

JetNet 4510

Industrial 10-port Management Fast Ethernet Switch

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- 7 10/100 Base TX and 3 RJ-45/SFP combo (10/100Base-TX, 100Base-FX)
- Flexible Fiber connection-Multi or Single mode fiber cable
- Comprehensive Ring Technology- Multiple Super Ring (**MSR™**)
- Latest Rapid Super Ring Technology- 5 ms failover time, zero for restore time
- Multi-path, Multi-node backup technology-Rapid Dual Homing (**RDH™**)
- Multiple ring coupling technology- **MultiRing™**
- Ring Path Aggregation technology - **TrunkRing™**
- Flexible Ring architecture- **TangentRing™**, **CrossRing™**, **AnyRing™**
- High Speed Fabric-32Gbps with Non-blocking technology
- LACP /VLAN / GVRP /QoS /IGMP Snooping/Rate Control/ Online Multi-Port Mirroring
- Secured by Port, Access IP, SSH and HTTPS Login
- IEEE 802.1x with Local and remote authenticate service.
- Event Notification by SMTP, SNMP trap and system logs.
- Cisco-Like CLI, **JetView™**, Web, SNMP/RMON for network Management
- Redundant DC Power Inputs, Digital Input and Relay Output
- 1.5KV Hi-Pot Protection for ports and power
- Industrial Heat dispersing design, -10~70°C operating temperature, Rigid Aluminum Case Complies with IP31

Overview

The JetNet 4510 is a Managed industrial Ethernet Switch, equipped with 7 ports 10/100TX and 3 ports 10/100 RJ-45 / 100FX SFP combo ports. It is designed as rugged surface with aluminum alloy material, supporting wide operating temperature. The software provides full L2 management features, ring redundancy, network control, security and alert

features. The JetNet 4510 also supports RS-232 console for out-of-band management and the combo port design, enlarging connections with 10 ports pure 10/100Mbps pure copper to 7 ports 10/100Mbps copper as well as 3 fiber ports with multi-mode or single-mode transceiver in random.

Superb Management Features

It is critical of industrial applications which require the network remaining non-stop. Korenix Rapid Super Ring technology provides network redundancy that can self-recover in less than 5 ms at full load. Moreover, JetNet 4510 provides users with multiple advanced management features. It can be configured smartly by console CLI and web browser. The network administrator can define event notifications to be sent via E-mail, SNMP trap, Syslog and relay output. Online status of each port is also shown on web pages. To optimize network traffic, network administrators can segment ports into

different VLANs and filter multicast traffic by IGMP Snooping. Bandwidth can be managed with port rate control to avoid abnormal broadcast storm. To enhance security, port access can be limited to define IP address table in advance, binding MAC address to specific port. It also can be managed by HTTPS or SSH or perform access security through IEEE 802.1x mechanism. Network determinism is responded by QoS, Quality of Service, for traffic prioritization. JetNet 4510 is the perfect combination of intelligent network management and robust network operation.

3 Flexible Fast Ethernet Combo Ports

The JetNet 4510 equips three combo Fast Ethernet ports. Each combo port combines one Small Form factor Pluggable (SFP) socket for 100Mbps multi-mode 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 combo ports. 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.

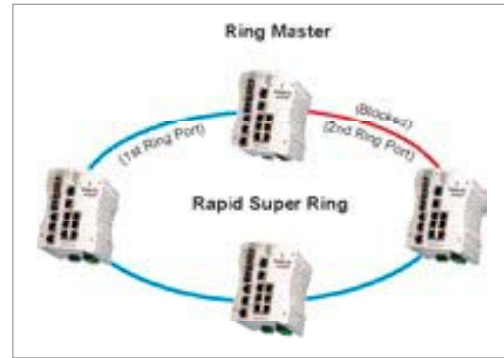
Comprehensive Redundant Solutions- Multiple Super Ring (MSR™) Technology

The JetNet 4510 supports new generation of ring technology – **MSR™** which includes various new technologies for different network redundancy applications and structures. With the **MSR™** technology, the failover time can be shortened less than 5 milliseconds with zero second restore time. With unlimited device connectivity, users can enlarge ring structures to meet the campus needs without the data traffic delay. The **MSR™** also facilitates the JetNet 4510 to connect with core management switch via standard Rapid Spanning Tree Protocol, though multiple paths or nodes to increase the reliability by Rapid Dual Homing (**RDH™**) technology.

