

# JetNet 5228G

## 24+4G Rackmount Managed Ethernet Switch



- 24 10/100-TX and 4 Gigabit RJ-45/SFP combo ports (10/100/1000 Base-TX, 1000 Base-X)
- Design for the Building, Control Room and Telecom applications
- 24+4G Non-Blocking Switching performance
- Supports Jumbo Frame up to 9,216 byte
- 802.1s Multiple Spanning Tree Protocol
- Link Layer Discovery Protocol (LLDP), SNMPv3, SSL, SSH management
- Advanced Security by 802.1x, Radius and Layer 2/4 Access Control List
- Advanced VLAN protocols, Protocol VLAN, Private VLAN and VLAN stacking (QinQ) for telecom service provider
- 100-240VAC power input and Fan-less Design

### Overview

The JetNet 5228G, a 19-inch 24+4G Rackmount Managed Ethernet Switch, is equipped with 24 10/100 Base-TX ports plus 4 Gigabit RJ45 / MINI GBIC combo ports.

It is a special design for building, control room and telecom applications where request high-ports density and performance. The device is mounted within the 19 inch rack, along with other 19 inch public servers or other network devices. It also supports Jumbo Frame, forwarding up to 9.2Kbytes. Furthermore, the transmission of large files in industrial environments becomes more efficient and solid. The advantage of choosing the JetNet 5228G is that it supports 4 gigabit ports which allow users to trunk up to 8G

uplink bandwidth, load balancing, path protection, to form network redundancy or apply MSTP to connect RSTP from different VLAN.

To fulfill the advanced management, control and security requests in industrial buildings and control rooms, the JetNet 5228G supports various advanced software features. The protocol VLAN, private VLAN, VLAN stacking, QoS, IGMP Snooping, layer 2/4 Access Control List, 802.1x, SNMP V3, LLDP, etc. complete the demand and greatly satisfy technicians' requests. Furthermore, the low power consumption and the fan-less design enhance the benefits on the industrial requests.

### High Bandwidth and Performance

JetNet 5228G supports 4 gigabit combo ports and up to 9,216 bytes jumbo frame.

Why 4 gigabit combo ports?

- Act as the access switch, two gigabit ports for lower network, one or two for upper connection.
- The upper connection can be aggregated with up

to 8G bandwidth in full duplex mode.

- 4 Combo Ports Design to save stock of storing different kinds of transceivers.
- 2 Gigabit ports for forming rings, the other 2 for connecting to public servers.

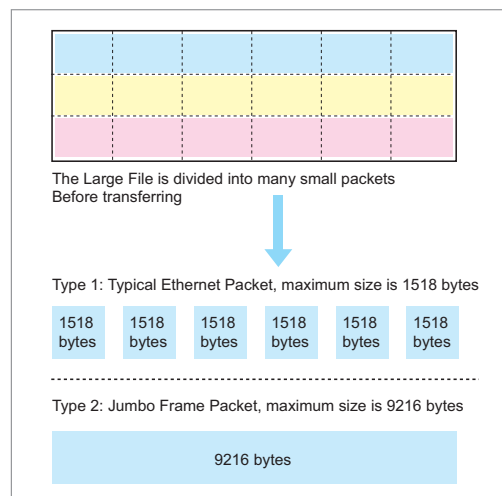
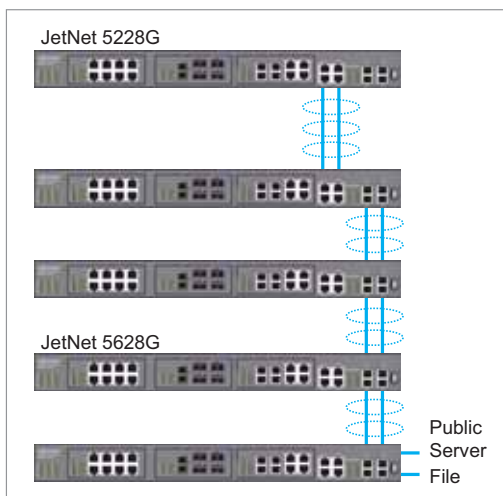
## High Bandwidth and Performance

What is Jumbo Frame?

