

# I-Series

## Policy-based Industrial Ethernet Switch

### BENEFITS

#### BUSINESS ALIGNMENT

- Supports a variety of network-attached devices such as Programmable Logic Controllers (PLCs), shop floor workstations, and security cameras
- DIN-mountable and rack-mountable for flexible installation

#### OPERATIONAL EFFICIENCY

- Operational tolerance for extreme temperatures (-40° C to 60° C) enables placement in uncontrolled temperature environments
- High-availability design and simple field maintenance minimizes technical support expense
- External alarm support enables problem notification without physical monitoring

#### SECURITY

- Integral security without performance degradation
- Network security maintained concurrently with user/device mobility
- Network resources securely allocated according to user/device operational roles

#### SUPPORT AND SERVICE

- Industry-leading customer satisfaction and first call resolution rates
- Personalized response services
- 5-year warranty



- Industrial Ethernet switch with 2 modular slots for configuration flexibility
- Industrial-grade components support explosive gas and other physically demanding environments
- Strong authentication capabilities enable placement in unsecured locations
- Redundant, 24-volt external power supplies

### Product Overview

The Extreme Networks I-Series is a 2-slot modular, industrially-hardened Ethernet switch with an IP50 dust-resistant design and Class 1 Division 2 support suitable for explosive gas and other physically demanding environments, such as manufacturing plants, oil refineries, and utilities. Along with its operational tolerance for extreme temperatures ranging from -40° C to 60° C, the I-Series combines multi-layer switching capabilities with wire-rate performance to support the demanding requirements of industrial applications. The I-Series provides 2 modular slots which can support up to 24 10/100Base-T Ethernet ports as well as 2 1 Gbps Small Form Factor Pluggable (SFP) Ethernet uplink ports. In order to provide a reliable, high-availability network, all I-Series models support redundant, 24-volt external power supplies as well as Link Aggregation Groups (LAGs) for scalable, redundant uplinks.

The DIN-mountable I-Series utilizes industrial-grade components and provides a set of event-driven relay connectors to support external alarms.

In conjunction with its non-blocking architecture, the I-Series provides strong support for a variety of network-attached devices such as Programmable Logic Controllers (PLCs), shop floor workstations, and security cameras. The I-Series' highly customizable Layer 2/3/4 packet classification capabilities together with its intelligent queuing mechanisms ensure that mission-critical devices and applications receive prioritized access to network resources.

Making use of Extreme Networks' policy capabilities, a network administrator can define distinct roles or profiles that represent industry-specific operational groups or devices. Each defined role is granted individualized access to specific

network services and applications (e.g., supervisor, operator, PLC, security camera) and these access privileges remain associated with users/devices for both wired and wireless network access. Users and devices are authenticated via IEEE 802.1X, MAC address, or web-based authentication, and then assigned a pre-defined operational role ensuring that each user has access to appropriate information, thus aligning network resource utilization with business goals and priorities.

In order to sustain a secure, feature-rich and cost-effective network well into the future, the I-Series comes with a 5-year warranty.

Industrial-Grade Reliability: Maintenance-free reliability can provide years of uninterrupted service in a wide range of severe temperature and hazardous gas conditions.

## Features and Benefits

Advanced Security and Traffic Control Features in a Hardened Switch: No switch vendor matches Extreme Networks for providing a secure infrastructure. This same functionality is now available in a fully-industrialized switch.

Fully Managed Solution: The I-Series is securely SNMP-managed to allow control of the device by authorized users from anywhere on the network, while all events and traffic statistics are reported and tracked by the Extreme Network Management Suite (NMS).

Easy Installation: Optional memory configuration card allows non-technical personnel to field-replace I-Series switches with a simple removal and reinsertion of a memory configuration card. The card carries a copy of the switch configuration and allows settings to be quickly transferred to another I-Series switch.

## Standards and Protocols

### SWITCHING SERVICES

IEEE 802.1AB - LLDP  
ANSI/TIA-1057 - LLDP-MED  
IEEE 802.1D - MAC Bridges  
IEEE 802.1s - Multiple Spanning Trees  
IEEE 802.1t - 802.1D Maintenance  
IEEE 802.1w - Rapid Spanning Tree Reconvergence  
IEEE 802.3 - Ethernet  
IEEE 802.3ab - 1000 Base-T  
IEEE 802.3ad - Link Aggregation  
IEEE 802.3i - 10Base-T  
IEEE 802.3u - 100Base-T, 100Base-FX  
Full/half duplex auto-sense support on all ports  
IGMP Snooping v1/v2/v3  
Jumbo Frame support (9,216 bytes)  
Loop Protection  
One-to-One and Many-to-One Port Mirroring  
Port Description  
Protected Ports  
Per-port Broadcast/Multicast/Unknown Unicast Suppression

