Gazelle R101i industrial 3G router

Overview

The Gazelle R101i fits for data backhaul in various environments where wired network coverage is unavailable. Adopting 2G/3G high-speed wireless network as the data bearing network, it provides safe and high-speed wireless connection between remote devices and sites. It also supports WCDMA, CDMA2000, and TD-SCDMA network systems. No matter where you are, your device can be fast connected to the Internet or VPN through widespread GPRS/CDMA or 3G networks. In addition, it supports the WCDMA HSPA+ network, with the downlink rate up to 21 Mbit/s, thus overcoming bandwidth bottleneck and implementing wireless broadband application.

The Gazelle R101i adopts an industrial design to meet industrial users' requirements, with lower power consumption, operating temperature ranging from -20℃ to 70 ℃, small size, and low weight. With strict EMC indexes, it can work in harsh and narrow environment. It supports DTU of the multi-protocol serial server, thus being a good choice for industrial applications.

The Gazelle R101i supports VPN, thus able to connect to the VPDN tunnels of enterprises based on 3G network. It supports transmitting data in the secure IPSec tunnels to prevent data being accessed and tampered, providing with high security for network applications. It supports multiple safe and reliable management modes, such as easy Web remote network management, SNMP remote management, and centralized network management.

The Gazelle R101i can be widely applied in finance, transportation, monitoring, environmental protection, power grid, postal service, etc. industrials.

Appearance

Characteristics

High reliability

- Adopt the high-performance ARM9 platform, thus able to fast accessing the 3G network.
- Adopt software and hardware watchdog and multiple levels of link detection mechanisms, support automatical fault detection and automatical fault clearing. This guarantees stable and reliable operation of the Gazelle R101i.
- Support remote and local upgrade of firmware in redundancy backup mode.

Good usability

- Provide rich interfaces for high extendibility.
- Support multiple configuration modes, such as Web, Telnet, and SSH.
- Support importing and exporting configurations. This facilitates batch configurations.
- Support restoration to factory setting for software and hardware.
- Support activating and managing the 3G connection through a SMS.
- Support DTU, thus capable of wireless transmission for the serial interface device.

Complete network security

- Support VPN and VPN services based on standard IPSec. Support encryption modes include DES, 3DES, and AES. Support data authentication modes including MD5 and SHA-1.
- Support firewall security, such as intelligent Statefull Packet Inspection (SPI), Denial of Service (DoS) attack proofing, and anti-packet scanning.
- Support configuring Access Control List (ACL) rules and querying traffic logs and system logs.

- Support centralized network management. Namely, through the NView NNM system, the Gazelle R202i supports centralized network management, batch configuration and upgrading.

Industrial design

- Adopt a metallic shell with strong mechanical strength and rigidity, and support wall-mount and guide-rail installation.
- Adopt an embedded cassette for the SIM card and provide removal protection.
- Provide round metal grounding terminal with good grounding protection.
- Adopt high standard EMC and security protection design.
- Support operating temperature from -20 to 70°C and storage temperature from -40 to 85°C.
- Support relative humidity from 5% to 95% (non-condensing).
- Support high class IP40 protection.

Features

Feature	Subfeature	Description
3G network access	APN/VPDN	Support the customer leased network provided by the carrier for guaranteeing data security.
	Authentication mode	Support multiple authentication modes, such as CHAP and PAP.
	Connection mode	• Support connection on demand: activation by SMS or local traffic volume. • Support always-online mode with traffic warning threshold through SMS or mail.
	Auto-connection	Support auto-detection, auto-management, and auto-repair of links.
	2G/3G network switching	Support stable online mode.
Network interface	Auto-negotiation	Two 10/100 Mbit/s interfaces, self-adaptive to crossover or straight-through connection
	Isolation protection	1.5 KV network isolation transformer protection
Serial interface	Number of serial interfaces and signal type	1 RS-232/485 serial interface (reuse)
	Interface type	DB9 (Male)
	Rate	• RS-232: 1200–115200 bit/s • RS-485: up to 230 kbit/s
	Communication parameters	• Parity: None, EvIEC, Odd, Space, and Mark • Data Bits: 5, 6, 7, and 8 • Stop Bit(s): 1, 1.5, and 2
	Support flow control.	
	Provide 6 kV ESD protection.	
3G antenna	External antenna	Standard SMA antenna interface