The typical Ethernet frame is range from 64 to 1518 bytes. This is sufficient for general usages. However, when users want to transmit large files, the files may be divided into many small size packets. While the transmitting speed becomes slow, 9.2KBytes Jumbo frame can solve the issue.

Jumbo Frame examples:

- Transmitting large files, like the size of the LCD's bitmap type circuit may up to 800MB.
- Network servers usually progress backups for large of files.



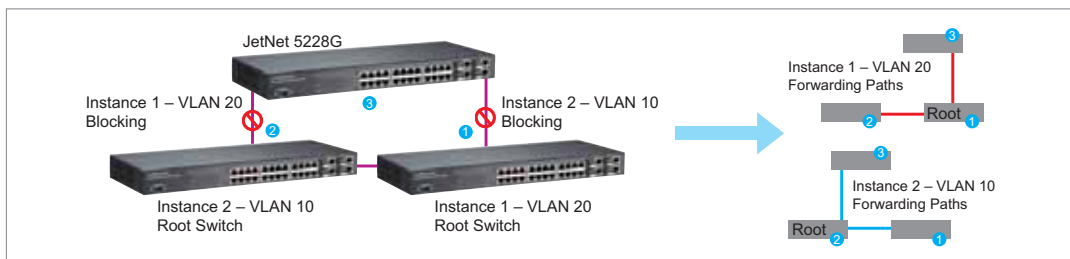
## 802.1s Multiple Spanning Tree Protocol

The JetNet 5228G supports 802.1s Multiple Spanning Tree Protocol (MSTP). The switch with MSTP enabled can select the root switch for each instance, block and form the forwarding path for each instance. Each instance represents for one VLAN. It is the limitation in STP/RSTP as the 2 traditional protocols only can block one path for all the existing VLANs in the same environment.

Example: Instance 1 represent for VLAN 20. Instance represent for VLAN 10.

In instance 1, there are one root and one blocking path. The VLAN 20 data can be transmitted from switch 3 to 1 to 2 or vise versa.

In instance 2, there are another root and another blocking path. The VLAN 10 data can be transmitted from switch 3 to 2 to 1 or vise versa.



## Advanced VLAN Features

JetNet 5228G is specially designed to meet the Telecom/Internet service provider's requests. It provides many advanced VLAN protocols, Protocol VLAN, Private VLAN, VLAN stacking (QinQ) and Multicast VLAN Registration (MVR).

### Protocol VLAN

Protocol VLAN allows you to create VLAN for the specific L3 protocols' packets, like the IP VLAN, IPX VLAN and AppleTalk VLAN. Different protocols' traffic is limited with the VLAN and can't be forwarded to the other VLANs.

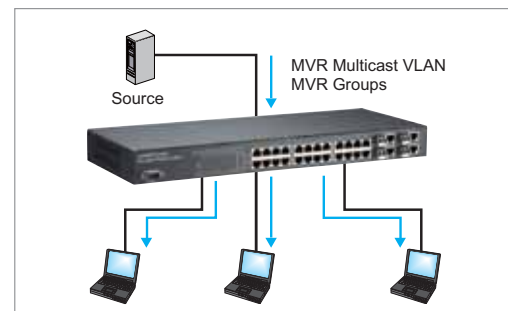
### Multicast VLAN Registration (MVR)

Multicast VLAN Registration (MVR) is a useful application to lower the multicast stream loading of the source port. In traditional multicast program, when hosts that belong to different VLANs require the same multicast programs, the source station copy the multicast data and forward to each VLANs through the same router port. The result is waste of the network bandwidth.

