# Gigabit Ethernet Switch (GES) NXT-8

**The Aeronix Gigabit Ethernet Switch (GES) NXT-8** is a MIL-Qualified 8-port Ethernet switch equipped with 8 x 10/100/1000 BASE-T copper ports. It is used in commercial, industrial, and military applications that require ultra-high data transfer rates in a self-contained ruggedized package. The rugged design requires no forced air or conductive cooling, operating in a broad range of harsh environments including uninhabited aircraft bays.

**The NXT-8 is a fully managed Layer 2/3 router** with the capability of customer specific configurations. The configurations are stored in non-volatile memory and loaded at startup to fulfill application specific requirements. All configurations are authenticated.

## KEY FEATURES

Part Number: AE1034XX-001

### Enhanced Features

- Time-Sensitive Networking (Deterministic Ethernet)
  - -Low latency, Highest QoS, Assured bandwidth
  - -GCIA 2.0 ready
- PTPv2 (IEEE-1588 and 802.1as)
  - -Grandmaster (GM) capable via external GPS
  - -Phase lock to GM in less than 20 secs
  - -Jitter from GM less than 100 ns
- Secure Boot, Secure Update, Secure Config
  - -HW ASIC-enforced using asymmetric ECDSA P384
  - -Rescue via TOTP
- Enhanced Built-In Test (Startup, Periodic, Initiated)
  - -Time-Domain Reflectometry cable test
  - -MAC Bouncing (spoofing) detection
- Store and Forward (default), Cut-through
- Port and Flow Mirroring, Jumbo frames
- Monitoring alarms through SNMP or JSON-RPC
- Hardware & Software Zeroize
- Boot Time < 50s
- Tri-Color Power/status LED

### Networking

- Auto MDIX with automatic downshifting
- Loop Guard and ERPS (802.1Q)
- Spanning Tree (8021.d), RSTP (802.1w), MSTP (802.15)
- IGMP v2/v3 and MLD v1/v2 Snooping, GARP (802.1ak)
- Broadcasting and Storm Control
- VLANs (802.1Q), Trunking, and Native VLAN
- VLAN Q-in-Q double-tagging (bridging) PVLANs
- QoS Multi-Layer Classifier, Strict Queues, Fair Queues, ACLs, ToS/DSCP
- L3 Static Routing, RIP v2, OSPF v2/v3
- Link Aggregation (802.3AD)
- IPv4 and IPv6 support

### Standards Compliance & Compatibility

- IEEE 802.1, IEEE 802.3, DO-160, MIL-STD-704, MIL-STD-810, MIL-HDBK-5400, MIL-HDBK-217

### Security and Access Control

- Hardware-enforced Secure Boot
- Hardware Root of Trust (HRoT)
- Authentication on all mgmt interfaces
- Encryption on SSH, JSON-RPC and Web
- AAA, 802.1X, RADIUS, TACACS+, Firewall, ACLs
- Port MAC Security, Sticky MACs
- ARP Inspection, IP Source Guard, DHCP Snooping
- BPDU Guard, Root Guard
- Syslog & audit trail to both UDP and TCP servers
- Traffic data not stored in non-volatile memory
- Backup Image and recovery