To enhance link availability and to increase link capacity, the JetNet 4510 has been implemented IEEE 802.3ad Link Aggregation Control Protocol (LACP). With LACP technology, the JetNet 4510 can negotiate an automatic port bundling dynamically between switches. Two or more Fast Ethernet connections are combined in order to increase the bandwidth and to create resilient and redundant links. It also provides two power inputs for power redundancy and wide DC power range, from DC 12V to DC 48V, supporting DC-48V in industrial applications.

▶ Rapid Super Ring (RSR) Technology

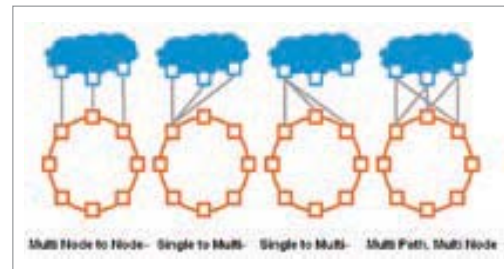
Rapid Super Ring is the 2nd generation of Korenix Ring Redundancy technology. The recovery time is improved from 300ms to 5ms for copper rings and 20ms for Fiber ring. The Ring Master can be auto-selected by the RSR engine. The 1st Ring Port of the R.M. is the primary path while the 2nd Ring Port of the R.M. is the block path. Once the primary path is failure, the 2nd path will be recovered in 5ms. Besides, the restore time is also enhanced to zero in R.M. auto-selection mode.



▶ Rapid Dual Homing (RDH™) Technology

The MSR technology includes a new Dual Homing technology- Rapid Dual Homing (RDH™) which provides flexible uplink connections in multiple nodes to nodes or multiple paths to one for the extra efficiency as well as the reliability.

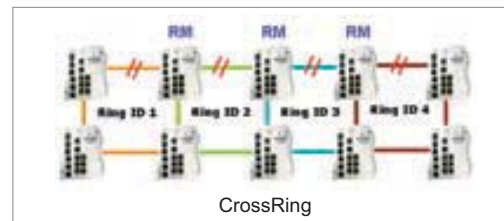
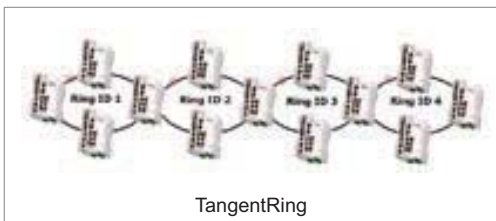
When you want to connect multiple RSR or form the redundant topology with the products from other vendors, RDH™ allows you enable RSTP and RSR with the same device and break the limitation of ring node. Thus, you have more flexibilities and the standard (RSTP) way to construct your network topology.



▶ MultiRing™ Technology

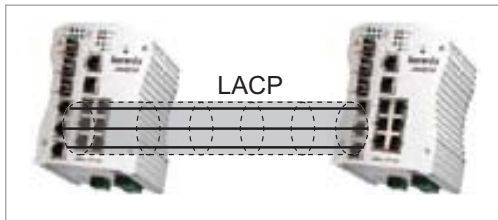
The MultiRing™ is a new technology that constructs different coupling rings without controlling ports and achieves different coupling structures by TangentRing™ or CrossRing™ (Note-1) technology which provides nod or path backup abilities.

With the MultiRing™ Technology, users can enlarge the network campus by applying different Ring IDs, different from one to another, in order to get the unlimited Ring Coupling ability.

