

# Gigabit Ethernet Switch (GES) Gen2

Part Number: AE101264-002  
Part Number: AE101264-004

NSN: 5895-01-601-2500  
NSN: 7025-01-657-3614

12-Port Rugged Ethernet Switch



## FEATURES

Ethernet Ports	<ul style="list-style-type: none"> <li>12x lightly managed tri-speed 10/100/1000 BASE-T ports</li> </ul>
Networking	<ul style="list-style-type: none"> <li>16K MAC Switching Engine</li> <li>Auto MDI/MDX and polarity correction</li> <li>Manual Port Speed/Duplex Selection</li> <li>8021q Static VLANs (port-based)</li> <li>Redundant Link, Port Mirroring</li> </ul>
Control and Status	<ul style="list-style-type: none"> <li>Serial Command Line Interface</li> <li>Default and custom non-volatile configurations</li> <li>Built-In Test: Startup, Periodic, Commanded</li> </ul>
Power	<ul style="list-style-type: none"> <li>MIL-STD-704A w/ Notice 3</li> <li>Voltage Input: 12Vdc - 33Vdc (28Vdc nominal)</li> <li>Power Consumption: 17 W maximum</li> </ul>
Connectors / Indicators	<ul style="list-style-type: none"> <li>Power and LAN Connector: MIL-C-38999</li> <li>LED Indicator: Power</li> </ul>
Mechanical	<ul style="list-style-type: none"> <li>Housing: Machined rugged aluminum</li> <li>Weight: 2.75 lbs</li> <li>Dimensions: 5.15" W x 8.25" L x 1.38" H</li> <li>Installation: 4x 10-32 captive screws</li> </ul>
Standards Compliance and Compatibility	<ul style="list-style-type: none"> <li>IEEE 802.1, IEEE 802.3, MIL-STD- 461, MIL-STD-704, MIL-STD-810, MIL-HDBK-5400, MIL-HDBK-217</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>No moving parts, passive cooling.</li> <li>No forced air or conductive cooling needed.</li> </ul>
Environmental	<ul style="list-style-type: none"> <li>MIL-STD-810F</li> <li>A-10 and F-16 profiles including Gunfire</li> </ul>
EMI / EMC	<ul style="list-style-type: none"> <li>MIL-STD-461E/F Electromagnetic interference / compatibility</li> </ul>
Temperature Range	<ul style="list-style-type: none"> <li>Operating: -65C to +71C</li> <li>Storage: -57C to +95C</li> </ul>
Altitude	<ul style="list-style-type: none"> <li>Operating up to: 60,000 ft continuous</li> </ul>
MTBF	<ul style="list-style-type: none"> <li>8,474 hours @ 55C, Airborne Uninhabited Fighter Environment (calculated)</li> </ul>
Customizable	<ul style="list-style-type: none"> <li>Aeronix offers an extensive line of Engineering Services including the creation and implementation of custom configurations for the Gen2 Packaging, Connectors, Number of Channels, and/or other customer unique requirements.</li> </ul>



The Aeronix Gigabit Ethernet Switch (GES) Gen2 provides twelve Tri-speed Ethernet ports 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, allowing operation in a broad range of harsh environments including operation in uninhabited aircraft bays.

Each of the twelve IEEE 802.3ab ports can individually auto-detect data rates of 10, 100, or 1000 BASE-T, or can be managed externally. The PHY's in the Gen2 offer extensive built in test utilizing Time Domain Reflectometry to detect problems in the platform wiring during Startup BIT.

The GES Gen2 is a lightly managed Layer 2 switch with the capability of customer specific configurations. The management functions are stored in non-volatile memory for fixed configurations, or loaded at startup for application specific requirements. The Gen2 utilizes a small footprint OS which is advantageous for security conscious applications. No Ethernet data is stored in onboard processor RAM.

Incorporating the Aeronix 12-Port GES into your design allows the use of high speed Ethernet connectivity between any or all of your devices while virtually eliminating data-rate bottlenecks. This allows platforms to share data between sensors and processors at speeds significantly higher than MIL-STD-1553 connections.



