DuraNET 3000

PRELIMINARY INFORMATION

Ruggedized Cisco IE-3000 Ethernet Switch,
IOS Managed - 10 / 18 / 26 Ports

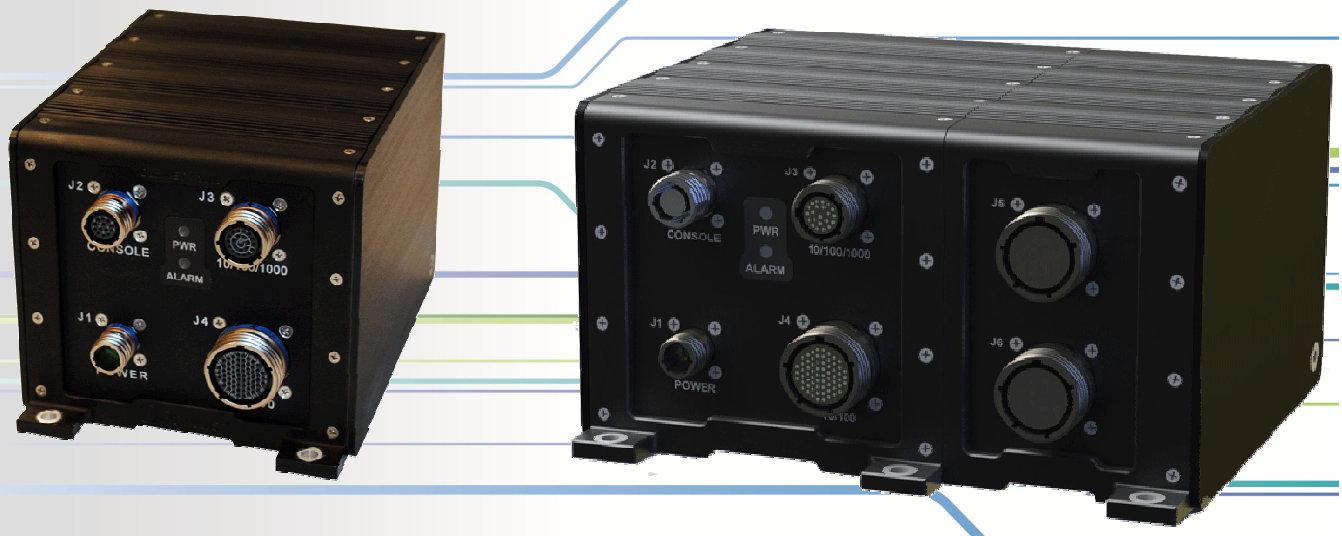

Photo of 10-Port Version (left) and Rendering of 26-Port Version (right)

FEATURES

CISCO INSIDE

- Ruggedized Version of Cisco IE-3000 Industrial Ethernet Switch with Best-in-Class Layer 2 LAN IOS or Layer 3 IP Services IOS Software Support
- Optional Integrated IE-3000 Switch Expansion Module(s) to Scale Port Density from 10 to 26 Ethernet Ports to Meet Application Requirements

RUGGEDIZATION

- Designed to meet MIL-STD-810 Shock, Vibration, Thermal Conditions
- -40 to +71C Fanless Extended Temperature Operation with No Moving Parts
- Rugged, Aluminum Chassis Sealed Against Water, Dust, and EMI
- Internal Structural Support and Component Potting for Shock/Vibe Resistance
- Circular MIL-DTL-38999 Connectors for Reliable Network Connections
- Filtered, Transient-Protected Power Supply for MIL Aircraft / Vehicle Use
- Conformal Coated Boards for Humidity and Tin-Whisker Mitigation

INTERFACES

- 2x Gigabit Ethernet Uplink Ports + 8x, 16x, or 24x Fast Ethernet Ports
- RS232 Serial Console

IOS MANAGEMENT

- Cisco IOS® with Data, Video, and Voice Service Features for Security, QoS, and High Availability: TCP, UDP, Telnet, IGMP, IP, RADIUS, SNMP, RMON, DHCP, HTTPS, VLAN, Cisco Network Assistant, Cisco CLI over Serial, Cisco Device Manager over Web Browser
- Layer 3 IP Services (Optional) Support Inter-VLAN Routing, Advanced Routing Protocols, i.e. Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), Border Gateway Protocol (BGP), Static Routing, VRF Lite, Multicast Routing,etc.

APPLICATIONS

- Civil and Military In-Vehicle Layer 2 / 3 LAN Switching
- 24V / 28V Ground Vehicle / Aircraft / Maritime Installations
- C4ISR Situational Awareness / Technology Refresh / Retrofit / LRU
- Cisco IOS-Managed Switch Port Expansion for DuraMAR/NET Routers

The DuraNET® 3000 is a ruggedized version of Cisco Systems' IE-3000 industrial Ethernet switch, specifically hardened for use in demanding military/ civil IP networking technology refresh applications. This fully managed network switch delivers the security, advanced Quality of Service (QoS), high availability, and manageability that customers expect from Cisco IOS-based switching technology, including optional Layer 3 IP Routing services. Designed with mechanical enhancements to support deployment of data, video, and voice services in extreme temperatures, shock, vibration, humidity, as well as exposure to dust, water, and EMI/EMC environments, the unit requires no active cooling, is completely sealed, and provides interfaces over MIL-C-38999 style connectors.

