DuraNET 30-2020

- **Ruggedized Cisco ESS 2020 Managed Switch**
- **19 Ports (2x GigE Uplinks, 17x Fast Ethernet)**
- **Cisco IOS Layer 2 LAN-Base/LAN-Lite Software**
- **Size, Weight & Power Optimized Subsystem**
- **Migration Path for Catalyst 2955T-12 Systems**
- **Designed to MIL-STD-810G, 461F, 1275D, 704F**
- **IP67 Protection, MIL-DTL-38999 Connectors**

Cisco Technology

PRELIMINARY – SUBJECT TO CHANGE

MIL-STD IP67 PC/104 NON-ITAR

- **Network-Centric Operations / Situational Awareness**
- **Embedded IP Networking Tactical Edge Applications**
- **Tactical Layer 2 In-Vehicle / Aircraft LAN Switching**
- **Cisco IOS-Managed Companion Switch for Cisco Mobile Routers**
- **Defense, Homeland Security, Energy, Industrial, Oil & Gas**

The DuraNET 30-2020 is an ultra-rugged 19-port Cisco IOS-managed Layer 2 network switch integrating Cisco's ESS 2020 Embedded Services Switch technology with an isolated MIL-STD-1275/704 power supply in an IP67 (dust/water proof) sealed aluminum chassis with MIL-DTL-38999 connectors. Designed for Size, Weight and Power (SwaP) sensitive harsh military and civil environments (i.e. aircraft, vehicle, mining, industrial), the unit provides reliable local area network (LAN) switching capabilities with the ease of use, secure access, and manageability expected from Cisco-based technology. Two levels of Cisco IOS software (LAN Lite or LAN Base) are available to support access layer connectivity and needs for data, security, voice, and video traffic at the network edge for stationary or mobile network nodes.

An ideal solution for IP networking technology refresh and situational awareness applications, the DuraNET 30-2020 enables IPv4 and IPv6 devices (computers, cameras, sensors, routers, etc.) to be networked across extended operating temperature ranges (-40 to +71C) and extreme shock/vibration conditions. The unit is designed to meet (and will be qualification tested) to extreme MIL-STD-461F EMI/EMC and MIL-STD-810G thermal, shock, vibe, humidity, and ingress conditions. To enhance reliability, the unit features no moving parts, a near cable-less internal design, industrial temperature grade components, EMI filtering, and power protections for the voltage surges, spikes and transients of aircraft/vehicles.

Backwards compatible with the functionality and connector pinout of the DuraNET 2955, the DuraNET 30-2020 provides an enhanced migration path for legacy deployed Cisco Catalyst 2955T-based switch subsystems. Physical dimensions and weight are reduced, Ethernet port density is greater (2x GigE uplinks + 17x 10/100) and EMI/dust/water ingress and input power protections are improved. The unit's chassis is also modular in nature, enabling the potential for special factory configured multi-function appliances integrating Parvus' DuraMAR 5915 Cisco IOS mobile router and/or

FEATURES

CISCO TECHNOLOGY
o Integrated Cisco ESS 2020 Layer 2 IOS Managed Ethernet Switch with 19x Ethernet Ports (2x GigE, 17x 10/100) in Size, Weight & Power (SWaP) Optimized Chassis: <5 lbs. Weight, 3" Height, < 15 Watts Power Consumption
o Cisco IOS LAN Lite or Cisco IOS LAN Base Images Provide Robust Layer 2 Switching, Management, Security, and Quality of Service Features

IOS MANAGEMENT:
o Cisco IOS® with Data, Video, and Voice Services Support
o Security: Dot1x, Port Security, and DHCP Allow Dynamic Port-Based Authentication, Secure Shell (SSHv2), SNMPv3 Provides Encrypted Administrator Traffic During Telnet and SNMP Sessions, TACACS+ and RADIUS Authentication Facilitate Centralized Control and Restrict Unauthorized Users
o Resiliency: Flex Links for Fast Recovery, Cisco REP Protocol for Fast Convergence, Rapid/Multiple Spanning Tree Redunancy, Link Aggregation
o Manageability: Auto SmartPort, Cisco Web Device Manager, Telnet, HTTPS access, SNMP, Storm Control, IGMP Snooping, VLAN, and CoS/QoS Traffic Prioritization