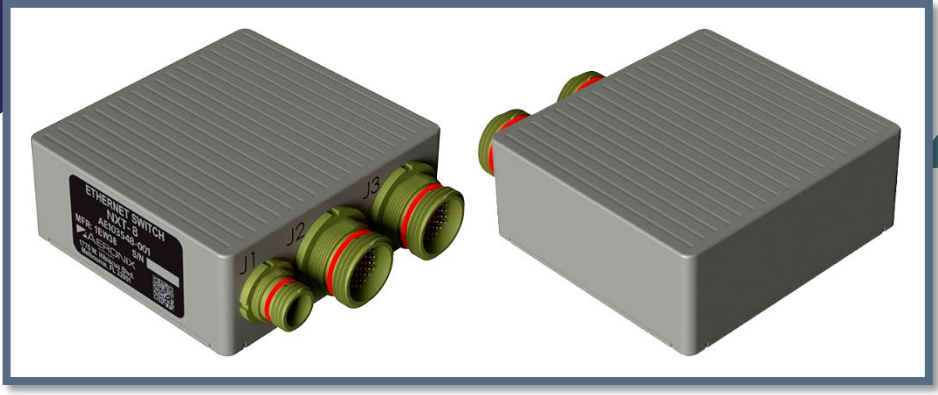
### Management Interfaces

- In-band HMI: SSHv2 CLI, Telnet CLI, HTTP/S Web
- In-band MMI: SNMPv1/v2/v3, HTTP/S JSON-RPC; GEN2 (AE101264-00X) backwards compatible API
- Out-of-band HMI: RS232 CLI

All interfaces can be individually disabled via startup-config.

### Ethernet Ports

- 8 x 10/100/1000Mbps BASE-T Copper Ports

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# Aeronix Airborne 8 Port Router (NXT-8) Qualifications

| Characteristic | Detail |
|---|---|
| Ports | 8 x 10/100/1000Mbps BASE-T Copper Ports - IEEE 802.3ab Compatible |
| Dimensions | 3.25"W x 3"L x 1.25"H |
| Weight | 1.5 lbs (.68 kg) |
| Processor | LAN9668 |
| Connectors | 1 x 2M801-011-07NF-13-37PA/B and 1 x 2M801-011-07NF-8-135A |

