



## JetNet 5310G

### Industrial 8 PoE + 2G Combo Managed High Power IEEE802.3at PoE Switch



- 8 10/100 Base TX PoE ports and 2 Gigabit RJ/ SFP combo ports
- IEEE 802.3af 15.4W / IEEE 802.3at 30W High Power PoE
- 240W@60°C power budget for High-power PoE camera
- SFP ports support 100/1000 Mbps with Digital Diagnostic Monitoring (DDM) to monitor long distance fiber quality
- All ports support Korenix patented RSR with ms recovery time, and MSR for up to 4 x 100M Rings and 2 Gigabit Uplink Rings
- Advanced management by LACP/VLAN/GVRP/QoS/IGMP/Private VLAN/QinQ/Snooping/Rate Control/Online Multi-Port Mirroring/DHCP
- Advanced Security system: Port Security, Access IP list, SSH and HTTPS Login, IEEE 802.1x MAB (MAC Authentication Bypass)/ Radius Server authentication
- Event Notification through E-mail, SNMP trap and SysLog
- IEEE 802.1AB LLDP and optional Korenix NMS software for auto-topology and group management
- Cisco-Like CLI, CGI-based web, SNMP/RMON for network
- Hi-Pot Isolation Protection for ports and power
- Industrial heat dispersing design, -40~75°C wide operating temperature

## Overview

Korenix JetNet 5310G, the revolutionary DIN Rail type industrial Gigabit managed Power over Ethernet Switch is designed with eight 10/100TX PoE injector ports and two Gigabit RJ-45 / SFP combo ports for highly critical PoE applications such as real time IP video surveillance, WiMAX systems and Wireless APs. All of the 8 ports of the switch are compliant with both IEEE 802.3af PoE and IEEE 802.3at high power PoE standards and can deliver up to 15.4W and 30W power per port to enable the high-power requiring devices, such as Wireless APs, PTZ and dome network cameras, etc.

The two Gigabit Ethernet combo ports provide high speed uplink to connect with higher level backbone

switches with Korenix MSR™ network redundancy technology, while ensuring the reliability of video transfer through the exclusive 5ms recovery time. By supporting various connection types, including 10/100/1000Mbps RJ-45 copper or 100Mbps, 1000Mbps Fiber, the Gigabit uplink ports further enlarge the ring infrastructure.

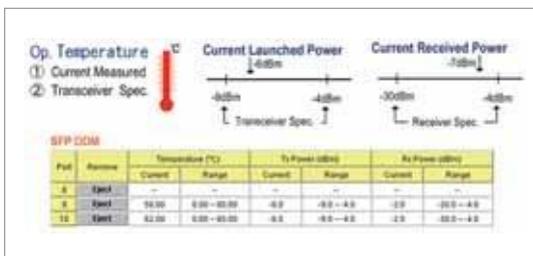
With IEC 61000-6-2 / 61000-6-4 Heavy Industrial EMC certified design, including robust enclosure and -40~75°C wide operating temperature range, JetNet 5310G ensures high performance of the surveillance network under vibrating and shock environments in rolling stocks, traffic control systems and other harsh surveillance applications.

## Driving the IP Surveillance Market

Since the ratification of the Power over Ethernet standard in 2003, the PoE technology becomes a trend; more devices adopt PD function to obtain power through Ethernet cable eliminating the need of running separate power wirings to a remote device. The JetNet 5310G is equipped with the new PSE solution, compliant with IEEE 802.3af, IEEE 802.3at 2-event or IEEE 802.3at 2-event with LLDP standards, as well as forced mode powering mode for legacy Power over Ethernet cable devices. The 8 PoE ports support LLDP power negotiation function or 2-event classification of IEEE 802.3at PoE plus, and can therefore deliver up to 30W power per port and 240W per unit at 60°C operating temperature, to drive the IP cameras for cross-street monitoring or WiMAX systems for internet access at train stations, airports or Hot-spots.



