NIS and RSA. To further protect ID's and passwords from someone 'snooping' on the network, Perle Managed Media Converters provide secure management sessions by supporting **SSH, SNMPv3, Telnet and HTTPS**. These types of features are used when managing your corporate firewalls, switches and routers. This is why Perle makes them available in the **SMI-10G Managed Media Converter**. 10G Media Converters are also available for unmanaged applications.

Fiber to Fiber and Copper to Fiber conversion is achieved by inserting SFP or SFP+ fiber transceivers that support multimode and single-mode fiber, including CWDM/DWDM wavelengths. Copper to copper is achieved by inserting SFP or SFP+ Direct Attach Cable (DAC), also known as twinax, transceivers.

The empty transceiver ports on the **SMI-10GR-STS Managed Media Converter** allow for flexible network configurations to meet any requirement using a variety of transceivers supplied by Perle, Cisco or other manufacturers of MSA compliant SFP. You can use the SMI-10GR-STS to convert:

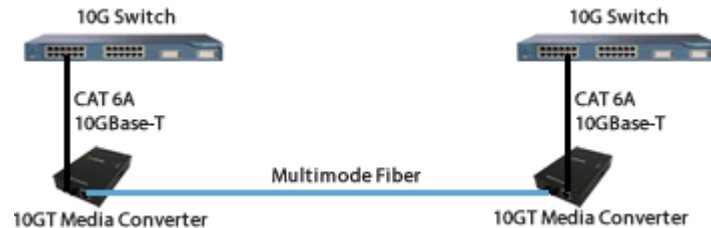


Copper to Fiber Conversion (1G and 10G)

- 1G Copper SFP to 1G Fiber SFP
- 1G Copper SFP/SFP+ to 10G Fiber SFP+

Copper to Fiber or Fiber to Fiber Rate Conversion

Using the dual SFP slots, convert 1G copper to 10G multimode or single mode fiber. Or, convert 1G fiber to 10G fiber.



The Perle SMI-10GR-STs Managed Media Converter provides an economical path to extend Ethernet data transmission distances or convert network speeds. Network Administrators can “see-everything” with Perle’s advanced features such as Smart Link Pass-Through, Fiber Fault Alert and Loopback. This allows for more efficient troubleshooting and less on-site maintenance. These cost and time saving features, along with a lifetime warranty and free worldwide technical support, make the Perle **SMI-10GR-STs Managed Media Converter** the smart choice for IT professionals.

10 Gigabit Ethernet Fiber Repeater

Extend the network distance of 10 Gigabit Fiber Links
Create a 10 Gigabit Ethernet fiber link that can extend up to 160km.



Fiber to Fiber Conversion (1G and 10G)

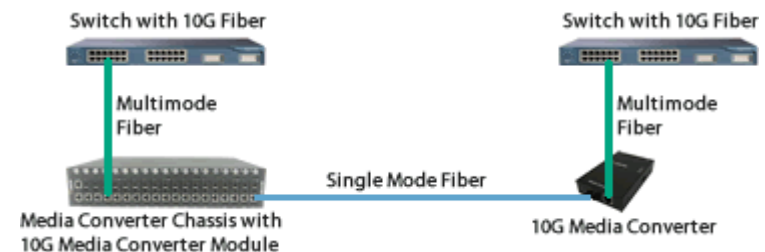
- 1G Fiber SFP to 1G Fiber SFP
- 1G Fiber SFP to 10G Fiber SFP+
- 10G Fiber SFP+ to 10G Fiber SFP+

Copper to Copper Conversion (1G and SGMII)

- 1G Copper SFP to 1G Copper SFP

10 Gigabit Ethernet Fiber Extender

Extend the network distance between two 10 Gigabit Fiber Switches
Two 10 Gigabit Mode Media Converters can extend the distance between 10 Gigabit Multimode Switches across a fiber link up to 80km in length.





SMI-10GRT-SFP Managed Media Converter

10/100/1000/2.5G/10GBase-T to SFP Copper or Fiber Converter



- Copper to fiber and copper to copper conversion
- Uses a variety of transceivers supplied by Perle, Cisco or other MSA compliant SFP+
- Advanced features: Cut-Through Forwarding, Smart Link Pass-Through, Fiber Fault Alert, Built-in Link Test Generator and Loopback
- Manage via SNMP, CLI - Telnet/SSH, Internet browser, or PerleVIEW Centralized Management Package
- Support for Power Level 1 and 2

The Perle **SMI-10GRT-SFP Managed Media Converter** transparently connects 10/100/1000/2.5G/10GBase-T Ethernet links over multimode or single mode fiber. Each Media Converter comes with one RJ45 port and an empty slot for one SFP or SFP+ module.

The SMI-10GRT-SFP Managed Media Converter supports key features for ultimate network flexibility and growth.

- 10/100/1000/2.5G/10G rate conversion can be enabled to automatically detect Ethernet port speed and do a rate conversion between the two ports if the Ethernet speed is different. This is ideal in scenarios where disparate networks need to be connected.
- Cut-Through Forwarding can be configured for environments where throughput speed is critical. This will increase the media converter's throughput and reduce latency by performing packet forwarding in the most efficient manner possible

SMI-10GRT-SFP Managed Media Converters support all authentication, authorization, and accounting (AAA) security services used in corporate networks, including TACACS+, RADIUS, LDAP, Kerberos, NIS and RSA. To further protect ID's and passwords from someone 'snooping' on the network, Perle Managed Media Converters provide secure management sessions by supporting **SSH, SNMPv3, Telnet and HTTPS**. These types of features are used when managing your corporate firewalls, switches and routers. This is why Perle makes them available in the **SMI-10GT Managed Media Converter**. 10GBASE-T Media Converters are also available for unmanaged applications.

Copper to Fiber conversion is achieved by inserting SFP or SFP+ fiber transceivers that support multimode and single-mode fiber, including CWDM/DWDM wavelengths. Copper to copper is achieved by inserting SFP+ Direct Attach Cable (DAC), also known as twinax.

