

ET-8xS-MIL Industrial Ethernet Switch

N-Tron Networking Series



▶▶▶ Military-Rated Industrial Ethernet Switch



PRODUCT HIGHLIGHTS

- 8 fast Ethernet ports for 10/100 Mbps links
- IP67/NEMA 6 rated package protects against dust, water, oil, and debris
- High-performance switch rated for MIL-STD-810F, MIL-STD-461E and MIL-STD-1275D
- Military-rated MIL-DTL-38999 Series III connectors protect against vibration, shock and water
- Tough corrosion-proof aluminum enclosure
- Truly industrial -40 to +75° C operating range with conductive cooling (no moving parts)

MILITARY STRENGTH

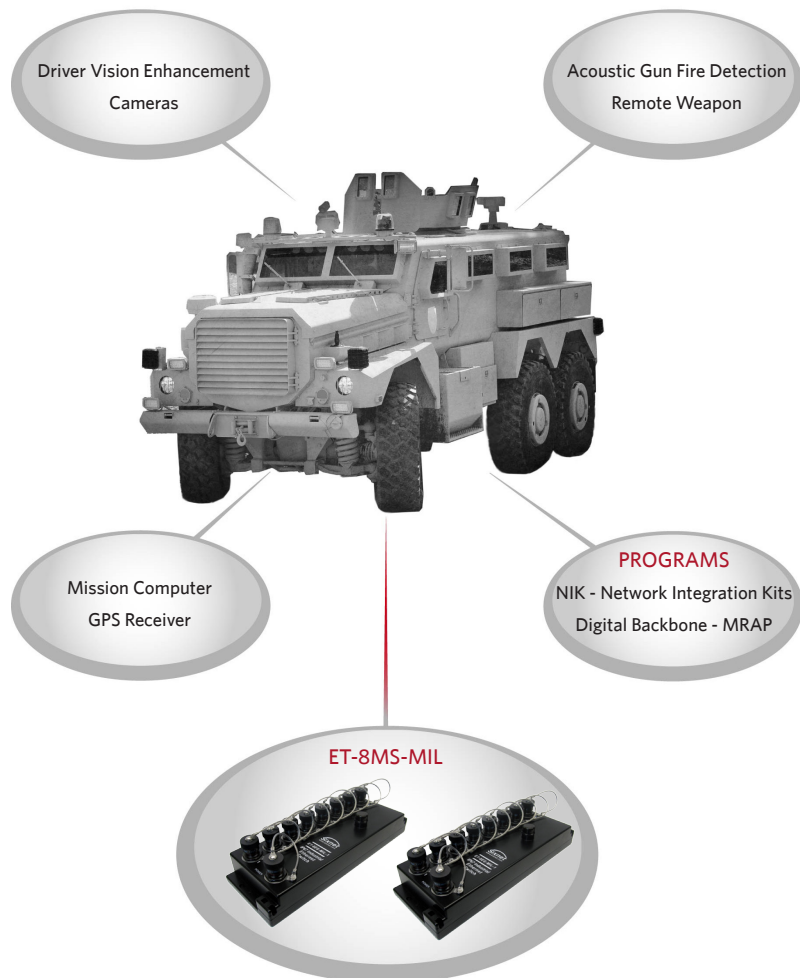
With military equipment subject to harsh climates, varying temperatures, shock and vibration, defense requirements are mission critical. Equipment has to be built to withstand extreme stresses without sacrificing performance. Sixnet's IP67 Ethernet switches are designed to reliably provide high-performance connectivity for the harshest defense applications. Military rated to support extreme defense conditions, our products link in-vehicle communication systems to support a host of military applications on the land, in the air and on sea. These include land vehicles, ground support facilities, missile delivery systems, bombers, aircraft, UAVs and naval vessels.

Sixnet's ET-8xS-MIL-1 is a fast (10/100) managed or unmanaged industrial Ethernet switch with military-style D38999 connectors. These high-performance switches offer an ideal commercial off-the-shelf (COTS) military solution for battlefield communications, combat vehicles and avionics shipboard as well as other industrial applications that require rugged reliability in extreme environments.

