JetNet 4510
Industrial 10-port Managed Fast Ethernet Switch

- 7 10/100 Base TX and 3 RJ-45/SFP combo (10/100Base-TX, 100Base-FX)
- Multiple Super Ring (recovery time ≤5ms), Rapid Dual Homing, Multiple Ring, and RSTP
- VLAN, GVRP, QoS, IGMP Snooping V1/V2/V3, Rate Control, Port Trunking, LACP, Online Multi-Port Mirroring
- 32Gbps Non-Blocking, 8K MAC address table
- Supports console CLI , Web, SNMP V1/V2c/V3, RMON, HTTPS, SSH and JetView
- Advanced security feature supports IP Security, Port Security, DHCP Server, IP and MAC Binding, 802.1x network access control
- Event Notification by E-mail, SNMP trap, Syslog, Digital Input and Relay Output
- Rigid Aluminum Case Complies with IP31, Redundant power, DIN-Rail/Wall-Mounting/Desktop Installation

CE FC cULus LISTED RoHS

Overview

JetNet 4510 is an industrial Managed Fast Ethernet Switch, designed with 7-10/100TX and 3-10/100 RJ-45 / 100FX SFP combo ports.

The flexible 3 combo ports offer flexibility for additional fiber connections by plugging different types of 100MM SFP modules, which can support 2KM in Multi-Mode or 120KM in Single-Mode. The combo ports make port combination even easier, such as 8 RJ ports and 2 fiber ports, or 9 RJ ports and 1 fiber port. The standard 10 port Fast Ethernet switch greatly reduces total cost by up to 15% for fiber uplink network.

In addition to cost savings, the flexible design of the JetNet 4510 can adapt to the world's fastest Ring Technology by Korenix. It only takes 5ms to recover from link failure, no matter how many nodes are inside a ring, and the restore time is zero when the failed link is recovered. The patented Multiple Super Ring provides the most flexible ring topologies, such as shared link of multiple rings, or shared unit of multiple rings, making it the best possible. The Multiple Super Ring is highly compatible to Rapid Spanning Tree by the new Dual Homing plus design. JetNet 4510 also enhances security designs, such as SNMP V3, SSH, 802.1X, etc.

3 Flexible Fast Ethernet Combo Ports

The JetNet 4510 is designed with three combo Fast Ethernet ports. Each combo port combines one Small Form factor Pluggable (SFP) socket for 100Mbps multimode or single mode SFP transceiver, as well as one RJ-45 copper port in 10Mbps full duplex, 100Mbps half /full duplex link mode.

The switch will automatically detect the priority of cable connections for each combo port. Users are able to connect two 100Mbps SFP ports of JetNet 4510 as a Fast Ethernet Fiber Redundant Ring topology and the third combo port as a fiber uplink port or an applicable port.

