



## Gazelle S3028i-MGL Series

The Gazelle S3028i-MGL GE modular Layer 2 industrial switch is specially designed for the Automatic Control System (ACS) in the industrial field, which can operate stably for a long time in harsh environments. The Gazelle S3028i-MGL adopts a fully modular design, provides high-density interfaces, and is configurable and scalable. It delivers industry-leading ring network technologies, supports multiple industrial redundant ring network protocols, through which any interface can form a ring with other devices, and supports chain, star, dual-star, ring, tangent ring, intersecting ring, and coupling ring, with sub-20ms self-healing of the ring network. Featuring high reliability, security, and manageability, the Gazelle S3028i-MGL ensures secure transmission of key data. It also supports remote management and can work with Raisecom NView NNM system for cluster management, implementing seamless network management during the whole process.

Gazelle S3028i-MGL is highly adaptive (such as mechanical stability, climate adaptability, and electromagnetic environment adaptability) to industrial environments. It is IP40 rated, and supports dual redundant power supplies, adopts low-power fanless cooling technology, and ensures up to 35-year Mean Time Between Failures (MTBF) and a 3-year warranty. The Gazelle S1020i-MGL can be widely used in electric power, transportation, maritime transport, coal, petroleum, metallurgy, water treatment and other industries.

Gazelle S3028i-4XF-16GE-MGL



Slot

Gazelle S3028i-4XF-16GF-MGL



Slot

Gazelle S3028i-4XF-16GE-PWH-MGL



Gazelle S3028i-MG-SUB-8GF



Gazelle S3028i-MG-SUB-8GE



\*For more models, please refer to ordering information

## Highlights >>

- Modular design, Fanless design, IP40-compliant
- Two subcards with more flexible portfolio of ports on the device
- Up to 24 Gigabit Ethernet ports plus up to 4 10G Ethernet ports
- IEEE 1588V2, PTP-TC
- ITU G.8032 recovery time < 50ms
- Automatic warning by exception through email and relay output
- 2 Digital Input (DI), 1 Relay Output
- POE/POE+/POE++, up to 90 W output per port
- Isolated redundant power inputs with 110/220 VAC/DC or 24/48 VDC power supply
- DHCP-based auto-configuration, configuration LED provided
- SNMP v1/v2c/v3, Raisecom Network Management System (NMS), CLI, Web management, and Telnet
- IEC61850-3 and IEEE1613-compliant
- Operating temperature: -40 to 75°C (the S3028i-4XF-16GE-MGL-HIP supports 85°C)
- MTBF ≥ 35 years

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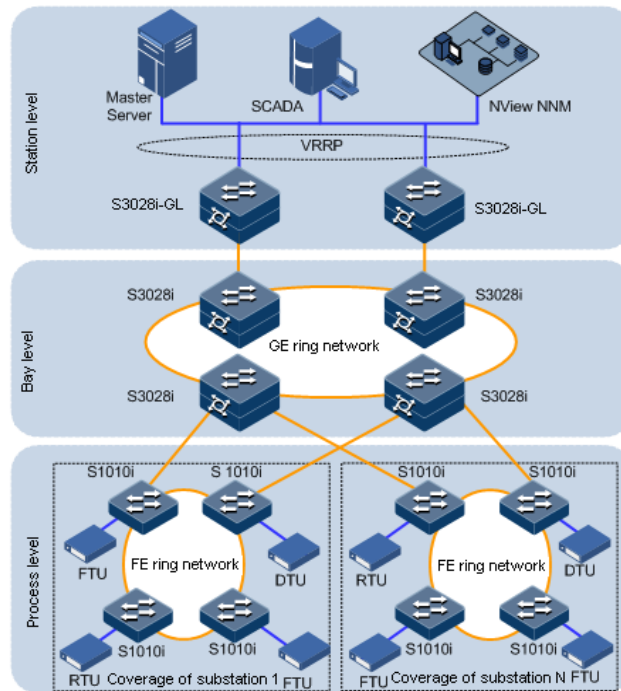
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**Application >>**

**Figure 1 Power SCADA**



**Power SCADA solution**

The Gazelle S3028i devices generally function as convergence switches and form a ring network or star network to access industrial devices or access switches. The Gazelle S3028i series devices can be used at the aggregation layer or you can use L3 core switches from other vendors.

