

DATASHEET

ET-8xS-MIL Industrial Ethernet Switch

Military-Rated Industrial Connectivity



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.

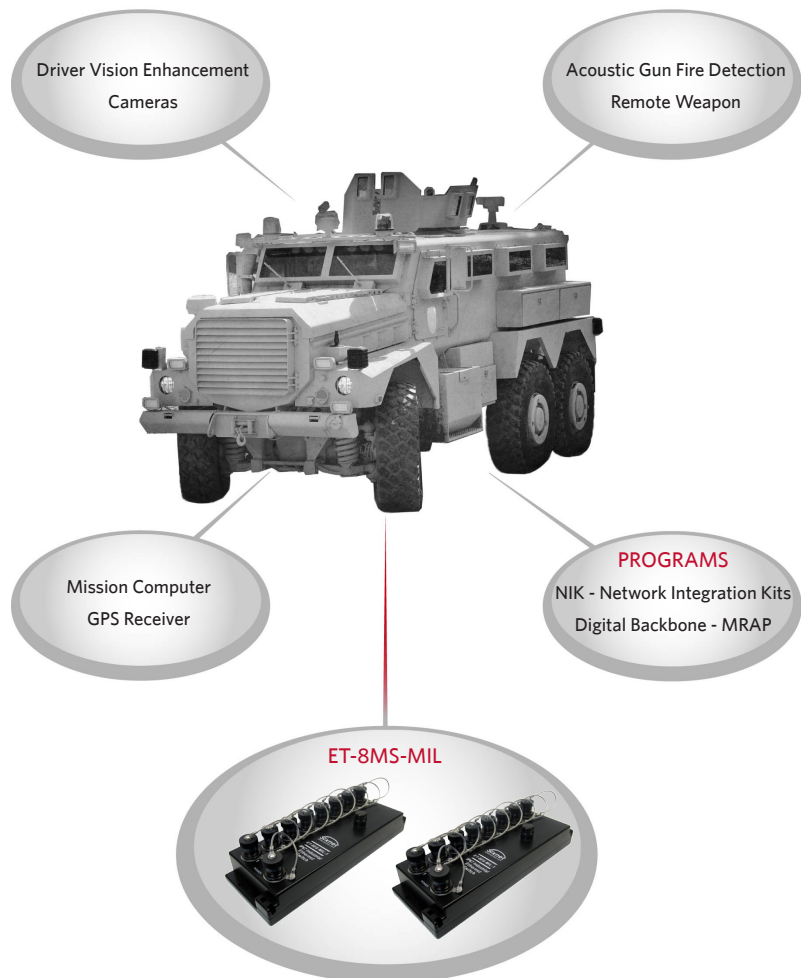
APPLICATION SCENARIO: MILITARY TOUGH

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-1275B
- 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)

APPLICATIONS

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



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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.

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-461F | CD101: Power Leads, 30Hz to 10Hz |
| Conducted Emissions | MIL-ST-461F | CE102: Power Leads, 10 kHz to 10 MHz |
| Radiated Emissions | MIL-ST-461F | RE102: Electric Field, 2 MHz to 18 GHz |
| Conducted Susceptibility | MIL-ST-461F | CS101: Power Leads, 30 Hz to 150 kHz |
| Conducted Susceptibility | MIL-ST-461F | CS114; Bulk Cable Injection, 10 kHz to 200 MHz |
| Conducted Susceptibility | MIL-ST-461F | CS115: Bulk Cable Injection, Impulse Excitation |
| Conducted Susceptibility | MIL-ST-461F | CS116: Damped Sinusoidal Transients, Cables and Power Leads, 10 kHz to 100 MHz |
| Radiated Susceptibility | MIL-ST-461F | RS101: Electric Field, 30 Hz to 100 kHz |
| Radiated Susceptibility | MIL-ST-461F | 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 |

Commercial Off-The-Shelf Solutions

COTS



CONNECT. MONITOR. CONTROL



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

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-810F | 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: 4 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

- FCC part 15/ICES-003; EN655022; IEC61326-1
- UL508/CSA C22.2/14 for electrical safety
- UL1604/CSA C22.2/213 and EN60079-15 (Zone 2) 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)

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.