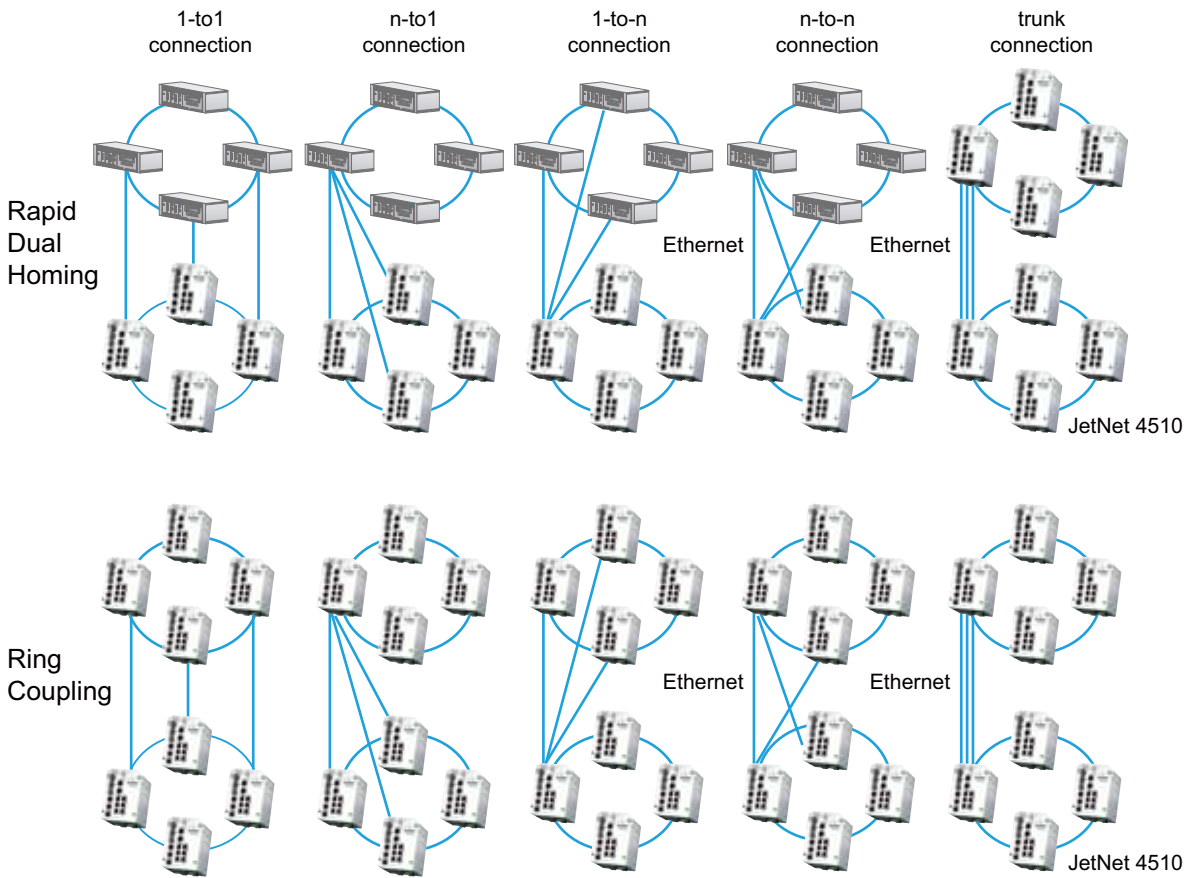## Comprehensive Redundant Solutions — Multiple Super Ring (MSR^{TM})

The JetNet 4510 supports MSR^{TM} (Multiple Super Ring) the next new generation of RSR (Rapid Super Ring) Ring technology. This new technologies is perfect for different network redundancy applications and structures. With the MSR^{TM} technology, a node can be configured to multiple rings with the failover time in as little as 5ms and ZERO-second restore time. In addition, users can extend the ring topology by adding hundreds of JetNet 4510 to meet the network needs without compromising the speed of the network.

The MSR^{TM} also facilitates the JetNet 4510 to connect with core management switch via standard Rapid Spanning Tree Protocol or through multiple paths or nodes to increase the reliability by Rapid Dual Homing (RDH^{TM}) Technology. By integrating MSR^{TM} and Link Aggregation Control Protocol (LACP) the JetNet 4510 can enhance the link availability and to increase the link capacity. Two or more Fast Ethernet connection are bundled in order to increase the bandwidth and to create resilient and redundant links.

Rapid Dual Homing (RDH^{TM}) Technology

Rapid Dual Homing (RDH^{TM}) replaces DualHoming II and can be used for ring coupling. While keeping easy configuration and multiple redundancies, the failover time is much faster (less than 50 ms) and the restore time is ZERO (seamless restoration). Uplinks can be auto detected and gathered into groups. In each group, uplinks are sorted into Primary, Secondary,

and Standbys by their link speed. The uplink with the highest speed is more likely to be the active path for data transmission. Link aggregation is also integrated into RDH^{TM}. An uplink can be a link or several links aggregated as a trunk, which provides better redundancy and link capacity.

