



# MILTECH™ 9116

Military Managed 12 X 10G Copper Ports + 10G F/O Ports

## PRODUCT DESCRIPTION

Driven by rapid advancement and lower costs, Ethernet is becoming the standard for IP-based components in a wide range of military and commercial applications, including:

- Armored ground vehicles
- Land autonomous vehicles (UGVs)
- Robots
- Mobile equipment fielded in harsh environments

Modern platforms contain dozens of network devices that must be interconnected. The MILTECH 9116 is an ideal solution for mobile Ethernet-equipped platforms. With the best combination of size, weight, power in the industry, it saves valuable real estate for computers, sensors, targeting systems, and other devices that make mobile platforms highly effective.

The MILTECH 9116 is fully managed military grade network switch/router offering 12 x 10G copper ports + 4 x 10G fiber ports using TacBeam connectors. It can

be remotely managed to optimize communications and prioritize critical information traffic. Advanced network features, never before found in a package of this size, include switching protocols, virtual LANS (VLANS), traffic prioritization (QoS), and bandwidth aggregation are standard.

The MILTECH 9116's 10 gigabit speeds and 24VDC power make it instantly compatible with network device and power systems.

The MILTECH 9116's is widely used in battlefield communications C4ISR, video, sensor data acquisition, and transmission. Its mechanical packaging enhancements, including ruggedized D38999 connectors, is designed for MIL-STD-810F airborne and ground environmental compliance and high reliability. Leveraging best-in-class switching technology, the MILTECH 9116 serves as a robust commercial off-the-shelf (COTS) solution for rugged LAN connectivity.

## FEATURES

<b>ETHERNET PORTS:</b>	<ul style="list-style-type: none"> <li>• Managed 12 x 10G copper ports + 4 x 10G fiber ports</li> </ul>
<b>NETWORKING:</b>	<ul style="list-style-type: none"> <li>• Wire-speed hardware-based 28 ports gigabit and 10 Gigabit Ethernet switch – L2, L3, L4 Capabilities</li> <li>• L3-Routing capabilities:static,RIPV1,V2,OSPF V2/V3 Multicast Routing, BGP4*,VRRP,ECMP Routing</li> <li>• Multicasting (IGMP Snooping), GARP, GMRP, MLD and GVRP up to 8K groups for both IPv4 and IPv6</li> <li>• Broadcasting and flooding Control up to 8K Groups</li> <li>• 802.1q Tagged based VLAN up to 4K VLAN groups</li> <li>• Bridge Support for VLAN Q-in-Q , manual tunneling</li> <li>• Link Aggregation 802.3ad, up to 16 members in group</li> <li>• Link Aggregation mechanism based on L2/ L3/ L4 parameters</li> <li>• Jumbo Frame support up to 10K</li> <li>• WEB, CLI, Telnet , SNMP V2/V3 management</li> </ul>
<b>NETWORKING:</b> Quality of Service:	<ul style="list-style-type: none"> <li>• QoS Multi-Layer Classifier: 802.1p, EtherType, VLAN-ID, IPv4/6 DSCP/ToS, and UDP/TCP ports &amp; ranges traffic classification.</li> <li>• Per port WFQ and Strict Queuing scheduling</li> <li>• DSCP remarking for both IPv4 and IPv6 frames</li> <li>• Ingress policer and ingress shaper per port with 500Kbps granularity</li> <li>• Egress shaper per port with 500Kbps granularity</li> <li>• Full-duplex flow control (IEEE802.3X) and half-duplex backpressure, symmetric and asymmetric</li> </ul>





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## SPECIFICATIONS

<p><b>NETWORKING:</b></p> <p>Security:</p>	<ul style="list-style-type: none"> <li>• Security via Radius Authentication 802.1x, Port / MAC access control</li> <li>• Port Security</li> <li>• Per port ingress and egress port mirroring including 10G mirroring</li> <li>• Mirroring per VLAN and per content awareness match</li> <li>• Private VLAN support per VLAN (Isolated and Promiscuous ports)</li> <li>• Content Aware Policers:             <ul style="list-style-type: none"> <li>• 128 Content Aware Policers</li> <li>• 16 Content Aware rate policers with rates from 1fps to 32 million fps</li> <li>• 8 UDP/TCP port range policers</li> </ul> </li> <li>• Advanced ACL through hardware based match patterns</li> <li>• Content Aware Policers for generic MAC, ARP, IPv4, IPv6 protocols</li> <li>• No restriction on any mix of entries to Content Aware Policers</li> <li>• Content Aware Policers actions are permit/deny, police, count, snoop and mirror</li> <li>• Special support for IP fragments, UDP/TCP port ranges</li> <li>• Extensive CPU DoS prevention</li> <li>• Surveillance functions by Content Aware Policers counters</li> <li>• Multiple ACLs per port for optimal usage of Content Aware Policers</li> <li>• Storm controllers for flooded broadcast, multicast and unicast</li> </ul>
<p>Redundancy and ring protection:</p>	<ul style="list-style-type: none"> <li>• Spanning Tree (802.1d), RSTP (802.1w) and multiple Spanning Tree (802.1S) for fast recovery rings</li> <li>• QoS consistency across stack / ring</li> <li>• Mirroring across stack / ring</li> <li>• Link aggregation groups spanning multiple switches in stack / ring</li> </ul>
<p><b>CONNECTORS:</b></p>	<ul style="list-style-type: none"> <li>• Power connector: Type MIL-D-38999/24WC04PN</li> <li>• LAN connectors: 3 x 10-646402-643N</li> <li>• Optical Connectors: 2 x TacBeam EB4H8000-3443</li> <li>• Led indication: link / activity per port</li> </ul>
<p><b>CHASSIS:</b></p>	<ul style="list-style-type: none"> <li>• Machined rugged aluminum</li> <li>• Conductively cooled w/custom internal heat-sinks</li> <li>• Ingress protection against sand, dust and moisture</li> <li>• Anodize Coating, MIL-A-8625, Type II, Class 2</li> </ul>
<p><b>STANDARDS:</b></p>	<ul style="list-style-type: none"> <li>• MIL-STD-1275B   MIL-STD-704A   MIL-STD-461E   MIL-STD-810F/G   IP67</li> </ul>
<p><b>PERFORMANCE:</b></p>	<ul style="list-style-type: none"> <li>• 240 Mpps wire speed forwarding rate</li> <li>• 320G maximum forwarding bandwidth</li> <li>• 32K MAC Address</li> </ul>
<p><b>POWER:</b></p>	<ul style="list-style-type: none"> <li>• MIL-STD-1275B Surge and Spike protection</li> <li>• Voltage Input: 24Vdc Nominal (18-32V)</li> <li>• Power Consumption: 87W Maximum</li> <li>• Chassis grounding</li> </ul>

