



NETWORK-SWITCH-LP01

EN 54 16

Managed industrial ethernet switch, designed to provide ASL's safety critical Secure Loop network for medium to large installations.

The NETWORK-SWITCH-LP01 is a Managed Industrial Switch specifically designed to suit heavy industrial environments and contains all the standard features to deploy in an EN 54 Voice Alarm system. Engineered with hardened components and enclosed in a rugged IP30 aluminium case, the NETWORK-SWITCH-LP01 can operate in a wide temperature range and also has excellent tolerance capability to high vibration and shock. The switch is also equipped with a variety of management functions that let you configure communication parameters as you desire, and can monitor the network behaviour in number of different simple ways. In addition, the switch is built with dual redundant power inputs to ensure reliability and maximize network up time whilst ensuring full compliance with EN 54-16.

Fast Recovery

Even a few seconds of missed communications due to link failures can cause inconvenience, and recovery can become critical. ASL's proprietary Xpress Ring in NETWORK-SWITCH-LP01 rapidly reacts to such link failures and recovers in less than 10ms, a much faster fail-over time to support nonstop transmissions. This is critical for Public Address or Voice Alarm networks handling heavy audio and data traffic.

In addition, RSTP provides a highly reliable network with redundancy connections whenever required and guarantee continuous network uptime.

Robust Switch Performance

NETWORK-SWITCH-LP01 is built with an IP30 rated aluminium case, with surge and ESD protection to deliver robust performance and withstand extreme conditions in industrial environments.

In case of any abnormal hardware condition, the switch automatically sends warnings via its relay output with real-time alarm messages back to the Voice Alarm system. This assists the system administrators to immediately react to emergency events and diagnose the faults more efficiently.

Architecture

The NETWORK-SWITCH-LP01 is compatible with 10/100/1000 Mbps through RJ45 transceivers to guarantee a strong & stable connection of Ethernet, Fast Ethernet, or Gigabit Ethernet, providing flexible deployment options to satisfy industrial networking requirements.

For medium to large single site applications the NETWORK-SWITCH-LP01 can be used to connect ASL’s audio router in a dedicated SecureLoop IP network, using standard Cat5/6 cable or multi-mode / single-mode fibre. This enables a fully redundant and supervised audio network to be easy rolled out across a large site. Making NETWORK-SWITCH-LP01 ideal for large multi node installations such as; stadia, tunnels, arenas and exhibition halls. (Figure 1)

