



Gazelle S3028i-LF

The industrial Ethernet switch Gazelle S3028i-LF is specially designed to meet requirements for industrial automation control systems, and can run stably for a long time in harsh environments. It has a very flexible port portfolio. It has industry-leading ring network technology, supports multiple redundant ring network protocols, such as ITU G.8032, and any port can form a ring. It supports chain type, star type, double-star type, ring type, tangent ring, and intersecting ring. The ring network heals itself within 20ms. The Gazelle S3028i-LF has high reliability, high security, high manageability, ensures reliable transmission of key data, supports remote management, and can cooperate with the Raisecom NView integrated network management system for cluster management, thus implementing seamless full-process network management.

The Gazelle S3028i-LF has excellent industrial site environmental adaptability (including mechanical stability, climate environment adaptability, and electromagnetic environment adaptability). Its protection class reaches IP40. It supports dual redundant power supplies, low power consumption, fanless heat dissipation. The MTBF is over 35 years, so it can be widely used in electric power, transportation, coal, petroleum, metallurgy, water treatment and other industries.

Gazelle S3028i-LF



Highlights >>

- GE uplink connection and linear speed switching
The Gazelle S3028i-LF supports bus bandwidth of up to 56 Gbit/s, and provides linear switching capabilities for all interfaces, thus meeting requirements for high bandwidth by multiple services and big data.
- Flexible Ethernet networking
The Gazelle S3028i-LF supports not only the traditional STP/RSTP/MSTP but also standard ERPS solution in the industry. It supports multiple networking modes, such as sing ring, tangent ring, and intersecting ring. It supports service switching as fast as 50ms, thus implementing carrier-grade reliability.
The Gazelle S3028i-LF supports interface backup, dual-homed protection, manual and static LACP link aggregation. With backup of the uplink, it has greatly improves reliability of the access-side device.
The Gazelle S3028i-LF supports loop detection, which can automatically detect and eliminate the loop and ensure stable operation of the network.
- Various security control mechanisms
The Gazelle S3028i-LF supports multiple access control and user authentication technologies, such as ACL, dot1x,

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RADIUS, and TACACS+, so it can adapt to multiple types of authentication in the network environment.

ARP attacks and ARP virus are the major threat to LAN security. The Gazelle S3028i-LF supports rich ARP protection functions, such as dynamic ARP inspection, to implement user validity check and ARP packet validity check and to prevent massive ARP packets to impact the CPU due to ARP rate limiting. By establishing and maintaining the DHCP Snooping binding table, the Gazelle S3028i-LF supports directly discarding packets that mismatch the DHCP Snooping binding table. With the interface trust of DHCP Snooping, it can guarantee the validity of the DHCP server.

- Easy OAM

The Gazelle S3028i-LF supports SNMPv1/v2c/v3, raisecom NMS, CLI, Web network management, Telnet, various management modes including in-band or out-of-band network management, so it can be easily maintained. It also supports SSHv2.0 and other encryption modes, making management more secure. It supports RMON and statistics on traffic on interfaces, thus facilitating network optimization and reconstruction.

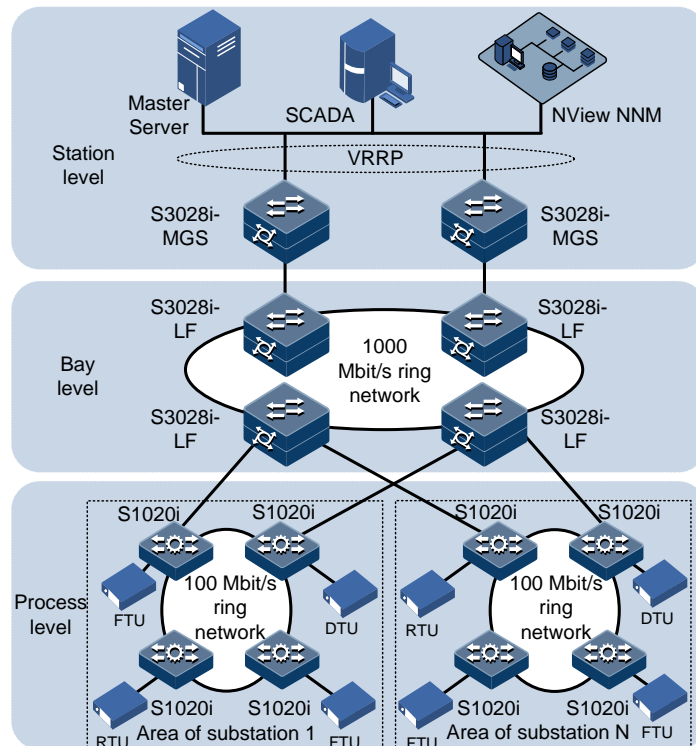
The Gazelle S3028i-LF can download configuration files and upgrade software through the DHCP server, or can be remotely upgraded in batches through the Raisecom NMS, thus lowering costs on operation and maintenance.