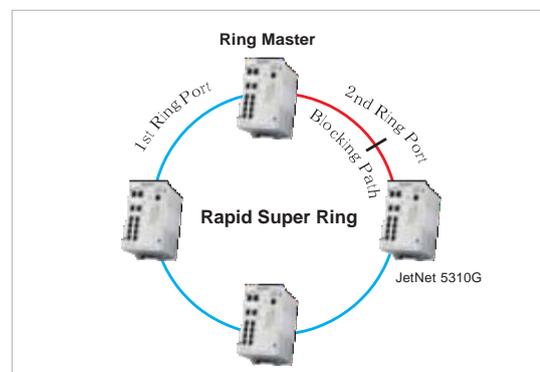
## 100/1000Mbps DDM SFP Transceiver for High Quality Monitoring



The SFP socket of the JetNet 5310G supports 100Mbps and 1000Mbps SFP type fiber transceivers with speed detection and independent indication. Moreover, it supports DDM (Digital Diagnostic Monitoring) type SFP transceivers allowing users to diagnose optical cable transmission problem through maintenance and debugging of the optical signal quality by DDM without the need of an extra optical cable analyzer, as a result greatly saving time and system costs.

## Rapid Super Ring (RSR™) Technology

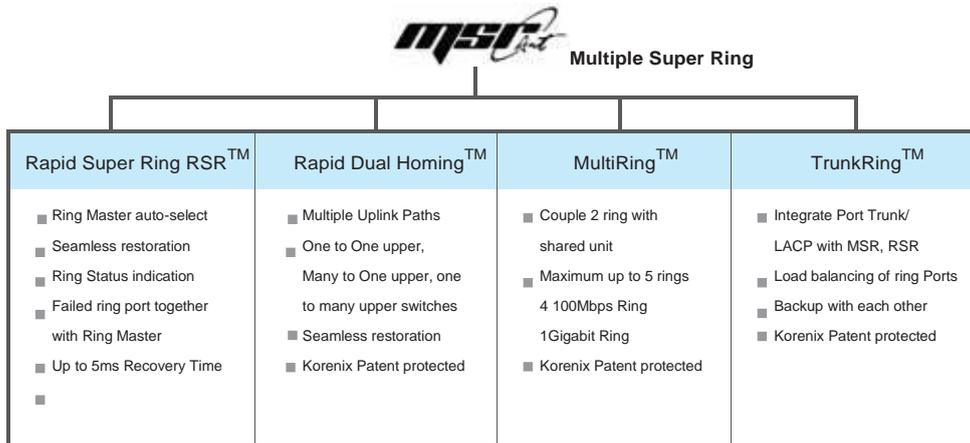
The JetNet 5310G supports Rapid Super Ring technology, which is the 2nd generation of Korenix Ring Redundancy technology. The recovery time is greatly improved from 30ms to few ms for both copper and fiber ring. The Ring master can be auto-selected by RSR engine. The 1st ring port of the R.M. is the primary path while the 2nd ring port of the R.M. is the block path. Once the primary path fails, the 2nd path will be recovered within few ms. Besides, the restoration time is also shortened to zero in the R.M. auto-selection mode.



## Comprehensive Redundant Solutions – Multiple Super Ring (MSR™)

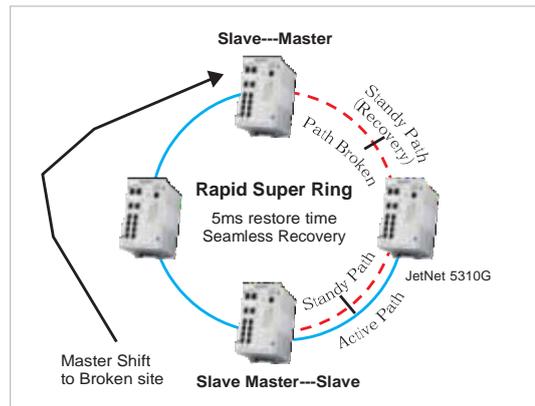
JetNet 5310G also supports advanced Ring technology – M.S.R. (Multiple Super Ring) which includes various new technologies for different network redundancy applications and structures. The supported MSR allows JetNet 5310G aggregating up to 5 Rapid Super rings into one switch. With the MSR™ technology, a node can be configured to multiple rings with the failover time. In addition, users can extend the ring topology by adding hundreds of JetNet managed switches to meet the large-scale network needs without compromising

the network speed. The MSR™ also allows JetNet 5310G managed switch to easily connect with core management switches via standard Rapid Spanning Tree Protocol (RSTP) or through multiple paths or nodes to increase the reliability by RDH™ (Rapid Dual Homing) technology. By integrating MSR™ and LACP (Link Aggregation Control Protocol), the JetNet series can enhance the link ability and increase the overall link capacity. Two or more Fast Ethernet connections are combined in order to increase the bandwidth and to create a resilient and redundant link.