1-to1 connection | n-to1 connection | 1-to-n connection | n-to-n connection | trunk connection

Rapid Dual Homing

Ethernet   Ethernet

JetNet 4510

Ring Coupling

Ethernet   Ethernet

JetNet 4510

Link Aggregation Control Protocol

Link Aggregation Control Protocol (LACP) allows you to group multiple Ethernet ports in parallel to increase the link bandwidth. The aggregated ports can be considered one physical port, so that the bandwidth is higher than just one single Ethernet port. The member ports of the same trunk group can balance the loading and backup with each other. The LACP feature is usually used when you need higher bandwidth for the backbone network. This is an inexpensive way for users to transfer much more data. If the trunk port is also assigned as a ring port, it will become a TrunkRing™, which means that the bandwidth of ring path has increased with port trunk

LACP
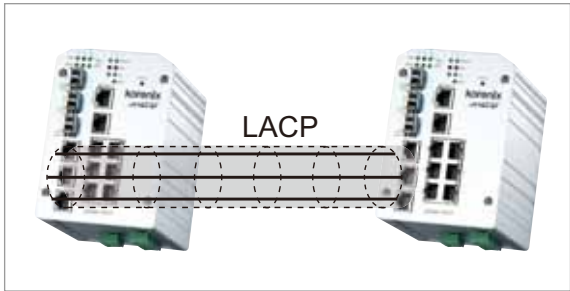
technology. Now, there is no recovery time when failures occur. The JetNet 4510 provides a simple and easy way to aggregate port bandwidth into Rapid Super Ring.

Various Network Control and Security Features

The JetNet 4510 provides various network control and security features. The Network Control feature allows users to optimize their industrial environment. The supported features include VLAN, IGMP Snooping, Quality of Service(QoS), Link Aggregation Control Protocol (LACP), Rate Control. The security can help users avoid hackers' attack. The features include DHCP Server, IP and MAC Binding, 802.1x Access Control, SSH, IP Access Table and Port Security.

Port Security

Port Security is an enhanced security feature provided by JetNet 4510. Port Security is also known as, "Port and MAC Binding". The users can bind a specific MAC address to a specific port, add the MAC and Port binding entry/entries to the port security table. After enabling this, only the PC with the available MAC address can access the network through the switch. The other PCs can't even pass the traffic through the port.

Port Security Table

Port	VID	Mac Address
Port 1	1	MAC B
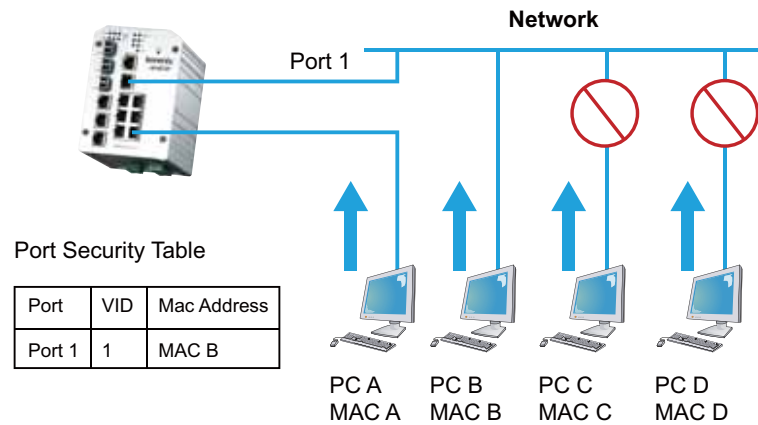
# Easy-to-Configure Network Management Features

The JetNet 4510 also provides users many advanced management features. It can be configured smartly by JetView, Web browser, SNMP, Telnet and RS-232 console Command Line Interface (CLI).