APPLICATIONS

- Industrial outdoors
- Marine and maritime
- Transportation
- Military in-vehicle (per COTS)
- Aerospace

APPLICATION SCENARIO: MILITARY TOUGH



industrial
networking

RoHS
compliant

FEATURES & BENEFITS

Ultra Rugged & Compact

- **Meets extreme military standards**
- **Provides proven reliability under field conditions**
 - Fully certified MIL-STD performance
 - -40 to 75° C operating temperature
 - Tough corrosion proof aluminum case
 - Conductive cooling — no moving parts
 - Over 1,000,000 (MTBF) of trouble-free service

Industrial COTS Solution

- **Reduces time and cost for development and maintenance**
- **Simplifies procurement**
 - Pre-tested for vibration and harsh conditions
 - Ready to ship

Flexible Deployment Options

- **Reduces crew workload**
- **Improves task performance**
 - Direct-mounting — no need for additional enclosures and wiring
 - IP67 (NEMA 6) water-tight case enables mounting into a vehicle or an exposed wall in harsh applications
 - Low-profile chassis fits into tight spaces

Real-Time Ethernet Performance

- **Helps optimize vehicle networks**
- **Protects mission critical communications**
 - Fast wire-speed switching
 - Auto-speed/duplex, auto-crossover and auto-polarity
 - RSTP, SNMP, QoS/CoS, IGMP, VLAN and security options

EMI & EMC

Test	Standard	Specification
Conducted Emissions	MIL-ST-461E	CD101: Power Leads, 30Hz to 10Hz
Conducted Emissions	MIL-ST-461E	CE102: Power Leads, 10 kHz to 10 MHz
Radiated Emissions	MIL-ST-461E	RE102: Electric Field, 2 MHz to 18 GHz
Conducted Susceptibility	MIL-ST-461E	CS101: Power Leads, 30 Hz to 150 kHz
Conducted Susceptibility	MIL-ST-461E	CS114; Bulk Cable Injection, 10 kHz to 200 MHz
Conducted Susceptibility	MIL-ST-461E	CS115: Bulk Cable Injection, Impulse Excitation
Conducted Susceptibility	MIL-ST-461E	CS116: Damped Sinusoidal Transients, Cables and Power Leads, 10 kHz to 100 MHz
Radiated Susceptibility	MIL-ST-461E	RS101: Electric Field, 30 Hz to 100 kHz
Radiated Susceptibility	MIL-ST-461E	RS103: Electric Field, 2 MHz to 40 GHz (50V/m)
Ripple Test	MIL-STD-1275D	2 V Peak and 7 V Peak Ripple Test
Spike Test (Imported)	MIL-STD-1275D	+/- 250 Volt Imported Spike Test
Spike Test (Exported)	MIL-STD-1275D	Voltage Spike Exported from the EUT
Surge Test	MIL-STD-1275D	40 V and 100 V Surges



Military-rated MIL-DTL-38999 Series III connectors protect against vibration, shock, water and more.

ET-8xS-MIL Industrial Ethernet Switch Specifications

ENVIRONMENTAL

Test	Standard	Specification
Operating Temperature	MIL-STD-810F	Methods 501.4 and 502.4: Operating Temperature
Temperature Shock	MIL-STD-810F	Method 503.4: Temperature Shock
Humidity	MIL-STD-810F	Method 507.4: Humidity
Elevation	MIL-STD-810F	Method 500.4: Elevation
Functional Shock	MIL-STD-810F	Method 516.5: Functional Shock
General Vibration	MIL-STD-810F	Method 514.5, Proc. 1: General Vibration
Steam and Water jet	MIL-STD-108E	Paragraph 4.10 Table II: Steam & Water jet
Leakage (Immersion)	MIL-STD-810F	Method 512.4: Leakage (Immersion)
Salt and Fog	MIL-STD-810F	Method 509.4
Sand and Dust	MIL-STD-810F	Method 510.4 Proc. 1
Explosive Atmosphere	MIL-STD-810F	Method 511.4
Acceleration Test	MIL-STD-810F	Method 513.5 Proc. 1,2,3