## Seamless Ring Port Restoration

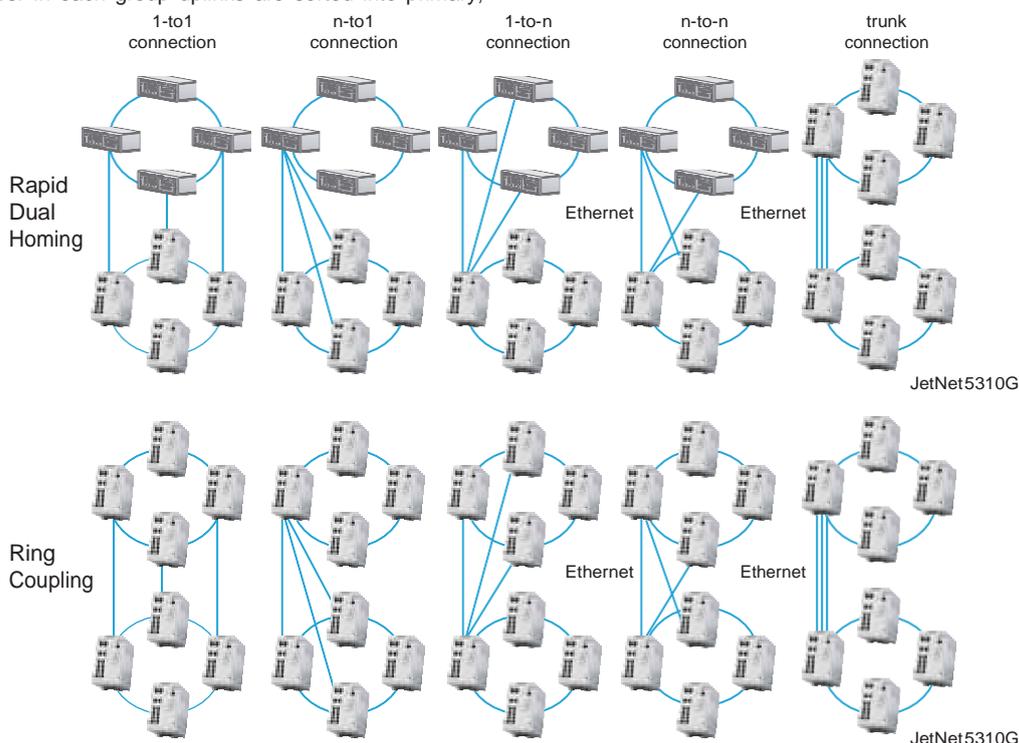
Seamless restoration is a new Korenix patented technology which can restore a failed ring without causing any loop problem, topology change and packet loss. With a zero second restoration time, this mechanism eliminates any unstable status and guarantees the applications running non-stop.



## Rapid Dual Homing (RDH™) Technology

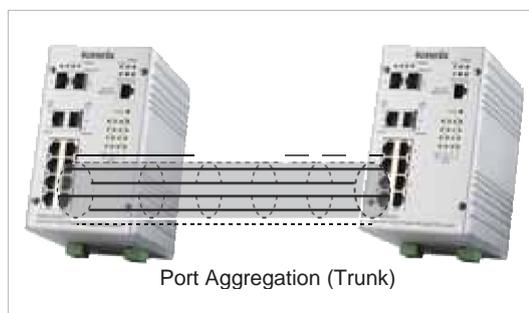
Rapid Dual Homing is also an important feature of Korenix new generation Ring technology. It supports ring coupling with other vendors devices. Moreover, providing easy configuration and multiple redundancies, the failover time is much faster and the restoration time is zero ms. Uplinks can be auto detected and gathered into groups. In each group uplinks are sorted into primary,

secondary and standbys based on their link speed. The uplink with the highest speed is more likely to be active path for data transmission. Link aggregation is also integrated into RDH™. An uplink connection can be a single link or several links aggregated as a trunk, which provides better redundancy and link capacity.