- Localization

The switch chip and PHY chip are all made in China. The CPU is made in China Taiwan. Localization of all components is met.

Applications >>

Gazelle S3028i-LF power distribution automation scheme



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The Distribution Automation (DA) system features control, supervision, protection, and other automation functions. The DA network adopts a hierarchical network: station level, bay level, and process level.

Station level: this level consists of two Gazelle S3028i-MGS devices to guarantee continuity and reliability of communication. Supervisory Control And Data Acquisition (SCADA) is the data collection, supervisory, and control system.

Bay level: the Gazelle S3028i-LF installed in each substation aggregates data and transmits services. Layer 2 industrial switches and the Gazelle S3028i-LF form a ring network through 1000 Mbit/s optical interfaces, provide redundant channels for transmitting service, and improve network reliability.

The process level partitions the areas governed by substations to different subnets, each of which forms a 1000 Mbit/s ring network through the Gazelle S3028i-GL and Gazelle S3028i-GS that is installed in this substation. Each ring network can guarantee no service interruption and network restoration within 50ms upon faults through the redundancy ring topology. In this case, network security and reliability are improved.

Key features >>

Interface	<ul style="list-style-type: none">● S3028i-4GF-24GE-LF: uplink, 4*100/1000M SFP; downlink, 24*10/100/1000M RJ45● S3028i-4X-24FE-LF(MST/S1ST): uplink, 4*10/100M ST (1*9 multi-mode 155M optical modules); downlink, 24*10/100M RJ45● S3028i-4GX-16GE8GF-LF: uplink, 4*1GE Combo; downlink, 16x10/100/1000M RJ45+8*100/1000M SFP
Management interface	<ul style="list-style-type: none">● 1 RJ45 Console interface● 1 SPDT alarm interface
Switching capacity	<ul style="list-style-type: none">● 56 Gbit/s for the 1000 Mbit/s models● 5.6 Gbit/s for the 100 Mbit/s models
Packet forwarding rate	<ul style="list-style-type: none">● 41.66 Mpps for the 1000 Mbit/s models● 4.17 Mpps for the 100 Mbit/s models
Jumbo Frame	10 Kbytes
MAC address table	<ul style="list-style-type: none">● 8K MAC addresses● Static MAC and suppression of MAC address flapping● Based on port security MAC● MAC address limit based on interface
VLAN	<ul style="list-style-type: none">● 4K VLANs● Dot1Q and basic QinQ● 1:1 and N:1 VLAN mapping● Protocol VLAN
Multicast	<ul style="list-style-type: none">● 500 layer 2 multicast addresses● IGMP Snooping and MVR● IGMPv1v2v3● IGMP Proxy● IGMP filter
Reliability	<ul style="list-style-type: none">● ERPS (G.8032) STP/RSTP/MSTP● LACP, with 8 as the maximum number of groups and the maximum number of members

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- Interface protection
 - Interface backup
 - Loop detection
- IPv4**
- Static ARP IPv4
 - IP broadcast
 - DHCP Client, DHCP Snooping, DHCP Server, and DHCP Option
 - Zero-configuration
 - DAI and IPSG
- IPv6**
- DHCPv6 Client and DHCPv6 Option
 - IPv6 zero-configuration
 - MLD Snooping
 - NTPv4
 - HTTP, SNMP, and Syslog over IPv6
- QoS/ACL**
- IPv4/IPv6 ingress ACL
 - Trusting interface priority/CoS/DSCP
 - SP, WRR, DRR, SP+WRR, and SP+DRR queue scheduling modes
 - SRED
 - Shaping based on queue or interface
 - Rate limiting base on interface or flow
- Security**
- Hierarchical user management and password protection
 - Radius, TACACS+
 - 802.1x authentication interface isolation
 - Port security MAC
 - SSHv2.0
 - SFTP
 - HTTPS
 - DHCP Snooping and anti-spoofing DHCP server
 - Dynamic ARP inspection, (Man-In-the-Middle Attack) MIMA protection, and ARP DOS
 - CPU protection and ARP attack protection
- Management and maintenance**
- Console interface
 - SNMPv1/v2c/v3, CLI, Web network management, Telnet, SSH2.0, and other management modes
 - Raisecom NView NNM system (NMS)
 - RMON
 - LLDP/LLDP-MED
 - System log, hierarchical alarms, and Dying Gasp alarm
 - NTP and SNTP
 - Virtual Cable Test (VCT)
 - Interface loopback
 - Zero-configuration, enabling the device to download configuration files and upgrade software from the DHCP server
 - Loop detection on the interface

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- Optical module DDM
- Link-state tracking
- Dual systems

Specifications >>

Input voltage	<p>HIP:</p> <ul style="list-style-type: none"> ● Rated input: 100–240 VAC, and 110/220 VDC ● Voltage range: 85–264 VAC, and 88–300VDC <p>DC:</p> <ul style="list-style-type: none"> ● Rated input: 24/48 VDC ● Voltage range: 20~72 VDC
Maximum power consumption	Output power: < 30 W
Dimensions(Width × Height × Depth)	440mm×43.6mm×300mm
Environment requirements	-40 to +85°C, 5%–95% RH: 5%–90% (non-condensing)