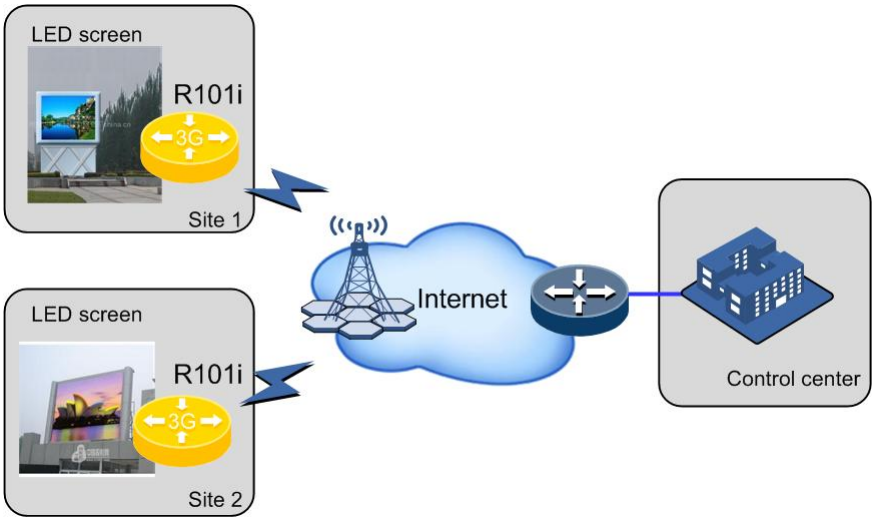
Feature	Subfeature	Description
interface		
System management	Configuration mode	Support Telnet, Web, and SNMP configuration modes.
	Upgrade mode	• Support remote upgrade and Web upgrade. • Support upgrade with redundancy backup.
Network features	Route	Static route
	Supported protocols	ICMP, IP, TCP, UDP, DHCP, PPP, ARP, Telnet, DNS, HTTP, and HTTPS
	Connection detection	Adopt Raisecom-developed connection detection mechanism to guarantee the device always online.
	NAT and PAT	Support NAT and PAT to hide internal IP addresses and expand IP addresses.
	NTP	Support NTP.
	MAD address binding	Support denying the access by unauthorized hosts.
	Interface mapping	Support external users to access specified internal interfaces.
	DNS/DDNS	Support dynamic domain name binding.
	QoS	Support limit on sessions, rate limiting, and traffic recognition.
Network security	VPN	• Support VPN services based on standard IPSec. Support encryption modes include DES, 3DES, and AES. Support data authentication modes including MD5 and SHA-1. • Support L2TP/GRE VPN services.
	Authentication mode	• Pre-shared key • Digital certificates
	Firewall policy	SPI, filtering multicast packet and PING packets, and anti-DoS attack with different firewall policies

Feature	Subfeature	Description
	ACL rule	Support configuring ACL rules flexibly for TCP, UDP, and ICMP packets, and support traffic logs and system logs.
Embedded features	Realtime clock	Provide precise clock signals for the system.
	Watchdog	Guarantee the system not to crash.
	Running status LEDs	POWER, SYS, 3G, serial interface, etc. LEDs
Power supply	Power input	12 VDC, overcurrent protection
	Power consumption	< 4 W
	Surging protection	4 kV
Mechanical features	Shell	High-rigidity metallic shell
	Dimensions	100 mm (Height) × 100 (Width) mm × 25 (Depth) mm
	Weight	0.29 kg
	Installation mode	Wall-mount/Guide-rail mode
	SIM card protection	Adopt a pop-up cassette with removal protection.
Operating environment	Operating temperature	Industrial level: -20 to 70 ℃
	Storage temperature	Industrial level: -40 to 85 ℃
	Relative Humidity	5%–95% (non-condensing)
	Protection level	IP40
Security authentication	Shocking	IEC60068-2-27
	Falling	IEC60068-2-32
	Shaking	IEC60068-2-6