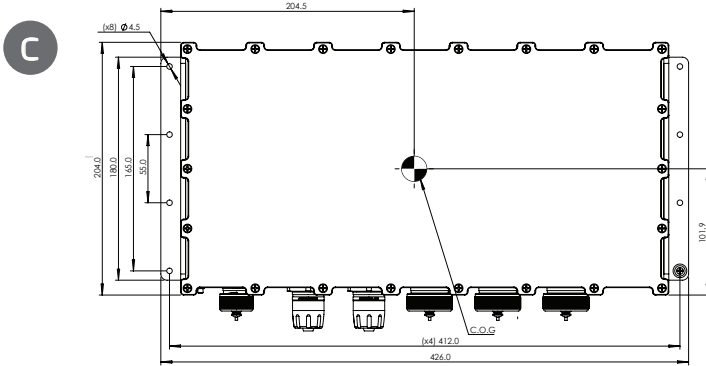
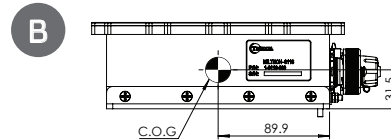
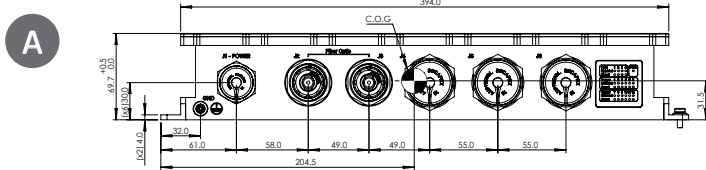


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## SPECIFICATIONS

<b>ENVIRONMENTAL:</b>	<ul style="list-style-type: none"> <li>MILSTD-810F/G</li> <li>Random vibration (514.5I), Bench Handling (516.6VI), High Temp.(501.5I,II), Low Temp.(502.5I), Humidity (507.5II), Air Pressure (500.5I,II)</li> <li>Blowing Rain (506.5I), Immersion (512.5I), Salt Atmosphere (509.5I), Blowing Dust (510.5I), Loose Cargo Vibration (514.6II), Wind Analysis</li> </ul>
<b>PHYSICAL:</b>	<ul style="list-style-type: none"> <li>Dimensions: 426mm(L) x 204mm(W) x 70mm(H), not including connectors. Weight: 4kg</li> <li>Dimensions: 16.77"(L) x 8.03"(W) x 2.75"(H)</li> </ul>
<b>INSTALLATION:</b>	<ul style="list-style-type: none"> <li>8 x 4.5mm mounting holes</li> </ul>
<b>COOLING:</b>	<ul style="list-style-type: none"> <li>No Moving Parts. Passive Cooling.</li> </ul>
<b>OPERATING TEMP:</b>	<ul style="list-style-type: none"> <li>-45°C to +75°C (-49°F to +167°F) Cold Start-Up</li> </ul>
<b>STORAGE TEMP:</b>	<ul style="list-style-type: none"> <li>-45°C to +85°C (-49°F to +185°F)</li> </ul>



## ORDERING INFORMATION

PART NUMBER	DESCRIPTION
1-9116-000	<ul style="list-style-type: none"> <li>Managed Military Grade Gigabit switch/router, 12 x 10G TX + 4 x 10G F/O</li> </ul>
1-9116-001	<ul style="list-style-type: none"> <li>Managed Military Grade Gigabit switch/router, 12 x 10G TX + 2 x 10G F/O</li> </ul>
1-9116-002	<ul style="list-style-type: none"> <li>Managed Military Grade Gigabit switch/router, 12 x 10G TX</li> </ul>
2-CBL9028PWR	<ul style="list-style-type: none"> <li>Power Harness for MILTECH9022/9024/9028/9116</li> </ul>
2-CBL9116LAN+	<ul style="list-style-type: none"> <li>LAN &amp; Management harness for MILTECH9116</li> </ul>