The empty transceiver port on the **SMI-10GRT-SFP Managed Media Converter** allows for flexible network configurations to meet any requirement using a variety of 10G transceivers supplied by Perle, Cisco or other manufacturers of MSA compliant SFP. You can use this product to convert:



Copper to Fiber Conversion:

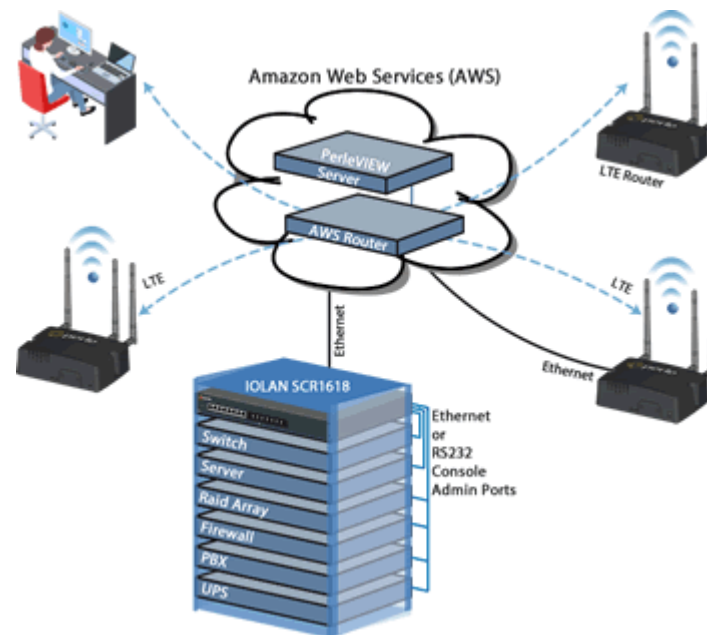
- 10/100/1000/2.5G/10GBase-T to 1G Fiber SFP
- 10/100/1000/2.5G/10GBase-T to 10G Fiber SFP+

Copper to Copper Conversion:

- 10/100/1000/2.5G/10GBase-T to 1G Copper SFP

The Perle SMI-10GRT-SFP Managed Media Converter provides an economical path to extend Ethernet data transmission distances or convert network speeds. Network Administrators can “see-everything” with Perle’s advanced features such as Smart Link Pass-Through, Fiber Fault Alert and Loopback. This allows for more efficient troubleshooting and less on-site maintenance. These cost and time saving features, along with a **lifetime warranty** and **free worldwide technical support**, make the Perle **SMI-10GRT-SFP Managed Media Converters** the smart choice for IT professionals.

For those environments requiring a medium to large-scale deployment of media converters, a centralized platform that simplifies the configuration, administration, monitoring, and troubleshooting of Perle Managed Media Converters is recommended. PerleVIEW Device Management software is a multi-user, Windows server-based application that delivers this level of Enterprise-grade solution.





SMI-10GT-XFPH Managed Media Converter

10GBase-T to XFP Copper and Fiber Converter

- Copper to fiber and copper to copper conversion
- Uses MSA compliant XFPs
- Advanced features –Smart Link Pass-Through, Fiber Fault Alert, Built-in Link Test Generator and Loopback
- Manage via SNMP, CLI - Telnet/SSH, Internet browser, or PerleVIEW Centralized Management Package
- Support for Power Level 1,2,3 as well as high-power Level 4 XFPs

Perle **SMI-10GT-XFPH Managed Media Converter** transparently connects 10GBase-T Ethernet links over multimode or single mode fiber in **environments where network security is critical**. The SMI-10GRT additionally supports 10/100/1000/2500/10000 rate conversion. Each 10GBASE-T Media Converter comes with one RJ45 10GBase-T port and an empty slot for one XFP module.



SMI-10GT-XFPH Managed Media Converters support all authentication, authorization, and accounting (AAA) security services used in corporate networks, including TACACS+, RADIUS, LDAP, Kerberos, NIS and RSA. To further protect ID's and passwords from someone 'snooping' on the network, Perle Managed Media Converters provide secure management sessions by supporting **SSH, SNMPv3, Telnet and HTTPS**. These types of features are used when managing your corporate firewalls, switches and routers. This is why Perle makes them available in the **SMI-10GT-XFPH Managed Media Converter**. 10GBASE-T Media Converters are also available for unmanaged applications.

Copper to Fiber conversion is achieved by inserting an XFP fiber transceivers that supports multimode and single-mode fiber, including CWDM/DWDM wavelengths. Copper to copper is achieved by inserting XFP 10Gbase-CX4 transceivers.

The empty transceiver port on the **SMI-10GT-XFPH Managed Media Converter** allows for flexible network configurations to meet any requirement using a variety of MSA compliant XFPs. You can use this product to convert:

- 10GBase-T (RJ45) to XFP
- 10GBase-T (RJ45) to 10GBase-CX4 (XFP)

Perle 10GBASE-T Gigabit Ethernet to Fiber Converters provide an economical path to extend the distance of an existing 10GbE link. Network Administrators can “see-everything” with Perle’s advanced features such as Smart Link Pass-Through, Fiber Fault Alert, a built-in Link Test capability and Loopback. This allows for more efficient troubleshooting and less on-site maintenance. These cost and time saving features, along with a **lifetime warranty** and **free worldwide technical support**, make the Perle **SMI-10GT-XFPH Managed Media Converters** the smart choice for IT professionals. This product is also available for managed networks with AAA Security.

For those environments requiring a medium to large-scale deployment of media converters, a centralized platform that simplifies the configuration, administration, monitoring, and troubleshooting of Perle Managed Media Converters is recommended. PerleVIEW Device Management software is a multi-user, Windows server-based application that delivers this level of Enterprise-grade solution.





SMI-10G Managed Media Converters

10 Gigabit Copper and Fiber Converters

- Fiber to Fiber, copper to fiber and copper to copper conversion
- 2 empty slots that use a variety of 10G transceivers supplied by Perle, Cisco or other MSA compliant SFP+ and XFPs
- Advanced features –Smart Link Pass-Through, Fiber Fault Alert, Built-in Link Test Generator and Loopback
- Support for Power Level 1,2,3 as well as high-power Level 4 XFPs
- Optical signal regeneration: 3R (re-amplify, reshape, and retiming)
- Manage via SNMP, CLI - Telnet/SSH, Internet browser, or PerleVIEW Centralized Management Package

Perle SMI-10G-STX Managed Media Converters transparently connect 10 Gigabit Ethernet links over multimode or single mode fiber in environments where network security is critical. Each 10GbE Media Converter comes with two pluggable transceiver ports that support fiber to fiber, copper to fiber or copper to copper media conversion.



SMI-10G-STX Managed Media Converters support all authentication, authorization and accounting (AAA) security services used in corporate networks, including TACACS+, RADIUS, LDAP, Kerberos, NIS and RSA. To further protect ID's and passwords from someone 'snooping' on the network, Perle Managed Media Converters provide secure management sessions by supporting SSH, SNMPv3, Telnet and HTTPS. These types of features are used when managing your corporate firewalls, switches and routers. This is why Perle makes them available in the SMI-10G-STX Managed Media Converter. 10G Media Converters are also available for unmanaged applications.

