

## 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™**
- Support device recovery utility - **JetView™**
- 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, 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. The JetNet 4510 is designed as rugged surface in aluminum alloy material and with wide operating temperature. The software supports 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 could enlarged connection from 10 ports pure 10/100Mbps pure copper to 7 ports 10/100Mbps copper plus 3 fiber ports with multi-mode or single-mode transceiver in random.

## Superb Management Features

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

multicast traffic by IGMP Snooping. Bandwidth can be managed by port rate control to avoid abnormal broadcast storm. To enhance security, port access can be limited to pre-defined IP address table, binding MAC address to specific port or managed by HTTPS or SSH or perform access security through IEEE 802.1x mechanism. Network determinism is answered by QoS, Quality of Service, for traffic prioritization. JetNet 4510 is the perfect combination for 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 combining one Small Form factor Pluggable (SFP) socket for 100Mbps multi-mode or single mode SFP transceiver and one RJ-45 copper port in 10Mbps full duplex, 100Mbps half /full duplex link mode. The switch will automatically detect

the cable connections priority for combo port. Users can 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 applicable port.

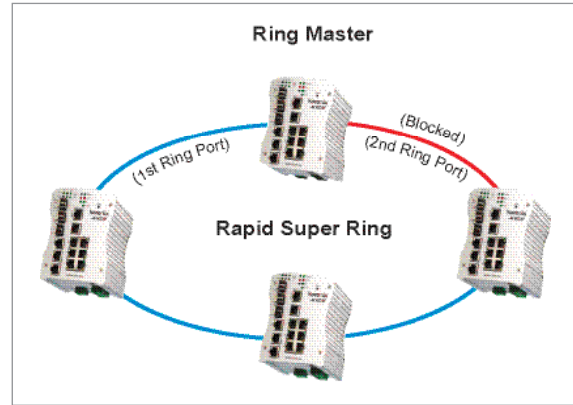
## Comprehensive Redundant Solutions- Multiple Super Ring (MSR™) Technology

It is critical for industrial applications that network remains non-stop. The JetNet 4510 supports new generation of ring technology – **MSR™** which includes various new technology for different network redundancy applications and architectures. With the **MSR™** technology, the failover time could be short less than 5 milliseconds and with zero second restore time. Unlimited device connective, user can enlarged the ring architecture as the campus need without delay of the data traffic. The **MSR™** also facilitates the JetNet 4510 to connect with core management switch via standard Rapid Spanning Tree protocol though multiple paths or multiple nodes

to increase the reliability by Rapid Dual Homing (**RDH™**) technology. To higher link availability and 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 allows two power inputs for power redundancy and wide DC power range, from DC 12V to DC 48V plus supporting DC-48V in industrial applications.

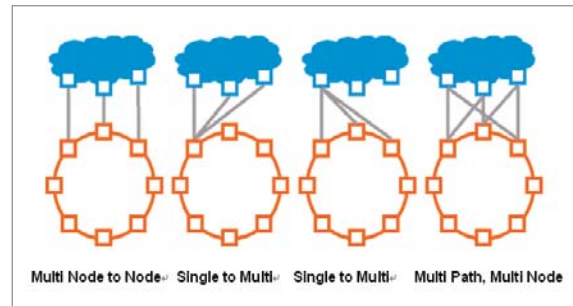
## ▶ Rapid Super Ring (RSR) Technology

Rapid Super Ring is Korenix 2nd generation Ring redundancy technology. The recovery time is enhanced from 300ms to 5ms for copper ring, 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. The 2nd Ring Port of the R.M. is the block path. Once the primary path is failure, the 2nd path will be recovered within 5ms. Besides, the restore time is also enhanced to zero in R.M. auto



## ▶ Rapid Dual Homing (RDH™) Technology

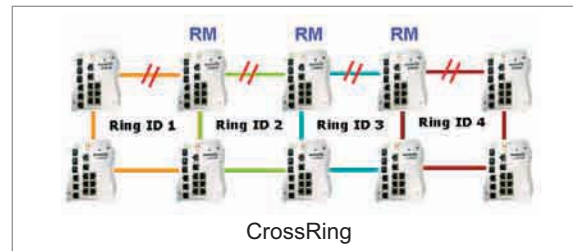
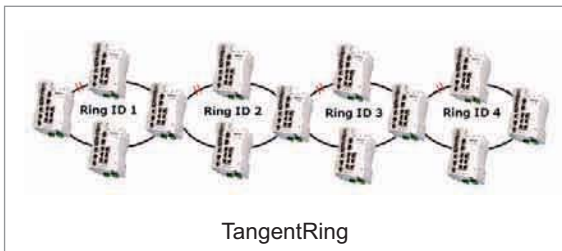
In the MSR technology includes a new Dual Homing technology- Rapid Dual Homing (RDH™) which provides flexible uplink connection in multiple node to node or multiple paths to one to obtain more efficiency and reliability than before. When you want connect multiple RSR or form the redundant topology with other vendors, RDH™ allows you enable RSTP and RSR at the same device and break the limitation of ring node. Thus you have more flexibility and standard (RSTP) way to construct your network topology.



