ITS EXPRESS

A **HN** HARDENED NETWORKS BRAND

HN-8012-24 V3 Overview

ITS Express/ Hardened Networks switches have been specifically engineered to handle the challenging demands of extreme environmental conditions and 8k multi-cast high bandwidth video applications.

A vast array of redundancy protocols combined with dual redundant power capabilities ensure maximum uptime for mission-critical applications.

Hardened Networks provides state-of-the-art designed switches, which all feature next- generation ASICs, robust backplanes, and dependable firmware. This gives you the "best-of-breed" in environmentally challenging switch products.

Our exciting new Flex-Technology revolutionizes speed upgrades in hardened switches!

Now you can purchase switches with any higher speed SFPs 10gig /2.5 gig and connect them to your existing slower speed 100 or 1000 optics without requiring like optics. Make your upgrade path fast, simple, and pain-free!

Ask your sales representative today!

▶ Exceeds NEMA TS-2 Specifications

▶ Hardened Base Layer 3

▶ (4) 10 Gb USFP+ (Ultra SFP+)

▶ (4) 2.5 Gb ESFP (Enhanced SFP)

▶ (16) 1000Mb Copper Ports

▶ S-Flow network usage monitoring

▶ Static Routing

▶ 176 GB Back- Plane

▶ Advanced V3 Diagnostics, Security, and Redundancy

- Designed for heavy video use in unicast/multi-cast in extreme environments
- Layer 3 management, 802.1x authentication
- 4 USFP+ 1Gb/10Gb (Ultra SFP+ ports)
- 8 ESFP 100Mb/1Gb/2.5Gb (Enhanced SFP ports)
- 8 copper ports 10Mb/100Mb/1000TX
- Remote monitoring of utilization and data flow with RMON
- Easy to configure web interface designed by ITS users
- VeriPHY (advanced real-time copper cable testing)
- Optical monitoring with mapping capabilities
- File transfer options include SFTP, FTP, SCP, TFTP, HTTP, and HTTPS
- Ring Protocols: STP, RSTP, MSTP, RPVST +, R-RVST+, ITS- Ring, Moxa/ Herschman/ Advatech Rings (PVST+ or RPVST+ Cisco compatibility)
- Fast ITS ring recovery time < 10ms over 250 units of connections
- ESFP/USFP+ mix and match all speeds single or multi-mode, dual strand (LX,EX,ZX, ZR) or single strand fiber (BX, BR) 100Mb/1000Mb/2.5Gb/10Gb
- Notifications for link up, link down, SFP power/temperature, topology change ring environment, SMTP, SNMP, and relay output
- Swapable primary and secondary software instances with multiple configuration storage
- Separate memory for forwarding plane, firmware, and startup configuration
- V3 Technology

Switch Model	HN-8012-24 V3
Physical Ports	
USFP+ 100Mb/1G/2.5GB/10GB Base-X SFP+	4
ESFP 100Mb/1G/2.5GB Base-X SFP	4
Copper TX 10Mb/100Mb/1000Mb Ports in RJ45 Auto MDI/MDIX	16
Technology	
Ethernet Standards	-IEEE 802.3-2018 for 10/100/1000 Base- T(X), 100/1000/2.5Base-(F)X, 10G Base-R -IEEE 802.3ab for 1000Base-T -IEEE 802.3z for 1000Base-X -IEEE 802.3x for Flow control -IEEE 802.3ad for LACP (Link Aggregation Control Protocol) -IEEE 802.1p for COS (Class of Service) -IEEE 802.1Q-2014 for VLAN Tagging, STP, RSTP, and MSTP -IEEE 802.1w R-PVST+ Cisco natively compatible for all VLANs -IEEE 802.1x for Authentication -IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)
MAC Table	32k
Processing	Adaptive cut-through /fallback to store-and-forward
Priority Queues	8
Protocols	CSMA/CD
Packet Buffer	32Mbits
Jumbo Frame	Up to 10k Bytes
Switch Properties	-Switching latency: 7 us -Switching bandwidth: 176Gbps -Throughput (packet per second): 179Mpps@ 64 Bytes packet -Maximum number of available VLANs: 4095 -VLAN ID range : VID 0 to 4095 -IGMP multicast groups: 64 for each VLAN -Port loop protection
Security Features	-Device binding security features -MAC based port security, device binding, alive check -Port based network access control (802.1x) -MAC-based authentication -MAC address limit -VLAN (802.1Q) to segregate and secure network traffic -AAA RADIUS/TACACS+ User/Password management selectable by management method -SNMPv3 encrypted authentication and access security HTTPS/SSH/SSL to encrypt network management traffic -Access management enabled by method with whitelisted network/ host -Profile based authorization (15 levels per criteria) profile assigned to user -IP source guard DHCP address snopping and protection -DOS/DDOS auto prevention