Leveraging the modular nature of the Cisco IE-3000 platform, Parvus' DuraNET 3000 subsystem comes in several configurations to flexibly scale Ethernet port density from ten (10) to eighteen (18) or twenty-six (26) Ethernet ports. This enables customers to match size, weight, and power (SWaP), along with cost and functional requirements to program needs. Suitable for ground vehicle and aircraft installations, the DuraNET 3000 features MIL-STD-1275 / 704 transient protection and MIL-STD-461 filtering, and is designed to meet MIL-STD-810 environmental conditions.

With software built on the Cisco IOS Catalyst architecture, the DuraNET 3000 offers ease of use and can be configured and managed using a web-based GUI Cisco Device Manager, plus network management tools like Cisco Network Assistant and CiscoWorks. The Layer 2+ version features a specialized Catalyst 2960 LAN Base Image, whereas the Layer 3 version offers a Catalyst 3750 IP services image with a Layer 3+ feature set. The Layer 3 switch supports high performance routing features, such as static, InterVLAN routing, dynamic routing protocols, multicast and IPv6 routing. Security features include port security, layer 2 to layer 4 access list, enhanced identity-based networking with 802.1x, network admission control, DHCP snooping, dynamic ARP inspection, IP source guard, private VLANs, and others. These features help protect network networks from unauthorized users, prevent denial of service attacks and ensure that sensitive information is protected.