Fiber to Fiber and Copper to Fiber conversion is achieved by inserting XFP or SFP+ fiber transceivers that support multimode and single-mode fiber, including CWDM/DWDM wavelengths. Copper to copper is achieved by inserting SFP+ Direct Attach Cable (DAC), also known as twinax, or XFP 10Gbase-CX4 transceivers. The empty transceiver ports on the **SMI-10G-STX Managed Media Converters** allow for flexible network configurations to meet any requirement using a variety of 10G transceivers supplied by Perle, Cisco or other manufacturers of MSA compliant SFP+ and XFPs. You can use these products to convert:

- SFP+ to SFP+
- XFP to XFP
- XFP to SFP+
- SFP to SFP (1000Base-x to 1000Base-x)
- SFP+ to CX4

Perle 10 Gigabit Ethernet to Fiber Converters provide an economical path to extend the distance of an existing 10GbE link. Network Administrators can "see-everything" with Perle's advanced features such as Smart Link Pass-Through, Fiber Fault Alert, a built-in Link Test capability and Loopback. This allows for more efficient troubleshooting and less on-site maintenance. These cost and time saving features, along with a **lifetime warranty and free worldwide technical support**, make Perle **SMI-10G-STX Media Converters** the smart choice for IT professionals.





SMI-4GPT-DSFP Fiber Mode Converter

Managed SFP to SFP Protocol Transparent Media Converter

- Easy Fiber to Fiber network extension to remote locations
- Provide wavelength conversion for CWDM and DWDM transponder applications
- Protocol-transparency support for all network protocols
- Support for SFP transceivers with data rates up to 4.25 Gbps
- Reliable operation with advanced features like Smart Link Pass-Through and Fiber Fault Alert
- Manage via SNMP, CLI - Telnet/SSH, Internet Browser, or PerleVIEW Centralized Management Package



Perle **SFP to SFP protocol and rate-transparent managed media converters** enable network administrators to incorporate multiple fiber types and wavelengths in, or between, networks through **fiber to fiber mode conversion**. Using this technology will result in significant cost savings when compared to replacing an optical blade on network equipment. Easily extend a LAN in **environments where network security is critical** by converting:

- Multimode to Multimode
- Multimode to Single Mode
- Single Mode to Single Mode
- Dual to single fiber (Duplex to Simplex BiDi)

SMI-4GPT Managed Media Converters support all authentication, authorization and accounting (AAA) security services used in corporate networks, including TACACS+, RADIUS, LDAP, Kerberos, NIS and RSA. To further protect ID's and passwords from someone 'snooping' on the network, Perle Managed Media Converters provide secure management sessions by supporting **SSH, SNMPv3, Telnet and HTTPS**. These types of features are used when managing your corporate firewalls, switches and routers. This is why Perle makes them available in the **SMI-4GPT Managed Media Converter**. SFP to SFP Media Converters are also available for unmanaged applications.

SFP to SFP Conversion

The **SMI-4GPT Fiber Mode Converter** comes with two empty SFP slots. This allows for flexible network configurations using SFP fiber transceivers supplied by Perle, Cisco or other manufacturers of MSA compliant SFPs. Adapting to different fiber types, distances and wavelengths is made simple by **mixing and matching SFP's as needed** for maximum flexibility across a variety of topologies and network architectures. The hot-swappable nature of SFPs allow for easy configuration and future upgrades as network demands evolve by simply upgrading a single SFP instead of replacing the entire fiber mode converter.

Convert different wavelengths (WDM Transponder)

SFP transceivers also enable the **SMI-4GPT Fiber Mode Converter** to operate as a **Wave Division Multiplexing (WDM) transponder**. Also referred to as Bi-Directional (BiDi) or Simplex, WDM Transponders help network administrators take advantage of the cost savings in both material and labour associated with Single Strand Fiber. WDM uses separate transmit and receive frequencies to **communicate on a single fiber strand**. WDM technology relies on the fact that optical fibers can carry many wavelengths of light simultaneously without interaction between each wavelength. Thus, a single fiber can carry many separate wavelength signals or channels simultaneously. WDM systems are divided into different wavelength patterns, conventional/coarse (**CWDM**) and dense (**DWDM**).

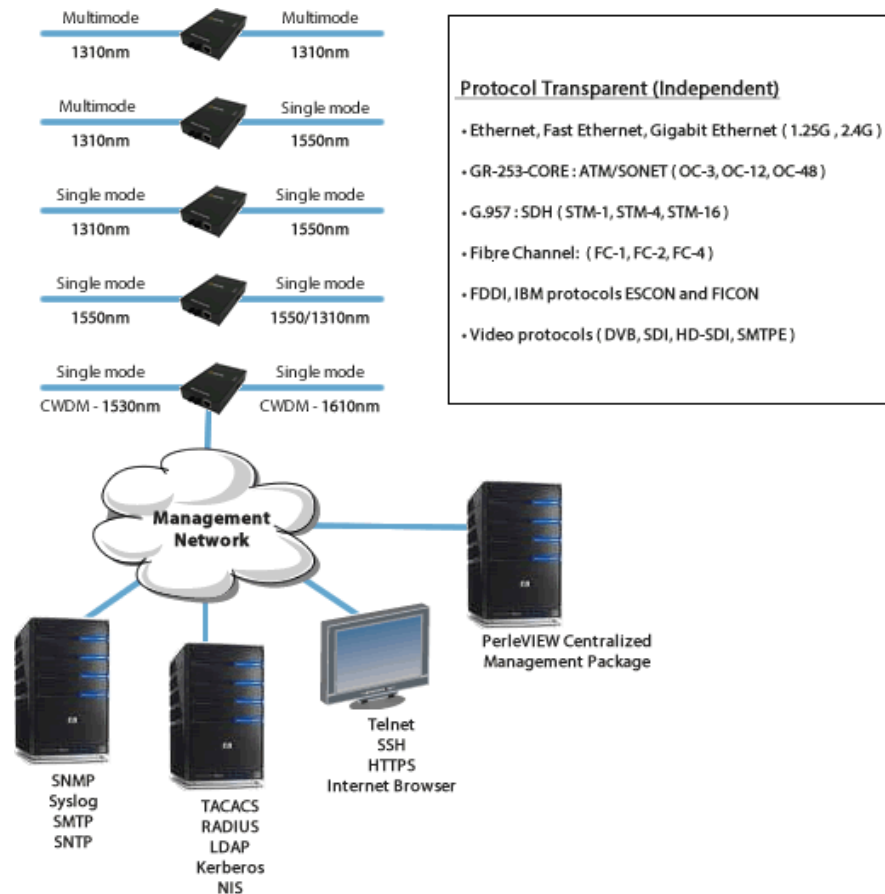


SMI-4GPT Fiber Mode Converter Features

Network Administrators can “see-everything” Perle’s advanced features such as Smart Link Pass-Through and Fiber Fault Alert. This allows for more efficient troubleshooting and less on-site maintenance. These cost and time saving features, along with a **lifetime warranty and free worldwide technical support**, make the **SMI-4GPT Fiber Mode Converter** the smart choice for IT professionals.