It provides Failure notification by E-mail, SNMP Trap, System Log, Digital Input and Fault Relay. The JetNet 4510 also supports Built-In Watchdog Timer for system recovering when detecting CPU failure.
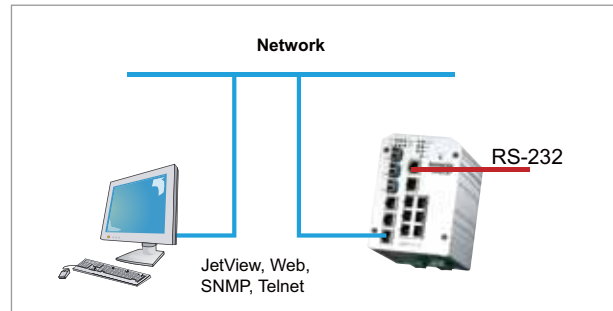
JetView, Easy Management Utility

The JetView is the convenient tool to help administrators to discover the JetNet series Switches. It supports group IP assignment,group firmware upgrade, group configuration backup and restore.
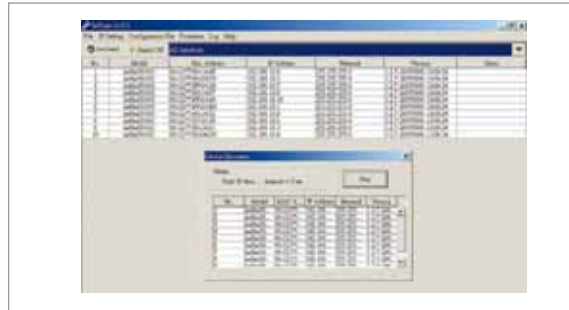
A Built-in Watchdog Timer

With a built-in Watchdog timer, the JetNet 4510 performs a warm boot (restarting the switch) automatically when the switch system locks up. It saves the effort of maintenance for keeping network alive if the switch can recover by itself.

Watchdog Timer

00:00:06

CPU Failure = 6 sec
=> Internal Reset

00:00:00
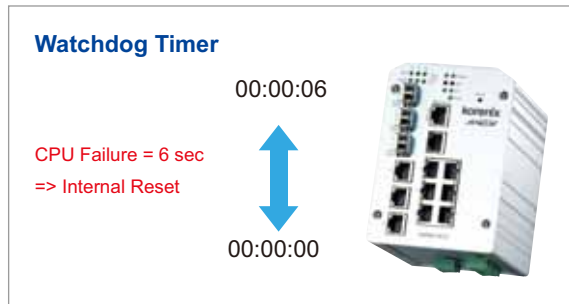
Brilliant Idea for Hazardous Environment Application Robust Mechanism Design

Korenix JetNet 4510 has an outstanding outlook plus is rock solid with strong functionality. Using an aluminum extrusion case with industrial quality, IP 31 class of protection, light weight, rigid shell and excellent thermal conductivity units can operate under harsh industrial environment reliably.

Industrial
PoE Switch

IP67/68
Ethernet Switch

Rackmount
Managed
Switch

Gigabit Switch

Redundant
Switch

Entry-Level
Switch

Networking
Computer

Communication
Computer

Ethernet
I/O Server

Serial Device
Server

Media
Converter

Multiport
Serial Card

SFP Module

Din Rail
Power Supply

JetNet 4510 Appearance

LEDs
SFP 8-10,
RJ45 8-10

LEDs
Power, DI, DO, R.M.

Reset

Console

SFP Socket

Din Rail Mounting

Din 35
(35mm)