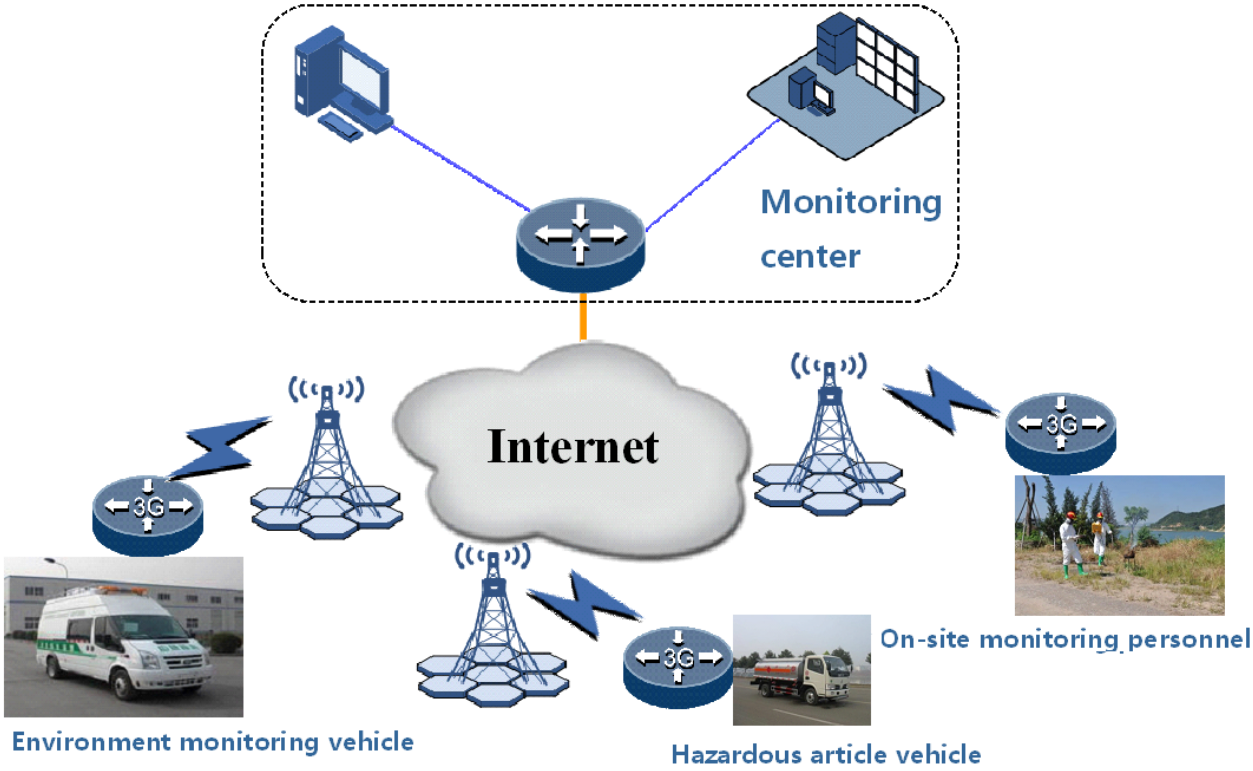
Feature	Subfeature	Description
	Static electricity	IEC61000-4-2
	Surge	IEC61000-4-5 • AC power interface: ±2 kV in common mode and ±4 kV in differential mode • Network interface: ±1.5 kV • Serial interface: ±1 kV
	Rapid pulse group	IEC61000-4-4 • AC power interface: ±4 kV • Network interface: ±2 kV • Serial interface: ±2 kV
	Radiation immunity	IEC61000-4-3
	Conduction immunity	IEC61000-4-6, 10 V (150 kHz to 80 MHz)
	Power frequency magnetic field	IEC61000-4-8 • 100 A/m, continuous • 1000 A/m, 1s–3s
	Pulse magnetic field	IEC61000-4-9, 300 A/m
	Damped oscillation magnetic field	IEC61000-4-10, 30 A/m
	Damped oscillation wave	IEC61000-4-12 • Common mode: 2.5 kV • Differential mode: 1 kV

