MILTECH™ 9012-C

Compact, Military-Grade, Managed 12-Port Gigabit Ethernet Router/Switch With Cisco® IOS® External Connectivity

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:

- Avionics and UAVs
- Mobile equipment in battlefield environments
- Land autonomous vehicles
- Robots

The MILTECH 9012C is specifically designed for battlefield C4ISR, voice, video, and sensor data acquisition, and communications in platforms that require LAN/WAN connectivity.

While platform-internal networks need maximum speed and throughput, WAN interfaces require robust connectivity. The MILTECH 9012C provides the best of both worlds in a single package – with our proven line-rate internal routing/switching AND Cisco-IOS industry-standard routing, security, and mobility protocols.

The MILTECH 9012C's switch portion features both L2/L3 network switching and routing capabilities, including virtual LANS (VLANS), traffic prioritization/QoS, IPv4/IPv6 support, and bandwidth aggregation.

The integrated Cisco ESR router transparently connects to a mobile world of wired and wireless networks, with IPv4/IPv6 routing and multicast protocols that include BGP, OSPF, GRE, EIGRP, CDP, IGMP and MLD. Voice and video connection quality is maintained with advanced quality of service (QoS) while external communications is secured with the latest encryption algorithms, IPsec and IKEv2 protocols, authentication, identity management, and integrated threat management. These advanced functions normally require a separate edge router, but are now available in our compact MILTECH 9012C.

The MILTECH 9012C offers the best combination of size, weight, and power (SWaP) in the industry, saving valuable real estate for devices that make mobile platforms highly effective. No other military-grade devices offers such functionality in such a small package.

The 9012C is a member of the MILTECH 9012 family that offers flexible alternatives for LAN, LAN/WAN, and customizable networking. All family members are MIL-STD, fully managed, and military grade, with 12 triple-speed (10/100/1000Mbps) ports.
The MILTECH 9012C gigabit-rate transmission and 24VDC power make it instantly compatible with network device and power systems.

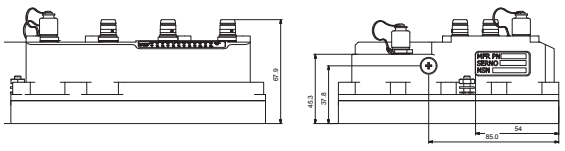
Developed for military and harsh avionic applications, the MILTECH 9012C's mechanical packaging enhancements are designed for MIL-STD-810F airborne and ground environmental compliance and high reliability. The unit has been especially hardened to improve ingress, impact, and shock/vibration protection, as well as eliminate all moving parts through the use of passive cooling. Sealed SCE2 Amphenol circular connectors give the MILTECH 9012C an IP68 rating.