## ▶ MultiRing™ Technology

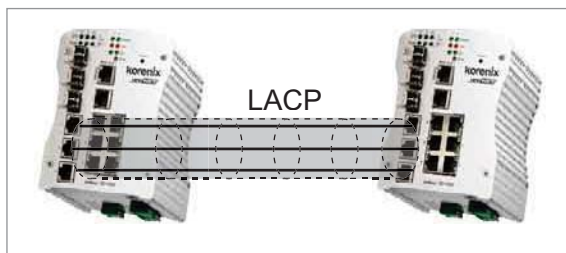
The MultiRing™ is a new technology that construct coupling ring without control port and achieve different coupling architecture by TangentRing™ or CrossRing™ (Note-1) technology which provides node or path backup ability.

By the MultiRing™ Technology, user can enlarge the network campus just apply different Ring ID which is different with neighborhood to get unlimited Ring Coupling ability.

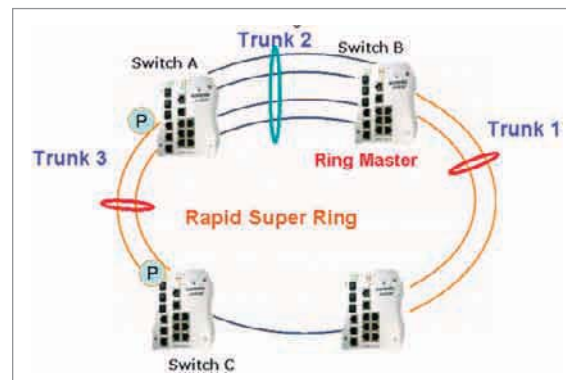


## ▶ Link Aggregation Control Protocol, TrunkRing™ Technology

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

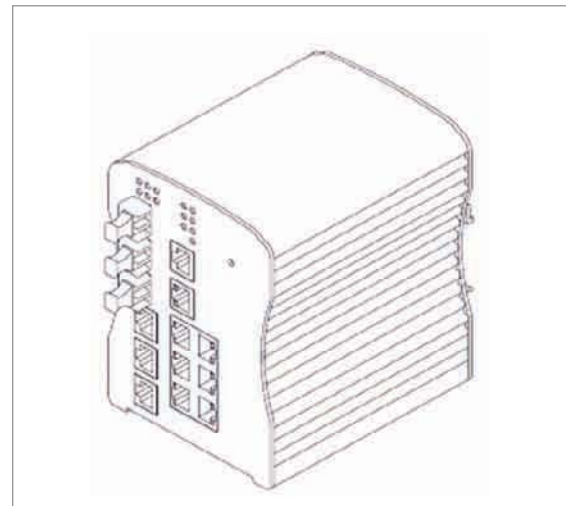


backbone network. This is an inexpensive way for you to transfer much more data. If the trunk port also assigned as a ring port then it will become as a **TrunkRing™** – which mean is the bandwidth of ring path have increased by port trunk technology and there is no recovery time when failure occurred. The JetNet 4510 provides a simply, easily way to aggregate port bandwidth into Rapid Super Ring.

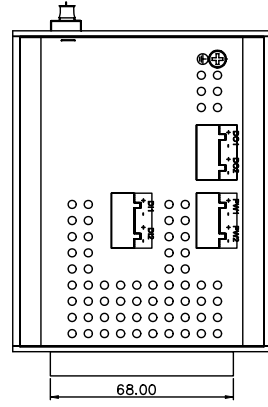
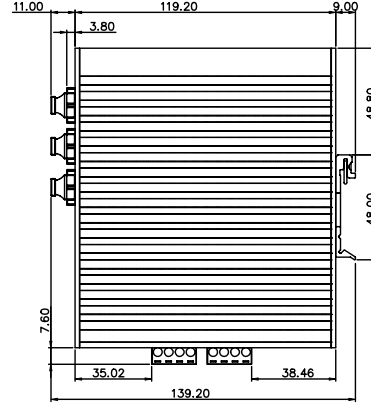
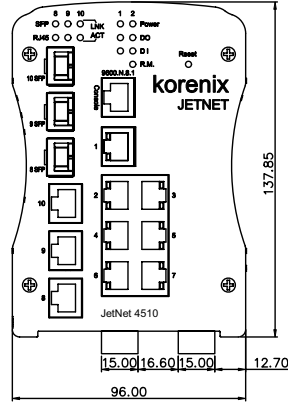


## ▶ Robust Mechanism Design

Korenix JetNet 4510 outstanding outlook is attractive and with strong functionality. 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 driving air flow through the enclosure, it helps carrying the rising heat toward the top ventilation holes to let the chimney-effect flows become very effective. Using aluminum extrusion case with industrial arts quality, IP 31 class of protection, light weight, rigid assembly, 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, 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:** 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

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

**Any Ring:** 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:** -10 ~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

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## Ordering Information

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### 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

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## Ordering Accessories

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**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