

ITS EXPRESS

A **HN** HARDENED NETWORKS BRAND

New
Flex-Technology



HN-3488 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+)
- ▶ (8) 2.5 Gb ESFP (Enhanced SFP)
- ▶ (8) Copper Ports
- ▶ S-Flow network usage monitoring
- ▶ Static Routing
- ▶ 156 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-3488
Physical Ports	
USFP+ 1G/10GB Base-XSFP+	4
ESFP 100Mb/1G/2.5GB Base-X SFP	8
Copper TX 10Mb/100Mb/1000Mb Ports in RJ45 Auto MDI/MDIX	8
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	64k
Processing	Adaptive cut-through /store-and-forward
Priority Queues	8
Protocols	CSMA/CD
Packet Buffer	64Mbits
Jumbo Frame	9k Bytes
Flash Memory	128 MB
DRAM Size	512MB
Switch Properties	-Switching latency: 7 us -Switching backplane: 156Gbps -Maximum Number of Available VLANs: 4095 -IGMP Multicast groups: 256 for each VLAN -Port rate limiting: user define -Static routing
Security Features	-Device binding security features -Enable/disable ports, MAC based port security -Port based network access control (802.1x) -MAC-based authentication -MAC address limit -VLAN (802.1Q) to segregate and secure network traffic -Radius centralized password management -SNMPv3 encrypted authentication and access security -Https / SSH enhance network security -Web and CLI authentication and authorization -Authorization (15 levels) -IP Source Guard -DOS/DDOS auto prevention

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
Software Features	-Layer 3 static routing / multiple interface IPs -VRRP RFC 3768 -Redundant ring (ITS Ring) with recovery time less than 30ms over 250 units -VLAN (802.1Q) with VLAN tagging -IP-based bandwidth management -Port configuration, status, statistics, monitoring, and security -DHCP Server/Client/Relay -Modbus TCP -SMTP Client -NTP server
Network Redundancy	-ITS-Ring -Express-Chain -Express-Ring (Express Ring now integrates with Moxa, Advantech, and Hirschmann 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



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- 3488 V3, please browse our other solutions.

Ethernet Switches

Communications



HN-8012-24 V3

- 4 Ultra Fiber Ports SFP+ 100Mb/1000Mb/2.5Gb/10Gb
- 4 Enhanced Fiber Ports SFP 100Mb/1000Mb/2.5Gb
- 16 Copper Ports 10Mb/100Mb/1000Mb
- 176 GBPS Back-Plane



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-8012-24+ V3

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



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-1000

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



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:

