

# ExtremeSwitching™ Industrial Ethernet Switches

## HIGHLIGHTS

### MODELS

- 4 10/100 POE+ ports, 2 10/100 ports, and 2 100FX/1000Base-X SFP ports
- 4 10/100/1000 POE+ ports, 2 10/100/1000 ports, and 2 100FX/1000Base-X SFP ports
- 8 10/100 POE+ ports, and 4 100FX/1000Base-X SFP ports
- 8 10/100/1000 POE+ ports, and 4 100FX/1000Base-X SFP ports

### PERFORMANCE

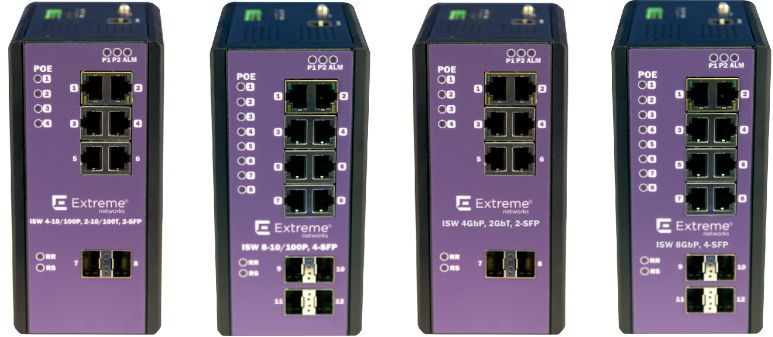
- Full Wire Speed Layer 2 Switching
- All PoE ports IEEE 802.3af and 802.3at compliant and support up to 30W concurrently
- Dual DC power input and reverse power protection
- -40°C to +75°C operating temperature

### FORM FACTOR

- DIN Rail or Wall Mountable
- Rugged IP30 Enclosure

### FEATURES

- Highly Resilient LACP, Spanning tree STP, RSTP & MSTP, fast Ring fail-over and G.8032 ERPS protection options
- Port-based /tag-based VLAN, IEEE 802.1ad/QinQ VLAN, Add/remove VLAN tags
- IGMP v1/v2/v3, multicast proxy and snooping
- Multicast/Broadcast/Flooding Storm Control
- IEEE802.1x access control
- Per VLAN mirroring
- CLI/Web/SNMP management interfaces
- PoE PSE power management and PD power consumption



## Industrial Networking

Designed for industrial use, Extreme Industrial Switches provide continuous uptime, manageability and operational efficiency. With full PoE+ power per PoE port, each switch offers the performance needed for today's power-hungry surveillance devices and WLAN access points.

Extreme Industrial Switches are an excellent choice for industrial environments, including intelligent transportation systems, utilities, and smart cities. Full redundant ring technology creates fault-tolerant networks with high availability with industry standard technologies.

PART NO.	SWITCH MODELS	PORT COUNTS					AGGREGATE BANDWIDTH	FORWARDING RATE
		10/100	10/100 POE+	10/100 /1000	10/100/1000 POE+	SFP		
16801	ISW 4-10/100P, 2-10/100T, 2-SFP	2	4	-	-	2	5.2 Gbps	3.87 Mpps
16802	ISW 8-10/100P, 4-SFP	-	8	-	-	4	9.6 Gbps	7.14 Mpps
16803	ISW 4GBP, 2GBT, 2-SFP	-	-	2	4	2	16 Gbps	11.90 Mpps
16804	ISW 8GBP, 4-SFP	-	-	-	8	4	24 Gbps	17.85 Mpps

## Specifications

### OPERATING MODE

- Store and forward, L2 wire-speed/non-blocking switching engine
- MAC Addresses- 8K
- Jumbo Frames- 9K Bytes

### COPPER RJ45 PORTS

- 10/100 Mbps or 10/100/1000 Mbps depending on model
- IEEE 802.3af and IEEE 802.3at on POE enabled ports
- MDI/MDIX Auto-Crossover
- Auto-negotiation, full and half duplex
- Ethernet Isolation- 1500VRMS 1 minute

### PLUGGABLE SFP PORTS

- 100FX SFP and 100/1000BaseX SFP Transceiver

### NETWORK REDUNDANCY

- Fast Failover Ring Protection with single and multiple rings, ring coupling, dual homing and chain modes
- IEEE 802.1D STP, IEEE 802.1w RSTP, IEEE 802.1s MSTP
- Static trunk or Dynamic via LACP (Link Aggregation Control Protocol)