Interconnect Multiple Fiber Types and Wavelengths

Managed SFP to SFP protocol-transparent fiber mode converters enable network administrators to incorporate multiple fiber types and wavelengths within or between networks. See below some examples. The fiber link on the managed standalone unit can provide vital information and status to network management tools such as SNMP





SMI-1000 Gigabit Media Converters

1000Base-T to 1000Base-X Fiber Mode Conversion



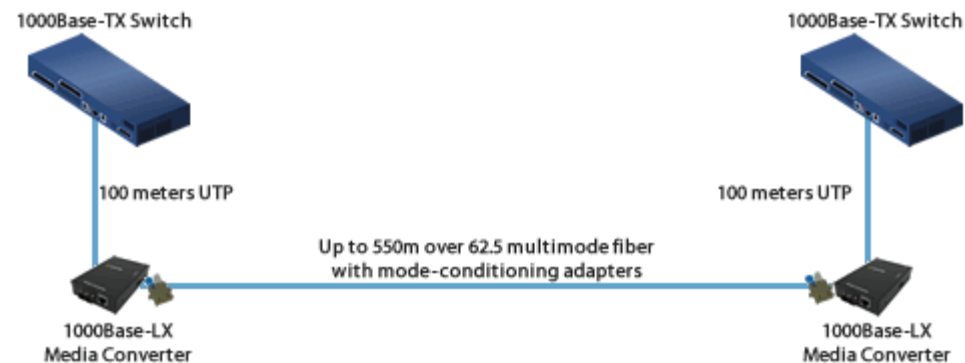
- 1000Base-T to 1000Base-X Fiber Media Converters
- Extend network distances up to 160km
- Manage via SNMP, CLI - Telnet/SSH, Internet Browser, or PerleVIEW Centralized Management Package
- Advanced media converter features - Smart Link Pass-Through, Fiber Fault Alert, Auto-MDIX and Loopback

Perle's advanced line of **Managed Gigabit Media Converters**, provides transparent and reliable **Gigabit Ethernet to fiber connections**. While providing an economical means of extending your existing copper-based network connection, these media converters are SNMP manageable to enable complete control and status viewing of your fiber links.

Perle Gigabit Managed Media Converters come standard with extensive cost and time saving features. In addition, a lifetime warranty and free worldwide technical support make Perle's Managed Gigabit to Fiber Converters the smart choice for IT professionals.

Extend Gigabit to 550m over 62,5 micron Multimode Fiber

Gigabit across 62,5 micron MMF cable is normally limited to 275 meters. By adding mode-conditioning adapters and 1000baseLX media converters you can extend the distance up to 550 meters on MMF cable plant.





SMI-1000-SFP Managed Gigabit

1000Base-T to 1000Base-X Fiber Mode Conversion



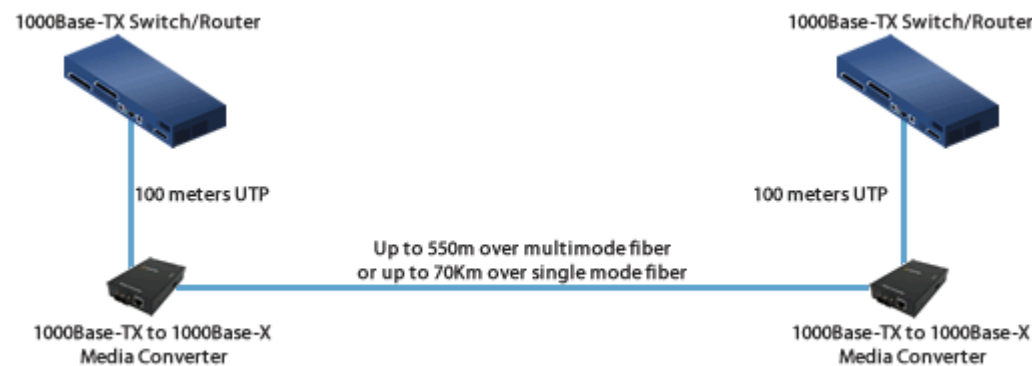
- 1000Base-T to 1000Base-X Fiber SFP Media Converters
- Empty slot for Cisco and other industry standard Gigabit Fiber SFPs
- Manage via SNMP, CLI - Telnet/SSH, Internet Browser, or PerleVIEW Centralized Management Package
- Advanced media converter features - Smart Link Pass-Through, Fiber Fault Alert, Auto-MDIX and Loopback

Perle's advanced line of **Managed Gigabit SFP Media Converters**, transparently connects Gigabit copper to SFP for multimode or single mode fiber. The pluggable fiber optics port allows for flexible network configurations using SFP transceivers supplied by Perle, Cisco or other manufacturers of MSA compliant SFPs.

While providing an economical means of extending your existing copper-based network connection, these media converters are SNMP manageable to enable complete control and status viewing of your fiber links. Perle **Gigabit SFP Managed Media Converters** come standard with extensive cost and time saving features. In addition, a lifetime warranty and free worldwide technical support make Perle's Managed Gigabit SFP Converters the smart choice for IT professionals.

Extend the network distance between two twisted pair Gigabit Switches

Two Gigabit Ethernet Media Converters can extend the distance between 1000Base-T Switches across a fiber link up to 120km in length





SMI-1110 Managed Media and Rate Converters

10/100/1000Base-T to 1000Base-X Conversion



- 10/100/1000Base-T to 1000Base-X Fiber Media Converters
- Connect 10/100 devices to Gigabit backbone
- Extend network distances up to 160km
- Manage via SNMP, CLI - Telnet/SSH, Internet Browser, or PerleVIEW Centralized Management Package
- Advanced media converter features - Smart Link Pass-Through, Fiber Fault Alert, Auto-MDIX and Loopback

