

# HN

# HARDENED NETWORKS



ITS- 8004-16

# HN

## Where Innovation Meets Reliability



- Hardened Full Layer 3
- OSPF/PIM/VRRP/BGP
- 100/1000/2.5/10 Gb USFP+ (Ultra SFP+)
- 16 Copper Ports
- Exceeds NEMA TS-2 Specifications
- S-Flow network usage monitoring
- V3 Technology
- 192 GB Back-Plane
- Compact DIN- Rail or Shelf Mount

### 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!

- Designed for routing and forwarding of area wide unicast and multicast video in extreme environments
- Exceeds NEMA TS TS-2 Specifications
- 4 USFP+ ports 100Mb/1000Mb/2.5Gb/10Gb (Ultra SFP+ ports)
- 16 copper ports 10Mb/100Mb/1000Mb TX
- Dynamic unicast routing protocols BGP, OSPF, and RIP
- Multicast routing SSM, PIM dense and sparse modes with RP and BSR capabilities
- Create loopback interfaces for stable routing operations
- Easy to configure web interface designed by ITS users, with a familiar CLI
- Multiple managing options: HTTP, HTTPS, SSH, Telnet, and Serial
- ESFP/USFP+ mix and match all speeds single or multi-mode, dual strand (LX,EX,ZX, ZR) or single strand fiber (BX, BR)
- Default profile includes RSTP and IGMPv2 snooping on VLANs
- Create redundant rings using STP/RSTP/MSTP (PVST+ or RPVST+ Cisco compatibility)
- Up or download configurations, script files, CLI Banners, public keys, user profiles
- File transfer options include HTTP, TFTP, FTP, SCP, and SFTP
- Redundancy through dual firmware images and dual power inputs
- S-Flow network usage monitoring
- VeriPHY (advanced real-time copper cable testing)
- Optical monitoring with mapping capabilities



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.

Switch Model	ITS-8004-16
<b>Physical Ports</b>	
USFP+ 100Mb/1G/2.5GB/10GB Base-XSFP+	4
Copper TX 10Mb/100Mb/1000Mb Ports in RJ45 Auto MDI/MDIX	16
<b>Technology</b>	
Ethernet Standards	<ul style="list-style-type: none"> <li>-IEEE 802.3 for 10Base-T</li> <li>-IEEE 802.3u for 100Base-TX and 100Base-FX</li> <li>-IEEE 802.3ab for 1000Base-T</li> <li>-IEEE 802.3z for 1000Base-X</li> <li>-IEEE 802.3x for Flow control</li> <li>-IEEE 802.3ad for LACP (Link Aggregation Control Protocol)</li> <li>-IEEE 802.1p for COS (Class of Service)</li> <li>-IEEE 802.1Q for VLAN Tagging</li> <li>-IEEE 802.1D for STP (Spanning Tree Protocol)</li> <li>-IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol)</li> <li>-IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol)</li> <li>-IEEE 802.1x for Authentication</li> <li>-IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)</li> </ul>
MAC Table	16k
Processing	Adaptive cut-through / store-and-forward
Priority Queues	8
TSN Protocols	IEEE 802.1AS, QAV, QAT
Packet Buffer	16 Mb
Flash Memory	1024 Mb
DRAM Size	8 Gb
Switch Properties	<ul style="list-style-type: none"> <li>-Switching bandwidth: 192Gbps</li> <li>-Maximum number of available VLANs: 4093</li> <li>-VLAN (802.1Q) with VLAN tagging</li> <li>-VLAN ID range : VID 1 to 4093</li> <li>-IGMP multicast groups: 128 for each VLAN</li> <li>-Port rate limiting: user define</li> <li>-LLDP standard, enable ISDP for Cisco CDP compatibility</li> <li>-IP Subnet based VLAN, MAC based, and protocol based VLANs</li> </ul>
Software Features	<ul style="list-style-type: none"> <li>-Port loop protection feature</li> <li>-TOS/Diffserv supported</li> <li>-Unidirectional link detection UDLD feature</li> <li>-Quality of Service (802.1p) for real-time traffic</li> <li>-IGMP v1, v2, v3, v2 snooping</li> <li>-Multicast VLAN registration (MVR)</li> </ul>