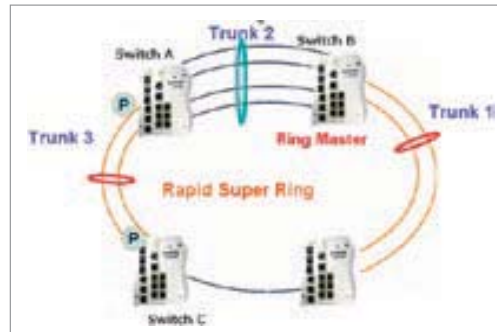


▶ Link Aggregation Control Protocol, TrunkRing™ Technology

Link Aggregation Control Protocol allows you to group multiple Ethernet ports in parallel to increase the link bandwidth. The aggregated ports can be considered as 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

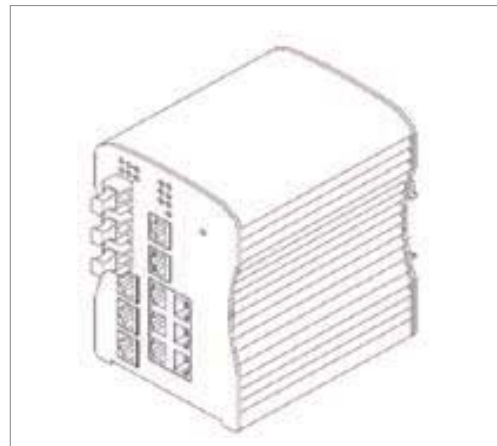


the backbone network. This is an inexpensive way for users to transfer much more data. If the trunk port is also assigned as a ring port, it will become as a **TrunkRing™** – which means that the bandwidth of ring path has increased with port trunk technology, and there is no recovery time when failures occur. The JetNet 4510 provides a simple and easy way to aggregate port bandwidth into Rapid Super Ring.



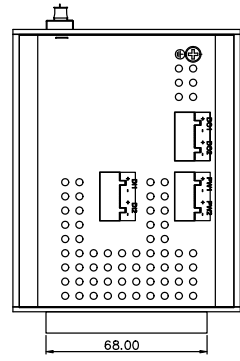
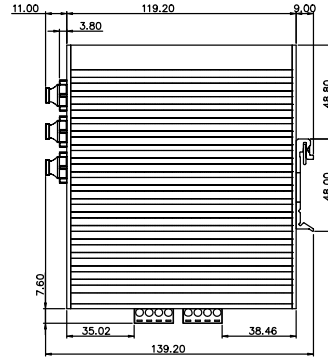
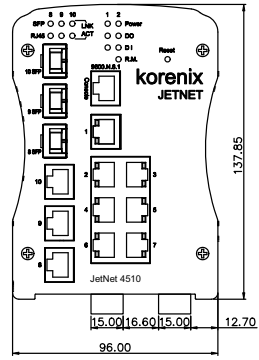
▶ Robust Mechanism Design

Korenix JetNet 4510 has the unique and outstanding appearance, which is attractive and with strong functionalities. The special fan-less mechanical design adapts the thermodynamic technique to ventilate heat generated from Fast Ethernet modular efficiently. The form factor with nice inward curvature on the sides drives air flow through the enclosure, and it helps carry the rising heat toward the top ventilation holes to enable the chimney-effect flows become very effective. Using aluminum extrusion case with the industrial arts quality, IP 31 class of protection, the light weight, the rigid assembly, the excellent thermal conductivity, fin-type by extending heat dissipation surface, assures units can be operated under harsh industrial environment reliably.