Applications

Wireless transmission of LED data



Video monitoring and data transmission in public security, environmental protection, etc. industries



Ordering information

Gazelle R101i industrial 3G router	
Model	**Description**
Gazelle R101i-WS	• Provide two 10/100 Mbit/s Ethernet electrical interfaces. • One serial interface supports RS232/485 working mode. • Be embedded with a 3G module supporting WCDMA (HSPA+) 3G uplink connection. • Support 12 VDC power.
Gazelle R101i-W	• Provide two 10/100 Mbit/s Ethernet electrical interfaces. • One serial interface supports RS232/485 working mode. • Be embedded with a 3G module supporting WCDMA (HSPA) 3G uplink connection. • Support 12 VDC power.
Gazelle R101i-C	• Provide two 10/100 Mbit/s Ethernet electrical interfaces. • One serial interface supports RS232/485 working mode. • Be embedded with a 3G module supporting CDMA2000/EVDO REV.A 3G uplink connection. • Support 12 VDC power.
Gazelle R101i-T	• Provide two 10/100 Mbit/s Ethernet electrical interfaces. • One serial interface supports RS232/485 working mode. • Be embedded with a 3G module supporting TD-SCDMA (HSPA) 3G uplink connection. • Support 12 VDC power.
Sucker antenna	• 5-meter long cable • SMA connector • Suitable for weak-signal scenario • Mounted against metal surface

RAISECOM

Raisecom Technology Co., Ltd

Datasheet

Gazelle R102i

Manged Industrial-grade Ethernet Router

Gazelle R102i is a managed industrial-grade Ethernet Router manufactured by Raisecom, which serves as ideal solution for outdoor networking deployment in financial industry, environmental protection, monitoring, transportation, military, utility and residential areas. Gazelle R102i allows up to 4 Ethernet-based devices to simultaneously use a single cellular data account for primary or backup network connectivity to remote sites and devices. By integrating routers, switches, firewalls, VPN, and 3G in one single device, Gazelle R102i provides the high- performance required for concurrent services, including firewall, 3G uplink , encryption for VPNs, cellular Data for mobility, and quality-of-service (QoS) features for optimizing voice and video applications at broadband speeds. The Gazelle R102i can be placed on a desktop or wall-mounted, whereas the Gazelle R102i has an IA design and can be attached to a DIN-rail. Both products use 9 to 48 VDC power inputs with a screw-on design for greater reliability.

Gazelle R102i

Highlights

Sophisticated Network Security Assurance	Networks are secured with port-isolation within individual VLAN, MAC binding, Qos, DHCP Client
Integrated Network	Support Routing, NAT/PAT,NTP/NAPT,VRRP,DMZ, DNS/DDNS, PPPoE; Universal tri-band UMTS/HSDPA 850/1900/2100 MHz; Quad-band GSM 850/900/1800/1900 MHz, WCDMA 850/900/1900/2100 MHz,CDMA2000 450 /800/1900/2100 mhz.
Advanced Security	3G uplink for Primary or Backup; Support L2TP VPN, Firewall, Anti-DoS, Anti-ARP, Anti-Scanning;
Enhanced Industrial-grade Hardware	Devices are designed and manufactured to adapt to deployments in harsh environments: 1) performances and reliabilities are guaranteed under extreme thermal conditions from -20˚C to 70˚C; 2) products are also featured to be dust-proof (IP40 level).
Easy Management	Management via Web management, SNMP, Telnet, CLI, SSH.