To solve this problem, you can enable the MVR feature on 5228G. Assign the MVR multicast VLAN and available MVR multicast groups for the source station. Configure the MVR source or receiver for the

### Private VLAN

The private VLAN allows ISP to direct client ports' traffic to uplink port only. The uplink port to upper switch/router acts as the Primary VLAN. The client VLANs act as secondary VLAN. There are 2 types of secondary VLAN, isolated or community. The isolated clients can only forward traffic to uplink port, they can't communicate with other secondary VLANs. The clients within the same community can forward traffic to uplink port and communicate with other members within the same community.

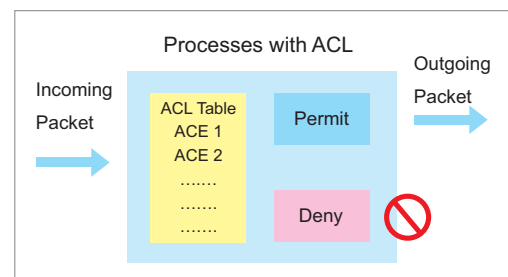


ports. So that the hosts belongs to different VLANs can receive the same multicast program but can't communicate with each other.

## Advanced Security by Layer 2/4 Access Control List

In industrial building and control room installations, the 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...



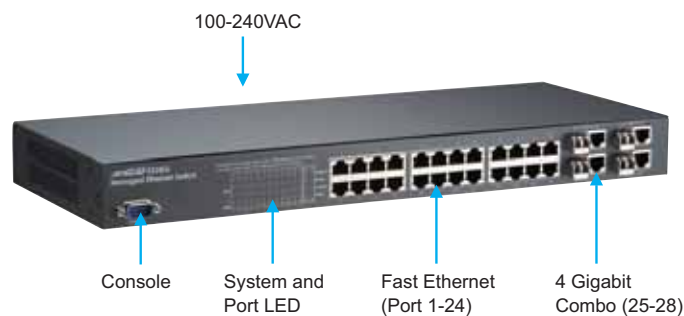
are the operations which users prefer to control. The JetNet 5228G equipped with one layer 2+ switch fabric which provides flexible ACLs for the specified subjects and operations within the same LAN.

## Link Layer Discover Protocol

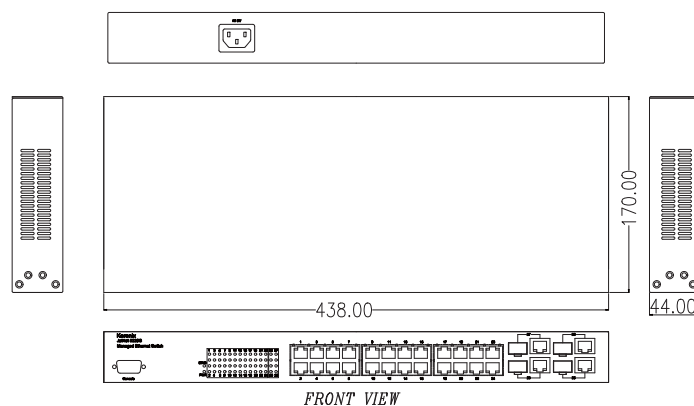
The Link Layer Discover Protocol (LLDP) was formally ratified as IEEE 802.1AB-2005. LLDP is the Layer 2 protocol that allows the network device/station to advertise connectivity & management information, the identity & major capabilities, receives and establishes network management information on the 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.

