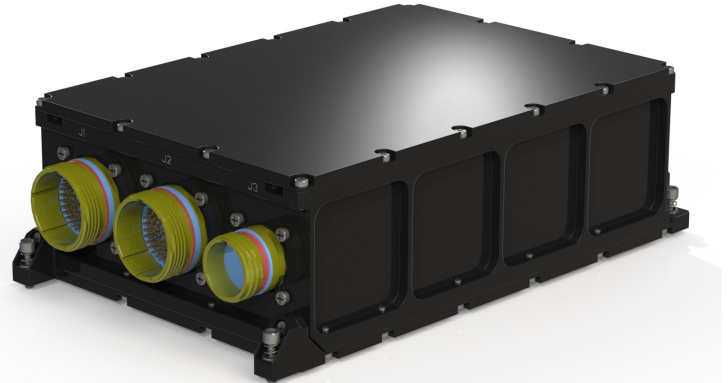


Gigabit Ethernet Switch (GES) MLS

Part Number: AE102438-002

12-Port Rugged Multi-Level Security Ethernet Switch



FEATURES

Ethernet Ports	<ul style="list-style-type: none"> 12x managed tri-speed 10/100/1000 BASE-T
Networking	<ul style="list-style-type: none"> 16K MAC Switching Engine Auto MDI/MDX and polarity correction 802.1p Quality of Service / DiffServ 802.1q VLANs, RSTP in non-MLS case IGMP Snooping, Port Mirroring
Security	<ul style="list-style-type: none"> Hardware enforcement of red/black separation Support for Single and Multi-Level Security (Secret & Unclassified) operational modes Signatures on Software Loads Internal memory sanitization and switch flush modes
Control and Status	<ul style="list-style-type: none"> Serial Command Line Interface Default and custom non-volatile configurations Built-In Test: Startup, Periodic, Commanded
Power	<ul style="list-style-type: none"> MIL-STD-704D Voltage Input: 12Vdc - 33Vdc (28Vdc nominal) Power Consumption: 21 W maximum
Connectors / Indicators	<ul style="list-style-type: none"> Power and LAN Connector: D38999 LED Indicators: n/a
Mechanical	<ul style="list-style-type: none"> Housing: Machined rugged aluminum Weight: 4.375 lbs Dimensions: 6.18" W x 9.92" L x 2.91" H Installation: 4x Captive screws (options)
Standards Compliance and Compatibility	<ul style="list-style-type: none"> IEEE 802.1, IEEE 802.3, MIL-STD-461, MIL-STD-704, MIL-STD-810, DO-160, MIL-HDBK-5400, MIL-HDBK-217, FIPS-188, CIPSO, CALIPSO
Cooling	<ul style="list-style-type: none"> No forced air or conductive cooling needed.
Environmental	<ul style="list-style-type: none"> MIL-STD-810G, DO-160G
EMI / EMC	<ul style="list-style-type: none"> MIL-STD-461F Electromagnetic interference
Temperature Range	<ul style="list-style-type: none"> Operating: -40C to +55C Storage: -55C to +85C
Altitude	<ul style="list-style-type: none"> Operating up to: 40,000 ft
MTBF	<ul style="list-style-type: none"> >25,000 hours @ 55C, Airborne Uninhabited Fighter Environment (calculated)
Customizable	<ul style="list-style-type: none"> Aeronix offers an extensive line of Engineering Services including the creation and implementation of custom configurations for the MLS - Packaging, Connectors, Number of Channels, and/or other customer unique requirements.

The Aeronix Multi-Level Security (MLS) Gigabit Ethernet Switch (GES) 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 with the added capability of hardware-backed security enforcement for single and multiple levels of security. The rugged design uses 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 manually managed externally. The PHY's in the GES offer extensive built in test utilizing Time Domain Reflectometry to detect problems in the aircraft wiring during Startup BIT.

The GES-MLS is a fully 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. No Ethernet data is stored in onboard processor RAM. Layer 3 functionality can be added.

Security modes allow only specifically tagged messages to go in and out of the GES MLS according to user configurations. Tagging configurations for both ingress and egress are separately controlled. The ANS supports multiple tagging conventions that enable external use of its MLS capabilities to include CIPSO, CALIPSO, or an Ethernet based tag. All configurations require digital signature to be accepted.

