JetNet 5428G / 5428G-DC / 5428G-2G-2FX

Industrial 24+4G Rackmount Managed Ethernet Switch

RoHS

24 FE + 4G Combo	24 FE + 2G Combo+ 2 SFP	MSR	12+2G Rings	MSTP
256 VLANs	Private VLAN, QinQ	Modbus TCP/IP	LLDP & Korenix NMS	-25~70°C

- 24-port 10/100-TX and 4-port Gigabit RJ-45/SFP combo ports (10/100/1000 Base-TX, 1000Base-X) (JetNet 5428G / 5428G-DC)
- 24-port 10/100-TX, 2-port 100M/Gigabit SFP and 2-port Gigabit RJ-45/SFP combo ports (10/100/1000 Base-TX, 1000Base-X) (JetNet 5428G-2G-2FX)
- Non-Blocking Switching Performance
- Supports Jumbo Frame up to 9,216 bytes
- 802.1s MSTP, RSTP and Multiple Super Ring (Rapid Super Ring, Rapid Dual Homing, MultiRing, TrunkRing) for network redundancy
- Maximum 12 x 100M Rings plus 2 Gigabit Rings aggregation capability
- 256 VLAN, Private VLAN, QinQ,LACP, GVRP, QoS, IGMP Snooping, GMRP, Rate Control, Online Multi Port mirroring
- Supports LLDP and Korenix NMS software for auto-topology visualization and efficient group management
- SNMP V1/V2c/V3, RMON for remote management
- Advanced Security system by IP/Port Security, 802.1x and Access Control List
- Industrial Modbus TCP protocol for device management and monitoring
- Event Notification by E-mail, SNMP Trap, Syslog and Relay Output
- Fan-Less design with -25~70°C wide operating temperature
- 90-264VAC (JetNet 5428G) or Dual 24V (12-48V) DC input (JetNet 5428G-DC)

Overview

The JetNet 5428G series, the 19-inch 24+4G Managed Ethernet Switch, is equipped with 24 10/100 Base-TX ports plus 4 Gigabit RJ45 / MINI GBIC combo ports (JetNet 5428G) and 2G combo and 2 Gigabit / 100M SFP sockets (JetNet 5428G-2G-2FX). The switches are special design for control rooms where high-port density and performance are required. The Gigabit Combo port design allows 10/100/1000 triple speed, and the SFP ports accept all types of Gigabit SFP transceivers, including Gigabit SX, LX, LHX, ZX and XD for several connections and distances.

The device is mounted within the 19 inch rack, along with other 19 inch public servers or other network devices. When the lower industrial switches are aggregated to the JetNet 5428G, the 24+4G design allows connecting up to 12 100M rings plus 2 copper/fiber gigabit or FE rings. Each of the ring has its own ring redundancy protection.

This is a unique and Korenix patent protected ring technology. JetNet 5428G is designed as a fan-less rackmount switch with low power consumption and wide operating temperature. JetNet 5428G-DC, the DC input model, allows 12-48VDC input. JetNet 5428G supports Jumbo frame featuring up to 9,216 bytes packet size for large size file transmission. This is the trend for future industrial application requests.

The embedded software supports RSTP and Multiple Super Ring technology for ring redundancy protection. Full layer 2 management features include VLAN, IGMP Snooping, LACP for network control, SNMP, LLDP for network management. Secured access is protected by Port Security, 802.1x and flexible Layer 2/4 Access Control List. With JetNet 5428G, you can fulfill the technicians' need of having best solution for the industrial Ethernet infrastructure.

High Bandwidth and Performance

JetNet 5428G series support 24 fast Ethernet ports plus 4 gigabit combo ports as well as wire speed forwarding and up to 9,216 bytes jumbo frame. The 24+4G combo port design provides benefits and advantages when planning your industrial network architecture.