RUGGED MIL-STD DESIGN:
o Designed to Meet Harsh MIL-STD-810G Conditions (Temp, Shock, Vibration, Humidity, Altitude, Dust/Water Ingress)
o Designed to Meet MIL-STD-461F EMI/EMC (Conducted & Radiated Emissions & Susceptibility) and MIL-STD-1275 & 704 Power Input and Transient Protections
o Filtered, Transient-Protected Power Supply for Aircraft and Vehicle Use
o Extended Temperature, Open Architecture PC104 Sized Circuit Card Assemblies with Cable-Less Internal Interconnect for Shock & Vibration Extremes
o Conformal Coated Internal Boards for Humidity and Tin-Whisker Mitigation
o -40 to +71C Fanless Extended Temp Operation with No Moving Parts
o Corrosion-Resistant, Aluminum Chassis Sealed (IP67) Against Water, Dust, EMI
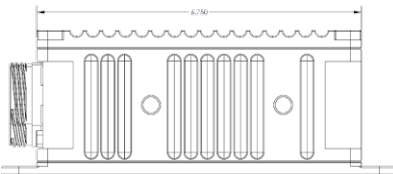o Circular MIL-DTL-38999 Connectors for Reliable Network Connections

Parvus

Specifications

APPLICATIONS	• Cisco IOS-Managed Layer 2 Local Area Network (LAN) Ethernet Switching in Harsh Temperature and Vibration Environments for IP-Enabled Equipment (i.e. On-board Computers, Cameras, Sensors, Routers, Monitoring Devices, and Command-and-Control Gear) • Size, Weight & Power (SWaP) Constrained Mobile, Tactical, Airborne, and Vehicle Networking Applications Upgrading Situational Awareness and Network Centric Capabilities at Network Edge for Defense, Homeland Security, Energy, Industrial, Oil & Gas Platforms • Cisco IOS-Managed Ethernet Port Expansion for Tactial Cisco Mobile Routers (including DuraMAR) • Technology Migration Path for End of Life Cisco Catalyst 2955T-12 (including DuraNET 2955)
CISCO TECHNOLOGY	• Cisco ESS 2020 Non-Blocking OSI Data Layer 2 Ethernet Switch-Based (Derivative of Cisco IE-2000) • Software Options: Cisco IOS LAN Lite or Cisco IOS LAN Base Images (see Cisco ESS 2020 Datasheet / Cisco Feature Navigator for Complete Software Feature Comparison)
PORTS	• 2x 10/10/1000BaseT Gigabit Ethernet Ports • 17x 10/100BaseT Fast Ethernet Ports • RS-232 Management Console and Power Input
PERFORMANCE	• Line Rate/Non-Blocking Uplink/Downlink Application Specific Integrated Circuit (ASIC)-based Architecture • Forwarding Rate: 5.5 Mpps with 64-bytes packets; Forwarding Bandwidth: 3.7 Gbps; Egress buffer: 2MB • Unicast MAC Addresses: 8000; IGMP Multicast Groups: 255; Max VLANs: 255
LAYER 2 SWITCHING	• IEEE 802.3/u/ab (Ethernet, Fast Ethernet, Gigabit Ethernet), IEEE 802.3ad Link Aggregation (LACP), Resilient Ethernet Protocol (REP), IEEE 802.1D/w/s (STP, RSTP, MSTP), IEEE 802.1p Layer2 COS Prioritization; IEEE 802.1q VLAN; IEEE 802.1AB Link Layer Discovery Protocol (LLDP, VLAN Trunking Protocol v2 (VTPv2), Network Time Protocol (NTP), UDLD, Flex Links - (LAN Lite & LAN Base IOS) • VLAN Trunking Protocol v3 (VTPv3), EtherChannel, Voice VLAN (LAN Base IOS only)
MULTICAST	• IGMPv1, v2, v3 Snooping, IGMP Querier (LAN Lite & LAN Base IOS)
MANAGEMENT	• Web Device Manager, SmartPort, MIB, SNMP, syslog, RMON (LAN Lite IOS & LAN Base IOS) • DHCP Server, Remote Switched Port Analyzer (RSPAN), Voice VLAN (VVID), L2 IPv6 Host Capabilities, L2 HTTP over IPv6, SNMP over IPv6, Customized TCAM/SDM Size, Storm Control (LAN Base IOS only)