Standards and protocols >>

Standards and protocols	<ul style="list-style-type: none"> ● IEEE 802.3 ● IEEE 802.3u for 100BaseT(X) and 100Base FX ● IEEE 802.3ab for 1000BaseT(X) ● IEEE 802.3z for 1000BaseSX/LX/LHX/ZX ● IEEE 802.3x for Flow Control ● IEEE 802.1d for Spanning Tree Protocol ● IEEE 802.1w for Rapid STP ● IEEE 802.1q for VLAN Tagging ● IEEE 802.1p for Quality of Service ● IEEE 802.1X for Security ● IEEE 802.3ad for Port Trunk with LACP ● IEC61000-4-2 (ESD): ±8 kV contact discharge; ±15 kV air discharge ● IEC61000-4-3 (RS-): 10 V/m (80–1000 MHz) ● IEC61000-4-4 (EFT): power cable, ±4 kV; data cable: ±4kV (5 kHz, 100 kHz) ● IEC61000-4-5 (Surge): power cable: CM±6kV/DM±6kV; data cable: CM±4kV ● IEC61000-4-6 (RF CI): 10V (150kHz~80MHz) ● IEC61000-4-8 (Power frequency magnetic field): 10 A/m lasting; 300 A/m, 1s to 3s ● IEC61000-4-9 (Pulse magnetic field): 100A/m ● IEC61000-4-10 (Damped oscillatory magnet field): 10 A/m@1MHz ● FCC Part 15/CISPR22 (EN55022): Class A ● IEC61000-6-2 (universal industrial standard) ● IEC60068-2-6 (anti-vibration) ● IEC60068-2-27 (anti-shock) ● IEC60068-2-32 (free fall) ● IEC61850-3 (substation) ● IEEE1613 (Electric Power Substations)
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Ordering information>>

- | | |
|---|--|
| <ul style="list-style-type: none">● Gazelle S3028i-4GF-24GE-LF-HIP/D● Gazelle S3028i-4GF-24GE-LF-HIP/S● Gazelle S3028i-4GF-24GE-LF-DC/D● Gazelle S3028i-4GF-24GE-LF-DC/S | <p>Four 100/1000 Mbit/s SFP optical interfaces, twenty-four 10/100/1000 Mbit/s electrical interfaces, 1 Console interface, and 1 alarm interface</p> <p>Power supply types:</p> <ul style="list-style-type: none">● HIP/D: dual power supplies, with rated input of 100–240 VAC, 110/220VDC● HIP/S: single power supply, with rated input of 100–240 VAC, 110/220VDC● DC/D: dual power supplies, with rated input of 24/48 VDC and range of 20–72 VDC● DC/S: single power supply, with rated input of 24/48 VDC and range of 20–72 VDC |
| <ul style="list-style-type: none">● Gazelle S3028i-4X-24FE-LF-HIP/D● Gazelle S3028i-4X-24FE-LF-HIP/S● Gazelle S3028i-4X-24FE-LF-DC/D● Gazelle S3028i-4X-24FE-LF-DC/S | <p>Four 100 Mbit/s ST optical interfaces, twenty-four 10/100/1000 Mbit/s electrical interfaces, 1 Console interface, and 1 alarm interface</p> <p>Power supply types:</p> <ul style="list-style-type: none">● HIP/D: dual power supplies, with rated input of 100–240 VAC, 110/220VDC● HIP/S: single power supply, with rated input of 100–240 VAC, 110/220VDC● DC/D: dual power supplies, with rated input of 24/48 VDC and range of 20–72 VDC● DC/S: single power supply, with rated input of 24/48 VDC and range of 20–72 VDC |
| <ul style="list-style-type: none">● Gazelle S3028i-4GX-16GE8GF-LF-HIP/D● Gazelle S3028i-4GX-16GE8GF-LF-HIP/S● Gazelle S3028i-4GX-16GE8GF-LF-DC/D● Gazelle S3028i-4GX-16GE8GF-LF-DC/S | <p>4 Combo interfaces (100/1000 Mbit/s optical/electrical interfaces), sixteen 10/100/1000 Mbit/s electrical interfaces, eight 100/1000 optical interfaces, twenty-four 10/100/1000 Mbit/s electrical interfaces, 1 Console interface, and 1 alarm interface</p> <p>Power supply type:</p> <ul style="list-style-type: none">● HIP/D: dual power supplies, with rated input of 100–240 VAC, 110/220VDC● HIP/S: single power supply, with rated input of 100–240 VAC, 110/220VDC● DC/D: dual power supplies, with rated input of 24/48 VDC and range of 20–72 VDC● DC/S: single power supply, with rated input of 24/48 VDC and range of 20–72 VDC |

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