- Acting as the access switch, 100M speed is still the major and popular in industrial environment.
- Acting as the distribution switch, Gigabit Combo ports are designed for network redundancy, connecting public server or uplink path...
- 2 Gigabit ports are for forming independent ring, or connecting multiple switches with RSTP protection.
- 2 ports for ring and the others for connecting to public servers with higher bandwidth.
- The upper connection can be aggregated with up to 8G bandwidth in full duplex mode by LACP.
- Combo Ports Design to save stock of storing different kinds of transceivers.
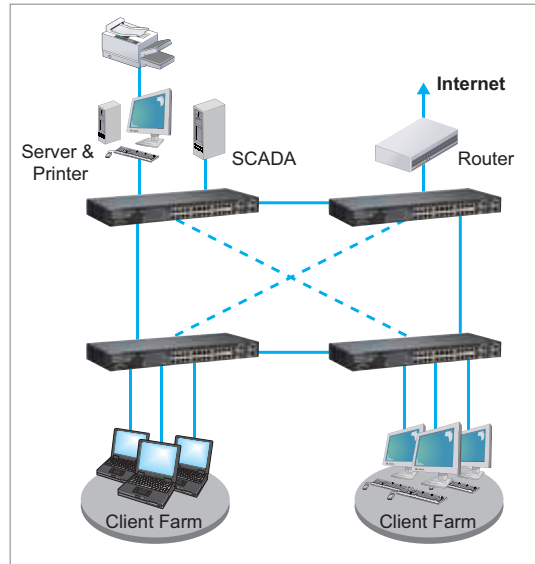
Maximum 12+2G Rings Aggregation Capability

Korenix JetNet 5428G supports MultiRing which allows aggregating multiple Rapid Super Rings. With the MultiRing technology all the Fast Ethernet and Gigabit Ethernet ports can be part of the ring ports. Besides, up to 12 100M Rings can be formed and 2 gigabit rings (JetNet 5428G / 5428G-DC) or 1 gigabit/100M fiber ring plus 1 gigabit ring (5428G-2G-2FX) Rings can be aggregated to single access switch.

Traditional ring switches, which only allow one ring setting or one ring traffic passthrough, need additional links or settings to connect multiple rings. When there are several ring requests in your network, the setting and environment becomes complex. Unlike these traditional ring switches, with MultiRing feature the lower rings can connect to the JetNet 5428G directly.

Up to 12 x 100M Rings
+ 2 Gigabit Rings
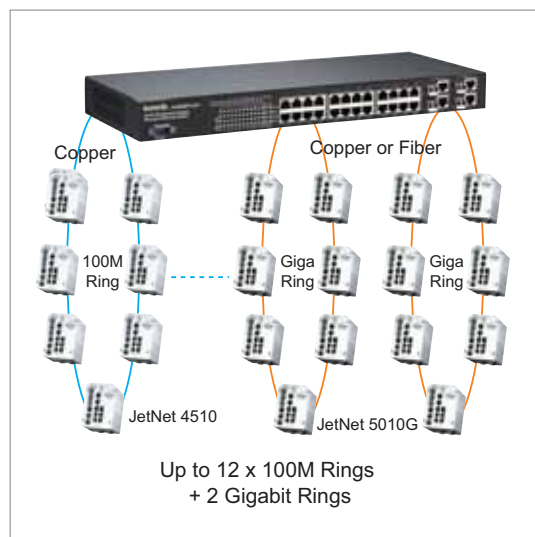
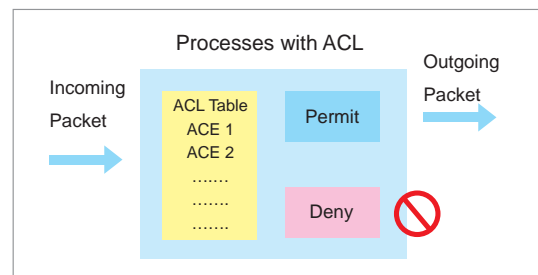## Modbus TCP for Factory Automation Network Enhancement

JetNet 5428G and JetNet 5428G-2G-2FX series support Modbus TCP protocol for providing enhanced monitoring and maintenance in factory automation applications.

It enables users to monitor the status of the switches easily, such as SCADA systems through their own Modbus/TCP based progress/display/monitor applications.

