# RP-ISG6516IX-4F-D

## 16-P Gigabit + 4-SFP (1G/2.5G/10G) slot L3 Managed Industrial Switch with DI/DO/RS485



The REPOTEC RP-ISG6516IX-4F-D is a Layer 3 managed industrial Ethernet switch with 16 non-PoE Gigabit RJ45 ports and four SFP+ slots that support 1G, 2.5G, and 10G fiber uplinks. Digital inputs and outputs (DI/DO) and the RS-485 interface help integrate the switch into industrial automation systems.

The switch supports IPv4 and IPv6 static routing, dynamic routing protocols such as OSPFv2 and BGP4, and Layer 2 features including VLANs, QoS and access control lists. ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) restores network connectivity within 20 ms after a link failure in the ring.

The switch features a fanless IP40 enclosure, DIN-rail mounting, redundant 12–75 VDC power inputs and an operating temperature range of −40°C to +75°C. Built-in surge protection on the power and Ethernet ports makes it suited to factory automation, transportation networks and oil and gas facilities.

## Features

**Ports and Industrial Interfaces**

- 16 × Gigabit RJ45 ports (non-PoE)
- 4 × SFP+ slots supporting 1G, 2.5G and 10G fiber uplinks
- Digital inputs and outputs (DI/DO) and RS-485 for industrial automation

**Layer 3 Routing**

- IPv4 and IPv6 static routing, with RIP, OSPFv2, BGP4 and IS-IS dynamic routing
- Up to 13,000 routing entries, with ECMP and VRRP support
- DHCPv4 server and relay

**Layer 2 Switching and Network Resilience**

- ITU-T G.8032 ERPS with major ring and sub-ring support and recovery within 20 ms
- STP, RSTP, MSTP and loop detection
- VLAN, GVRP, QinQ, QoS, IGMP snooping and link aggregation

**Security and Network Management**

- Access control lists (ACLs), IEEE 802.1X port authentication and AAA
- IPv4/IPv6 dual-stack management through web and CLI interfaces
- SNMPv2c/v3, sFlow, MQTT, SPAN/RSPAN and SFP digital diagnostics (DDM)
- USB support for configuration and firmware updates

**Industrial Design and Protection**

- Redundant 12–75 VDC power inputs with reverse-polarity and overcurrent protection
- Fanless IP40 enclosure with DIN-rail mounting
- Operating temperature range of −40°C to +75°C
- Up to 6 kV surge protection on power and Ethernet ports, with 15 kV air and 8 kV contact ESD protection

## Specifications

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| **Standards** | • IEEE 802.3 10Base-T Ethernet<br>• IEEE 802.3u 100Base-TX Ethernet<br>• IEEE 802.3ab 1000Base-T Ethernet<br>• IEEE 802.3z 1000Base-X Ethernet<br>• IEEE 802.3ae 10Gigabit Ethernet<br>• IEEE802.3x Flow Control and Back Pressure<br>• IEEE 802.1D Spanning Tree Protocol<br>• IEEE 802.1w Rapid Spanning Tree Protocol<br>• IEEE 802.1Q VLAN<br>• ITU-T G.8032 ERPS<br>• IEEE 802.1X Port Authentication Network Control<br>• IEEE 802.1ab LLDP<br>• IEEE 802.3ad LACP |
| **Interface** | • 16 x 10/100/1000Base-T RJ45 (1-16 ports)<br>• 4 x 1G/2.5G/10GBase-X SFP (17-20 ports) |
| **Size of RAM** | • 1GB |
| **Size of Flash** | • 512MB |
| **Management port** | • 1 x RJ45 Console port (115200,8,N,1)<br>• 1*USB 2.0 for configuration and firmware update |
| **Switching capacity** | • 112Gbps |
| **Packet forwarding rate** | • 166.6Mpps |
| **MAC address table** | • 16K |
| **VLAN** | • 4K |
| **Buffer** | • 12Mbit |
| **Forwarding delay** | • <5us |
| **Jumbo Frame** | • Support 10Kbytes |
| **MDX/MIDX** | • Support |
| **Watchdog** | • Support |
| **Layer 2 function** | |
| **Port aggregation** | • Support GE port aggregation<br>• Support 2.5GE aggregation<br>• Support 10GE aggregation |