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Features

General	
Switching Mode	Store and forward mode;
Bandwidth Profile	Rate limit:1,00,000Kbps; Egress per port; Rate limit based on packet type/queue; Increments: 64Kbps (64K-1M), 1Mbps (1-100M), 10Mbps (100-1000M);
VLAN	IEEE 802.1Q VLAN; 16 active VLANs; Port PVID Overviews;
MAC Address Table	IEEE802.1Q 8K MAC address; Add/remove MAC address; View MAC address statistic; Search MAC address; Aging time:15-3,825s; MAC table limit:1-255;
Flow control	IEEE 802.3x in full duplex mode; Back pressure in half duplex mode; Port-based configurations
Port Backup	Support
Transparent Reply	BPDU;
QOS	CoS/DSCP to queue mapping; Port priority override; TRUST CoS/DSCP priority; Global queue scheduling; 4 queues per port;
Advanced	
IP Features	Routing capability - Static & Dynamic routing (RIPv1/v2), OSPF; Generic routing encapsulation (GRE); Network Address Translation (NAT)/NAPT; IGMP Proxy Dynamic Host Configuration Protocol (DHCP) server, relay, and client; Domain Name System (DNS) Client, Proxy; Dynamic Domain Name System (DDNS); Access control lists (ACLs);

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	Supports load balancing;
Multi-Protocol Supported	Support ICMP, IP, TCP, UDP, DHCP, PPP, ARP, Telnet, DNS, SSH, VRRP, HTTP, HTTP;
VRRP	Hot backup function: when the Primary link is interrupted, Router can automatically switch to the backup line;
WAN	Support WAN port settings, wireless and wired network backup;
Security Features	Layer 2 Tunneling Protocol (L2TP); Maximum of up to 100 IPSec VPN Tunnels; Authentication (SHA-1, MD5); Manual Key, IKE, PKI (X.509); Stateful inspection transparent firewall; Dynamic and static port security; ACLs; Anti-DoS; Anti-ARP; Anti-Scanning; RADIUS; Binding of MAC address & port;
3G	Universal tri-band UMTS/HSDPA 850/1900/2100 MHz; Quad-band GSM 850/900/1800/1900 MHz; WCDMA 850/900/1900/2100 MHz; CDMA2000 450 /800/1900/2100 mhz; 3G function Enable and Disable; primary or backup network connectivity uplink; selectable network mode: Automatic/2G only/3G only; PIN code management; 3G flow management; 3G link quality detection; Supports flow trigger dial-up and automatic dial-up; Advanced configuration function: DNS/MTU/NAT configuration; System message management: working status and equipment's information displayable; Support CHAP/PAP authentication modes;
Built-in Functions	Real-time clock: provide the local precise time for the system; Watchdog: ensure system never crash; Signal strength indicator: signal strength real-time instructions, divided into 3 levels; The running status indicator: POWER, SYS, 3G network, serial port status

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	indicators;
Maintenance	Debug information output; PING (Packet Internet Groper); Telnet Client;
Scheduling	System task scheduling
Software Upgrade	Web/Xmodem/FTP upgrade in BOOTROM FTP/TFTP
System Management	CLI/ARP/Telnet/Console/SSH/SNMP/Web; management; RAISECOM NMS; System log; Hierarchical alarms; Link alarm per port; Keepalive report; Fault pass through;
Time Management	Time zone; Time modification; DST;
Error Tolerance& Redundancy	System error report;
Industrial-grade	
Extended Temp Range	Operating temp:-20~70˚C
Dust-proof	IP40 level dust prevention
Lingting-proof	IEC61000-4-2 (Electrostatic discharge ESD): ±8kV Contact Discharge ±15kV air discharge IEC61000-4-3 (Electromagnetic radiation RS): 20V/m (80～1000MHz) IEC61000-4-4 (EFT): Power line:±4kV Data line:±2kV IEC61000-4-5 (Surge): Power line: CM±2kV/DM±1kV Data line:±4kV IEC61000-4-6 (Conducted RF): 10V (150kHz～80MHz) IEC61000-4-8 (Frequency Magnetic Field): 100A/m sustained 1000A/m, 1s to 3s IEC61000-4-9 (PMF): 300A/m IEC61000-4-10 (Damped Oscillation): 30A/m IEC61000-4-12/18 (Sasser): CM 2.5kV; DM 1kV IEC61000-4-16 (Common-Mode Conducted): 30V sustained 300V, 1s IEC 60870-2-2(shock): Cm IEC 60721-3-3(shock): Cm