## JetNet 5228G Appearance



## Dimensions (Unit –mm)



## Specification

### Technology

#### Standard:

IEEE 802.3 10Base-T Ethernet  
 IEEE 802.3u 100Base-TX Fast Ethernet  
 IEEE 802.3ab 1000Base-TX  
 IEEE 802.3z Gigabit Ethernet Fiber  
 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)  
 IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)  
 IEEE802.3ad Link Aggregation Control Protocol (LACP)  
 IEEE802.1X Port based Network Access Control  
 IEEE802.1AB Link Layer Discovery Protocol  
 IEEE802.1v Protocol-based VLAN

### Performance

#### Switch Technology:

Store and Forward Technology, 12.8Gbps Wire-Speed Switching

**System Throughput:** 14,880pps for 10M Ethernet, 148,800pps for 100M Fast Ethernet, 1,488,100 for Gigabit Ethernet

**Transfer packet size:** Typical: 64 bytes to 1536 bytes,

**Jumbo Frame Enabled:** Up to 9,216bytes.

**MAC Address:** 8K MAC

**Packet Buffer:** 2Mbits

### Management

**Configuration:** Cisco-Like CLI, Web, SSL, SSH, 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, Dual Firmware images

**Jumbo Frame Enable/Disable:** up to 9,216KBytes

**LLDP:** Link Layer Discovery Protocol to advertise system/port identity and capability on the local network

**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

**Port Mirroring:** Online traffic monitoring

**Port Trunk:** Static Trunk and 802.3ad LACP, Up to 12 Trunk Group, 2-8 ports per trunk

**Rate Control:** Ingress and Egress rate limiting

**VLAN:** IEEE802.1Q VLAN, GVRP. Up to 255 VLANs

**Private VLAN:** Direct client ports to uplink port

**Protocol VLAN:** 802.1v Protocol based VLAN

**VLAN Stacking:** Double VLAN tag (QinQ)

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

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

**MVR:** Multicast VLAN Registration

**Port Security:** Assign authorized MAC to specific port

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

**802.1x:** Port\_based Network Access Control

**Access Control List(ACL):** Layer 2+ ACL Security

**RADIUS/TACACS** Authentication, Authorization, Accounting

**DHCP Option 82**

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

**Syslog:** Message logged to flash with different policy

### Network Redundancy

**Rapid Spanning Tree Protocol:** 802.1w RSTP, compatible with Legacy STP

**Multiple Spanning Tree Protocol:** IEEE802.1s MSTP each MSTP instance can include one or more VLANs.

### Interface

#### Number of Fixed Gigabit Ports:

10/100Base-TX: 24 x RJ-45, Auto MDI/MDI-X, Auto Negotiation

10/100/1000Base-TX: 4 x RJ-45, combo with SFP

1000Base-X: 4 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)

1000 Base-T: 4-pair UTP/STP Cat. 5 cable (100m)

#### Diagnostic LED:

System: Power (Green), DIAG (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

**RS232 Console:** DB9 Connector, Pin3: TxD, Pin2: RxD, Pin5: GND

**Power:** 1 sets of AC inputs

#### FAN-less

### Power Requirements

**Power:** 100-240V AC power input

**Power Consumption: Maximum 20 Watts**

### Mechanical

**Installation:** 19-inch, 1U Rack Mount

**Dimension:** 44mm(H) x 438mm (W) x 170mm (D)

**Weight:** 2.65 kg with package

### Environmental

**Operating Temperature:** -10 ~ 50°C

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

**Storage Temperature:** -40 ~ 70°C

### Regulatory Approvals

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

**EMS:** EN61000-4-2, EN61000-4-3, EN61000-4-4,

EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11

**Safety:** cUL (CSA22.2, UL60950-1)

**Shock:** IEC60068-2-29

**Vibration:** IEC60068-2-6

**Free Fall:** IEC60068-2-32

**Warranty:** 3 years

## Ordering Information

### **JetNet 5228G 24+4G Rackmount Managed Ethernet Switch**

Includes:

- JetNet 5228G (no SFP transceivers)
- Rack Mount Kit
- Power Cord
- Console Cable
- Quick Installation Guide
- Document CD

## Optional Accessories

**Gigabit Multi-Mode SFP Transceiver**

**Gigabit Single-Mode SFP Transceiver**

**Gigabit BIDI/WDM Single-Mode SFP Transceiver**