NEX-G
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NEX-G AUTOMATION LLP

ETHERNET IP RELAYS

Network-Driven Industrial Relay Switching Architecture

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Installation **Configuration** **Operation** **Integration** **Maintenance**

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1. Product Overview

The **Nex-G Ethernet IP Relays** provide high-performance network-driven remote switching designed for industrial automation, building systems, and SCADA environments. Operating in Client Mode over standard TCP/IP Ethernet networks, these modules connect directly to target server environments to execute real-time physical switching commands. Available in 4, 8, or 16 channel variants with 10A contact ratings, the architecture enables reliable remote actuation without complex inbound firewall rules.

Core Hardware & System Capabilities:

- Scalable physical channel topologies (4, 8, or high-density 16-channel modules).
- Client Mode network operation proactive connection to target server IP addresses.
- Robust electrical contact switching handling up to 250V AC / 30V DC at 10A.
- Ultra-low switching latency for immediate real-time automated workflow control.
- Integrated keep-alive diagnostic heartbeat for continuous network link integrity verification.

2. Electrical & Safety Guidelines

> **Power & Voltage Isolation:** Disconnect all primary power sources before wiring relay terminal contacts. Ensure load currents do not exceed the specified 10A rating per channel to prevent contact welding.

- **Qualified Wiring:** Installation must be performed by qualified electrical personnel adhering to industrial control standards.
- **DIN Rail Installation:** Securely snap the module onto a standard TS-35 DIN rail or panel wall mount with proper ventilation space.
- **Supply Rating:** Power the module using a stable 12V DC or 24V DC regulated industrial power supply as labeled.

3. Technical Specifications

Parameter	Specification Details	Notes
Communication Interface	Ethernet (10/100 Mbps RJ45)	Native TCP/IP protocol stack
Operating Mode	Client Device Configuration	Proactive connection to target host server IP
Relay Channel Variants	4 / 8 / 16 Physical Channels	SPDT or SPST switching contacts available
Relay Contact Rating	Up to 250V AC / 30V DC @ 10A Max	High-power industrial electrical load switching
Operating Power Input	12V DC or 24V DC	Model-dependent regulated DC input
Enclosure Type	Rugged Metal / Industrial ABS Housing	Heavy-duty construction for harsh environments
Mounting Setup	Standard DIN Rail / Wall Mount	TS-35 DIN rail clip included
Configuration Links	Web-Based Portal / Serial Utility	Target IP, subnet, and port mapping settings
Diagnostic Functions	Keep-Alive Heartbeat Telemetry	Automated link check and connection recovery
Operating Temperature	−20°C to +70°C	Extended temperature rating for industrial plants

4. Network Switching Architecture & Flow

Sequence of client connection, IP command parsing, and electrical relay switching:

01. Server Connect
Relay in Client Mode reaches target server IP.

02. IP Command
Server issues raw TCP/IP channel control packets.

03. Physical Switch
Selected relay changes contact state (10A load).

04. Heartbeat Status
Keep-alive packets monitor continuous network integrity.

5. Web Interface & Configuration Ecosystem

The internal web-based portal and serial utility allow complete network configuration:

Utility Function	Operational Capabilities
Target IP & Port Mapping	Configure outbound destination server IP addresses and port pathways for Client Mode operation.
Manual Channel Overrides	Individually force relay states (ON/OFF) via local web panel commands for testing and maintenance.
Subnet & Gateway Settings	Customize static IP addresses, netmasks, and gateway routing to integrate cleanly into corporate subnets.
Keep-Alive Heartbeat Flags	Set diagnostic transmission intervals to maintain continuous TCP connection sessions with host software.

6. Strategic Solution Advantages

Client Mode Security
Proactively connects outbound to servers, eliminating open inbound ports and firewall risks.

SCADA & PLC Integration
Integrates directly into existing factory SCADA workflows and automated control loops.

High Power Switching
Handles heavy-duty electrical contact loads up to 10A across 250V AC / 30V DC.

Massive Fleet Scalability
Deploy and map dozens of physical relay modules across a single corporate Ethernet network.

7. Frequently Asked Questions (FAQ)

- **What channel variants are available?** 4, 8, or 16 physical channel modules.
- **How does the relay communicate?** Ethernet TCP/IP protocol stack operating in Client Mode.
- **What is the maximum relay contact rating?** Up to 250V AC / 30V DC at 10A maximum loading per channel.
- **How can the module be mounted?** Standard TS-35 DIN rail or flat surface wall mounting.

8. Troubleshooting Guide

Symptom	Possible Cause	Recommended Action
No network connection / Link LED off	Faulty RJ45 cable or switch port down	Check Ethernet cable link LEDs; verify switch port status and VLAN settings.
Module fails to connect to target server	Incorrect host IP / firewall blocking port	Verify target server IP/port in configuration portal; ensure firewall permits outbound TCP.
Relay clicks but load does not activate	External load circuit open or wiring error	Check load power source and verify wiring across COM and NO/NC relay terminals.
Frequent disconnects during operation	Network latency / power supply drop	Check keep-alive heartbeat interval and ensure stable 12V/24V DC power input.

9. Maintenance & Care

- Inspect screw terminal blocks regularly to ensure electrical wire connections remain tight under vibration.
- Keep ventilation slots clean and dust-free to prevent thermal buildup inside the metal/ABS housing.
- Perform routine quarterly channel switching tests in coordination with system operators.
- Store uninstalled relay modules in a dry location within −20°C to +70°C.

10. Support and Service Contact

For technical support, integration guides, command protocol specifications, or custom configurations, contact Nex-G Automation LLP:

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