### BRIDGING, VLANs, MULTICAST

- Flow Control IEEE 802.3x (Full Duplex) and Back-Pressure (Half Duplex)
- VLAN Capacity- 1024
- Port-based VLANs; MAC-based VLANs; IP Subnet-based VLANs
- Protocol-based VLANs
- IEEE 802.1Q tag-based VLANs
- IEEE 802.1ad Double Tagging (Q in Q)
- IGMP v1, v2, v3 with up to 1000 multicast groups
- IGMP snooping and querying
- Immediate leave and leave proxy
- Throttling and filtering
- IEEE 802.1ab Link layer Discovery Protocol (LLDP)
- ITU G.8032 Ethernet Ring Protection Switching (ERPS)

### TRAFFIC MANAGEMENT AND QOS

- Priority — IEEE 802.1p QoS
- Queues per port- 8
- Scheduling - Strict, Weighted Round Robin
- Port-based shaping

### SECURITY

- Port Security — IP and MAC-based access control, IEEE 802.1X authentication Network Access Control, RADIUS and TACACS+ AAA (Authentication, Accounting and Authorization)
- Storm Control — Multicast/Broadcast/Flooding Storm Control

### MANAGEMENT

- CLI
- GUI
- SNMP v1, v2c, v3
- Telnet
- Management Security- HTTPs, SSH, RADIUS client for management
- FTP- Configuration Import/Export, Firmware Upgrade
- SYSLOG
- Per VLAN mirroring
- Ethernet Copper Diagnostics
- Digital Diagnostics for SFP ports
- DHCP- Client, Server, Relay, Snooping, Option 82
- NTP
- PoE scheduling, power control, PoE PD power consumption

## STANDARD MIBS

- RFC 1213 MIB II
- RFC 1215 A Convention for Defining Traps for Use with the SNMP
- RFC 2613 SMON MIB: VLAN statistics and port copy
- RFC 2674 VLAN MIB
- RFC 2819 RMON (Group 1, 2, 3, and 9)
- RFC 2863 Interface Group MIB using SMI v2
- RFC 3411 SNMP Management Frameworks
- RFC 3414 User-based Security Model for SNMPv3
- RFC 3415 View-based Access Control Model for SNMP
- RFC 3621 LLDP-MED Power
- RFC 3635 Ethernet-like MIB
- RFC 3636 802.3 Medium Attachment Units (MAUs) MIB
- RFC 4133 Entity MIB v3
- RFC 4188 Bridge MIB
- RFC 4292 IP Forwarding Table MIB
- RFC 4293 Management Information Base for the Internet Protocol (IP)
- RFC 4668 RADIUS Authentication Client MIB
- RFC 4670 RADIUS Accounting MIB
- RFC 5519 Multicast Group Membership Discovery MIB
- IEEE 802.1 MSTP MIB
- IEEE 802.1AB LLDP MIB (LLDP MIB included in clause of standard)
- IEEE 802.1X MIB (PAE MIB included in clause of standard)
- IEEE 802.1Q Bridge MIB 2008
- IEEE 802.3ad MIB (LACP MIB included in clause of standard)

## PRIVATE MIBS

- Access Management MIB
- ACL MIB
- AGGR MIB
- ARP Inspection MIB
- Authentication MIB
- Daylight Saving MIB
- DDMI MIB
- DHCP6 Client MIB
- DHCP Relay MIB
- DHCP Server MIB
- DHCP Snooping MIB
- DNS MIB
- EEE MIB
- ERPS MIB
- Firmware MIB

## PRIVATE MIBS (CONT.)

- GVRP MIB
- HTTPS MIB
- ICFG MIB
- ICMP MVR MIB
- ICMP Profile MIB
- ICMP Snooping
- IP MIB
- JSON RPC Notification MIB
- LACP MIB
- LLDP MIB
- Loop Protection MIB
- MAC MIB
- MEP MIB
- MSTP MIB
- NAS MIB
- NTP MIB
- POE MIB
- Port MIB
- Privilege MIB
- PSEC MIB
- QOS MIB
- SMI MIB
- SNMP MIB
- SSH MIB
- SYSLOG MIB
- System Utilities MIB
- Textual Convention MIB
- Users MIB
- VLAN MIB
- Voice VLAN MIB

## POWER

- Redundant Input Terminals
- Input voltage range-
  - Non-POE mode 12-58VDC
  - 802.3af POE mode 46-58VDC
  - 802.3at POE mode 50-58VDC
- Power Consumption- 15 Watts without POE PD loading
- POE Budget 16801 and 16803 – 120 watts
- POE Budget 16802 and 16804 – 240 watts
- Reverse Power Protection
- Transient Protection- >15K Watts peak

## OPTIONAL INDUSTRIAL RATED AC-DC POWER SUPPLIES

- Input- 88-264VAC and 124-370VDC
- Frequency Range 47-63Hz
- 240 watt and 480 watt output models available
- Operating Temperature -20°C to 70°C
- DIN Rail

## LEDS

- Power Input Status
- Per Port Ethernet Link, Speed and POE Status
- Ring Status