Advanced Security by Layer 2/4 Access Control List

In industrial building and control room installations, multi types of advanced security features are required and must be implemented. The secured access control list (ACL) makes it easy to limit certain devices communicating with the other addressed devices and by the specific protocol. Example rules include (1) the administrator to multiple stations, (2) stations to stations and (3)stations to public servers…etc.

The ACLs provide "Permit" and "Deny" rules for any or specific host. The IP address, MAC address and port ID are the destinations allowed to be applied the rules. The protocol ID, QoS tag, TCP flag...

Processes with ACL

Incoming Packet → ACL Table ACE 1 ACE 2 .... | Permit → Outgoing Packet | Deny

are the operations which users prefer to control. The JetNet 5428G series is equipped with one layer 2+ switch fabric which provides flexible ACLs for the specified subjects and operations within the same LAN.

Link Layer Discovery Protocol

The Link Layer Discover Protocol (LLDP) was formally ratified as IEEE 802.1AB-2005. LLDP is the Layer 2 protocol that allows the network device/station to advertise connectivity & management information, the identity & major capabilities. If receives and establishes network management information on the local same network.
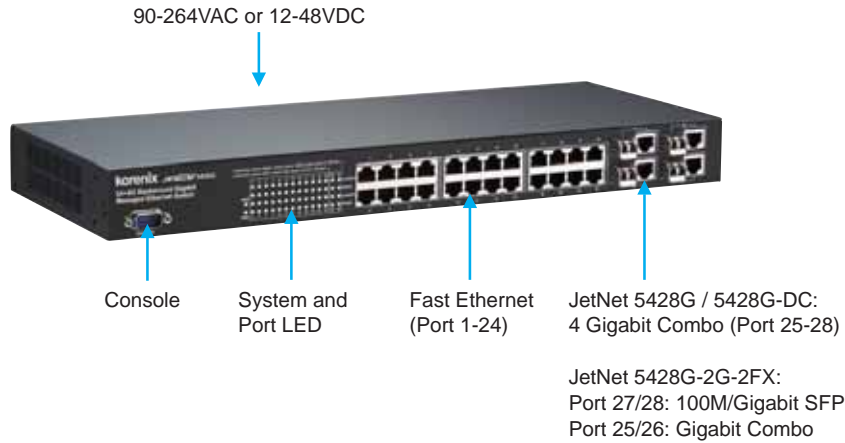
In industrial environments, most vendors provide their own discovering protocols, window utility or other tools to manage their switches. The LLDP protocol fixes the interoperability among them. With LLDP supported, users can easily browse the network devices and establish the network management information schema about the stations.

Supporting SNMP, LLDP and Korenix View protocol, the JetNet 5428G series can be easily discovered, port and ring status can be displayed by Korenix NMS, Korenix designed Network Management System or other NMS which support SNMP and LLDP. The software can help administrators efficiently and effectively manage the surveillance network.

JetNet 5428G / 5428G-DC / 5428G-2G-2FX Appearance

90-264VAC or 12-48VDC

Console

System and
Port LED

Fast Ethernet
(Port 1-24)

JetNet 5428G / 5428G-DC:
4 Gigabit Combo (Port 25-28)

JetNet 5428G-2G-2FX:
Port 27/28: 100M/Gigabit SFP
Port 25/26: Gigabit Combo

Dimensions (Unit = mm)

JetNet 5428G-DC

JetNet 5428G

440.00

170.00

482.00

44.00

JetNet 5428G/JetNet 5428G-DC

JetNet 5428G-2G-2FX

Industrial
Intelligent
NMS

Rackmount
PoE Plus
Switch

Industrial
PoE Plus
Switch

Industrial
12-24V
PoE Switch

Industrial
PoE Switch

**Rackmount
L3/L2 Switch**

Gigabit
Managed
Switch

Managed
Ethernet
Switch

Entry-level
Switch

Wireless
Outdoor AP

Embedded
PoE/Router
Computer
(LINUX)

Industrial
Communication
Computer
(WIN/LINUX)