Fast Ethernet Port 1-7

10/100 Base-TX

Power Input, Digital Input,
Digital Output
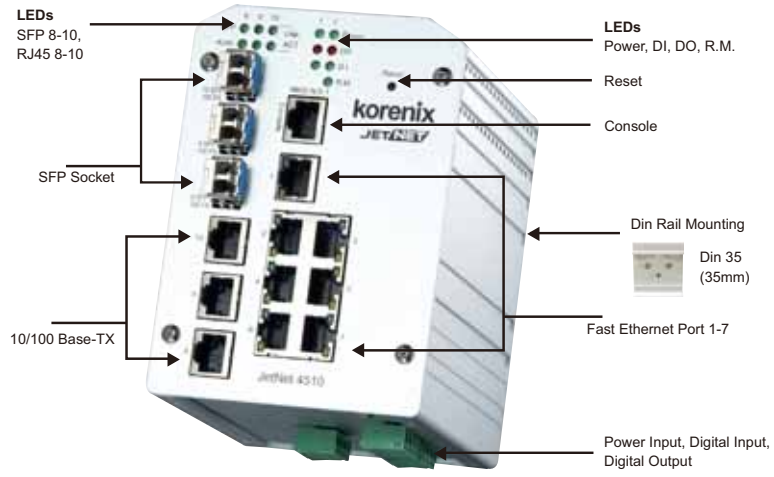
Dimensions (Unit –mm)
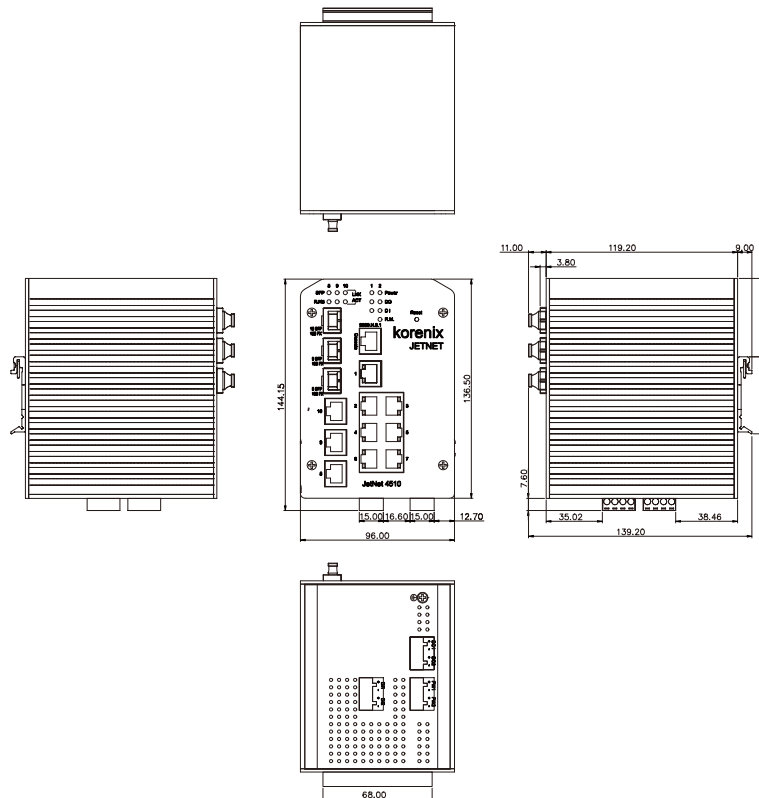
Specification

Technology

Standard:

IEEE 802.3 10Base-T Ethernet

IEEE 802.3u 100Base-TX Fast Ethernet

IEEE 802.3u 100Base-FX Fast Ethernet

IEEE 802.3x Flow Control and Back-pressure

IEEE 802.1p class of service

IEEE 802.1Q VLAN and GVRP

IEEE 802.1D-2004 Rapid Spanning Tree Protocol (RSTP)

IEEE802.3ad LACP

IEEE802.1X Port_based Network Access Control

Performance

Switch Technology:

Store and Forward Technology with 32Gbps Switch Fabric

System Throughput: 2.976Mpps/ 64bytes packet

Transfer packet size: 64 bytes to 1522 bytes

(with VLAN Tag)

MAC Address: 8K MAC

Packet Buffer: 1Mbits

Relay Alarm: Dry Relay output with 1A@24V ability

Management

Configuration: Cisco-Like CLI, JetView, Web, HTTPS, SSH; TFTP/Web Update for firmware and configuration backup/restore, DHCP Client, Warm reboot, Reset to default, Admin password, Port Speed/Duplex control, status, statistic, MAC address table display, Static MAC, Aging time, SNMP v1, v2c, v3, Traps and RMON1

SNMP MIB: MIB-II, Bridge MIB, VLAN MIB, SNMP MIB, RMON and Private MIB

Port Trunk: Up to 5 Static Trunk and 802.3ad LACP

VLAN: IEEE802.1Q VLAN, GVRP. Up to 64 VLAN groups

Quality of Service: Four priority queues per port, IEEE802.1p COS and Layer 3 TOS/DiffServ

IGMP Snooping: IGMP Snooping V1/V2/V3 for multicast filtering and IGMP Query V1/V2