NIST 800-171 Compliant | AS9100D CERTIFIED ISO 9001

SPECIFICATIONS

ETHERNET PORTS:	• Managed 12 x switched 10/100 /1000 ports .
NETWORKING: General	• Wire-speed hardware-based 22 ports gigabit Ethernet switch – L2, L3, L4 Capabilities. • L3 – Routing capabilities: Static, RIP V1, V2, OSPF V1/V2/V3, Multicast Routing, BGP4, VRRP • Multicasting (IGMP Snooping), GARP, GMRP, MLD and GVRP up to 8K groups for both IPv4 and IPv6 • Broadcasting and flooding Control up to 16K Groups • 802.1q Tagged based VLAN up to 4K VLAN groups • Bridge support for VLAN Q-in-Q • Link Aggregation 802.3ad, up to 16 members in group • Link Aggregation mechanism based on L2/ L3/ L4 parameters • Jumbo Frame support up to 10K • WEB, CLI, Telnet Management
NETWORKING: Quality of Service:	• QoS Multi-Layer Classifier: 802.1p, EtherType, VLAN-ID, IPv4/6 DSCP/ToS, and UDP/TCP ports & ranges traffic classification • Per port WFQ and Strict Queuing scheduling • DSCP remarking for both IPv4 and IPv6 frames • Ingress policer and ingress shaper per port with 500Kbps granularity • Egress shaper per port with 500Kbps granularity • Full-duplex flow control (IEEE802.3X) and half-duplex backpressure, symmetric and asymmetric
NETWORKING: Security:	• Security via Radius Authentication 802.1x, Port / MAC access control • Port Security • Per port ingress and egress port mirroring • Mirroring per VLAN and per content awareness match • Private VLAN support per VLAN (Isolated and Promiscuous ports) • Content Aware Policers: - 128 Content Aware Policers - 16 Content Aware rate policers with rates from 1fps to 32 million fps - 8 UDP/TCP port range policers - Advanced ACL trough hardware based match patterns - Content Aware Policers for generic MAC, ARP, IPv4, IPv6 protocols - No restriction on any mix of entries to Content Aware Policers - Content Aware Policers actions are permit/deny, police, count, snoop and mirror - Special support for IP fragments, UDP/TCP port ranges - Extensive CPU DoS prevention - Surveillance functions by Content Aware Policers counters - Multiple ACLs per port for optimal usage of Content Aware Policers • Storm controllers for flooded broadcast, multicast and unicast
NETWORKING: Redundancy and ring protection:	• Spanning Tree (802.1d), RSTP (802.1w) and multiple Spanning Tree (802.1S) for fast recovery rings • QoS consistency across stack / ring • Mirroring across stack / ring • Link aggregation groups spanning multiple switches in stack / ring

A



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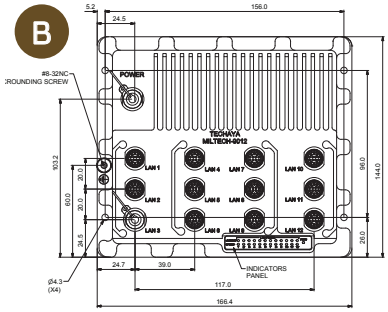

SPECIFICATIONS

CISCO NETWORKING: General:	Routing Information Protocol (RIP) Versions 1 and Open Shortest Path First (OSPF) Enhanced Interior Gateway Routing Protocol (EIG Border Gateway Protocol (BGP) Cisco Discovery Protocol IP Policy Routing IP Multicast Protocol Independent Multicast (PIM) Versions 1 and 2 Internet Group Management Protocol (IGMP) Versions 1, 2, and 3 IP Multicast Load Splitting Cisco Group Management Protocol (GMP) Up to 32 VLANs supported per router IPv4 support IPv6 routing and Cisco Express Forwarding switching • IPv6 QoS • IPv6 tunneling support • Cisco IOS Zone-Based Firewall for IPv6 traffic Encapsulations • Point-to-Point Protocol (PPP) • PPP over Ethernet (PPPoE) client and server for Fast Ethernet • 802.1q VLAN trunking support • Generic routing encapsulation (GRE)
CISCO NETWORKING: General:	Radio-Aware Routing • Optimizes IP routing over fixed or temporary radio networks • Factors radio link metrics into route calculations • Immediately recognizes and adapts to changes in network neighbor status • Supports Dynamic Link Exchange Protocol (DLEP) • Supports Router Radio Control Protocol (R2CP) • Supports RFC 5578 (authored by Cisco) Mobile Ad-Hoc Networks • OSPFv3 enhancements for mobile ad-hoc networks
CISCO NETWORKING: Quality of Service:	• QoS • Generic traffic shaping • Class-based Ethernet matching and mobile access routing (802.1p class of service [CoS]) • Committed access rate • Flow-based Weighted Random Early Detection (WRED) • Class-Based Weighted Fair Queuing (CBWFQ) • Low Latency Queuing (LLQ) • Priority Queuing • Weighted Fair Queuing (WFQ) • Traffic Policing Resource Reservation Protocol (RSVP)
CISCO NETWORKING: Security:	Authentication • Route and router authentication • Password Authentication Protocol (PAP) • Challenge Handshake Authentication Protocol (CHAP) • Microsoft CHAP (MS-CHAP) local password • IP basic and extended access lists • Time-based access control lists (ACLs) Secure Connectivity Secure collaborative communications with Group Encrypted Transport VPN, Dynamic Multipoint VPN (DMVPN), or Enhanced Easy VPN Integrated Threat Control Responds to sophisticated network attacks and threats using Cisco IOS Intrusion Prevention System (IPS), Cisco IOS Firewall, Cisco IOS Zone-Based Firewall, Cisco IOS Content Filtering, and Flexible Packet Matching (FPM) Identity Management Intelligently protecting endpoints using technologies such as AAA and public key infrastructure (PKI) Security Protocols • IPsec • SSL/TLS • 3DES • AES • IKE
CONNECTORS:	• 1 x Power Connector Type: Amphenol – SCE2-B-76A07-10ASN • 12 x LAN Connector Type: Amphenol – SCE2-B-76A07-14SN • LED Indication Per Port (Speed, Link/Activity) Per Unit (Power)

MILTECH™ 9012-C

Avionic Cisco Router IOS - 12 Ports Gigabit

SPECIFICATIONS

CHASSIS:	• Rugged machined aluminum • Conductively cooled w/custom internal heat-sinks • Ingress protection against sand, dust and moisture • Anodize Coating, MIL-A-8625, Type II, Class 2
STANDARDS:	• MIL-STD-1275B, MIL-STD-704A, MIL-STD-461E, MIL-STD-810F, IP68
PERFORMANCE:	• 96.8 Mpps wire speed forwarding rate for switching • 56 Gbps maximum forwarding bandwidth for switching • 10/25/50Mbps for Cisco IOS routing – Based on Cisco 5921 Router • 8K MAC Address
POWER:	• Exceed MIL-STD-1275B and MIL-STD-704A Surge and Spike protection • Voltage Input: 24Vdc Nominal (18-36V) • Power Consumption: 25W Typical • Chassis grounding
ELECTROMAGNETIC:	• MIL-STD-461E Electromagnetic compatibility • CE-102, CS-114, CS-115, CS-116, RE-102, RS-103
SHOCK/VIBRATION/HUMIDITY:	• MIL-STD-810F; 501.4I, 501.4II, 502.4I, 502.4II, 507.4, 500.4II, 514, 516I, 516VI, 514.5, 512.4
PHYSICAL:	• Dimensions: 166mm (L) x 144mm (W) x68(H), including connectors & hardware • Dimensions: 6.53"(L) x 5.67"(W) x 2.67"(H), including connectors & hardware • Weight: 1.1Kg
INSTALLATION:	• Four 4.5mm mounting holes on bottom for mounting to any flat surface.
COOLING:	• No Moving Parts. Passive Cooling.
OPERATING TEMP:	• -45°C to +85°C (-49°F to +185°F) Cold Start-Up
STORAGE TEMP:	• -45°C to +85°C (-49°F to +185°F)

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
1-9012C-000	• Military Grade Cisco Router with 12 x 10/100/1000TX ports
1-9012C-CG-000	• Military Grade Cisco Router with 12 x 10/100/1000TX ports + GPS
1-9012C-001	• 12 Port Ethernet Switch + 10MBPS Cisco Router License.
1-9012C-002	• 12 Port Ethernet Switch + 25MBPS Cisco Router License.
1-9012C-003	• 12 Port Ethernet Switch + 50MBPS Cisco Router License.
1-9012C-004	• 12 Port Ethernet Switch + 100MBPS Cisco Router License.
2-CBL9012CPWR	• Power Harness for MILTECH9012C
2-CBL9012CLAN	• LAN Harness for MILTECH9012C
2-CBL9012CLN+	• Management harness for MILTECH9012C
2-CBL9012CMNG	• Communication cable for port 10
2-CBL9012CP11	• Communication cable for port 11
2-CBL9012CP12	• Communication cable for port 12
2-CBL9012CRF	• RF cable for 9012CG