Incorporating the Aeronix 12-Port MLS 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



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Gigabit Ethernet Switch (GES) MLS

Part Number: AE102438-002

12-Port Rugged Multi-Level Security Ethernet Switch

Aeronix Gigabit Ethernet Switch MLS Qualifications

Characteristic	Detail		
Ports	12x 1000Mbps full duplex, 100Mbps or 10Mbps full or half duplex, IEEE 802.3ab compatible		
Dimensions	6.18" W x 9.92" L x 2.91" H		
Weight	4 lb 6 oz (1.984 kg)		
Processor	NXP QorIQ P1010		
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
Low Pressure (Altitude)	Storage	MIL-STD-810G Method 500.5 Procedure I	Procedure I: -40°C @ 50,000 feet
	Operational	MIL-STD-810G Method 500.5 Procedure II	Procedure II: -40°C @ 40,000 feet
High Temperature	Storage	DO-160G Section 5, Category A3	Category A3: +85°C
	Operational	DO-160G Section 4.5.4, Category B4	Category B4: +55°C Category B4: +71°C for 30 minutes
Low Temperature	Storage	DO-160G Section 5, Category A3	Category A3: -57°C
	Operational	DO-160G Section 4.5.1, Category B4	Category B4: -40°C
Temperature	Shock	DO-160G Section 4.5.3, Category B4	-40°C to +55°C @ 20°C/minute
Rain	Drip	MIL-STD-810G Method 506.5 Procedure I, III	Blowing rain 30 minutes @ 10 cm/hr and 40mph, Dripping for 15 minutes
Humidity		MIL-STD-810G Method 507.5, Procedure II	Operating and non-operating effects of humidity, including conditions where in condensation takes place in and on the equipment
Fungus		MIL-STD-810G Method 508.6	Designed with certified fungus inert materials
Salt Fog	Exposure	MIL-STD-810G Method 509.5 Procedure I	Operating and non-operating exposure to salt-sea atmosphere
Sand and Dust	Blowing	MIL-STD-810G Method 510.5 Procedure I, II	6 hours of blowing sand/dust at 23C, 16 hours of blowing sand at 63C
Explosive Atmosphere		MIL-STD-810G Method 511.5 Procedure I	46,000 ft to 43,000 ft to 36,000 ft at 55C with fuel, 6,500 ft to 3,200 ft at 55C with fuel
Acceleration Load Factors	Structural	MIL-STD-810G Method 513.6 Procedure I	Performance at ±10.5g applied individually along the three axes
	Operational	MIL-STD-810G Method 513.6 Procedure II	Performance at ±10.5g applied individually along the three axes
	Crash Hazard	MIL-STD-810G Method 513.6 Procedure III	Performance at ±20g applied individually along the three axes
Vibration	Resonance	MIL-STD-810G Method 519.6, Annex C	0.5 to 1g logarithmic from 5 to 2000Hz for 36 minutes
	General	MIL-STD-810G Method 514.6, Procedure I	Annex D, Cat 14, 4 hours, Helicopter, 5-500Hz, W0=0.001g2/Hz, W1=0.010g2/Hz
	Gunfire Sine Sweeps	MIL-STD-810G Method 519.6 Gunfire	Annex C, 2 hours, 10-500Hz, W0=0.001g2/Hz, W1=0.010g2/Hz
Acoustic Noise		MIL-STD-810B Method 515.6, Procedure I	140db 30 minutes
Shock	Bench Handling	MIL-STD-810G Method 516.6, Procedure VI	4in drops
	Functional	MIL-STD-810G Method 516.6 Procedure I	As modified: six (6) blows, terminal peak sawtooth, 20g, 9ms
	Crash Safety	MIL-STD-810G Method 516.6, 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	>25,000 hours @ +55°C, Airborne Rotary Wing Environment
Transportability			Transportation by rail, truck, air and/or ship at altitudes up to 50,000 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
RE102	MIL-STD-461F		Electric field, 2MHz to 18GHz
RS103	Radiated Suscep	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 Input	28VDC nominal	MIL-STD-704D	28VDC Category B, Curve 2 and Curve 3 of Figure 9
Power Consumption			21 Watts maximum