Typical Multi Node Distributed EN 54 System

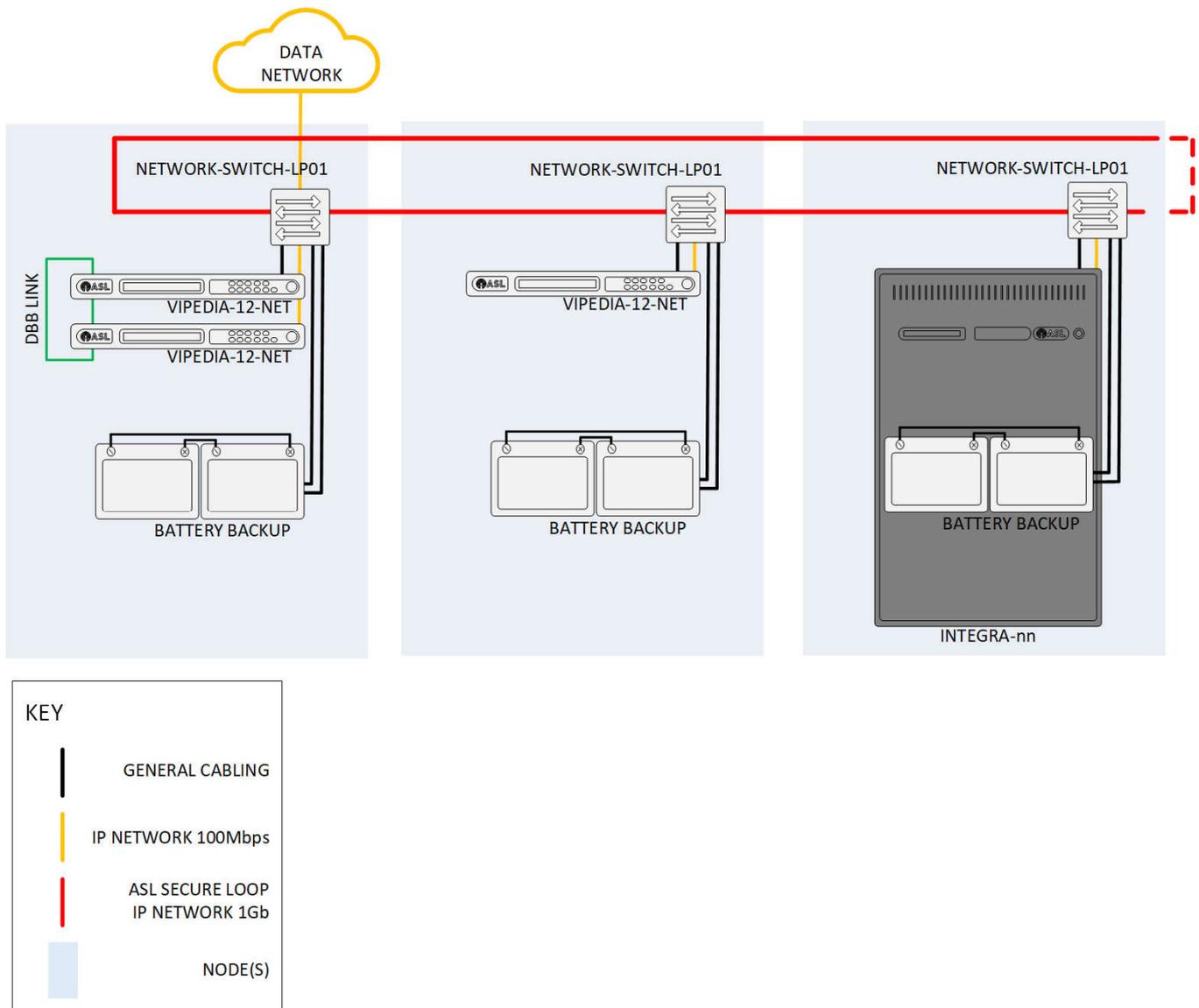


Figure 1— (3 node system with both INTEGRA and VIPEDIA-12-NET)

Feature Highlights

Port-Based VLAN, IEEE 802.1Q VLAN, GARP and GVRP to ease network planning

Planning, designing and managing complex networks is now simplified with NETWORK-SWITCH-LP01. The switch supports VLANs which segment large networks into smaller parts and organize them into separate broadcast domains.

This helps the administrators to control the traffic patterns, limit broadcast traffic and reduce broadcast storms. As the network expands, to provide control of increased VLANs, the switch offers GVRP feature, an application protocol of GARP, which registers devices and its ports depending on their availability. This feature prevents unnecessary network traffic transmitted by unregistered users and simplifies the network design irrespective of its size.

Code Redundancy

The configuration file of the switch may be lost due to various reasons such as upgrading to a new firmware or power fluctuations and can lead to network down situation. To avoid such situations, the NETWORK-SWITCH-LP01 provides a perfect alternate solution using its dual flash for the code redundancy feature.

The dual flash memory allows the switch to store a backup file of primary configuration on one flash space. Even if the primary configuration file is lost, the backup file will enable the switch and ensure that your network is running continuously.

Redundant Power system

Mission-critical industrial applications need to operate without any interruptions because even a minimum network downtime can hugely impact the overall output. Providing continuous power as well as data to such applications is now made easy with NETWORK-SWITCH-LP01's redundant power system.

The switch is designed with standard industrial terminal block for redundant power. In case the primary power supply fails, the secondary power source will enable the switch to provide continuous service.

Efficient network monitoring and proactive capability

In a network, the issues that impact network performance can be quickly resolved with the NETWORK-SWITCH-LP01's most accepted and enhanced traffic management, monitoring and analysis protocols such as SNMP and SFP DDMI (Digital Diagnostics Monitoring Interface).

SNMP facilitates network communication and management, and, with SFP DDMI enabled on the switch, administrators can easily monitor and troubleshoot SFP parameters such as temperature, voltage, laser bias current and evaluate the SFP's working condition, ensuring a reliable network by identifying connectivity and performance issues and isolating the problem remotely on individual switches.

Comprehensive QoS Mechanisms to Assign Priority

Industrial applications need different levels of services delivered to them reliably without any transmission delays and interruptions. The NETWORK-SWITCH-LP01 has comprehensive QoS mechanisms which assign priority to applications and sends only specific dedicated traffic to them. In addition, bandwidth management function of the switch allocates high bandwidths to mission-critical communications and reduce the bandwidth to applications that are less critical.

With full control of limiting the bandwidth, the administrators can prevent unpredictable errors and utilize the bandwidth more effectively.

Proprietary Technology Delivers Redundant Ring and Fast Recovery

Even a few seconds of missed communications due to link failures can cause inconvenience, and recovery can become critical. NETWORK-SWITCH-LP01's proprietary Xpress Ring rapidly reacts to such link failures and recovers in less than 10ms, a much faster fail-over time to support nonstop transmissions. This is critical for networks handling heavy data traffic or when the NETWORK-SWITCH-LP01 is used in EN 54 Voice Alarm Systems.

In addition, ERPS, Dual Homing, LACP and RSTP provide a highly reliable network with redundancy connections whenever required and guarantee continuous network up-time.