## MEMORY

- 128MB DRAM
- 16MB FLASH
- 4MB Packet buffer

## Environmental and Compliance

### OPERATING TEMPERATURE RANGE

- -40°C to +75°C (cold startup at -40°C)

### STORAGE TEMPERATURE RANGE

- -40 to +85 °C

### HUMIDITY (NON-CONDENSING)

- 5 to 95% RH

### VIBRATION, SHOCK AND FREEFALL CERTIFICATIONS

- IEC 60068-2-6 (Vibration)
- IEC 60068-2-27 (Shock)
- IEC 60068-2-32 (Freefall)

### REGULATORY AND SAFETY

#### North American ITE

- UL 60950-1 2nd Ed., Listed Device (U.S.) (In Process)
- CSA 22.2 #60950-1-03 2nd Ed. (Canada) (In Process)

#### International ITE

- CB Report and Certificate per IEC 60950-1 2nd Edition + National Differences

### EMI/EMC Standards:

#### North American EMC for ITE

- FCC CFR 47 part 15 Class A (USA)
- ICES-003 Class A (Canada)

#### European EMC Standards

- EN 61000-6-2:2005
- EN 61000-6-4:2007 +A1:2011
- 2004/108/EC EMC Directive

#### International EMC Certifications

- CISPR 22: 2006 Ed 5.2, Class A (International Emissions)
- CISPR 24:A2:2003 Class A (International Immunity)
- IEC 61000-4-2:2008/EN 61000-4-2:2009 Electrostatic Discharge, 6kV Contact, 8kV Air, Criteria B
- IEC 61000-4-3:2008/EN 61000-4-3:2006+A1:2008 Radiated Immunity 20V/m, Criteria A
- IEC 61000-4-4:2004 am1 ed.2./EN 61000-4-4:2004/A1:2010 Transient Burst, 4 kV, Criteria A
- IEC 61000-4-5:2005 /EN 61000-4-5:2006 Surge, 1kV DC Input, 2kV Ethernet Ports Criteria B
- IEC 61000-4-6:2008/EN 61000-4-6:2009 Conducted Immunity, 0.15-80 MHz, 10V RMS, Criteria A
- IEC/EN 61000-4-8:2009 Power Frequency Magnetic Field Immunity, 300 A/m, Criteria A
- IEC/EN 61000-4-9:1993 +A1:2001 Pulsed Magnetic Field Immunity, 300 A/m, Criteria A

### ROHS AND WEEE

- RoHS (Pb free) and WEEE compliant

### MTBF

- > 25 years

## Mechanical

### INGRESS PROTECTION

- IP30

### DIN

- Rail mounting or wall mounting

### DIMENSIONS

- 77mm(W) x 154mm(H) x 128mm(D)

### WEIGHT

- 1410g

## Ordering Information

PART NUMBER	NAME	DESCRIPTION
16801	ISW 4-10/100P,2-10/100T,2-SFP	4-port POE+ 10/100 2-Port 10/100 w/ 2-port SFP Operating Temperature -40°C - +75°C
16802	ISW 8-10/100P,4-SFP	8-port POE+ 10/100 w/ 4-port SFP Operating Temperature -40°C - +75°C
16803	ISW 4GBP,2GBT,2-SFP	4-port POE+ Gigabit, 2-port Gigabit w/ 2-port SFP Operating Temperature -40C - +75C
16804	ISW 8GBP,4-SFP	8-port POE+ Gigabit w/ 4-port SFP Operating Temperature -40C - +75C
16807	IS AC-DC PS 240W	IS AC-DC Power Supply 240W Output DIN Rail -25 - 70C
16920	IS AC-DC PS 480W	IS AC-DC Power Supply 480W Output DIN Rail -25 - 70C
10051H	1000BASE-SX SFP, Hi	1000BASE-SX SFP, MMF 220 & 550 meters, LC connector, Industrial Temp
10052H	1000BASE-LX SFP, Hi	1000BASE-LX SFP, MMF 220 & 550 meters, SMF 10km, LC connector, Industrial Temp
10053H	1000BASE-ZX SFP, Hi	1000BASE-ZX SFP, SMF 70km, LC connector, Industrial Temp
10056H	1000BASE-BX-D SFP, Hi	1000BASE-BX-D SFP, 1490-nm TX/1310-nm RX wavelength, Industrial Temp
10057H	1000BASE-BX-U SFP, Hi	1000BASE-BX-U SFP, 1310-nm TX/1490-nm RX wavelength, Industrial Temp
10066	100BASE-LX10 SFP	100BASE-LX10 SFP module, SMF 10km link, LC-connector for Fast Ethernet SFP Port
10067	100BASE-FX SFP	100BASE-FX SFP module, MMF 2km link, LC-connector for Fast Ethernet SFP Port

*\*These products are currently subject to regional availability, please contact your Extreme Networks representative for additional details.*



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