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| | • Support static aggregation<br>• Support LACP dynamic aggregation<br>• Up to 64 aggregation groups and up to 8 ports per group |
| **Port features** | • Support IEEE802.3x flow control,<br>• Support interface counters,<br>• Support port isolation,<br>• Port mirroring ( One-to-One, Many-to-One)<br>• Support loop detection(Port-based; VLAN-based)<br>• Support broadcast storm suppression(broadcast; unknown multicast; unknown unicast) |
| **Mac-address table management** | • Support static Mac-address management<br>• Support dynamic Mac-address Management<br>• Support filtering Mac-address<br>• Support MAC limit based on port and VLAN<br>• Support MAC flapping based on port and VLAN<br>• 16K Mac-address table size |
| **VLAN** | • IEEE802.1Q tagged VLAN<br>• Mac based VLAN<br>• IP based VLAN<br>• Protocol based VLAN<br>• Voice VLAN, specially divide VLAN for user voice data flow<br>• Private VLAN, divide a VLAN broadcast domain into multiple subdomains to form a double-layer VLAN structure<br>• VLAN range: 1-4094<br>• Support access mode/trunk mode/hybrid mode |
| **GVRP** | • Normal mode<br>• Fixed mode<br>• Forbidden mode |
| **QinQ** | • Port-based QinQ<br>• VLAN-based QinQ (VLAN-stacking; VLAN-mapping)<br>• Flow-based QinQ |
| **LLDP** | • Link Layer Discovery Protocol<br>• Med |
| **SPAN** | • Number of Sessions: 7<br>• Many-to-one |
| **RSPAN** | • Remote Switch Port Analyzer |
| **MSTP** | • 802.1D STP<br>• 802.1W RSTP<br>• 802.1S MSTP<br>• BPDU Guard<br>• Number of Single Ring Device Connections: 20 |
| **ERPS G.8032** | • Major ring<br>• Sub ring<br>• Recovery time≤20ms |

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| | • Number of Single Ring Device Connections: No limit |
| **Qos** | • Qos Class, Remarking<br>• Support SP, WRR Queue Scheduling<br>• Ingress Port-based Rate-limit<br>• Egress Port-based Rate-limit<br>• Egress Port-queue shaper<br>• Policy-based QoS<br>• Port Queue Numbers: 8 |
| **DHCPv4 Snooping** | • DHCP snooping trust port<br>• DHCP snooping option-82<br>• DHCP snooping circuit-id and remote-id customized |
| **L2 Multicast** | |
| **IGMP** | • IGMP v1,v2,v3 |
| **IGMP snooping** | • Internet Group Management Protocol Snooping<br>• Fast leave<br>• Multicast Table Size: 1K |
| **PIM-SM** | • Protocol Independent Multicast-Sparse Mode |
| **Security functions** | |
| **ACL** | • IP Standard ACL<br>• MAC extend ACL<br>• IP extend ACL<br>• IPv6 ACL<br>• Time Range<br>• ACL apply on VLAN<br>• ACL entries, include input and output |
| **802.1x** | • Port access control<br>• Mac-address access control<br>• RADIUS server |
| **Port-security** | • Port-security |
| **IP source guard** | • IP source Guard, Port-based IP/Mac Binding Access |
| **ARP-check** | • Support ARP-check and ARP packet filtering for illegal users |
| **DAI** | • Dynamic ARP Inspection |
| **Anti-gateway ARP Spoofing** | • Prevent Gateway ARP spoofing |
| **Ddos** | • Ddos attack protection |
| **Access control** | • Support Telnet/SSH/HTTP/HTTPS user access control |
| **AAA** | • RADIUS authentication access switch<br>• TACACS authentication access switch<br>• Authorization |
| **Reliability** | |
| **Loop Detect** | • Loop detect, based on port or VLAN |
| **EFM** | • The Ethernet in the first mile, 802.3ah |
| **Management & Maintenance functions** | |