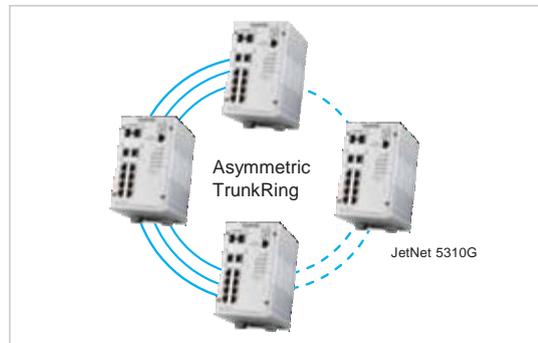
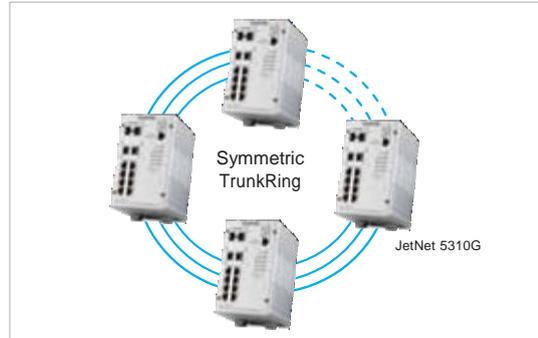
## Link Aggregation Control Protocol

Link Aggregation Control Protocol allows users grouping 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 higher bandwidth is needed for the backbone network. This is a cost-effective way for transferring much more data.

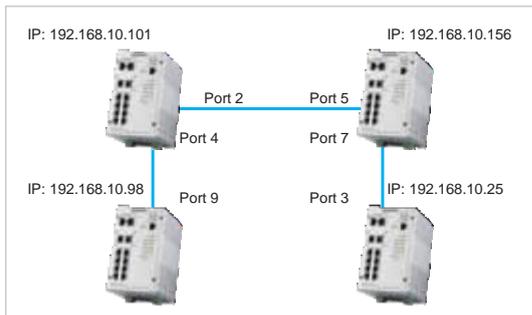


## TrunkRing™

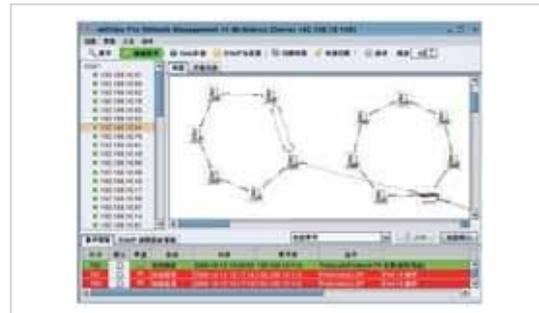
TrunkRing is a new feature in MSR which merges the two technologies of RSR and link aggregation. It takes advantages of aggregation to enhance the link redundancy, while increasing the link speed. The ring will open only if all the aggregated links are broken. Link aggregation can be achieved by either static trunk or LACP. Not all the link sections in a TrunkRing need to be the same. Ring links can be either symmetric or asymmetric. Some are a single path, and the others are aggregated by links where the number of links in a trunk group can be different. Users can enhance the link redundancy at different locations in accordance to the need. The link with less speed is more likely to be used as the backup path for restoring the network to full play capacity.



## Auto Topology Discovery & Efficient Management through LLDP and Korenix NMS



JetNet 5310G supports topology discovery or LLDP (IEEE 802.1AB Link Layer Discovery Protocol) function that can help users to discover multi-vendor's network devices on the same segment by an NMS system which supports LLDP function. With LLDP function, NMS can easily maintain the topology map, display port ID, port description, system description, VLAN ID and so on. Once a link failure happens, the topology changed



events are updated to the NMS to help users easily maintain the network system. Like as the Korenix NMS, not only supports topology discovery, it also delivers group IP assignment, firmware upgrade, configuration files backup / restore ,SNMP MIB Browser /compile, MSR™ group management and also allows user to export topology map to drawing file-JPEG, BMP, PNG or PDF for other application.