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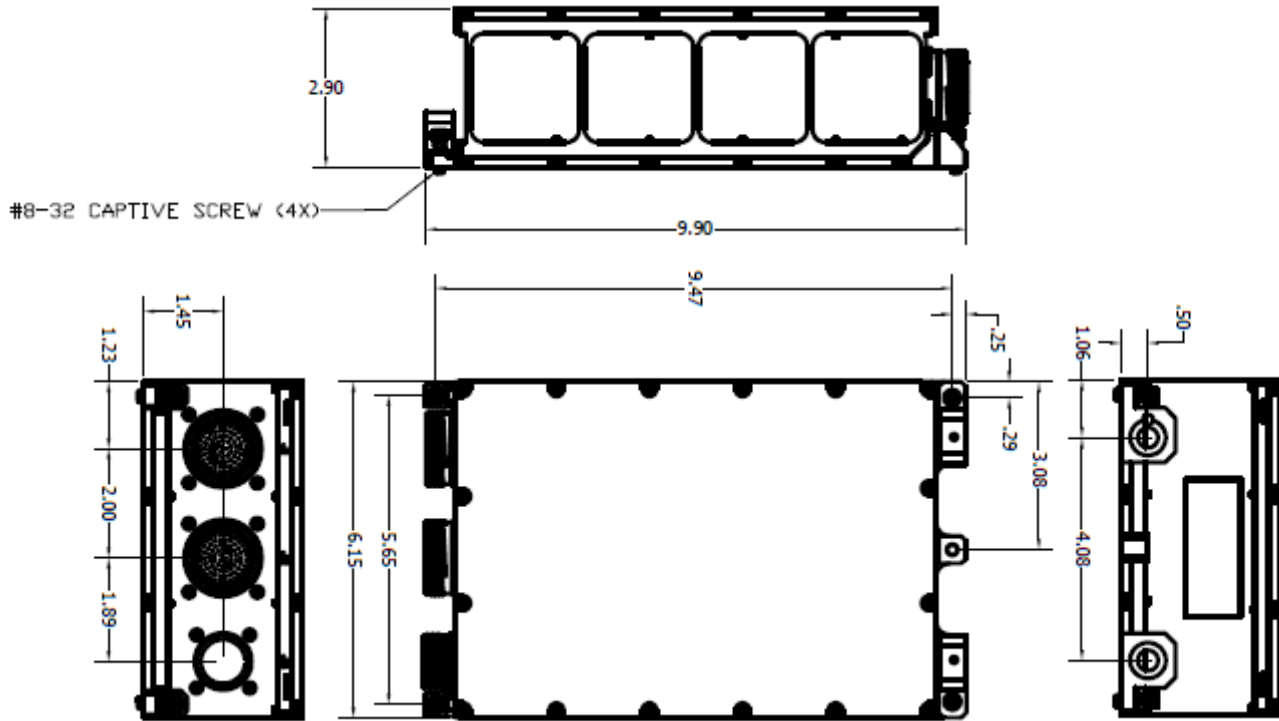
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Gigabit Ethernet Switch (GES) MLS

Part Number: AE102438-002

12-Port Rugged Multi-Level Security Ethernet Switch



3D model file available upon request

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
AE102438-002	<ul style="list-style-type: none">Military Rugged, Ethernet Switch, Airborne Vehicle Qualified, Multi-Level Security, 12x 10/100/1000 BASE-T with D38999 Connectors
Accessories (Intended for Lab Use Only)	
AE102605-001	<ul style="list-style-type: none">Breakout cabling from GES MLS J1 (D38999/26FG35SN) to 6x RJ45 connectors, cable length 120 inches
AE102605-002	<ul style="list-style-type: none">Breakout cabling from GES MLS J2 (D38999/26FG35SA) to 6x RJ45 connectors, cable length 120 inches
AE102604-001	<ul style="list-style-type: none">Power cabling from GES MLS J3 (D38999/26FD19SN) to 2x Banana Jack, cable length 120 inches



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