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| **Dual Stack** | • IPv4 and IPv6 Dual Stack Management |
| **System Log Management** | • Syslog Level 7 to 0 Corresponding Debug/Info/Notice/Warning/Err/Critical/Alert<br>• Support connecting up to 3 Servers<br>• For IPv4 and IPv6 |
| **User Management** | • Support password protection, support MD5/SHA256/SHA512 algorithm<br>• Local Management of User Privilege<br>• Remote authorization by RADIUS or TACACS<br>• Enable privilege protection<br>• User password complexity requirements<br>• User login fail protection<br>• User Privilege Level 0 to 15 |
| **Login Service Management** | • Up to 8 users online simultaneously<br>• Access control based on IPv4 or IPv6 ACL |
| **Firmware Management** | • Firmware upgraded by WEB<br>• Firmware upgraded by CLI<br>• Dual partition |
| **Web Management** | • Web Management<br>• Support HTTP V1.1<br>• Support HTTPS<br>• For IPv4 and IPv6 |
| **CLI management** | • Console/Telnet command line management |
| **Fault Detection** | • Ping/Traceroute, For IPv4 and IPv6<br>• Dying gasp (the input voltage should be more than 18V)<br>• Optical transceiver DDM<br>• One click fault information collection<br>• Cable detection |
| **DNS** | • Domain Name System |
| **NTP** | • Network Time Protocol, For IPv4 and IPv6<br>• Support domain name configuration |
| **Configuration Import/Export** | • FTP/TFTP based remote configuration import and export<br>• USB flash drives based local configuration import and export |
| **sFlow** | • Sampled flow |
| **SNMP** | • Version SNMPV2C/V3 |
| **MQTT** | • Message Queuing Telemetry Transport |
| **RMON** | • Support RMON (Remote Monitoring) alarm |
| **Dual partition management** | • Support dual partition switching |
| **Application Protocol Functions** | |
| **Telnet server** | • Support telnet server for IPv4 and IPv6 |
| **Telnet client** | • Support telnet client for IPv4 and IPv6 |

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| **SCP (Secure Copy Protocol)** | • SCP client/server for IPv4 and IPv6 |
| **SFTP** | • Sftp client/server for IPv4 and IPv6 |
| **SSH server** | • Support login based on user password-SSH2, support IPv4, IPv6<br>• Support public key-based login |
| **TACACS** | • Support TACACS (the terminal access controller accesses the control system) |
| **TFTP** | • Support TFTP Client |
| **Layer 3 function** | |
| **Static Route** | • Support VLAN interface and route port<br>• IPv4 static routing table entry configuration<br>• ARP dynamic learning and static configuration<br>• IPv6 static routing table entry configuration<br>• Neighbor discovery and static configuration<br>• Routing prefix table size 4K for IPv4, for IPv6 divide by 4 |
| **DHCPv4 Client** | • Dynamic host configuration protocol for IPv4 |
| **DHCPv6 Client** | • Dynamic host configuration protocol for IPv6 |
| **DHCPv4 Relay** | • DHCP Relay for IPv4 |
| **DHCPv4 Server** | • DHCP Server for IPv4 |
| **ECMP** | • Support ECMP (Equal-cost multi-path routing)<br>• Support the configuration of ECMP Max next-hop<br>• Support capacity balanced configuration |
| **Route policy** | • IPv4 prefix-list |
| **VRRP** | • virtual router redundancy protocol |
| **Routing Protocol Specification** | |
| **RIP** | • RIPv1/v2 |
| **OSPFv2** | • OSPFv2 |
| **BGP4** | • BGP4<br>• BGP Support Routing Recursive ECMP<br>• Support to view the number of neighbors and up/down state |
| **IS-IS** | • IS-ISv4 |
| **Routing Entry** | • 13K |
| **Power parameter** | |
| **Input voltage** | • 12-75V DC, redundant power input |
| **Input current** | • 1.8A Max |
| **Total power consumption** | • Full loading ≤22W |
| **Connector** | • Removable 2*2-pin terminal block |
| **Reverse polarity protection** | • Support |
| **Over-current protection** | • Support |
| **Mechanical structure** | |
| **LED Indicators** | • P1/P2 (Power indicator) Green<br>• SYS (System status indicator)<br>• USB (USB status indicator) Green<br>• ALM(Fault status indicator) Red |