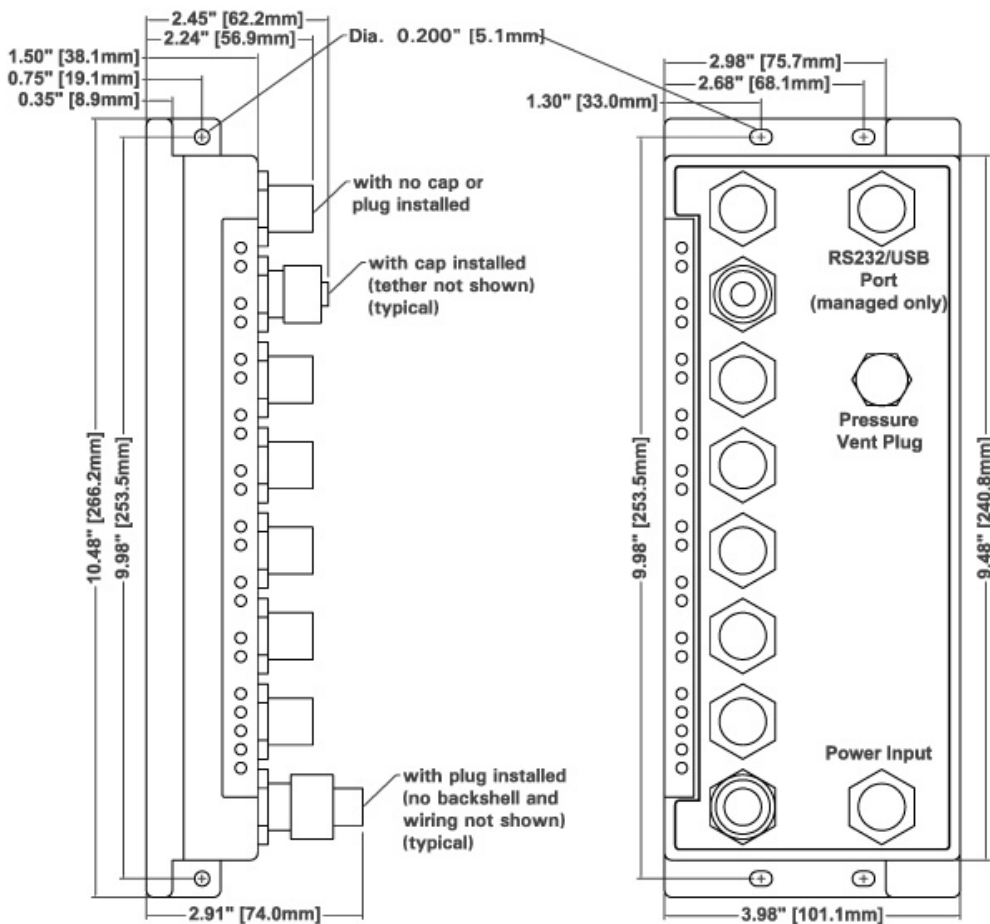
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SELECTION GUIDE

| 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-xCG | 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



ABOUT SIXNET

Celebrating over 35 years in operation, Sixnet provides innovative machine-to-machine (M2M) industrial networking solutions that integrate wireless, automation and switching technologies to better serve customers and markets worldwide. Sixnet's flexible solutions enable organizations to cost-effectively increase business productivity. By integrating powerful enterprise-class networking with rugged reliability, Sixnet meets the standards of the most demanding applications in industries such as power & energy, banking & retail, transportation, video & security, utilities, military, mobile data, maritime and more. Based in Ballston Lake, NY, the company has offices across North America, Asia and Europe.



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