**Key features >>**

Ethernet Ports	<ul style="list-style-type: none"> <li>● Basic Model (Fixed port on the motherboard): Gazelle S3028i-4XF-16GE-MGL: (4*10G SFP+ port + 4 GE Combo + 12 GE port) Gazelle S3028i-4XF-16GF-MGL: (4*10G SFP+ port + 4 GE Combo + 12 GF port)</li> <li>● Optional module (pluggable subcard): SUB-8GE-MGL: (8 GF port) SUB-8GF-MGL: (8 GE port )</li> </ul>
Ethernet Port Type	<ul style="list-style-type: none"> <li>● XF: 10G SFP+ port (supports 1000 Mbit/s SFP.)</li> <li>● GF: 100/1000 Mbit/s auto-negotiation SFP optical port</li> <li>● GE: 10/100/1000 Mbit/s auto-negotiation Ethernet electrical port</li> </ul>
Switching capacity	● 128Gbps
Packet forwarding rate	● 95.3Mpps
MAC address table	<ul style="list-style-type: none"> <li>● 16K MAC addresses</li> <li>● MAC automatic learning, MAC aging, and static MAC</li> <li>● Static, dynamic, blackhole MAC entries</li> </ul>

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	<ul style="list-style-type: none"> <li>● MAC address limits based on VLAN and interface</li> <li>● Suppression of MAC address flapping</li> </ul>
VLAN	<ul style="list-style-type: none"> <li>● 4K VLANs</li> <li>● MAC/Protocol/IP subnet/Interface-based VLAN</li> <li>● Basic QinQ and selective QinQ</li> <li>● VLAN mapping</li> </ul>
PTP protocol	<ul style="list-style-type: none"> <li>● IEEE1588v2 PTP-TC</li> </ul>
Ring network protection	<ul style="list-style-type: none"> <li>● ERPS (G.8032)</li> <li>● STP/RSTP/MSTP</li> <li>● BPDU protection and root protection</li> <li>● Loop detection</li> </ul>
Reliability	<ul style="list-style-type: none"> <li>● Manual aggregation and static LACP</li> <li>● Interface backup</li> <li>● LACP</li> <li>● Loop detection</li> </ul>
IPv6	<ul style="list-style-type: none"> <li>● IPv6 Ping, IPv6 Tracert, IPv6 Telnet, and IPV6 FTP/TFTP/SFTP</li> <li>● IPv6 SNMP, Raisecom NView IPv6 network management</li> <li>● IPv6 Radius, IPV6 TACACS+ , IPv6 NTP, and SNTP</li> <li>● IPv6 ACL</li> </ul>
Multicast	<ul style="list-style-type: none"> <li>● IGMP v1/v2/v3 Snooping and immediate leave</li> <li>● Immediate leave based on interface and user</li> <li>● Static multicast group</li> <li>● MLD Snooping v1/v2</li> </ul>
DHCP	<ul style="list-style-type: none"> <li>● DHCP Client</li> <li>● DHCP Snooping</li> <li>● DHCP Relay</li> <li>● DHCP Server, supporting option43</li> <li>● DHCP Snooping option61, 82/DHCP Relay option82</li> </ul>
Mirroring	<ul style="list-style-type: none"> <li>● Flow mirroring</li> <li>● Local and remote port mirroring</li> </ul>
QoS/ACL	<ul style="list-style-type: none"> <li>● Simple traffic classification based on interface, IEEE 802.1p priority, and DHCP priority</li> <li>● Rate limiting in the ingress direction of the interface and traffic shaping in the egress direction of the interface</li> <li>● SP, WRR, DRR, SP+WRR, and SP+DRR scheduling modes, 8 queues supported by each interface</li> <li>● ACL (MAC, IP, MAC+IP, IPv6, and user-defined)</li> <li>● Traffic policy (redirection, mirroring, adding and modifying VLANs, modifying (802.1p/DSCP) priority, and modifying egress queues, gathering statistics, and so on)</li> <li>● Flow-based single-rate dual-color CAR</li> <li>● Traffic policy applied based on physical interface in the ingress direction, statistics viewing and clearing</li> </ul>
Security	<ul style="list-style-type: none"> <li>● User hierarchical management and password protection</li> <li>● IEEE 802.1x authentication based on interface and MAC</li> </ul>