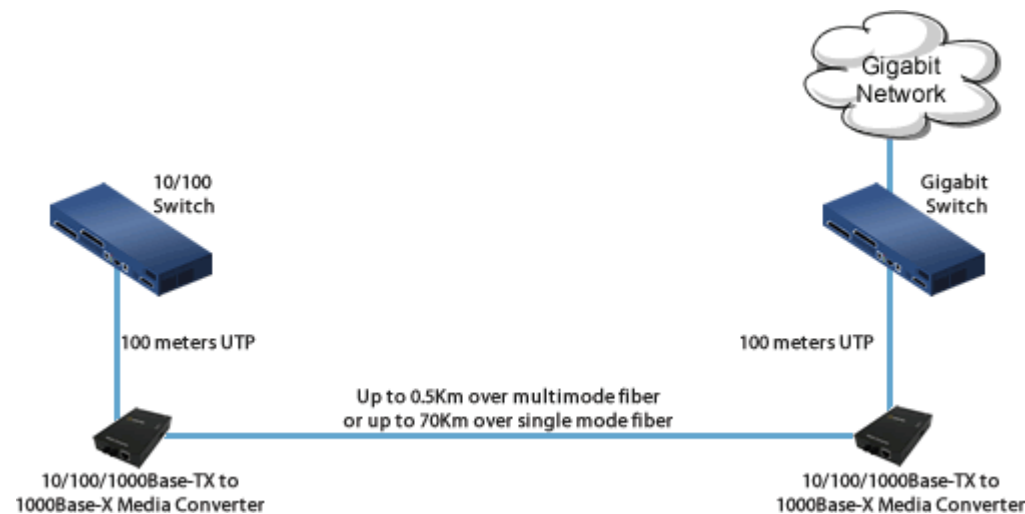
Perle's advanced line of **Managed Gigabit Rate Converting Media Converters**, provides transparent and reliable **10/100/1000 ethernet to fiber connections**. While providing an economical means of extending your existing copper-based network connection, these media converters are SNMP manageable to enable complete control and status viewing of your fiber links.

Perle 10/100/1000 Managed Media Converters come standard with extensive cost and time saving features. In addition, a lifetime warranty and free worldwide technical support make Perle's Managed 10/100/1000 Ethernet Converters the smart choice for IT professionals.

Bridge 10/100 Devices to gigabit Backbone

Connect 10/100 devices to Gigabit Backbone

Devices on a 10/100 ethernet switch can be connected to a Gigabit backbone through the use of rate converting 10/100/1000 Media Converters.



SMI-1110-SFP Managed Media and Rate Converters

10/100/1000Base-T to 100/1000Base-X Conversion



- 10/100/1000Base-T to 1000Base-X or 100Base-X Fiber SFP Media Converters
- Connect 10/100 devices to Fast Ethernet or Gigabit backbone
- Empty slot for Cisco and other industry standard Gigabit or Fast Ethernet Fiber SFPs
- Automatically adjusts to speed of Gigabit and Fast Ethernet fiber SFP's
- Manage via SNMP, CLI - Telnet/SSH, Internet Browser, or PerleVIEW Centralized Management Package
- Advanced media converter features - Smart Link Pass-Through, Fiber Fault Alert, Auto-MDIX and Loopback

Perle's advanced line of **Managed 10/100/1000 SFP Media Converters**, transparently connects 10/100/1000 copper to SFP-based multimode or single mode fiber. The pluggable fiber optics port allows for flexible network configurations using SFP transceivers supplied by Perle, Cisco or other manufacturers of MSA compliant SFPs.

While providing an economical means of extending your existing copper-based network connection, these media converters are SNMP manageable to enable complete control and status viewing of your fiber links. Perle **10/100/1000 SFP Managed Media Converters** come standard with extensive cost and time saving features. In addition, a lifetime warranty and free worldwide technical support make Perle's Managed 10/100/1000 Ethernet Converters the smart choice for IT professionals.

Direct Connect - Long Distance

Direct Connection between two remote devices

With a pair of Fast Ethernet Media Converters two devices, such as file servers, can be connected up to 120Km away across a fiber link.





SMI-100 Fast Ethernet Converters

100Base-TX to 100Base-FX Fiber Mode Conversion



- 100Base-TX to 100Base-FX Fiber Media Converters
- Extend network distances up to 120km
- SC, LC and ST Media Converters
- Advanced Features: Link Pass-Through, Far-End Fault, Auto-MDIX
- Manage via SNMP, CLI - Telnet/SSH, Internet Browser, or PerleVIEW Centralized Management Package

Perle's advanced line of **Managed Fast Ethernet Media Converters**, transparently connects UTP ethernet copper to multimode or single mode fiber. While providing an economical means of extending your existing copper-based network connection, these media converters are SNMP manageable to enable complete control and status viewing of your fiber links.

Perle Fast Ethernet Managed Media Converters come standard with extensive cost and time saving features. In addition, a lifetime warranty and free worldwide technical support make Perle's Managed Fast Ethernet Converters the smart choice for IT professionals.

Fast Ethernet UTP Switch to Fiber Switch

Interconnect a UTP Switch with a Fiber Switch

A media converter can interconnect a UTP copper-based Switch port to a remote switch that has integrated fiber.





SMI-110 Fast Ethernet Standalone

10/100Base-T to 100Base-X Conversion



- 10/100Base-TX to 100Base-X Fiber Media Converters
- Extend network distances up to 120km
- SC, LC and ST Media Converters
- Advanced Features: Link Pass-Through, Far-End Fault, Auto-MDIX
- Manage via SNMP, CLI - Telnet/SSH, Internet Browser, or PerleVIEW Centralized Management Package

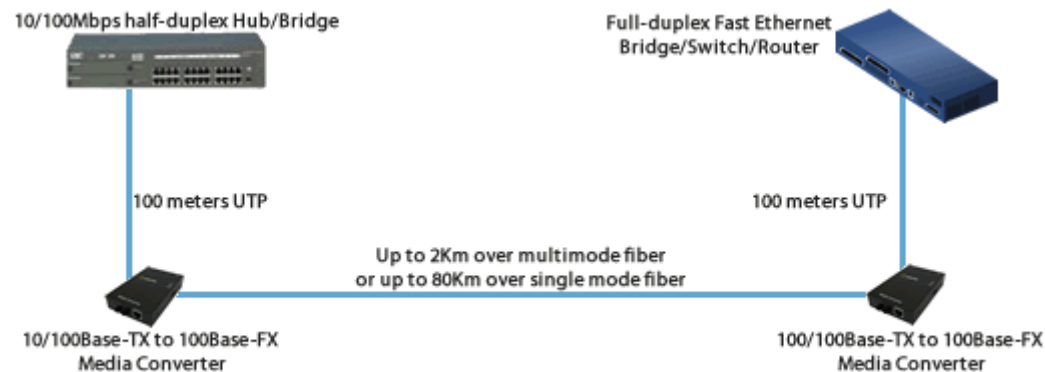
Perle's advanced line of **Managed 10/100 Ethernet Media Converters**, transparently connect UTP ethernet copper to multimode or single mode fiber. While providing an economical means of extending your existing copper-based network connection, these media converters are SNMP manageable to enable complete control and status viewing of your fiber links.