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
 IEEE 802.1D-2004 Rapid Spanning Tree Protocol (RSTP)
 IEEE 802.3ad LACP
 IEEE 802.1x Port based Network Access Control

Performance

Switch Technology:

Store and Forward Technology with 32Gbps Switch Fabric

System Throughput: 2.976Mpps/ 64bytes packet length

Transfer packet size:

64 bytes to 1522 bytes (with VLAN Tag)

Transfer performance: 14,880pps for Ethernet and 148,800pps for Fast Ethernet

MAC Address: 8K MAC

Packet Buffer: 1Mbits

Relay Alarm:

Dry Relay output with 1A@DC 24V contact ability

Management

Configuration: Cisco-Like CLI, Telnet, Web, TFTP/Web Update for firmware and configuration backup and restore, JetView™, 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: MIBII, Bridge MIB, VLAN MIB, SNMP MIB, RMON and Private MIB

Port Trunk: Up to 5 Static Trunk and with IEEE 802.3ad LACP protocol

VLAN: 802.1Q VLAN, GVRP. Up to 64 VLAN groups

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

Quality of Service: Four priority queues per port, 802.1p 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 failure

Port Mirroring: Online traffic monitoring on multiple selected ports

Port Security: Port security to assign authorized MAC to specific port

IP Security: IP address security to prevent unauthorized access

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

System Log: Supports both Local mode and Server mode

DHCP: DHCP Client, DHCP Server with IP binding MAC or excludes IP address functions

Port Based Network Security: IEEE 802.1x for user access authentication with local access list or remote Radius server

Network Redundancy

Rapid Spanning Tree: IEEE802.1D-2004 Rapid Spanning Tree Protocol. Compatible with Legacy Spanning Tree and 802.1w

Multiple Super Ring(MSR™): New generation Korenix Ring Redundancy Technology-Multiple Super Ring.

The MSR™ supports 5ms failover time and zero delay of restore time with R.M. auto selection, it also backward compatible with legacy super ring in slave mode

Rapid Dual Homing (RDH™): Support multiple node to node, multiple path to one node to obtain more flexible and reliable architecture

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

MultiRing™: New generation of ring coupling technology without extra control port. It equipped 2 types of connection architecture- TangentRing™ and CrossRing™ (Note-1)

AnyRing™: Inter-operate with other vendors' redundant ring

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, EIA/TIA-568B 100-ohm (100m)

100 Base-TX: 2/4-pair UTP/STP Cat. 5 cable, EIA/TIA-568B 100-ohm (100m)

Diagnostic LED:

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

Port 8~10 Copper: Link/Activity(Green)

Port 8~10 SPF: 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 Input

Digital Input:

2 sets of Digital Input

Logic Low (0): DC 0~10V

Logic High(1): DC 11~30V

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

Reset: Reset button is provided to restore default settings



Power Requirements

System Power: Dual Power Input, DC 12~48V/-12~-48V with Reverse Polarity Protection

Power Consumption: About 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: 0.915 g without package

Environmental

Operating Temperature: -20 ~70°C

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

Storage Temperature: -40 ~ 85°C

Hi-Pot: 1.5KV for ports and power

Regulatory Approvals

EMI: FCC Class A, CE/EN55022. Class A

EMC Immunity Interface: EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11

Safety: UL, cUL

Shock: IEC60068-2-27

Vibration: IEC60068-2-6

Free Fall: IEC60068-2-32

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

Warranty: 5 years

Note-1: Available in the further, please contact with Korenix sales windows for more detail information

Ordering Information

JetNet 4510 Industrial 10-Port Managed Fast Ethernet Switch

Includes:

- 7-ports 10/100Base-TX and 3 10/100/ 100FX SFP Combo ports Switch
- Wall mounting plate and six screws
- Quick Installation Guide
- Documentation CD-ROM

Ordering Accessories

SFP100MM: 100Mbps SFP Transceiver,1310nm, multi-mode, 2KM, -10~70°C

SFP100MM-w: 100Mbps SFP Transceiver,1310nm, multi-mode, 2KM, -40~85°C

SFP100SM30: 100Mbps SFP Transceiver,1310nm, single-mode, 30KM, -10~70°C

SFP100SM30-w: 100Mbps SFP Transceiver,1310nm,single-mode, 30KM, -40~85°C



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