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- CPU protection and ARP attack prevention
- Binding of IP, MAC, interface, and VLAN
- Blackhole MAC address
- MAC address limits
- AAA, Radius, and TACACS+
- Interface isolation
- Secure MAC
- SSH V2.0
- SFTP
- HTTPS
- DHCP Snooping, anti-proofing DHCP server
- Dynamic ARP inspection, MITM prevention and ARP DoS prevention
- BPDU guard and Root guard

## ISF

- Smart Intelligent Stacking Framework (ISF), virtualizing multiple devices into one
- Stacking up to 2 devices
- Linear topology stacking and ring topology stacking
- Local and long-distance ISF based on service port
- BFD MAD which avoids impact on the network after ISF splitting

## Management and maintenance

- Console interface and out-of-band interface management
- SNMPv1/v2c/v3, CLI, Web management, TELENET, SSH2.0, and so on
- Raisecom Nview NMS
- RMON
- LLDP/LLDP-MED
- Syslog and hierarchical alarms
- Ping and Tracert
- Dying gasp
- NTP and SNTP
- Virtual Cable Test
- Interface loopback
- Zero configuration, configuration downloading, and software upgrade through DHCP Sever
- Interface loop detection
- Optical module DDM
- Link-state tracking
- DLDP unidirectional link detection
- Dual systems

## Specifications >>

### Power supply

- DC: 24/48 VDC (20–72 VDC), support dual inputs (two independent terminals)
- HIP: 110/220 VAC/DC (85–264 VAC, 88–300)

## Standard and protocol >>

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<b>Maximum power consumption</b>	<p>VDC) , support dual inputs (two independent terminals)</p> <p>Only DC support POE, and required input:</p> <p>IEEE802.3af: 45 ~ 57 VDC</p> <p>IEEE802.3at: 50 ~ 57 VDC</p> <p>IEEE802.3bt: 52 ~ 57 VDC</p> <p>Model 1: 24 GE</p> <p>Gazelle S3028i-4XF-24GE-MGL: &lt; 40W</p> <p>Model 2: 24 GF (Full optical ports)</p> <p>Gazelle S3028i-4XF-24GF-MGL: &lt; 50W</p> <p>Model 3: PWH(POE)</p> <p>Gazelle S3028i-4XF-24GE-PWH-MGL</p> <p>Switch power consumption : &lt; 40 W</p> <p>POE power consumption : 0 ~ 480 W</p> <p><b>Only PWH Model supports POE:</b></p> <p>9~16 Ports support IEEE802.3bt(compatible with IEEE802.3af and IEEE802.3at), max 90w per port</p> <p>17~24 Ports support IEEE802.3at(compatible with IEEE802.3af), max 30w per port</p> <p>3-pin SPDT relay alarm terminal (Dying Gasp and device failure alarms)</p> <p>Support two digital inputs:</p> <p>The digital input supports status 1 and status 2.</p> <p>Status 1: 13–30V voltage input</p> <p>Status 2: -30 to 1V voltage input</p> <p>Maximum input current: 6mA</p> <ul style="list-style-type: none"> <li>● Ethernet port Status LED(LNK/ACT, SPEED) at the Front panel and Back panel</li> <li>● Power Status LED</li> <li>● SYS LED and ALM LED</li> <li>● MGMT LED (for auto-configuration)</li> <li>● USB Status LED</li> </ul> <p>Reset the system Reset or restore factory settings</p> <p>System upgrade and backup</p> <p>440mm × 44mm × 320mm(width × height × depth), 2.1 kg</p> <ul style="list-style-type: none"> <li>● Operating temperature: -40 to 85°C, 5%–95%</li> <li>● Storage temperature: -40 to 85°C, 5%–95%</li> <li>● Relative humidity: 5%–90% (non-condensing)</li> </ul>
<b>POE</b>	
<b>Alarm Relay</b>	
<b>Digital input</b>	
<b>LED Indicator</b>	
<b>Reset Button</b>	
<b>USB Port</b>	
<b>Dimension and Weight</b>	
<b>Environment requirement</b>	