| Test | Detail | Specification | Comment/Tailoring |
|---|---|---|---|
| **Environmental** | | | |
| Low Pressure (Altitude) | Storage | MIL-STD-810G Method 500.4 Procedure I | Procedure I: -57°C @ 50,000 feet |
| | Operational | MIL-STD-810G Method 500.4 Procedure II | Procedure II: -40°C @ 40,000 feet |
| | Explosive Decomp | MIL-STD-810G Method 500.4 Procedure IV | Procedure IV: 8,000 feet to 40,000 feet in not more than 0.1Sec |
| High Temperature | Storage | MIL-STD-810G Method 501.5 Procedure I | Procedure I: +95°C |
| | Operational | MIL-STD-810G Method 501.5 Procedure II | Procedure II: Cyclic = +55°C Constant = +71°C for 30 Minutes |
| Low Temperature | Storage | MIL-STD-810G Method 502.5 Procedure I | Procedure I: -57°C |
| | Operational | MIL-STD-810G Method 502.5 Procedure II | Procedure II: Cyclic = -40°C Sea level Constant = -65°C for 120 Minutes |
| Temperature Shock | | MIL-STD-810G Method 503.5 Procedure I-B | Procedure I-B: from Constant = -54°C to +71°C at 125°C/Minute |
| Comb Temp Alt/Humidity | Operational | MIL-STD-810G Method 520.3 Procedure III | Procedure III: -40°C to +71°C Sea level to 60,000ft |
| Rain | Drip | MIL-STD-810G Method 506.5 Procedure III | 7 gal/ft2/hr. 40 mph for 30 minutes |
| Humidity | Exposure | MIL-STD-810F Method 507.5 Procedure II | Operating and non-operating effects, 95% ± 4% Humidity +30°C to 60°C, 10 Cycles |
| Fungus | Non-Operational | MIL-STD-810G Method 508.6 | 7-day growth |
| Salt Fog | Exposure | MIL-STD-810G Method 509.5 | Operating and non-operating exposure to salt-sea atmosphere – Four 24hr wet/dry cycles |
| Sand and Dust | Blowing | MIL-STD-810G Method 510.5 Procedure I & II | <150um dust, 150um to 850um sand |
| Explosive Atmosphere | Operational | MIL-STD-810G Method 511.5 Procedure I | At site and 40,000ft altitudes |
| Acceleration Load Factors (Structural) | Limit Loads | MIL-STD-810F Method 513.6 Procedure I | Performance at ±10.0g applied individually along all 3 axes |
| | Ultimate Loads | MIL-STD-810F Method 513.6 Procedure II | Withstand without structural failure ±15.0g applied individually along all 3 axes |
| | Crash Landing | MIL-STD-810F Method 513.6 Procedure III | Remain captive, 40G forward, 20G aft and down, 18G left/right, 10G up |
| Vibration | Performance | MIL-STD-810G Method 514.6 Procedure I | Cat 12, Annex D, 514.6D-I; 30 mins, 0.02 G2/Hz to 0.04 G2/Hz, 15-2000 Hz, Overall, 4.4Grms |
| | Endurance | MIL-STD-810G Method 514.6 Procedure I | Cat 12, Annex D, 514.6D-I; 60 mins, 0.04 G2/Hz to 0.06 G2/Hz, 15-2000 Hz, Overall, 9.2Grms |
| | Gunfire | MIL-STD-810G Method 519.6, Procedure III | 7.5 min sweeps, 5 to 15 g, 66 to 856 Hz |
| | UH-60 Main | MIL-STD-810G Method 514.6, Procedure I | Cat 14, Annex A & D, Table 514.6D-III; 4 hours, 0.001g2/Hz to 0.01g2/Hz, 3 to 500 Hz |
| Acoustical Noise | Operational | MIL-STD-810G Method 515.6 Procedure I | 30 mins, 140dB overall, 50 to 10000 Hz |
| Shock | Functional | MIL-STD-810G Method 516.6 Procedure I | 20g, 11ms nominal, 3 blows ea direction, ea axis (18 total), terminal peak sawtooth (TPS) |
| | Crash Hazard | MIL-STD-810G Method 516.6, Procedure V | 40g, 11ms nominal, 2 blows ea direction, ea axis (12 total) TPS |
| | Bench Handling | MIL-STD-810G Method 516.6, Procedure VI | 4" drop, 1 drop per edge per face (24 total) |
| MTBF | 100% Duty Cycle | MIL-HDBK-217 FN2 | 63.298 hrs @ +55°C, 44.943 hrs @ +70°C Airborne Uninhabited Fighter Environment |
| Mounting Hardware | Vibration Tolerance | | 4 x 10-32 captive screws |
| Cooling Air | Free Air, unmounted | MIL-HDBK-5400 | Free convection and radiation. Does not use the aircraft structure as a heat sink |
| **Electromagnetic Compatibility** | | | |
| Conducted Emissions | Operational | MIL-STD-461G CE101 Par 5.4, CE101-4 Curve #2 | Power Leads, 30 Hz to 10 kHz |
| | | MIL-STD-461G CE102 Par 5.5, CE102-1 Basic Curve | Power Leads, 10 kHz to 10MHz |
| Conducted Susceptibility | Operational | MIL-STD-461G CS101 Par 5.7, CS101-1 Curve #2 | Power leads, 30Hz to 150 kHz |
| | | MIL-STD-461G CS114 Par 5.12, CS114-1 Curve #5 | Bulk cable injection, 10 kHz to 200MHz |
| | | MIL-STD-461G CS115 Par 5.13, CS115-1 | Bulk cable injection, impulse excitation, 30Hz for one minute |
| | | MIL-STD-461G CS116 Par 5.14, CS116-1 and CS116-2 | Damped sinusoidal transients, cables, & power leads, 10kHz to 100MHz, 5 mins |
| Radiated Emissions | Operational | MIL-STD-461G RE101 Par 5.17, RE101-1 and RE101-2 | Magnetic field, 30Hz to 100kHz |
| | | MIL-STD-461G RE102 Par 5.18, RE102-3 | Fixed wing external and Fixed wing internal < 25m; Electric field, 10kHz to 18GHz |
| Radiated Susceptibility | Operational | MIL-STD-461G RS101 Par 5.20 RS101-2 | Army; Magnetic field, 30 Hz to 100 kHz |
| | | MIL-STD-461G RS103 Par 5.21, Table XI | Aircraft Internal Army; Electric field, 2 MHz to 18 GHz |
| **Primary Power** | | | |
| Power Input | +28VDC in | MIL-STD-704F and MIL-STD-1275E | Category B |
| Voltage Spike | | MIL-STD-704F and MIL-STD-1275E, 5.3.3.1.1 | Category B; Spikes: +/- 250V, 50 ea, 2 Joules |
| Power Consumption | Operational | Startup ≤ 16W \| Steady State @ max speed with all ports on ≤ 8W | |