Perle 10/100 Managed Media Converters come standard with extensive cost and time saving features. In addition, a lifetime warranty and free worldwide technical support make Perle's Managed 10/100 Ethernet Converters the smart choice for IT professionals.

10/100 – Extend Network between Half-Duplex Hub and Switch

Extend the network distance between an Ethernet half-duplex hub and a full-duplex switch

A pair of 10/100 media converters can extend the distance between a half-duplex hub and a full-duplex switch across a fiber link up to 120km in length. They also isolate the collision domains, associated with half-duplex, from crossing the fiber link. In this scenario, the media converter connected to the switch must be forced to half-duplex.





RG7000 5G Routers

Enterprise-Class Edge 5G Router & Gateway

Perle IRG7000 5G Routers and Gateways provide primary or backup 5G connectivity to remote infrastructure and assets. Easy deployment of these ultra-low-power, rugged, high-performance cellular routers via a web GUI. Advanced admins can use the RESTFUL API and CLI commands.

The Perle IRG7000 5G Routers provide fast, secure, and reliable managed 5G network connectivity in places where wired options are impossible or require a backup. A wide range of applications must be supported while maintaining the highest level of security to ensure the integrity of the most critical services. Decrease downtime while speeding up service calls to distributed sites. There are a variety of ways an IRG7000 can be integrated into any enterprise cloud infrastructure that supports Data, SMS Voice and Video.

- Fleet management, GPS/GNSS Location tracking, Taxis, Public Service Vehicles, vehicle area networking (VAN)
- SCADA, Distribution management systems, Remote data loggers, flow meters, sensing equipment
- Building and process automation controllers, Internet of Things (IoT)
- Smart grid assets (meters, switches, controllers), Telco infrastructure controllers
- Digital signage, ATMs, POS, Kiosks, Temporary "pop-up" stores
- Video surveillance controllers, IP cameras, Mobile hotspots
- Public Service Vehicles, First responders, Command Centers
- Transit systems, Buses, Metro Subways, Railways

Edge Routers with Enterprise-Grade Routing Capabilities

Perle does not charge annual fees for operation, software updates, or feature access. The IRG7000 routers come standard with all of the advanced enterprise routing features. Their extensive routing protocol support makes them easily deployable in hierarchical or large mesh networks. A powerful CPU and lots of memory ensure the router can handle a heavy workload all day. When combined with multiple ISPs via BGP, the IRG5500 delivers carrier-grade routing performance capable of managing the entire Internet routing table.

- RIP, RIPv2, RIPv6, OSPFv1/2/3, BGP-4, VRRP
- IPv4 & IPv6
- OpenVPN & IPsec VPN
- DHCP & DHCPv6
- IP Passthrough for deployments requiring the router to operate in Gateway or Bridge mode
- Route between any interface (Cellular, Ethernet, USB, or serial RS232)
- Reduce unwanted network traffic by creating collision and/or broadcast domains