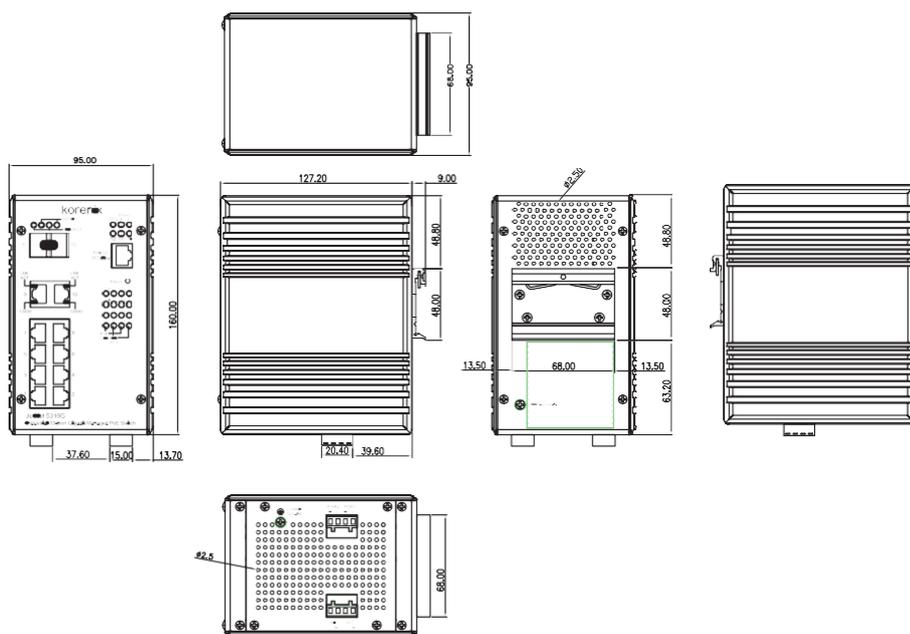
## Outstanding Management and Enhanced Security

The JetNet 5310G provides various network control and security features to ensure the reliable and secure network connection. To optimize the industrial network environment the switch supports advanced network features, such as Tag VLAN, Private VLAN, QinQ, IGMP Snooping, Quality of Service (QoS), Link Aggregation Control Protocol (LACP), Rate Control, etc. The PoE switch can be smartly configured through Korenix View, Korenix NMS (Korenix's advanced management utility), Web Browser, SNMP, Telnet and

RS-232 local console with its command like interface. The failure notifications are sent through e-mail, SNMP trap, Local/Remote system log, Multiple event alarm relay.

To avoid hacker's attacks and ensure the secure data transmission, JetNet 5310G series features DHCP client, DHCP server with IP and MAC binding, 802.1X Access Control, SSH for Telnet security, IP Access table, port security and many other security features.

## Dimensions (Unit = mm)





## Specification

### Technology

#### Standard:

IEEE 802.3 10 Base-T Ethernet  
IEEE 802.3u 100 Base-TX Fast Ethernet  
IEEE 802.3u 100 Base-FX Fast Ethernet Fiber  
IEEE 802.3ab 1000 Base-T  
IEEE 802.3z Gigabit Fiber  
IEEE 802.3x Flow Control and Back-pressure  
IEEE 802.3af Power over Ethernet  
IEEE 802.3at High power Power over Ethernet  
IEEE 802.1AB Link Layer Discovery Protocol (LLDP)  
IEEE 802.1p Class of Service (CoS)  
IEEE 802.1Q VLAN and GVRP  
IEEE 802.1QinQ  
IEEE 802.1D-2004 Rapid Spanning Tree Protocol (RSTP)  
IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)  
IEEE802.3ad Link Aggregation Protocol (LACP)  
IEEE802.1x Port Based Network Access Protocol  
IEEE 1588 Precision Time Protocol

### System Performance

**Switch Technology:** Store and Forward Technology with 32Gbps Switch Fabric.

**System Throughput:** 8.3Mega packet per second

**CPU performance:** 32 bits ARM-9E running at 180 Mhz and performance up to 200MIPS; Embedded hardware based watch-dog timer.