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## Aeronix Gigabit Ethernet Switch GEN2 Qualifications

Characteristic	Detail		
Ports	12x 1000Mbps full duplex, 100Mbps or 10Mbps full or half duplex		
Dimensions	5.15"W x 8.25"L x 1.38"H		
Weight	2 lb 12 oz (1.25 kg)		
Processor	ARM9		
Connectors	MIL-C-38999 (Signal and Power)		
Test	Detail	Military Specification	Comment/Tailoring
Environmental			
Cooling Air	Free Air, unmounted	MIL-HDBK-5400	Does not use the aircraft structure as a heat sink
	Storage	MIL-STD-810F Method 500.4 Procedure I	Procedure I: -57°C @ 40,000 feet
	Operational	MIL-STD-810F Method 500.4 Procedure II	Procedure II: -54°C @ 40,000 feet
Low Pressure (Altitude)	Explosive Decompression	MIL-STD-810F Method 500.4 Procedure IV	Procedure IV: 8,000 feet to 23,100 feet in 8mSec
	Storage	MIL-STD-810F Method 501.4 Procedure I	Procedure I: +95°C
High Temperature	Operational	MIL-STD-810F Method 501.4 Procedure II	Procedure II: +55°C Procedure II: +71°C for 30 Minutes
	Storage	MIL-STD-810F Method 502.4 Procedure I	Procedure I: -57°C
Low Temperature	Operational	MIL-STD-810F Method 502.4 Procedure II	Procedure II: -40°C
	Operational		Extended Operation at -65C with startup at ground ambient
	Shock	MIL-STD-810F Method 503.4, Procedure I	-40°C - +55°C at 20°C/Minute
Temperature	Altitude	MIL-STD-810F Method 520.2 Procedure III	Operational at 60,000 feet from -40°C to +23°C, 33,000 feet at +55°C
	Rain	Drip	MIL-STD-810F Method 506.4 Procedure III
Humidity		MIL-STD-810F Method 507.4	Operating and non-operating effects of humidity, including conditions wherein condensation takes place in and on the equipment
Fungus		MIL-STD-810F Method 508.5	Designed with certified fungus inert materials
Salt Fog	Exposure	MIL-STD-810F Method 509.4 Procedure I	Operating and non-operating exposure to salt-sea atmosphere
Sand and Dust	Blowing	MIL-STD-810F Method 510.4 Procedure I & II	
Explosive Atmosphere		MIL-STD-810F Method 511.4 Procedure I	At site and 40,000ft altitudes
Acceleration Load Factors	Limit Loads		Performance at ±10.0G applied individually along the three axes
	Ultimate Loads	MIL-STD-810F Method 513.5 Procedure I	Withstand without structural failure ±15.0G applied individually along the three axes
	Crash Landing		Remain captive, 40G forward, 20G aft and down, 14G left/right, 10G up
Vibration	Performance	MIL-STD-810F Method 514.5	0.025 G2/Hz 15 - 2000 Hz, Overall 4.4Grms
	Endurance	MIL-STD-810F Method 514.5	0.06 G2/Hz 15 - 2000 Hz, Overall 9.2Grms
Vibration	Gunfire Sine Sweeps	MIL-STD-810F Method 514.5 Gunfire	Up to 15G (A-10 profile)
Vibration	Gunfire Sine Sweeps	MIL-STD-810F Method 519.5 Gunfire	F-16 Gunfire vibration environment
Acoustical Noise		MIL-STD-810B Method 515 - Category A	140db 30 minutes
Shock	Bench Handling	MIL-STD-810F Method 516.5, Procedure VI	
	Functional	MIL-STD-810F Method 516.5 Procedure I	As modified: eighteen (18) blows, terminal peak sawtooth, 20g, 11ms
	Crash Safety	MIL-STD-810F Method 516.5, Procedure V	TPS (terminal peak sawtooth), 40g, 11 millisecond shock as modified by MIL-STD-810B, Method 516, Procedure III Figure 516-1
MTBF		MIL-HDBK-217 FN2, Method I, Case 3 using part stress calculations. 100% Duty Cycle	8,474 hours @ +55°C, Airborne Uninhabited Fighter Environment
Transportability			Transportation by rail, truck, air and/or ship at altitudes up to 40,000 ft.
Service Life			>10,000 hours
Mounting			Self locking, Retained
Electromagnetic Compatibility			
CE101	Conducted Emissions	MIL-STD-461F	Power leads, 30Hz to 10KHz
CE102		MIL-STD-461F	Power leads, 10 kHz to 10MHz
CS101	Conducted Susceptibility	MIL-STD-461E	Power leads, 30Hz to 150 kHz
CS114		MIL-STD-461E	Bulk cable injection, 10 kHz to 200MHz
CS115		MIL-STD-461E	Bulk cable injection, impulse excitation
CS116		MIL-STD-461F	Damped sinusoidal transients, cables and power leads, 10kHz to 100MHz
RE101-1 & 4	Radiated Emissions	MIL-STD-461F	Electric field, 30Hz to 100KHz
RE102		MIL-STD-461F	Electric field, 2MHz to 18GHz
RS103	Radiated Susceptibility	MIL-STD-461F	20 V/m from 30MHz to 1GHz - 60V/m from 1GHz to 18GHz
Electrical Bonding		SAE ARP 1870	
Chassis Grounding			DC resistance measured from the equipment case to the aircraft structure < 2.5mΩ
			DC resistance measured between each power input line and the safety grounding contact > 1MΩ
Primary Power			
Power Supply	12Vdc - 33Vdc (28Vdc nominal)	MIL-STD-704A w/ Notice 3	28VDC Category B, Curve 2 and Curve 3 of Figure 9, 17 Watts max