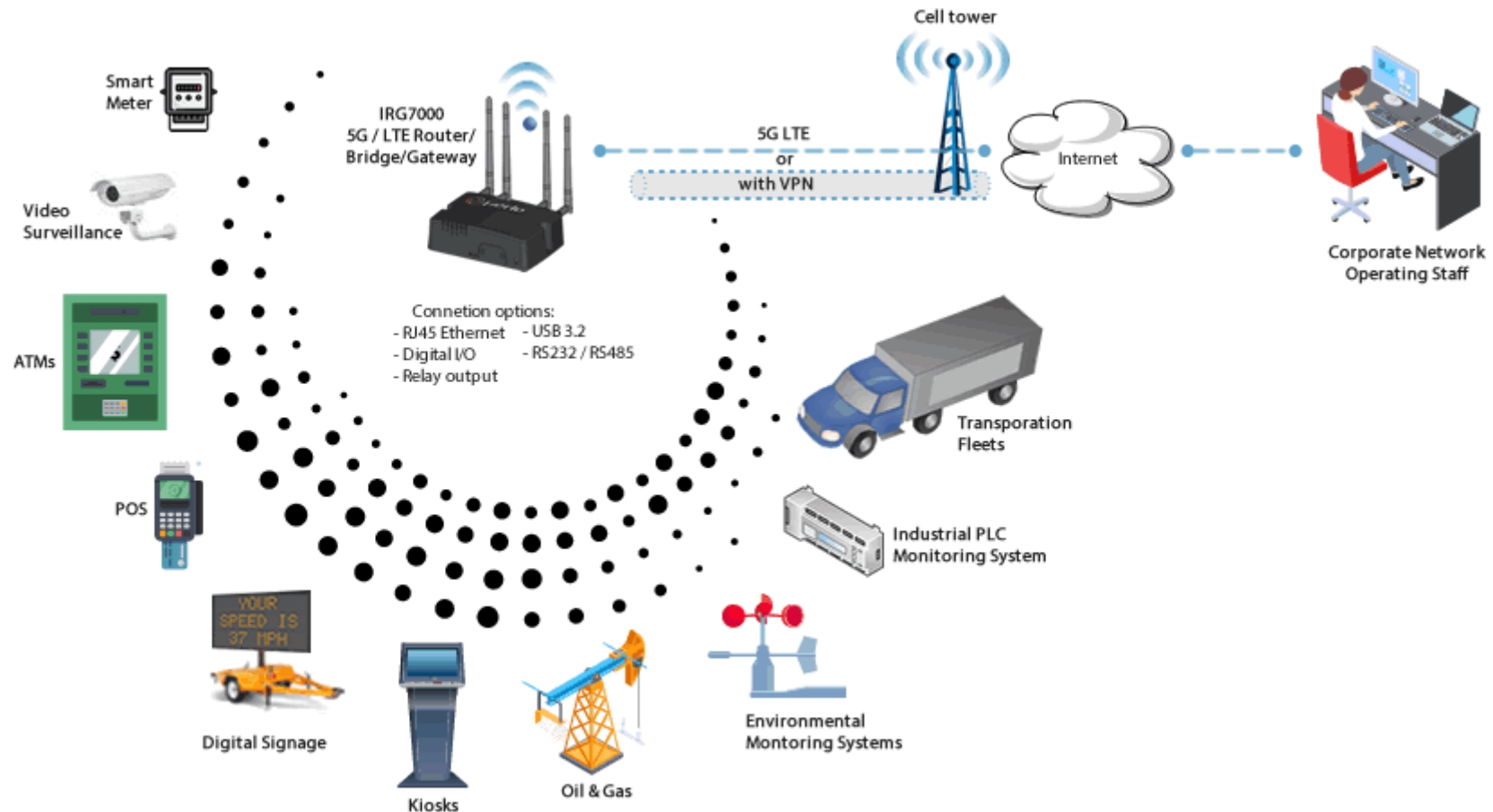


Figure 1 - LTE Routers in First Responder Vehicles



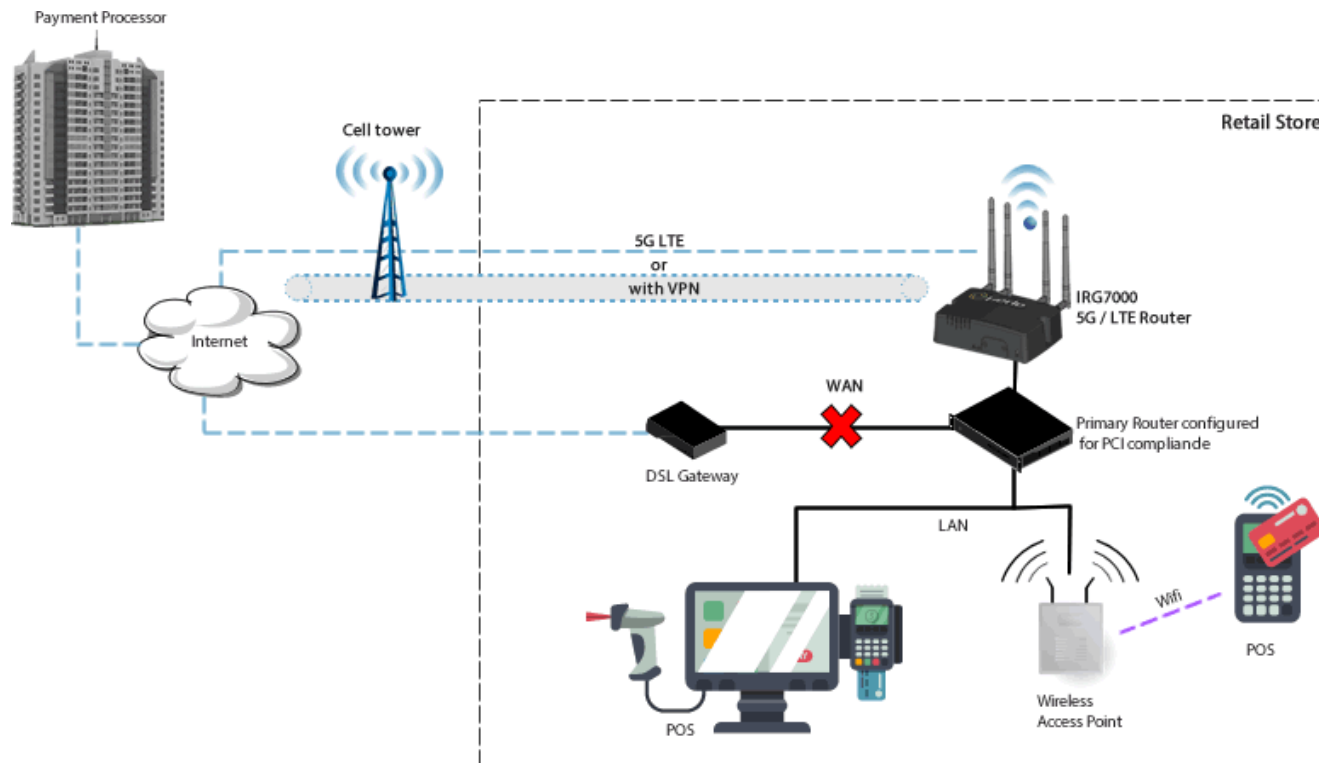
M2M / IoT Cellular Connectivity

Perle IRG7000 5G Routers offer always-on M2M connectivity that is secure, reliable, cost-effective, and easy to deploy. Featuring an industrial-grade ruggedized housing, Perle IRG7000 Routers are a versatile and compact solution that provides 5G connectivity with built-in GPS capabilities. Perle IRG7000 Routers are ideal for solving wireless connectivity challenges in a variety of vertical markets including video surveillance, digital signage, home security, oil and gas exploration, kiosks, smart grid, telematics and many more.



Integrated Zone-Based Policy Firewall

The IRG7000 built-in firewall offers intuitive policies for multiple-interface routers to protect inside networks from unauthorized access by users on an outside network. The firewall also protects inside networks from each other, for example, by keeping a human resources network separate from a user network. If there are network resources that need to be available to an outside user, such as a web or FTP server, these resources can be placed on a separate network behind the firewall, in a demilitarized zone (DMZ). The firewall will allow limited access to the DMZ, but because the DMZ only includes the public servers, any attacks there will not affect the inside network. The firewall controls when inside users access outside networks (for example, access to the Internet), by allowing only certain addresses out, by requiring authentication or authorization, or by coordinating with an external URL filtering server. A deny-all (blacklist) policy can be used to prohibit traffic between firewall security zones until an explicit policy is applied to allow desirable traffic. Router ports are assigned to zones and firewall inspection policies are applied to traffic moving between the zones. Firewall inter-zone policies come with considerable flexibility and granularity so that different firewall inspection policies can be applied to the same router port.



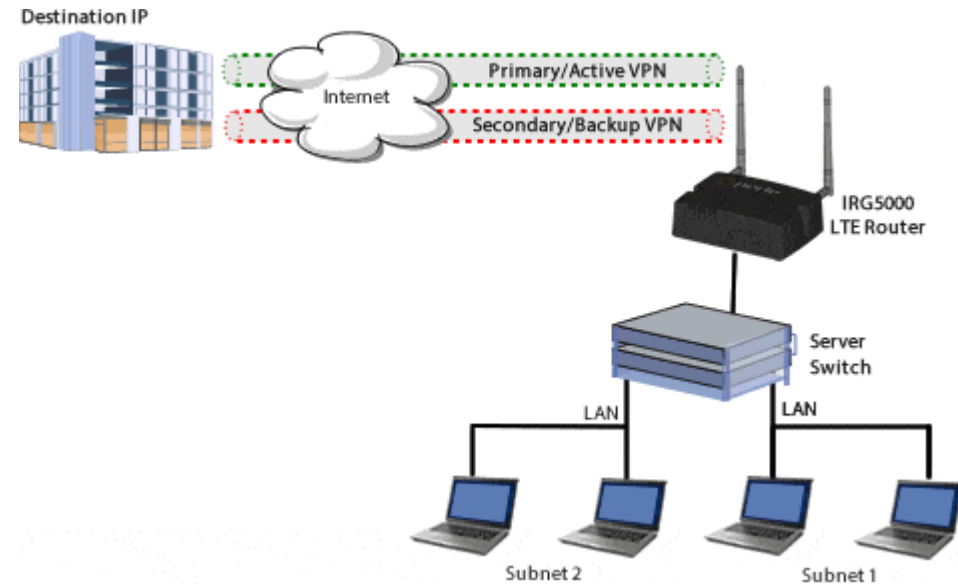
With multiple concurrent VPN sessions and 2 Factor Authentication, Perle IRG7000 Routers enable secure communications to multiple back-end systems.