Software Features	-Redundant ring (ITS-Ring) with recovery time less than 30ms -Quality of Service (802.1p) for real-time traffic -VLAN (802.1Q) with VLAN tagging -IP-based bandwidth management -Application-based QoS management -Port configuration, status, statistics, monitoring, and security -DHCP server/client/relay -NTP recurring daylight saving time option - Layer 3 static routing/multiple interface IPs
Multicast Features	-IGMP v1, 2, 3 - RFCs 1112, 2236, 4604 -IPv6 multicast listener discovery protocol (MLDv2) -IGMP snooping globally or per VLAN -Configurable SSM range designation -Selectable auto mode or IGMP/MLD version per VLAN -IGMP snooping port group filtering profiles -IGMP/MLD Querier Election per VLAN
Traffic Prioritization	-TOS/Diffserv supported -CoS -Application based QoS -IP based bandwidth management -Port rate limiting: user define -Storm Control -Port Classification -Port Tag Remarking -Port DSCP -Port Policing -Queue Policing -Port Shaping -DSCP- based QOS -WRED (Weighted Random Early Detection) for congestion avoidance
Network Redundancy	-ITS-Ring -Express-Chain -Express-Ring (Express Ring now integrates with Moxa, Advantech, and Hirchmann ring protocols) -STP/RSTP/MSTP(IEEE 802.1 d/w/s)/ (PVST+ or RPVST+ Cisco compatibility)
RS-232 Serial Console Port	RS-232 in RJ45 connector with console cable. 115200bps, 8, N, 1
LED Indicator	
Power Indicator (PWR)	Green : Power LED x 2
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in Ring Master mode

Redundant-Ring Indicator (Ring)	-Green: Indicates that the system operating in redundant-ring mode -Green Blinking: Indicates that the ring is broken
Fault Indicator (Fault)	Amber: Indicate unexpected event occurred
10/100/1000Base-T(X) RJ45 Port Indicator	-Green for port link/act (upper) -Dual color LED for speed: Green for 1000Mbps -Link light amber for 100Mbps (upper), and amber for 10Mbps (lower)
1G/2.5GBase-X SFP Port Indicator	Green for port link and green flashing for activity
1G/10Gbase-X SFP Port Indicator	Green for port link and green flashing for activity

Power

Redundant power input	Dual DC inputs 12~48VDC on 6-pin terminal block
Power Consumption (Typ.)	29 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present

Fault Contact

Relay	Relay output to carry capacity of 1A at 24VDC
Reset Button	<5 sec: system reboot; >5 sec: factory default

Physical Characteristics

Enclosure	IP-30
Weight (lb/g)	3.74lb/1670g
Dimension (W x D x H)	121.5 (W) x 127.3 (D) x 153.4 (H)mm

Environmental

Storage Temperature	-40 to 90C (-40 to 194F)
Operating Temperature	-40 to 85C (-40 to 185F)
Operating Humidity	5% to 95% Non-condensing

Regulatory Approvals

EMC	-EN55032 -EN55024(CE EMC) -FCC Part 15B -EN61000-3-2 -EN61000-3-3
EMI	CISPR 32, EN55032, FCC Part 15B class A
EMS	-EN 61000-4-2 (ESD) -EN 61000-4-3 (RS) -EN 61000-4-4 (EFT) -EN 61000-4-5 (Surge) -EN 61000-4-6 (CS) -EN 61000-4-8 (PFMF) -EN 61000-4-11 (DIP)
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-31
Vibration	IEC 60068-2-6
Safety	EN60950-1, UL 60950, EN 60950-1

Warranty

Warranty	5 Years

Other Solutions

Hardened Networks has created variety of high quality products to fit your needs. If you did not find what you needed in the HN- 8012-24 V3, please try the HN- 8012-24+ V3, or browse our other solutions.

Ethernet Switches

Communications

HN-3416

- 4 Ultra Fiber Ports SFP+ 100Mb/1Gb/2.5Gb/10Gb
- 16 Copper Ports 10Mb/100Mb/1000TX
- 156 GBPS Back-Plane
- Hardened Base Layer 3

HN-8042 V3

- 2 Ultra Fiber Ports SFP+ 100Mb/1000Mb/2.5Gb/10Gb
- 2 Enhanced Fiber Ports SFP 100Mb/1000Mb/2.5Gb
- 8 Copper Ports 10Mb/100Mb/1000Mb
- 96 GBPS Back-Plane

HN- MC-1000

- 10Mb/100Mb/1000tMbps Ethernet BASE-T/TX to SFP (MM or SM)
- Optical port supports 100Mb or 1000Mb full duplex data

HN-3488

- 4 Ultra Fiber Ports SFP+ 100Mb/1Gb/2.5Gb/10Gb
- 8 Enhanced Fiber Ports SFP Ports 100Mb/1Gb/2.5Gb
- 8 Copper Ports 10Mb/100Mb/1000TX
- 156 GBPS Back-Plane
- Hardened Base Layer 3

HN-8042+ V3

- 2 Ultra Fiber Ports SFP+ 100Mb/1000Mb/2.5Gb/10Gb
- 2 Enhanced Fiber Ports SFP 100Mb/1000Mb/2.5Gb
- 8 Copper Ports 10Mb/100Mb/1000Mb
- Two sets of bypass fiber ports
- 96 GBPS Back-Plane

HN- MC-100

- 10Mb/100Mbps Ethernet BASE-T/TX to SFP (MM or SM)
- Flexible power 18-46VAC/12-60 VDC

HN- VC-100

- High Speed VDSL-2 Technology
- 10Mb/100Mbps Ethernet BASE-T/TX to a pair of copper cables
- Flexible power 18-46VAC/12-60 VDC

We here at Hardened Networks are proud to carry products that are certified by:

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