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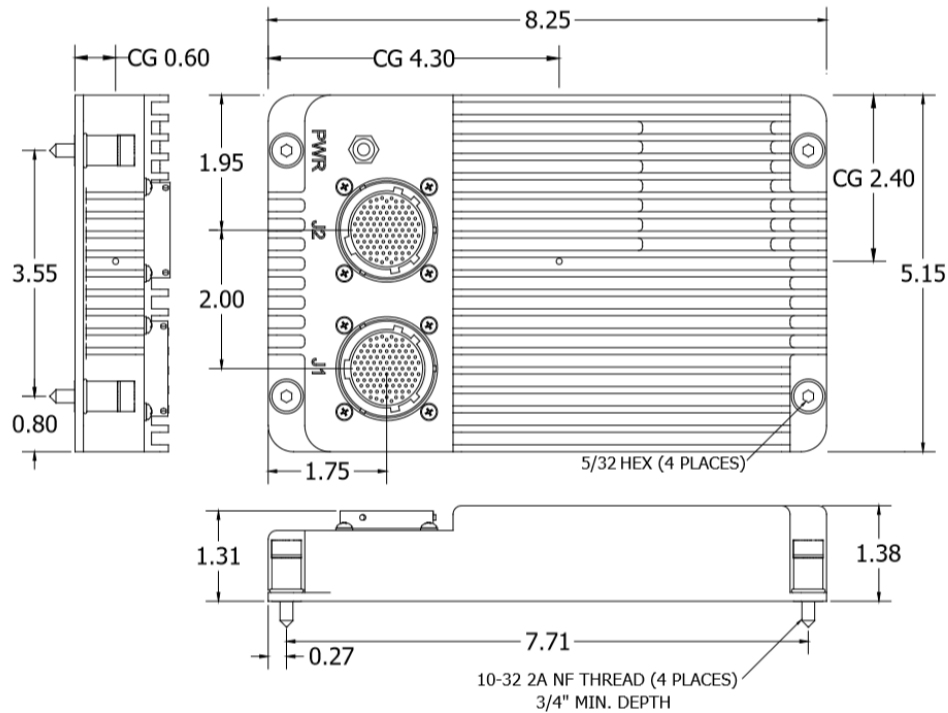
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3D model file available upon request

## ORDERING INFORMATION

PART NUMBER	DESCRIPTION
AE101264-002	<ul style="list-style-type: none"> <li>Military Rugged, Ethernet Switch, Airborne Qualified (A-10), 12x 10/100/1000 BASE-T with MIL-C-38999 Connectors</li> </ul>
AE101264-004	<ul style="list-style-type: none"> <li>Military Rugged, Ethernet Switch, Airborne Qualified (F-16), 12x 10/100/1000 BASE-T with MIL-C-38999 Connectors</li> </ul>
AE101264-005	<ul style="list-style-type: none"> <li>Military Rugged, Ethernet Switch, Airborne Qualified (C-130), 12x 10/100/1000 BASE-T with MIL-C-38999 Connectors</li> </ul>

### Accessories (Intended for Lab Use Only)

AE102576-001	<ul style="list-style-type: none"> <li>Breakout box from GES Gen2 to 12x RJ45 in box, 1x DB-9 cable and connector, and Banana plug power cables</li> </ul>
AE102085-002	<ul style="list-style-type: none"> <li>Breakout cabling from GES Gen2 P1 to 6x RJ45 connectors and 2x DB-9 connector, cable length 12 inches</li> </ul>
AE102085-084	<ul style="list-style-type: none"> <li>Breakout cabling from GES Gen2 P1 to 6x RJ45 connectors and 2x DB-9 connector, cable length 84 inches</li> </ul>
AE102086-001	<ul style="list-style-type: none"> <li>Breakout cabling from GES Gen2 P2 to 6x RJ45 connectors and 2x Banana jack, cable length 12 inches</li> </ul>
AE102086-084	<ul style="list-style-type: none"> <li>Breakout cabling from GES Gen2 P2 to 6x RJ45 connectors and 2x Banana jack, cable length 84 inches</li> </ul>



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