- Remote authentication (RADIUS, TACACS+, LDAP) management, integrates with enterprise-grade systems to control access to devices in the field.
- Software image CRC control protects the software upgrade process against unwanted software corruption and malware
- High-speed OpenVPN, IP Security (IPsec), Triple Data Encryption Standard (3DES), and Advanced Encryption Standard (AES) encryption for data privacy over the Internet.
- Intrusion prevention enforces security policies in a large enterprise or service provider networks.
- Perle's cloud-based centralized management solution puts all your network and IT infrastructure into a single application and provides secure reliable access and visibility during normal operations and critical network failures. Scalable to suit any business requirement, [Cloud Centralized Management](#) reduces human error and guarantees repeatability.

GPS / Global Navigation Satellite System (GNSS) Included

GNSS (GPS, Galileo, and Glonass) are included by default in all IRG7000 Routers and Gateways. This enables real-time location tracking of remote assets. Also, you can get real-time network clock updates in the router, or any attached equipment, for accurate time-stamp usage in time-sensitive applications. Cutting-edge design certified for a wide range of deployment scenarios

High-performance components and features enable customers to take advantage of broadband network speeds while running secure concurrent data, voice, and video services. All IRG7000 routers have high MTBF rates because they are developed with certified high-end components to provide superior reliability and uninterrupted operation.



Features

Primary or failover back-up connectivity	Perle is the only company to offer 5G edge routers with all of the enterprise-grade features and protocols needed to be a fully functional primary or failover back-up 5G Router. If the main network connection goes down for any reason, Perle IRG7000 5G routers provide an always-on, cost-effective redundant connection. As a failover solution, wireless speeds are fast enough to keep your network humming and distributed enterprises can enjoy the same reliability and competitive advantage as large enterprises. The relatively low cost of 5G for branch continuity means a greater return on investment and scalability for multiple locations. Simply put, an IRG7000 5G Router ensures maximum uptime, cost-effective scalability, and ease of deployment and management with limited IT resources.
Compact light-weight design	Deploy in many different environments where space, heat dissipation, and low power consumption are critical factors. The optional DIN-Rail mounting brackets or wall-mount brackets ensure easy installation.
Ultra-Low-Power	IRG7000 5G Routers are designed to operate on limited power sources by consuming less than 1 Watt in idle mode. This makes them ideal for battery and solar applications. In addition, Standby Mode can be used to protect power sources by dropping power consumption to a target of 52 mW. This can be triggered by timers, low voltage detection, or I/O. IRG7000 Routers also work with the existing power infrastructure in 4G/3G deployments that are migrating to 5G thus, eliminating the need to invest in replacement equipment.
Rugged Environment Certifications	• Rugged die-cast aluminium IP54 enclosure for dust & water ingress • Shock and vibration resistance certified to MIL-STD-810G • Operating temperature: -40 C to 70 C
Mobility Support	• Cellular tower connectivity can be established and maintained at up to 100 meters per second (360km per hour) • Built-in battery charge protection, with no requirement for external power conditioning • Ignition Power Management can schedule a delayed shutdown or start-up of the IRG7000 based on the vehicle ignition status

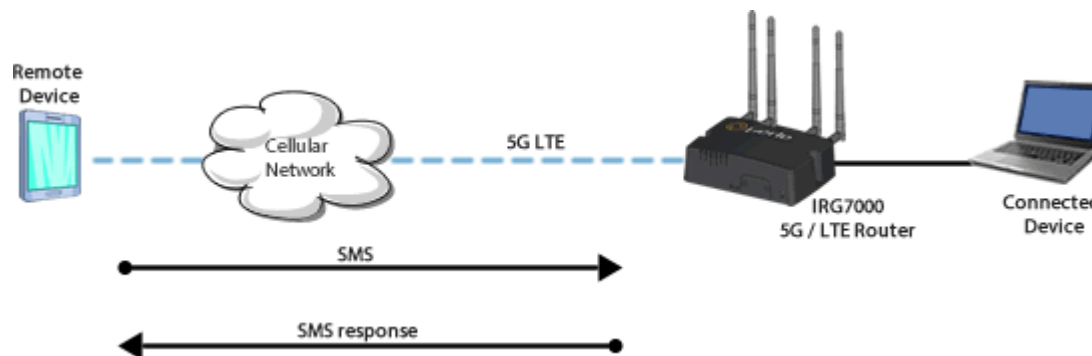


IRG7000 LTE Routers with DIN Rail Mounting Bracket



Further Features and Benefits

WAN Connectivity	5G and 10/100/1000 Ethernet
Central Management Configuration	Perle IRG7000 Routers and Gateways use PerleView, a web-based server configuration tool that simplifies setup and deployment. Centralized management capabilities give network managers visibility and control over network configurations at remote sites. Other Perle IRG7000 management capabilities include: • Fast Setup - Available when the router is in factory default (initial) configuration • Web Manager - Available using a browser • CLI - Command Line Interface • RESTful API - a standard for interactive Web services • SNMP - Using a Network Management System • <i>No ongoing monthly or yearly licensing fees</i>
Serial Port	Perle IRG7000 Routers come with an IOLAN Secure Device Server built-in for a secure serial to IP (Ethernet/Cellular) connectivity applications. This makes it ideal for applications that require remote device console management, data capture, or monitoring. Some of the supported applications are: • TrueSerial® packet technology delivers the most authentic serial connections across Ethernet for serial protocol integrity. • Serial Port Access: connect directly using Telnet / SSH • Terminal Server: Telnet, SSH, Rlogin, LPD, RCP printer • Serial machine to IP (Ethernet) • Raw serial data over Ethernet/Cellular/TCP/IP/UDP • Virtual modem simulation • TruePort redirector • ModBus, DNP3 and IEC-870-5-101 encapsulation • Line access permissions via TACACS+ and RADIUS servers • Dial direct serial: PPP, PAP/CHAP, SLIP





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