Specification

Standards

| | |
|--------------|---------------------|
| IEEE 802.3 | 10BASE-T |
| IEEE 802.3u | 100BASE-TX |
| IEEE 802.3ab | 1000BASE-T |
| IEEE 802.3x | Flow Control |
| IEEE 802.3ad | Link Aggregation |
| IEEE 802.1ab | LLDP |
| IEEE 802.1D | STP |
| IEEE 802.1w | RSTP |
| IEEE 802.1s | MSTP |
| IEEE 802.1p | Class of Service |
| IEEE 802.1Q | VLAN Tagging |
| IEEE 802.1X | Port Authentication |

Interface

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|-------------|--|
| Ports | 8 x 10/100BASE-TX (RJ45) 2 x 100FX/GbE SFP Slots 1 x RJ45 Console port |
| DIP Switch | Primary/Redundant Power Voltage Drop Alarm setting |
| LED Panel | PWR, RPS, ALM, POST, 1000, 10/100 |
| Alarm Relay | One relay output, 1 A @ 24V DC |

Features

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|-----------------|---|
| Performance | Jumbo frame Size: 10KBytes MAC Table Entries: 16K Active VLAN: 4K Switch Fabric: 5.6Gbps L2 Forwarding Rate: 4.1Mpps |
| Management | CLI, Telnet/SSH, HTTP/HTTPS, SNMP v1/v2c/v3, SNMP Trap, MVLAN, Firmware Upgradable, Configuration Backup/Restore, Syslog, SNTp, PTP, LLDP, UDLD, DHCP Client/Relay/Option82, e-mail Alarm, Server Control, Mirroring, DDM, SFP Info, Auto-Provisioning, RMON Statistics, Modbus TCP |
| Reliability | STP/RSTP/MSTP, Xpress Ring, ERPS v1/v2, Dual Homing, LACP, Static Trunk, Code Redundancy |
| VLAN | IEEE 802.1Q, GARP/GVRP, Port-based VLAN, MAC-based VLAN, IP-based VLAN, Protocol-based VLAN, QinQ |
| Traffic Control | IGMP Snooping/Throttling, IGMP Proxy/Filter, MLD, MVR, QoS, Flow Control, Rate Limit, Storm Control, Traffic Monitor, Port Isolation, Loop Detection, Static Route |
| Security | ACL, SSH, HTTPS, SNMPv3, Port-based 802.1x, TACACS+, Port Security, MAC Search, Refusal MAC, Sticky MAC, Static MAC, DHCP Snooping, DHCP Sever Screening, ARP Inspection, BPDU Guard/Filter, Root Guard, Managed Host |

Dante

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|--------------------|--|
| Dante Compatible | Yes |
| Bandwidth Capacity | Please refer to the configuration guide for more details |

Power Supplies

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|-------------------|--|
| Input Voltage | Primary inputs: 12~60VDC Redundant inputs: 12~60VDC |
| Power Consumption | 12W |

Mechanical

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|-----------------------|---|
| Housing | Aluminium (IP30 Protection) |
| Mounting | DIN-Rail |
| Weight | 850 g (1.9 lb) |
| Dimension (W x H x D) | 50 x 161.5 x 119.9 mm (1.97 x 6.36 x 4.72 in) |

Environmental

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|-----------------------|------------------------------|
| Operating Temperature | -40°C~75°C (-40°F~167°F) |
| Storage Temperature | -40°C~85°C (-40°F~185°F) |
| Operating Humidity | 5 to 95% RH (non-condensing) |
| Storage Humidity | 5 to 95% RH (non-condensing) |

Approval and Standard Compliance

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|-----------|--|
| EMI | FCC Part 15 Subpart B Class A EN 55035 EN 61000-6-4 EN 50130-4 |
| EMS | EN 55032: Class A EN 61000-6-2 Tested using: EN 61000-4-2 (ESD) EN 61000-4-3 (RS) EN 61000-4-4 (Burst) EN 61000-4-5 (Surge) EN 61000-4-6 (CS) |
| Shock | IEC 60068-2-27 |
| Freefall | IEC 60068-2-32 |
| Vibration | IEC 60068-2-6 |
| Emergency | EN 54-16 |

Compatible Products

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|-----------|---|
| SFP-CU1G | CAT5 SFP (Copper) Small Form-factor Pluggable Optical Transceiver. Suitable for use on EN 54 Systems |
| SFP-SM1G | Single Mode Fibre OS1/OS2 - Small Form-factor Pluggable Optical Transceiver Gigabit = 1000BASE-LX and 1G Fibre Channel (1GFC) Suitable for use on EN 54 Systems |
| SFP-MM1GC | Multimode Fibre OM1-4 Small Form-factor Pluggable Optical Transceiver Gigabit = 1000BASE-LX and 1G Fibre Channel (1GFC) Suitable for use on EN 54 Systems |
| SFP-MM1GL | Multimode Fibre OM1-4 Small Form-factor Pluggable Optical Transceiver 1 x 1000 Mbit/s with LC Connector, 1300nm 1.5km with 50/125 µm, 500m with 62.5/125 µm Suitable for use on EN 54 Systems |

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