Ethernet/PoE/
Serial Board

Ethernet
I/O Server

Media
Converter

Serial Device
Server

SFP Module

Din Rail
Power Supply

JetNET
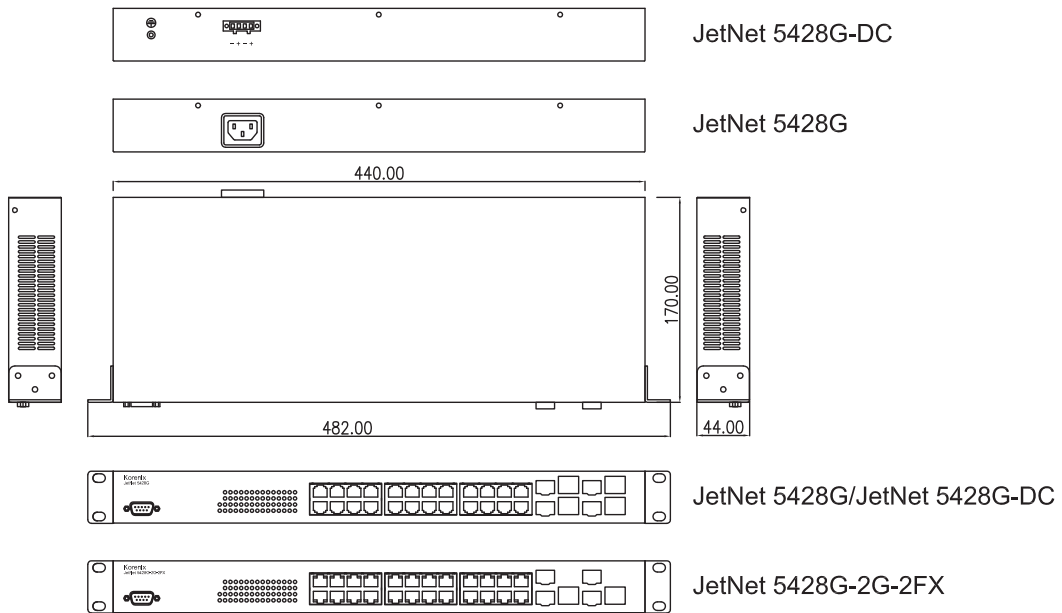
Technology
Standard: IEEE 802.3 10Base-T Ethernet
IEEE 802.3u 100Base-TX Fast Ethernet
IEEE 802.3ab 1000Base-T
IEEE 802.3z Gigabit Ethernet Fiber
IEEE 802.3x Flow Control and Back-pressure
IEEE 802.1p Class of Service
IEEE 802.1QinQ
IEEE 802.1Q VLAN and GVRP
IEEE 802.1D-2004 Rapid Spanning Tree Protocol (RSTP)
IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)
IEEE 802.3ad Link Aggregation Control Protocol (LACP)
IEEE 802.1X Port based Network Access Control
IEEE 802.1AB Link Layer Discovery Protocol

Performance
Switch Technology: Store and Forward Technology, 12.8Gbps Switch Fabric.
System Throughput: 14,880pps for 10M Ethernet, 148,800pps for 100M Fast Ethernet, 1,488,100 pps for Gigabit Ethernet
Transfer packet size: Typical: 64 bytes to 1536 bytes,
Jumbo Frame Enabled: Up to 9,216bytes.
MAC Address: 8K
Packet Buffer: 2Mbits

Management & Security
Configuration: Cisco-Like CLI, Web, SSL, SSH, Korenix View, 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
Jumbo Frame Enable/Disable: up to 9,216 Bytes
LLDP: Link Layer Discovery Protocol to advertise system/ port identity and capability on the local network
Modbus/TCP: Industrial Communication protocol for device management and monitoring
SNMP: SNMP v1, v2c, v3 and Traps.
SNMP MIB: MIB-II, Bridge MIB, VLAN MIB, SNMP MIB, RMON and Private MIB
SNTP: Simple Network Time Protocol to synchronize time
IEEE1588 Precision Timer Protocol(PTP): Synchronize time from the PTP server
Port Mirroring: Online traffic monitoring
Port Trunk: Static Trunk and 802.3ad LACP , Up to 8 Trunk Group, 2-8 ports per trunk
Rate Control: Ingress and Egress rate limiting
VLAN: IEEE802.1Q VLAN, GVRP. Up to 256 VLANs
Private VLAN: Direct client ports in isolated/community VLAN to promiscuous port in primary VLAN
QinQ: Double VLAN Tag in an Ethernet frame
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
GMRP: GARP Multicast Registration Protocol
802.1x: Port_based Network Access Control
Port Security: Assign authorized MAC to specific port
Radius: Login by Radius account/password, Key for Radius Server Authentication