**System Memory:** 8M bytes flash ROM, 64M bytes SDRAM.

**Transfer packet size:** 64 bytes to 1522 bytes (includes double VLAN tag).

**MAC Address:** 8K MAC address table.

**Packet Buffer:** 1M bits shared memory for packet buffer.

**Forwarding performance:** 14,880 pps for Ethernet and 148,800 pps for Fast Ethernet, 1488,100 pps for Gigabit Ethernet

**Environment Monitoring:** Embedded board-level thermal detector for system temperature monitoring

### System Management

**Configuration and monitoring interface:** Telnet, local RS-232 console, IPv4/IPv6 CGI-based Web- browser interface (HTTP/HTTPS), IPv4/IPv6 SNMP V1/V2c/V3 with SNMP Trap (4 Trap Stations), and SMTP interface. CLI, TFTP/Web Update for firmware and configuration backup and restore, DHCP Client, warm start, factory default, Admin password, Port Speed/Duplex Control, status, statistic, MAC address table display, static MAC, Aging time, RMON groups 1,2,3,9.

**Telnet & Local Console:** Supports command line interface with Cisco-like commands and maximum 4 sessions; the telnet interface also supports SSH

**SNMP:** Support IPv4/IPv6, v1, v2c, v3 with SNMP trap function, trap station up to 4 and can be manually configured the trap server IP address.

**SNMP MIB:** MIBII, Bridge MIB, Ethernet-like MIB, VLAN MIB, IGMP MIB, Korenix Private MIB

**Korenix Utility:** Supports Korenix View and Korenix NMS with IEEE 802.1AB Link Layer Discovery Protocol for device and link auto-topology discovery

**Network Time Protocol:** Supports NTP protocol with daylight saving function and localized time sync function.

**Management IP Security:** IP address security to prevent unauthorized access

**Management Secure:** IEEE 802.1x Port based network access control: MAB (MAC Authentication Bypass), remote management login authentication by Radius account /password, key for RADIUS server authentication

**E-mail Warning:** 4 receipt E-mail accounts with mail server authentication

### Network Performance

**Port Configuration:** Port link Speed, Link mode, current status and enable/disable.

**Port Trunk:** IEEE 802.3ad port aggregation and static port trunk; trunk member up to 8 ports and maximum 5 trunk groups include Gigabit Ethernet port

**VLAN:** IEEE 802.1Q Tag VLAN with 256 VLAN Entries and provides 2K GVRP entries

3 VLAN link modes- Trunk, Hybrid and Link access

**Private VLAN:** Direct client ports in isolated/community VLAN to promiscuous port in primary VLAN

**IEEE802.1 QinQ:** Supports Double VLAN Tag function for implementing Metro Network topologies

**Class of Service:** IEEE 802.1p class of service; per port 4 priority queues.

**Traffic Prioritize:** Supports 4 physical queues, weighted fair queuing (W.R.R.) and Strict Priority scheme, which follows 802.1p CoS tag and IPv4 ToS/ DiffServ information to prioritize the traffic of your industrial network

**IGMP Snooping:** IGMP Snooping v1/v2c /v3 for multicast filtering and IGMP Query mode; also support unknown multicasting process forwarding policies- drop, flooding and forward to router port

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

**Port Mirroring:** Online traffic monitoring on multiple selected ports

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

**DHCP:** DHCP Client, DHCP Server with IP & MAC Address binding, DHCP relay and port based DHCP server.

### Power over Ethernet

**PoE Standards:** IEEE 802.3af / IEEE 802.3at

End-span wiring architecture

**PoE Operating Mode:** Auto mode: Auto detects and powering by IEEE 802.3af, IEEE 802.3at 2-event / 2-event plus LLDP behaviors

Forced mode: User configured power consumption without detection, classification

**PoE forwarding conductor:** V+: RJ-45 conductor 3,6

V-: RJ-45 conductor 1,2

**Power forwarding ability:** IEEE 802.3af: 15.4w /port, IEEE 802.3at:30w/port

**PoE System Power Budget:** 240W @ 60°C, 95% Humidity, DC 48V power input

**Power Budget Control:** Port-based system power budget control with first plug-in high priority mechanism.

## Network Redundancy

**Multiple Super Ring (MSR)™**: New generation Korenix Ring Redundancy Technology, Includes Rapid Super Ring, Rapid Dual Homing, TrunkRing™, MultiRing™, SuperChain™ and backward compatible with legacy Super Ring™.