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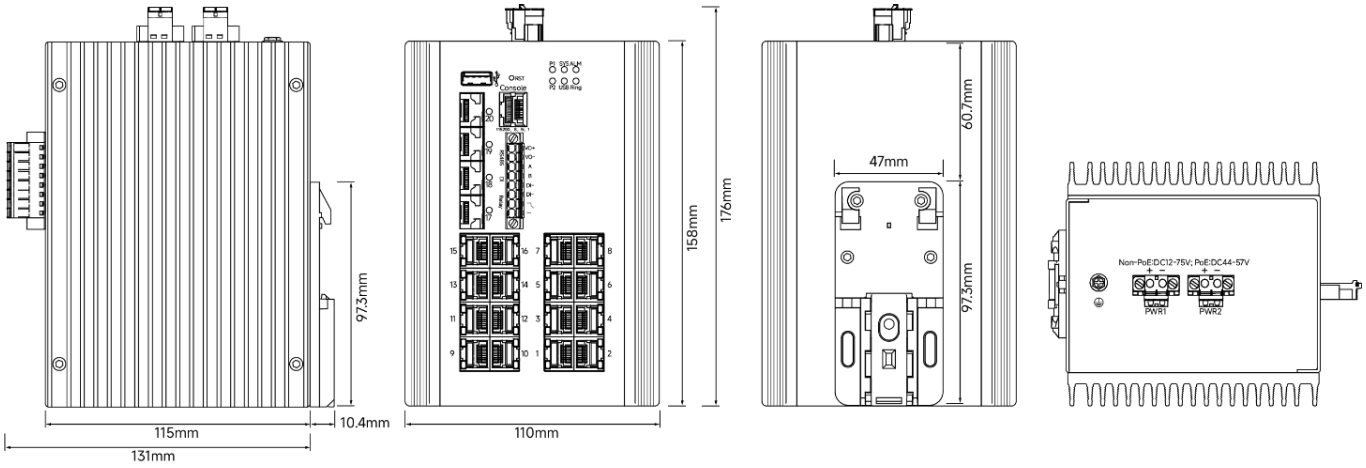
| | • Ring(Ring network indicator)<br>• 1-16 (Copper ports indicators)<br>Green: ports link up<br>Yellow: port speed on 1000M<br>• 17-20 (Fiber ports indicators) Green |
| **Case protection** | • IP40 |
| **Installation method** | • Din-rail |
| **Dimension** | • 110x158x115mm (WxHxD) |
| **Environment** | • Operating temperature: -40°C~+75°C<br>• Storage temperature -40°C~+85°C<br>• Operating Humidity: 10 to 90% (Non-Condensing)<br>• Storage humidity: 5%-95% RH |
| **EMS** | • Surge protection of power: IEC 61000-4-5 6KV/4KV (8/20us)<br>• Surge protection of Ethernet ports: IEC 61000-4-5 6KV/2KV (10/700us)<br>• RS：IEC 61000-4-3 80 MHz-1 GHz：10 V/m<br>• EFT：IEC 61000-4-4 4K/2K<br>• CS：IEC 61000-4-6 10V<br>• ESD：IEC 61000-4-2 Contact: 8K；Air: 15K |
| **EMI** | • FCC Part 15B Class A |
| **Shock** | • IEC 60068-2-27 |
| **Free fall** | • IEC 60068-2-32 |
| **Vibration** | • IEC 60068-2-6 |
| **Certification** | • CE/FCC/RoHS |

## Dimension




## Ordering information

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| **RP-ISG6516IX-4F-D** | 16-P Gigabit + 4-SFP(1G/2.5G/10G) slot L3 Managed Industrial Switch With DI/DO/RS485 |

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