IP Security: IP security to prevent unauthorized access
Access Control List: Permit/Deny access control lists
DHCP Server Support 255 Dynamic IP pool
DHCP Option 82 Relay the DHCP request to remote server
E-mail Warning: Automatic warning by pre-defined events
Syslog: Message logged with server and client mode

Network Redundancy
Multiple Spanning Tree Protocol: IEEE802.1s MSTP, each MSTP instance can include one or more VLANs
Rapid Spanning Tree Protocol: 802.1D-2004 RSTP, compatible with Legacy STP
Multiple Super Ring (MSR^{TM}): Korenix Ring Redundancy Technology, Includes Rapid Super Ring, Rapid Dual Homing, TrunkRing, MultiRing; 0~100ms recovery time
Rapid Dual Homing (RDH^{TM}): Multiple uplink paths to one or multiple upper switch
TrunkRing^{TM}: Integrate port aggregate function in ring path to get higher throughput ring architecture
MultiRing^{TM}: Couple or Multiple Rapid Super Rings within one switch. Maximum 14 rings at JetNet 5428G.
Legacy Super Ring: Backward compatible in client mode

Interface
Number of Fixed Ports:
JetNet 5428G / 5428G-DC:10/100Base-TX: 24 x RJ-45, Auto MDI/MDI-X, Auto Negotiation
JetNet 5428G-2G-2FX: 10/100Base-TX: 24 x RJ-45, Auto MDI/MDI-X, Auto Negotiation
10/100/1000Base-TX: 2 x RJ-45, combo with SFP
100Base-FX: 2 100Base-FX SFP, Only Port 27/28 Support
1000Base-X: 4 x SFP with Hot Swappable, port 25-28 support
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)
1000 Base-T: 4-pair UTP/STP Cat. 5 cable (100m)
Diagnostic LED:
System: Power (Green), Ring Master (Green)
10/100 RJ-45:
Link/Activity: Green = 100M, Yellow = 10M;
Duplex: On = Full, Off = Half
Gigabit Copper/SFP:
Link/Activity: Green = 1000M, Yellow = 10M or 100M;
Duplex: On = Full, Off = Half)
Gigabit SFP: Link/Activity (Green/Green Blinking)
RS232 Console: DB-9 type, Pin: (2: TxD, 3: RxD, 5:GND)
Power: 1 set of AC input (JetNet 5428G)
2 sets of DC inputs (JetNet 5428G-DC)

Power Requirements
Power: 90-264VAC (JetNet 5428G)
24VDC (12~48VDC, JetNet 5428G-DC)
Power Consumption: Max. 20 Watts

Mechanical
Installation: 19-inch, 1U Rack Mount
Dimension: 44mm(H) x 440mm (W) x 170mm (D)
Weight: 2.65 kg with package

Environmental
Operating Temperature: -25 ~ 70°C
Operating Humidity: 5% ~ 95% (non-condensing)
Storage Temperature: -40 ~ 85°C
Regulatory Approvals
EMI: FCC Class A, CE/EN55022. Class A
EMS: 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

Safety: cUL (CSA22.2, UL60950-1)*
Shock: IEC60068-2-27
Vibration: IEC60068-2-6
Free Fall: IEC60068-2-32
Warranty: 5 years
* Same Hardware as JetNet 5228G

Ordering Information

JetNet 5428G 24+4G Rackmount Managed Ethernet Ring Switch

Includes:

- JetNet 5428G (no SFP transceivers)
- Rack Mount Kit
- Power Cord
- Console Cable
- Quick Installation Guide
- Document CD

JetNet 5428G-DC 24+4G Rackmount Managed Ethernet Ring Switch with 12-48VDC input

Includes:

- JetNet 5428G-DC (no SFP transceivers)
- Rack Mount Kit
- Console Cable
- Quick Installation Guide
- Document CD

JetNet 5428G-2G-2FX 24+2G+2FX Rackmount Managed Ethernet Ring Switch

Includes:

- JetNet 5428G-2G-2FX (no SFP transceivers)
- Rack Mount Kit
- Power Cord
- Console Cable
- Quick Installation Guide
- Document CD

Industrial Intelligent NMS
Rackmount PoE Plus Switch
Industrial PoE Plus Switch
Industrial 12-24V PoE Switch
Industrial PoE Switch
Rackmount L3/L2 Switch
Gigabit Managed Switch
Managed Ethernet Switch
Entry-level Switch
Wireless Outdoor AP
Embedded PoE/Router Computer (LINUX)
Industrial Communication Computer (WIN/LINUX)
Ethernet/PoE/ Serial Board
Ethernet I/O Server
Media Converter
Serial Device Server
SFP Module
Din Rail Power Supply

JETNET

Optional Accessories

Gigabit SFP

SFPGSX:	1000Base-SX multi-mode transceiver 550m , commercial operating Temp, -10~70°C
SFPGSX-w:	1000Base-SX multi-mode transceiver 550m , commercial operating Temp, -40~85°C
SFPGSX2:	1000Base-SX multi-mode transceiver 2km , commercial operating Temp, -10~70°C
SFPGSX2-w:	1000Base-SX multi-mode transceiver 2km , commercial operating Temp, -40~85°C
SFPGLX10:	1000Base-LX single-mode transceiver 10Km , commercial operating Temp, -10~70°C
SFPGLX10-w:	1000Base-LX single-mode transceiver 10Km , commercial operating Temp, -40~85°C
SFPGLHX30:	1000Base-LHX single-mode transceiver 30Km , commercial operating Temp, -10~70°C
SFPGLHX30-w:	1000Base-LHX single-mode transceiver 30Km , commercial operating Temp, -40~85°C
SFPGXD50:	1000Base-XD single-mode transceiver 50Km , commercial operating Temp, -10~70°C
SFPGXD50-w:	1000Base-XD single-mode transceiver 50Km , commercial operating Temp, -40~85°C
SFPGZX70:	1000Base-ZX single-mode transceiver 70Km , commercial operating Temp, -10~70°C
SFPGZX70-w:	1000Base-ZX single-mode transceiver 70Km , commercial operating Temp, -40~85°C

SFP Gigabit BIDI/WDM

SFPGLX10B13:	1000Base-LX BIDI single-mode transceiver 10km, -10~70°C
SFPGLX10B13-w:	1000Base-LX BIDI single-mode transceiver 10km, -40~85°C
SFPGLX10B15:	1000Base-LX BIDI single-mode transceiver 10km, -10~70°C
SFPGLX10B15-w:	1000Base-LX BIDI single-mode transceiver 10km, -40~85°C
SFPGLX20B13:	1000Base-LX BIDI single-mode transceiver 20km, -10~70°C
SFPGLX20B13-w:	1000Base-LX BIDI single-mode transceiver 20km, -40~85°C
SFPGLX20B15:	1000Base-LX BIDI single-mode transceiver 20km, -10~70°C
SFPGLX20B15-w:	1000Base-LX BIDI single-mode transceiver 20km, -40~85°C
SFPGLX40B13:	1000Base-LX BIDI single-mode transceiver 40km, -10~70°C
SFPGLX40B13-w:	1000Base-LX BIDI single-mode transceiver 40km, -40~85°C
SFPGLX40B15:	1000Base-LX BIDI single-mode transceiver 40km, -10~70°C
SFPGLX40B15-w:	1000Base-LX BIDI single-mode transceiver 40km, -40~85°C
SFPGLX60B13:	1000Base-LX BIDI single-mode transceiver 60km, -10~70°C
SFPGLX60B13-w:	1000Base-LX BIDI single-mode transceiver 60km, -40~85°C
SFPGLX60B15:	1000Base-LX BIDI single-mode transceiver 60km, -10~70°C