**Rapid Dual Homing (RDH)™**: Multiple uplink paths to one or multiple upper switch

**TrunkRing™**: Integrates port aggregation function in ring path to get higher throughput ring architecture

**MultiRing™**: Couple or multiple rings: JetNet 5310G supports up to 4 100M rings and 2 Gigabit rings in single switch

**SuperChain™**: It is new ring technology with flexible and scalability, compatibility, and easy configurable. The ring includes 2 types of node Switch – Border Switch and Member Switch

**Rapid Spanning Tree**: IEEE802.1D-2004 Rapid Spanning Tree Protocol. Compatible with Legacy Spanning Tree and IEEE 802.1w multiple spanning tree

**Loop Protection**: The Loop Protection prevents any network looping caused by RSTP and MSR ring topology change

## Interface

**Enclosure Port**: 10/100Mbps PSE port: 8 x RJ-45  
Gigabit Ethernet port : 2 x RJ-45 with auto MDI/MDI-X function

100Mbps / 1000Mbps Fiber port : 2 x SFP Socket for SFP fiber transceiver with Hot-swappable and D.D.M. functions  
Console port : 1 x RJ-45 for system configuration.

Digital Input / Relay Output port: 4-Pin removable terminal block connector.

Power input port: 4-Pin removable terminal block connector.

**Cables**: 100 Base-TX: 2-pairs UTP/STP/FTP Cat.5 cable, EIA/TIA-568B 100-ohm (100m)

1000 Base-T: 4-pair UTP/STP/FTP Cat.5e cable, EIA/TIA-568B 100-ohm (100m)

Uses STP or FTP cable can provide higher electromagnetic resistance to correspond vertical market standard, such as railway EMC – EN50121-4.

**Digital Input**: Digital Input (Hi): DC 11V~30V

Digital Input (Low): DC 10V~0V

Supports sink type signal input with photo-coupler isolation.

**Relay Output**: Dry Relay output: 0.5A / DC 24V.

Supports Multiple Events Binding trigger function.

**Diagnostic Indicators**: Power: Green On: (System power applied)

D.I.: Green On (digital signal high level is detected)

D.O.: Red On (relay active and form as)

Sys: Green On (System Ready), Blinking ( System perform firmware upgrade)

R.S. (Ring status): Green on (Ring normal) / Blinking (Ring with wrong port), Yellow on (Ring abnormal) / Blinking (device's ring port failed)

LNK (Link): Green on, ACT (Active): Green Blinking

PoE: Yellow on ( PoE is applying power)

## Power Requirements

**System power**: 2x DC power input with polarity reverse protection

**Input Range**: DC 46~57V; Inrush current: 64A / DC 46V input, 76.4A / DC 57V input

**Power system type**: Passive power source

**Power Consumption**: 15Watt without PD loading.

## Mechanical

**Installation**: DIN-Rail mounting

**Case material**: Steel metal with Aluminum heat-dissipate panel housing

Ingress Protection –grade 30

**Dimension (mm)**:

95 (W) x 127(D) x 160 (H) – w/o DIN Rail Clip

95 (W) x 136.2(D) x 160 (H) – w/ DIN Rail Clip

**Weight**: 1.28Kg

## Environmental

**Operating Temperature**: -40 ~75°C

**Operating Humidity**: 0% ~ 95%, non-condensing

**Storage Temperature**: -40 ~ 85°C, 0% ~90% Humidity

**Hi-Pot**: DC 2.25KV for power to chassis ground, Ethernet port to chassis ground

## Regulatory Approvals

**EMC**: IEC /EN61000-6-2, IEC/EN61000-6-4 Heavy Industrial EMC

EMI:

FCC Class A, CE/ Class A

EMS:

IEC/EN61000-4-2, IEC/EN61000-4-3,

IEC/EN61000-4-4, IEC/EN61000-4-5,

IEC/EN61000-4-6, IEC/EN61000-4-8,

IEC/EN61000-4-9

**Safety**: EN60950-1, UL60950-1

**Warranty**: 5 years

## Ordering Information

**JetNet 5310G Industrial 8 PoE + 2 Gigabit Combo Managed High Power IEEE802.3at PoE Switch, -40~75°C**

Includes:

- JetNet 5310G
- DIN Rail kit
- Quick Installation Guide
- Please download User Manual from Korenix website