Spanning Tree Backup Root  
STP Pass Thru

### VLAN SUPPORT

Generic Attribute Registration Protocol (GARP)  
Generic VLAN Registration Protocol (GVRP)  
IEEE 802.1p - Traffic classification  
IEEE 802.1Q - VLAN Tagging  
Protocol-based VLANs with Extreme Networks Policy  
Private port  
Tagged-based VLAN  
VLAN Marking of Mirror Traffic

### SECURITY

Dynamic ARP Inspection  
DHCP Snooping  
Dynamic and Static MAC Locking  
EAP Pass Thru  
IEEE 802.1X Port Authentication  
MAC-based Port Authentication  
RADIUS Accounting for MAC Authentication  
RADIUS Client  
RFC 3580 - IEEE 802.1X RADIUS Usage Guidelines  
Password Protection (encryption)  
Secure Networks Policy  
Secure Shell (SSHv2)  
Secure Socket Layer (SSL)  
Web-based Port Authentication

### RFC AND MIB SUPPORT

Enterasys Networks Entity MIB  
Enterasys Networks Policy MIB  
Enterasys Networks VLAN Authorization MIB  
Enterasys Networks Spanning Tree Diagnostic MIB  
ANSI/TIA-1057 - LLDP-MED MIB  
IEEE 802.1AB - LLDP MIB  
IEEE 802.1X MIB - Port Access  
IEEE 802.3ad MIB - LAG MIB  
RFC 826 - ARP and ARP Redirect  
RFC 951, RFC 1542 - DHCP/BOOTP Relay  
RFC 1213 - MIB/MIB II  
RFC 1493 - BRIDGE-MIB  
RFC 1643 - Ethernet-like MIB  
RFC 2131, RFC 3046 - DHCP Client/Relay  
RFC 2233 - IF-MIB  
RFC 2271 - SNMP Framework MIB  
RFC 2465 - IPv6 MIB  
RFC 2466 - ICMPv6 MIB  
RFC 2618 - RADIUS Authentication Client MIB  
RFC 2620 - RADIUS Accounting Client MIB  
RFC 2668 - Managed Object Definitions for 802.3 MAUs  
RFC 2674 - P-BRIDGE-MIB  
RFC 2674 - QBRIDGE-MIB VLAN Bridge MIB

RFC 2737 – Entity MIB (physical branch only)  
 RFC 2819 – RMON-MIB  
 RFC 2863 – ifMib  
 RFC 2933 – IGMP MIB  
 RFC 3289 – DiffServ MIB  
 RFC 3413 – SNMPv3 Applications MIB  
 RFC 3414 – SNMPv3 User-based Security Module (USM) MIB  
 RFC 3415 – View-based Access Control Model for SNMP  
 RFC 3584 – SNMP Community MIB

## QUALITY OF SERVICE

8 Priority Queues per Port  
 802.3x Flow Control  
 IP DSCP – Differentiated Services Code Point  
 IP Precedence  
 IP Protocol  
 Queuing Control – Strict and Weighted  
 Round Robin  
 Source/Destination IP Address  
 Source/Destination MAC Address

## MANAGEMENT

Alias Port Naming  
 Command Line Interface  
 Configuration Upload/Download  
 Editable Configuration File  
 TFTP client  
 Multi-configuration File Support  
 NMS Automated Security Manager  
 NMS Console  
 NMS Inventory Manager  
 NMS Policy Manager  
 Node/Alias Table  
 RFC 768 – UDP  
 RFC 783 – TFTP  
 RFC 791 – IP  
 RFC 792 – ICMP  
 RFC 793 – TCP  
 RFC 826 – ARP  
 RFC 854 – Telnet  
 RFC 951 – BootP  
 RFC 1157 – SNMP  
 RFC 1901 – Community-based SNMPv2  
 RFC 2271 – SNMP Framework MIB  
 RFC 3164 – The BSD Syslog Protocol  
 RFC 3413 – SNMPv3 Applications  
 RFC 3414 – User-based Security Model for SNMPv3  
 RFC 3415 – View-based Access Control Model for SNMP  
 RFC 3826 – Advanced Encryption System (AES) for SNMP  
 RMON (Stats, History, Alarms, Events)  
 Secure Copy  
 Secure FTP

Simple Network Management Protocol (SNMP) v1/v2c/v3  
 Simple Network Time Protocol (SNTP)  
 Syslog  
 TACACS+ for Management Authentication, Authorization and Auditing  
 Text-based Configuration Upload/Download  
 Web-based Management  
 Webview via SSL Interface

## Specifications

### PHYSICAL PORTS

2 slots for 10/100 Mbps I/O modules  
 2 slots for Gigabit Ethernet SFP uplinks

### I/O MODULES

12-port 10/100 Base-T  
 8-port 100 Base-FX

### LED

1 red/green LED showing system status  
 2 green LEDs showing each power input status  
 2 green LEDs showing link activity of SFP ports