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	IEC 60721-4-3(shock): Cm
	IEC 60870-2-2(Vibration): Cm
	IEC 60721-3-3(Vibration): Cm
	IEC 60721-4-3(Vibration): Cm
	IEEE 1613(Vibration):V.S.3
	IEC 60870-2-2(Free fall): Cm
	IEC 60721-3-3(Free fall): Cm
	IEC 60721-4-3(Free fall): Cm
	IEC 60068-2-31(Free fall): Cm

Specifications

Indicators	Power Supply (flashing); System (flashing); 10/100BASE-T: SPEED& LINK/ACT indicators; 3G Status and 3G Signal intensity indicators; TXD,RXD,MODE Serial indicators;
Port Specs	4x10/100BASE-T, Automatic MDI/MDIX crossover, Auto-negotiation and speed auto-sensing half-full duplex, Switch-mode: LAN,WAN-DMZ-LAN,WAN-LAN ; 1xRS232/485/422 serial port (DB9 male); 1x RST button; 1Xwireless 3G SMA interface:3G wireless Antenna; Management port: 1 console (Type B mini USB);

Power Specs	DC : 12V/24V ≤10W (full load)
User Conditions	Storage temp: -40~85˚C Operating temp: -25~70˚C 3G module:-25~70˚C Humidity: 5~95% non-condensing Atmos:86KPa-106KPa
Installation	Rail/wall mountable
Dimensions	135(L) x 105(W) x 55(H) mm3
Weight	0.76kg

Compliances

Standards	IEEE802.3-2002 IEEE802.3 10BaseT
	IEEE 802.1x Security

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	IEEE802.3 100BaseT
	IEC61000-4-2
	IEC61000-4-3
	IEC61000-4-4
	IEC61000-4-5
	IEC61000-4-6
	IEC61000-4-8
	IEC61000-4-9
	IEC61000-4-10
	IEC 60870-2-2
	IEC 60870-2-2
	IEC 60721-3-3
	IEC 60721-4-3
	IEEE 1613
	IEC 60068-2-31

	IEEE 802.1p QoS Prioritization
	IEEE 802.3x Flow Control
	Fault Management
	Static Routing
	IGMPv1/v2/v3 Multicast
	SNMPv1/v2/v3

Ordering Information

Gazelle R102i-W	4 x 10/100BASE-TX, 1xRS232/485/422 serial port(DB9),built-in 3 G module with SMA interface external antenna; WCDMA(HSPA) 3G system uplink; DC 12V/24V power supply (with an external 220V AC to 12V DC power adapter)
Gazelle R102i-C	4 x 10/100BASE-TX, 1xRS232/485/422 serial port(DB9),built-in 3 G module with SMA interface external antenna; CDMA2000/EVDO REV.A 3G system uplink; DC 12V/24V power supply (with an external 220V AC to 12V DC power adapter)
Gazelle R102i-T	4 x 10/100BASE-TX, 1xRS232/485/422 serial port(DB9),built-in 3 G module with SMA interface external antenna; TD-SCDMA(HSPA) 3G system uplink; DC 12V/24V power supply (with an external 220V AC to 12V DC power adapter)

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