Rate Control: Ingress filtering for Broadcast, Multicast, Unknown DA or All packets, and Egress filtering for All packets

NTP: Network Time Protocol to synchronize time from internet or local PC

Embedded Watchdog: Embedded hardware watchdog timer to auto reset system when switch system failure

Port Mirroring: Online traffic monitoring on multiple selected ports

Port Security: Assign authorized MAC to specific port

IP Security: IP security to prevent unauthorized access

802.1x: Port_based Network Access Control

DHCP Server: Up to 255 IP address, support IP and MAC binding

E-mail Warning: Automatic warning by pre-defined events

System Log: Supports both Local mode and Server mode

Network Redundancy

Network Redundancy: Rapid Spanning Tree Protocol: IEEE802.1D-2004 Rapid Spanning Tree Protocol. Compatible with Legacy STP and IEEE802.1w

Multiple Super Ring(MSRTM**):** 2nd generation Korenix Ring Redundancy Technology. Failure recovery within 5ms.

Rapid Dual Homing (RDHTM**):** Support multiple node to

node, multiple path to one node to obtain more flexible and reliable architecture

TrunkRingTM**:** Provides port aggregate function in ring path to get more bandwidth for higher throughput ring architecture

Multiple Ring: New generation of ring coupling technology without extra control port - TangentRing

Legacy Super Ring: Backward compatible in client mode

Interface

Number of Ports: 10/100TX: 7 x RJ-45, Auto MDI/MDI-X, Auto Negotiation

10/100TX: 3 x RJ-45, combo with SFP

100Base-FX: 3 x SFP with Hot Swappable

Cables:

10Base-T: 2-pair UTP/STP Cat. 3, 4, 5 cable (100m)

100 Base-TX: 2/4-pair UTP/STP Cat. 5 cable (100m)

Diagnostic LED:

10/100 RJ-45: Link/Activity(Green), Full duplex/Collision (Yellow)

SFP: Link/Activity(Green)

Unit: Power(Green), Digital Out(Red), Digital Input(Green), R.M.(Green)

RS232 Console: RJ-45 Connector, Pin3: TxD, Pin6: RxD, Pin5:GND

Power: 2 sets of power Inputs

Digital Input: 2 sets of Digital Input

Logic Low (0): 0-10VDC/Logic High(1): 11-30VDC

Alarm: 2 sets of Relay outputs for pre-defined events

Reset: Reset button is provided to restore default settings

Power Requirements

System Power: 12~48V/-12~-48VDC with Reverse Polarity Protection

Power Consumption: 11.5 Watts @ DC 48V

Mechanical

Installation: DIN-Rail mount or Wall Mount

Case: IP-31 protection, aluminum metal case

Dimension: 137mm(H) x 96mm (W) x 119mm (D)

(without DIN rail clip)

Weight: 0.915kg with package

Environmental

Operating Temperature:-20 ~70°C

Operating Humidity: 5% ~ 95% (non-condensing)

Storage Temperature: -40 ~ 85°C (-40 ~ 185°F)

Hi-Pot: 1.2KV for ports and power

Regulatory Approvals

EMI: EN55022 CLASS A, EN61000-3-2, EN61000-3-3, EN61000-6-4

EMS: EN55024, EN61000-6-2, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11, IEC 61000-6-2

Safety: UL/cUL 60950

Shock: IEC60068-2-27

Vibration: IEC60068-2-6

Free Fall: IEC60068-2-32

MTBF: 249,683 Hours, MIL-HDBK-217F GB GB(MILITARY HANDBOOK)standard

Warranty: 5 years

JET NET

Ordering Information

JetNet 4510 Industrial 10-Port Managed Fast Ethernet Switch

Includes:

- JetNet 4510(without SFP transceiver)
- Wall mounting plate
- Quick Installation Guide
- Documentation CD-ROM
- Console cable

Optional Accessories

100Base-FX Multi-Mode SFP Transceiver
100Base-FX Single-Mode SFP Transceiver
100Base-FX BIDI/WDM Single-Mode SFP Transceiver

www.korenix.com