**Standard and protocol**

- 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 802.1s for MSTP
- 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
- IEEE 802.3af/at/bt for POE
- IEC61000-4-2 (ESD): ±8kV contact discharge; ±15kV air discharge
- IEC61000-4-3 (RS): 20V/m (80–1000 MHz)
- IEC61000-4-4 (EFT): power cable: ±4kV; data cable: ±2kV
- IEC61000-4-5 (Surge): power cable: CM±4kV/DM±2kV; data cable: ±4kV
- IEC61000-4-6 (RF Conducted Immunity): 10V (150–80 MHz)
- IEC61000-4-8 (Power frequency magnetic field): 100A/m continuous; 1000A/m, 1s to 3s
- IEC61000-4-9 (Pulse magnetic field): 1000A/m
- IEC61000-4-10 (Damped oscillatory magnetic field): 100A/m
- IEC61000-4-12/18 (Oscillatory wave): CM 2.5kV, DM1kV
- IEC61000-4-16 (Common mode conduction): 30 V continuous; 300V, 1s
- FCC Part 15/CISPR22 (EN55022): Class A
- IEC61000-6-2 (General industrial standard)
- IEC60068-2-6 (Anti-vibration)
- IEC60068-2-27 (Anti-shock)
- IEC60068-2-32 (Free drop)
- CE, FCC, UL, and ROHS-compliant

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## Ordering information (Basic Models)>>

Gazelle S3028i-4XF-16GE-MGL

(Basic Model)

- 4 10G SFP+ ports (support 1000Mbps SFP)
- 4 GE Combo ports (support 100/1000Mbps SFP port, and 10/100/1000Mbps RJ45 port)
- 12 GE ports (support 10/100/1000Mbps RJ45 port)

This model has an empty slot, and optional subcards are as following:

- Gazelle S3028i-MG-SUB-8GE
- Gazelle S3028i-MG-SUB-8GF
- None

Gazelle S3028i-4XF-16GF-MGL

(Basic Model)

- 4 10G SFP+ ports (support 1000Mbps SFP)
- 4 GE Combo ports (support 100/1000Mbps SFP port, and 10/100/1000Mbps RJ45 port)
- 12 GF ports (support 100/1000Mbps SFP )

This model has an empty slot, and optional subcards as following:

- Gazelle S3028i-MG-SUB-8GE
- Gazelle S3028i-MG-SUB-8GF
- None

Gazelle S3028i-4XF-16GE-PWH-MGL

(Basic Model)

- 4 10G SFP+ ports (support 1000Mbps SFP)
- 4 GE Combo ports (support 100/1000Mbps SFP port, and 10/100/1000Mbps RJ45 port)
- 12 GE ports (support 10/100/1000Mbps RJ45 port)

Port 9~16 support IEEE802.3bt(compatible with IEEE802.3af and IEEE802.3at), max 90W per port

Port 17~24 support IEEE802.3at(compatible with IEEE802.3af), max 30W per port

This model has an empty slot, and optional subcards as following:

- Gazelle S3028i-MG-SUB-8GE
- Gazelle S3028i-MG-SUB-8GF
- None

Gazelle S3028i-MG-SUB-8GE

Sub Card with 8 GE ports (10/100/1000Mbps RJ45 port), not supporting POE

Gazelle S3028i-MG-SUB-8GF

Sub Card with 8 GF ports (100/1000Mbps SFP port)

## Power Supply:

Gazelle S3028i-4XF-16GE-MGL

Gazelle S3028i-4XF-16GF-MGL

Gazelle S3028i-4XF-16GE-PWH-MGL

- DC/S: 24/48 VDC, single input
- DC/D: 24/48 VDC, dual inputs
- HIP/S: 110/220 VAC/DC, single input
- HIP/D: 110/220 VAC/DC, dual inputs

DC/D: 48 VDC, dual inputs

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