Gigabit Ethernet Switch (GES) NXT-16

The Aeronix Gigabit Ethernet Switch (GES) NXT-16 is a MIL-Qualified 16-port Ethernet switch equipped with 16 x 10/100/1000 BASE-T copper ports. It is for use 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-16 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: AE1034XY-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 < 90s
- Tri-Color Power/status LED
- Hardware-based geo-strapping startup configurations

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

Ethernet Ports

- 16 BASE-T Copper Ports
  - 10/100/1000

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

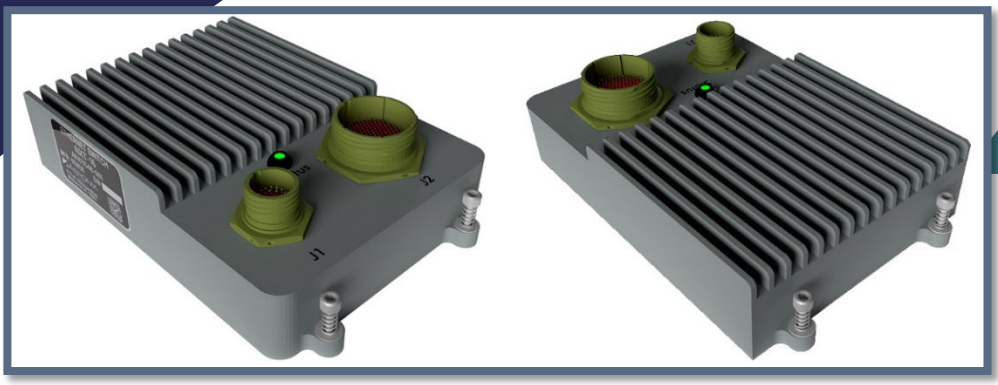
All interfaces can be individually disabled via startup-config.

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



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Aeronix Airborne 16 Port Router (NXT-16) Qualifications

Characteristic	Detail
Ports	16 x 10/100/1000Mbps BASE-T Copper Ports - IEEE 802.3ab Compatible
Dimensions	6"W x 4"L x 1.6"H
Weight	2.6 lbs (1.179 kg)
Processor	VSC7549TSN
Connectors	1 x TV07RW23-151 (P15), and 1x TV07RW13-353 (P15) (Power)

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 ≤ 30W | Steady State @ max speed with all ports on ≤ 14W	

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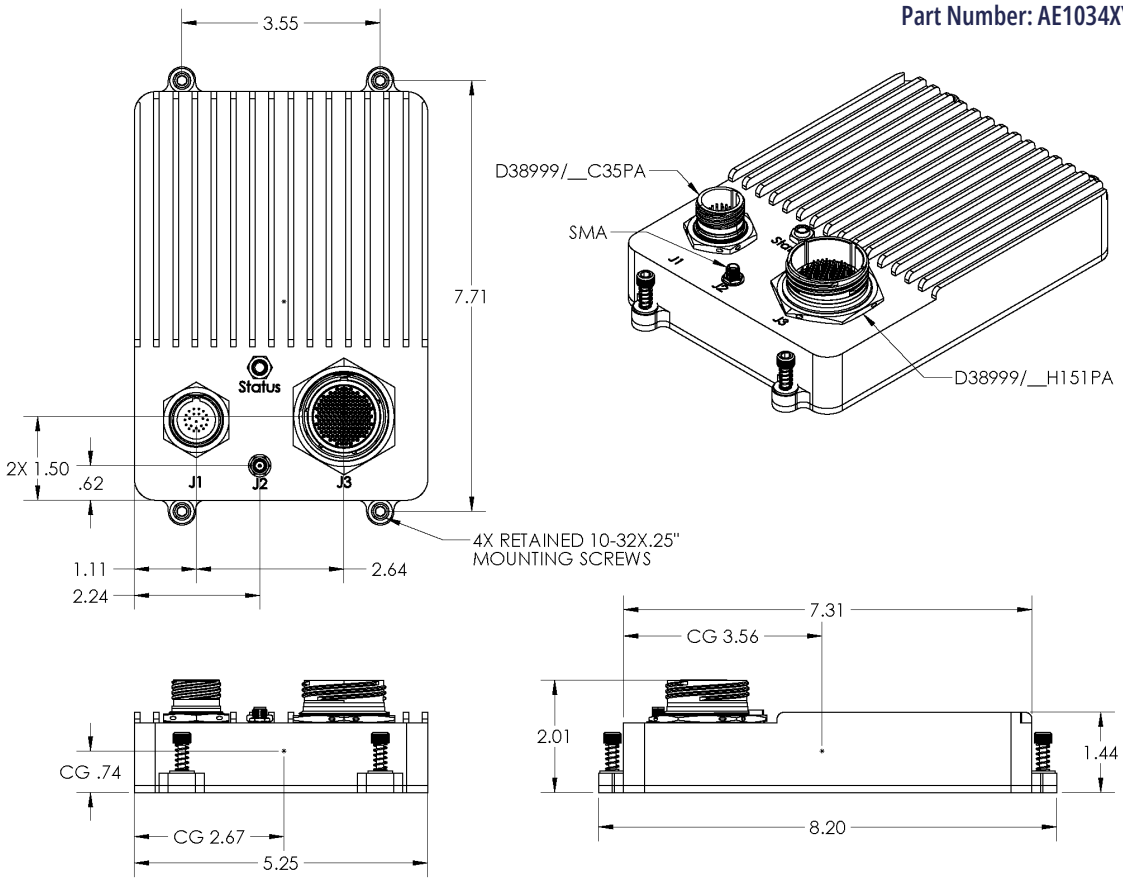

3D MODEL AVAILABLE UPON REQUEST

10/5/2023

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
AE1034XY-001	Military Rugged, Ethernet Switch/Router, DO-160 Qualified, 16 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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