### CAPACITY & PERFORMANCE

Address Table Size – 8000 MAC Addresses  
 1024 VLANs Supported  
 8 Hardware Queues/Port  
 VLAN Spanning Tree (802.1S)  
 - 4 Instances Supported  
 802.3AD Link Aggregation  
 - 8 ports per trunk group, 6 groups supported  
 Main memory: 256 MB  
 Flash memory: 32 MB

### PHYSICAL SPECIFICATIONS

#### Dimensions (H x W x D):

8.89 cm x 33.86 cm x 18.41 cm  
 (3.5" x 13.33" x 7.25")

#### I/O Module Dimensions:

4.57 cm x 10.7 cm x 11.4 cm (1.8" x 4.21" x 4.5")

#### Weight:

I3H252-12TX	4.35 kg (9.57 lbs)
I3H-12TX	0.24 kg (0.53 lbs)
I3H-8FX-MM	0.32 kg (0.70 lbs)
I3H252-24TX	4.59 kg (10.12lbs)
I3H252-16FXM	4.75 kg
(10.47lbs)I3H252-8FXM-12TX	4.67 kg (10.30 lbs)

#### MTBF

I3H252-12TX	182,146 hours
I3H-12TX	657,722 hours
I3H-8FX-MM	477,350 hours

I3H-8TX-2FX 600,601 hours

## ENVIRONMENTAL SPECIFICATIONS

### Operating Temperature:

-40° C to 60° C (-40° F to 140° F)

### Storage Temperature:

-40° C to 70° C (-40° F to 158° F)

### Operating Humidity:

95% Relative Humidity Non-Condensing

### Power Consumption:

The I-Series accepts 24 volt DC power only. The customer must provide DC power to the switch or purchase the optional external DC power unit (I3H-PWR).

### Operation Shock:

50 G Trapezoidal Shock

## AGENCY AND STANDARDS SPECIFICATIONS

### Standard Safety:

UL 60950-1, CSA 22.2 60950-1-03, EN 60950-1, and IEC 60950-1

### Standard EMC:

FCC Part 15 Class A, ICES-003 Class A, BSMI, VCCI V-3, AS/NZS CISPR-22 Class A, EN 55022 Class A, EN 55024 Class A

### Industrial EMC:

EN 61000-6-4, EN 61000-6-2, EN 55011

### Hazardous Locations:

ANSI/ISA 12.12.01; CAN/CSA C22.2 No. 213-M1987; EN 60079-0:2006; EN 60079-15:2005; for use in Class 1, Division 2, Groups A, B, C, and D

## SERVICE AND SUPPORT

Extreme Networks provides comprehensive service offerings that range from Professional Services to design and implement customer networks, customized technical training, to service and support tailored to individual customer needs. Please contact your Extreme Networks account executive for more information about Extreme Networks Service and Support.

## WARRANTY

As a customer-centric company, Extreme Networks is committed to providing quality products and solutions. In the event that one of our products fails due to a defect, we have developed a comprehensive warranty that protects you and provides a simple way to get your products repaired or media replaced as soon as possible.

The Extreme Networks I-Series comes with a 5 year warranty against manufacturing defects.

For full warranty terms and conditions please go to:

[www.extremenetworks.com/support/warranty.aspx](http://www.extremenetworks.com/support/warranty.aspx)

## Ordering Information

PART NUMBER	DESCRIPTION
I3H252-12TX	Factory Configured I-Series base unit with one I3H-12TX
I3H252-24TX	Factory Configured I-Series base unit with two I3H-12TX
I3H252-16FXM	Factory Configured I-Series base unit with two I3H-8FX-MM
I3H252-8FXM-12TX	Factory Configured I-Series base unit with one I3H-8FX-MM and one I3H-12TX
I3H-12TX	12-port 10/100 TX I/O card
I3H-8FX-MM	8-port 100 FX I/O card
I3H-DIN-KIT	DIN Rail Kit for I-Series
I3H-PWR	24VDC Power Unit for I-Series
I3H-RACK-MNT	19" Rack Mount Kit for I-Series
I-MGBIC-GLX	I-Series Only, -40°C to +60°C, 1 Gb, 1000BASE-LX, MM - 550 m, SM - 10 km, 1310 nm Long Wave Length, LC SFP.
I-MGBIC-LC03	I-Series Only, -40°C to +60°C, 1 Gb, 1000BASE-LX, MM, 1310 nm, 2 km with 62.5 MMF, 1 km with 50 MMF, LC SFP.
I-MGBIC-GSX	I-Series Only, -40°C to +60°C, 1 Gb, 1000BASE-SX, IEEE 802.3 MM, 850 nm Short Wave Length, 220/550 m, LC SFP.

  

POWER CORDS
In support of its expanding Green initiatives as of July 1st 2014, Extreme Networks will no longer ship power cords with products. Power cords can be ordered separately but need to be specified at the time order. Please refer to <a href="http://www.extremenetworks.com/product/powercords/">www.extremenetworks.com/product/powercords/</a> for details on power cord availability for this product.



<http://www.extremenetworks.com/contact> / Phone +1-408-579-2800

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