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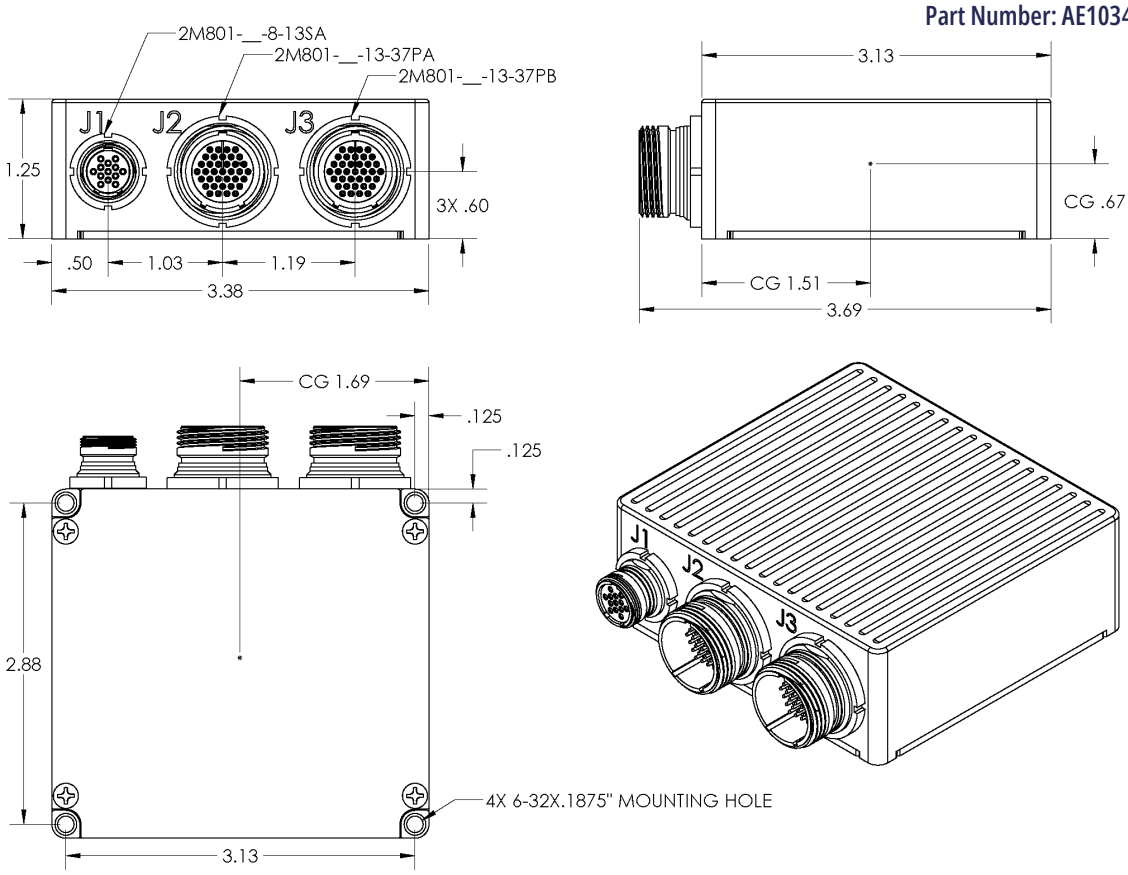


3D MODEL AVAILABLE UPON REQUEST

10/5/2023

## ORDERING INFORMATION

| PART NUMBER | DESCRIPTION |
|---|---|
| AE1034XX-001 | Military Rugged, Ethernet Switch/Router, DO-160 Qualified, 8 x 10/100/1000 BASE-T and 4x Ports with MIL-C-38999 Connectors |
| Accessories (Intended for Lab Use Only) | |
| TBA | TBA |


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