SPECIFICATIONS

Ethernet Performance

- 8 fast Ethernet ports for 10/100 Mbps links
- Store and forward wire-speed non-blocking switching
- Managed or unmanaged models available
- All IEEE802.3 Ethernet protocols supported
- Auto-negotiation for Ethernet speed and duplex
- Auto-crossover for Ethernet MDI/MDIX wiring
- Auto-polarity for Ethernet TD and RD polarity
- Full or half-duplex operation (auto or configurable)
- 2048 MAC addresses supported
- 3.2 Gbps memory bandwidth
- Ethernet isolation 1500 VRMS 1 minute
- Connector: MIL-DTL-38999 series III receptacle with shell size A, style 35, 6 socket contacts and N keying

Ethernet Compliance

- IEEE 802.3 (Original Ethernet 10Mbps)
- IEEE 802.3u (Fast Ethernet 100Mbps)
- IEEE 802.3x (Full-duplex with flow control)

Power Input

- Connector: MIL-STD-38999 Series III receptacle with shell size A, style 98, 3 pin contacts and A keying
- Input voltage range: 10-30 VDC (continuous)
- Input power: 6 W (max. under full load)
- Reverse polarity protection
- Exceeds MIL-STD-1275 for power protection
- Surge protection: 100 volts for 1 second
- Transient protection: 15,000 watts peak
- Spike protection: 5,000 watts (10x for 10 uS) or 250 volts (50x for 100 uS)

Environmental

- Operating temperature: -40 to +75° C (cold startup at -40° C)
- Storage temperature: -40 to +85° C
- Humidity (non-condensing) 5 to 95% RH
- Vibration, shock and freefall per MIL-STD-810F and IEC60068-2-6, -27 and -32
- Vent plug for high-altitude operation

Physical

- Dimensions (L x W x H): 10.5 x 4 x 2.45" (267 x 102 x 62 mm)
- Weight (including caps): 2.20 lbs (1 Kg)
- IP67 dust, oil and water-tight package protection

Standards & Compliance

- UL508/CSA C22.2/14 for electrical safety
- UL1604/CSA C22.2/213 for hazardous locations
- MIL-STD-461E for EMC performance
- MIL-STD-810F for environmental performance
- MIL-STD-1275B for power protection
- MTBF per MIL-HNDBK-217F2
 - 8ES: 2MM hours GB or 418,414 GM @ 40° C
 - 8MS: 2MM hours GB or 266,876 GM @ 40° C

Managed Models

- USB/RS232 console port via MIL-STD-38999 series III connector with shell size A, style 35, 6 socket contacts & A keying
- Real-Time Ring™ or Rapid Spanning Tree (RSTP) for fast redundant ring or mesh networks
- Priority queuing for real-time performance
- SNMP v1 and v2 for network management
- SNMP v3 for authentication and encryption
- SNMP notifications (traps) for report on event
- IGMP v1 & v2 for IP multicast filtering
- VLAN (port & tag based) for traffic segregation
- Message filtering to stop broadcast/multicast storms
- RMON and port mirroring for diagnostics
- Configuration via secure (HTTPS) web interface, Telnet/SSH (network), terminal (RS232) or SNMP (v1, v2, v3)
- DHCP Server

Recommended Interface Plugs

- Ethernet Plug: D38999/26WA35PN
- Power Plug: D38999/26WA98SA
- USB/RS232 Plug: D38999/26WA35PA

All specifications are subject to change. Contact Sixnet to learn more.

ET-8xS-MIL Industrial Ethernet Switch Specifications

SELECTION GUIDE

Model	Description
ET-8ES-MIL-1	8 port unmanaged IP67 switch
ET-8MS-MIL-1	8 port managed IP67 switch
(NOTE: Receptacle caps are included with the switch)	
ET-CAT6M-XCD	Cordset, military-style plug to RJ45, x=meters See separate datasheet for cable specs NOTE: contact Sixnet for other cordset and cable options
ET-MILPWR-C2	Cordset, power plug to leads, 2 meters
ET-MIL232-C2	Cordset, military-style plug to 232/USB, 2 meters

MECHANICAL DIAGRAM