Parvus

DuraNET 3000

Front View - 10 Port Version

Front View - 18 Port Version

Front View - 26 Port Version

Top View - 10 Port Version

Rear View - 10 Port Version

Specifications

CISCO INSIDE	• Integrated Cisco IE-3000-8TC(-E) Industrial Ethernet Switch + Up to Two IEM-3000-8TM Switch Expansion Modules • Cisco IOS Layer 2 LAN Base Image or Cisco IOS Layer 3 IP Services Image • Support for Cisco Express Setup, Cisco Device Manager Web Interface, Cisco Network Assistant, CiscoWorks
PORTS	• RS232 Serial Console • Up to 26 Ethernet Ports (over Copper): - 10 Port Version: 2x 10/100/1000BASE-T Gigabit Ethernet Uplinks, 8x 10/100BASE-TX Fast Ethernet Ports - 18 Port Version: 2x 10/100/1000BASE-T Gigabit Ethernet Uplinks, 16x 10/100BASE-TX Fast Ethernet Ports - 26 Port Version: 2x 10/100/1000BASE-T Gigabit Ethernet Uplinks, 24x 10/100BASE-TX Fast Ethernet Ports
PERFORMANCE	• Wire-speed switching, 16 Gbps Switching Fabric • Forwarding Rate (Based on 64-byte packets): 6.5 Mpps • Memory: 128 MB DRAM, 64 MB Compact Flash • MAC Address Support: Up to 8000 (Layer 2) / 2000 Addresses (Layer 3) • IGMP Multicast Groups: Up to 256 (Layer 2) / 1000 IGMP Groups, Multicast Routes (Layer 3) • Unicast Routes: Configurable up to 3,000 Routes (Layer 3 only) • Maximum Transmission Unit (MTU): Up to 9000 bytes
MANAGEMENT AND MONITORING	• Cisco IOS Command Line Interface (CLI) over Serial; Cisco Device Manager over Web Browser, HTTPS Access • DHCP Port-Based Allocation, SNMP (v1 / v2 / v3), RMON (I / II) • TCP, UDP, Telnet, IGMP, IP, RADIUS
AVAILABILITY / REDUNDANCY	• VLAN: Virtual Local Area Network Logical Segmentation of Network for Optimal use of Bandwidth. • QoS: Quality of Service Classification/Prioritization of Data, Guaranteeing Determinism for Mission-Critical Data • IGMPv3 Snooping and IGMP Filtering for Multicast Authentication • Storm Control: Per-port Broadcast, Multicast, and Unicast Storm Control • IEEE 802. 1D/w/s Spanning Tree Protocol (STP), RSTP, MSTP for Fault Tolerance • EtherChannel LACP and FlexLinks for Quick Recovery • HSRP: Cisco Hot Standby Router Protocol for Redundant, Failsafe Routing Topologies • REP: Resilient Ethernet Protocol, Scalable Up to 130 Nodes with Fast Convergence, 50ms. • Precision Timing: IEEE-1588v2 Precision Time Protocol for Nano-Second Precision in High Performance Apps
IP ROUTING FEATURES (LAYER 3 IOS ONLY)	• Inter-VLAN IP Routing, IPv6 Routing (OSPFv6 and EIGRPv6) • Static Routing, RIPv1, RIPv2 and RIPng • Open Shortest Path First (OSPF), Interior Gateway Routing Protocol (IGRP), Enhanced IGRP (EIGRP) • Border Gateway Protocol (BGP) Version 4 (BGPv4, IS-ISv4) • Protocol Independent Multicast (PIM) for IP Multicast Routing, up to 1000 Multicast Groups • Cisco Express Forwarding Hardware Routing Architecture, Policy-based routing (PBR) • HSRP Dynamic Load Balancing and Failover for Routed Links, up to 32 HSRP links • VRF-Lite Virtualization
SECURITY	• Layer 2 Port-based Access Control Lists (ACLs) (Up to 512 ACLs), Layer 3 Extended IP Security Router ACLs • IEEE 802.1x, TACACS+, and RADIUS Authentication • MAC Address Filtering and Port Security • Secure Shell (SSH) Protocol v2 and SNMPv3 encryption • Dynamic Host Configuration Protocol (DHCP) Snooping, Dynamic ARP Inspection, IP Source Guard • Trusted Boundary for QoS Priority Settings • Private VLAN Support
STATUS INDICATION	• LED Indicators for Power Status and Alarm Status
POWER	• Voltage Input: 28Vdc Nominal (18-60V) • Input & Transient Compliance: Designed for MIL-STD-704F, MIL-STD-1275D (Formal Qualification Testing Pending) • Power Consumption (Max): < 25W
PHYSICAL	• Chassis: Aluminium Alloy, Corrosion Resistant, Black Anodize Finish (MIL-A-8625, Type II, Class 2) • Installation: Integrated Flange Mount • Connectors: MIL-DTL-38999, Series III • Cooling: Passive Natural Convection; Internal Conductive Heatsinks; No Moving Parts • Weight: ~7.0 lbs (~3.2 kg) for 10 Ports; ~9.5 lbs (~4.3 kg) for 18 Ports; ~10 lbs (~4.5 kg) for 26 Port Version • Dimensions (Excluding Connectors and Mounting Flanges: 10-Port: Approx. 5.15" H x 5.78" D x 7.40" L (~13.08 cm H x ~18.80 cm D x ~14.68 cm L) 18-Port: Approx. 5.15" H x 5.78" D x 9.25" L (~13.08 cm H x ~18.80 cm D x ~23.50 cm L) 26-Port: Approx. 5.15" H x 5.78" D x 9.50" L (~13.08 cm H x ~18.80 cm D x ~24.13 cm L)
ENVIRONMENTAL	Designed to Meet MIL-STD-810G (Formal Qualification Testing Pending): • Operating 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) • Operating Shock: 40g, 11ms, 3 pos/neg per axis, 18 terminal peak sawtooth pulses (MIL-810G, Method 516) • Crash Hazard Shock: 75g, 11ms, 2 pos/neg per axis, 12 terminal peak sawtooth pulses (MIL-810G, Method 516) • Random Vibration: 10Hz to 2000Hz, 3 Axes, 1 Hour/Axis (MIL-STD-810G, Method 514) • Water Immersion: 1 Meter, 30 Minutes (MIL-STD-810G, Method 512) • Humidity: Up to 95% RH @ 40C, Non-Condensing (Conformal Coated PWBs; Qual by Analysis) • Blowing Sand and Dust per MIL-STD-810G, Method 501.5 (Sealed Enclosure; Qual by analysis) • Operational Altitude: Up to 13,000 feet (3,962 meters) - MIL-STD-810G, Method 500 (Qual by Analysis) • Storage Altitude: Up to 40,000 feet (12,192 meters) -MIL-STD-810G, Method 500 (Qual by Analysis)
EMI/EMC	Designed to Meet MIL-STD-461F (Formal Qualification Testing Pending): • CE102 Conducted Emissions, Input Power Leads, 10 KHz to 10MHz, figure CE102-1 for 28VDC • CS101 Conducted Susceptibility, Power Leads, 30 Hz to 150 KHz, CS101-1, curve 2 • RE102 Radiated Emissions, Electric Field, 10 KHz to 18 GHz, Fixed Wing Internal <25 Meters, Figure 102-3 • RS103 Radiated Susceptibility, Electric Field, 30 MHz to 18 GHz, 200 V/m, table VII
RELIABILITY	• MTBF: TBD Calculated per MIL-HDBK-217F • No Moving Parts; Passive Cooling, Conformal Coated Boards for Humidity and Tin-Whisker Mitigation
WARRANTY	Standard 90-Day Return to Depot Warranty; Extended Service Agreements Bundling Cisco SmartNET Available (for Access to IOS Software Upgrades/Updates)
OPTIONS	• Starter Breakout Cable Sets from MIL-38999 to RJ-45/DB-9 for Lab Use • Optional Fiber Optic Media, AC Power Supply Support: Contact Sales@parvus.com for Further Information