Software Features	<ul style="list-style-type: none"> <li>-RSPAN VLAN configuration</li> <li>-Application-based QoS management</li> <li>-Port configuration, status, statistics, monitoring, and security port mirroring</li> <li>-DHCP server/client/relay</li> <li>-SNTP client with source interface designation</li> </ul>
Security Features	<ul style="list-style-type: none"> <li>-Advanced architecture including hardware based security measures</li> <li>-Port based network access control (802.1x) MAC-based authentication(802.1x), MAB bypass mode</li> <li>-VLAN (802.1Q ) to separate and secure network traffic</li> <li>-Radius/TACACS+ centralized password management</li> <li>-SNMPv3 encrypted authentication and access security</li> <li>-Management access control and administration list for control of remote management</li> <li>-Port auto recovery configuration hot page</li> <li>-IP Source Guard, DHCP Snooping, Dynamic ARP Inspection</li> <li>-HTTPS / SSH encrypt management traffic for network security</li> <li>-DOS/DDOS auto prevention built throughout multiple levels</li> <li>-Selectable Management Access Control by protocol, disable Telnet, etc. - enable access by remote IP</li> </ul>
Routing Protocols	<ul style="list-style-type: none"> <li>-Unicast Routing <ul style="list-style-type: none"> <li>•Static routing, Dynamic routing through BGP, OSPF</li> <li>•OSPF settable to RFC 1583 or RFC 2328 for routing domain compatibility</li> </ul> </li> <li>-Multicast Routing <ul style="list-style-type: none"> <li>•PIM-DM, SSM, PIM-SM as multicast router, RP, BSR or all at once</li> </ul> </li> <li>-Routing Redundancy <ul style="list-style-type: none"> <li>•VRRP RFC 2787</li> </ul> </li> </ul>
Network Redundancy	STP/RSTP/MSTP (PVST+ or RPVST+ Cisco compatibility)
RS-232 Serial Console Port	RS-232 in DB9 connector with console cable. 115200bps, 8, N, 1
<b>LED Indicator</b>	
Power Indicator (PWR)	Green : Power LED x 3
Ring Master Indicator (R.M.)	Green : Indicates that the system is operating in ITS-Ring Master mode
ITS-Ring Indicator (Ring)	<ul style="list-style-type: none"> <li>-Green : Indicates that the system operating in ITS-Ring mode</li> <li>-Green Blinking: Indicates that the Ring is broken.</li> </ul>
Fault Indicator (Fault)	Amber : Indicate unexpected event occurred

10/100/1000Base-T(X) RJ45 Port Indicator	-Green for port link/act -Dual color LED for speed indicator : Green for 1000Mbps, -Link light amber for 100Mbps (upper), and amber for 10Mbps (lower)
1G/10Gbase-X SFP Port Indicator	Green for port link and green flashing for activity
<b>Fault Contact</b>	
Relay	Relay output to carry capacity of 1A at 24VDC
Reset Button	<5 sec: system reboot; >5 sec: factory default
<b>Power</b>	
Redundant power input	Dual DC inputs 12-48VDC on 6-pin terminal block
Power Consumption (Typ.)	23 Watts
Overload Current Protection	Present
Reverse Polarity Protection	Present
<b>Physical Characteristics</b>	
Enclosure	IP-30, Aluminum
Weight (lb/g)	3.37lb/1530g
Dimension (W x D x H)	116.4 (W) x 170 (D) x 180 (H) mm (4.58 x 6.69 x 7.08 inches)
<b>Environmental</b>	
Storage Temperature	-40 to 90C (-40 to 194F)
Operating Temperature	-40 to 85C (-40 to 185F)
Operating Humidity	5% to 95% Non-condensing
<b>Regulatory Approvals</b>	
EMC	CE EMC (EN 55024, EN 55032), EN 50121-4 (compliant), FCC Part 15 B
EMI	EN 55032, CISPR32, EN 61000-3-2, EN 61000-3-3, FCC Part 15 B class A
EMS	-IEC/EN 61000-4-2 (ESD: Contact 8KV, Air 10KV) -IEC/EN 61000-4-3 (RS: 3V) -IEC/EN 61000-4-4 (EFT Power 2KV, Signal 2KV) -IEC/EN 61000-4-5 (Surge: Power 4KV, Signal 4KV) -IEC/EN 61000-4-6 (CS: 3V) -IEC/EN 61000-4-8(PFMF)
Shock	IEC 60068-2-27
Free Fall	IEC 60068-2-31
Vibration	IEC 60068-2-6
Safety	EN60950-1
MTBF	776,493 hrs
<b>Warranty</b>	<b>5 Years</b>

# 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 ITS- 8004-16 V3, please browse our other solutions.

## Ethernet Switches

## Communications



**ITS-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



**ITS-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



**ITS- MC-1000**

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



**ITS-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



**ITS-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



**ITS- MC-100**

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



**ITS- 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

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