SECURITY	• Unicast MAC Filtering, SCP, SSH, SNMPv3, TACACS+, RADIUS Server/Client, MAC Address Notification, BPDU Guard, SPAN Session (LAN Lite IOS & LAN Base IOS) • 802.1x Multi-Domain Authentication (MDA), 802.1x Guest VLAN, Storm Control, Port-Security, DHCP Snooping, IP Source Guard, Dynamic Arp Inspection, Guest VLAN, MAC Authentication Bypass, Trust Boundary (LAN Base IOS Only)
QUALITY OF SERVICE	• QoS: Ingress Policing, Rate-Limit, Egress Queueing/Shaping, AutoQoS (LAN Base IOS only)
LAYER 3 ROUTING	• IPv4 Static Routing (LAN Base IOS only)
POWER	• Power Input: 28 VDC Nominal Steady State; Input Range: 18-33 VDC • MIL-STD-704F & MIL-STD-1275D Compliant: Steady State Voltage, Ripple, Surges, Spikes • Power Consumption (estimated): < 15 Watts (max), < 10 Watts (typical)
PHYSICAL	• Dimensions (estimated): 3.00" H x 6.75" D x 6.25" W (~7.62cm H x ~17.15cm D x ~15.88cm W), Excluding Connectors/Mounts • Weight (estimated): < 5 lbs. (~1.87 kg) • Installation: Base Flange Mount or Side Boss Mount (90° Rotated Orientation) • Connectors: MIL-DTL-38999 Series III • Cooling: Passive Natural Convection. No Moving Parts • Ingress Protection: Dust and Water Proof (Similar to IP67) • Enclosure/Finish: Corrosion Resistant, Aluminium Alloy w/ Black Anodize Finish per MIL-A-8625
ENVIRONMENTAL	Designed to Meet MIL-STD-810G (Formal Qualification Testing Pending): • Oper. Temperature: -40° to +71°C / -40° to +160°F (MIL-810G, Methods 501,502) • Storage Temperature: -40° to +85°C / -40° to 185°F (MIL-810G, Methods 501,502) • Oper. Shock: 40g, 11ms, 3 pos/neg per axis, 18 terminal peak sawtooth pulses (MIL-810G, Meth 516) • Crash Hazard Shock: 75g, 11ms, 2 pos/neg per axis, 12 term. peak sawtooth pulses (MIL-810G, Meth 516) • Random Vibration: 10Hz to 2000Hz, 3 Axes, Jet-Helo-Tracked Vehicle Profile, 3 Axes (MIL-810G,Meth 514) • Humidity: Up to 95% RH @ 40C, Non-Condensing (Conformal Coated PWBs - Qual by Analysis) • Water Immersion: 1 Meter, 30 Minutes (MIL-STD-810G, Method 512) • Blowing Sand and Dust per MIL-STD-810G, Method 501.5 (Sealed Enclosure; Qual by analysis) • Operational Altitude: Up to 15,000 feet (4,572 meters) - MIL-STD-810G, Method 500 • Storage Altitude: Up to 40,000 feet (12,192 meters) - MIL-STD-810G, Method 500
EMI / EMC	Designed to Meet MIL-STD-461F(Formal Qualification Testing Pending): • Conducted Emissions, CE102, Power Leads, 10 KHz to 10MHz, basic curve • Conducted Susceptibility, CS101, Power Leads, 30 Hz to 150 KHz, Curve 2 (28V and Below) • Radiated Emissions, RE102, Electric Field, 10 KHz to 18 GHz, Figure RE102-3 Radiated Susceptibility, RS103, Electric Field, 2MHz to 18 GHz, Aircraft External, 200 Volts per Meter
RELIABILITY	• Workmanship: Assembled to IPC-A-610 Class III Workmanship • No Moving Parts. No Active Cooling Required • Conformal Coated PCBs for Humidity/Tin-Whisker Mitigation, Staked Components, Underfilled BGA • MTBF: TBD Calculated per MIL-HDBK-217F
BREAKOUT CABLE SET	• Optional Starter Breakout Cable Set Mates with MIL-DTL-38999 Connectors for Ethernet, Console, and Power Signals, Transitioning to Traditional RJ-45/DB-9/Power (for Lab / Testing Purposes)
CUSTOM ORDER OPTIONS	• Combination Switch + Router and/or Mission Computer Subsystem: Contact Sales@parvus.com for Further Information