

integrated Ethernet Switch, 12 Port

integrated Ethernet Switch (iES-12), is a rugged 12 port layer 2 managed gigabit Ethernet switch with end node timing and discrete signal capabilities for demanding test instrumentation environments on airborne, shipboard or mobile ground vehicles.

A user programmable FPGA with soft CPU(s) tied directly into the switch with 2.5Gbps interfaces provide packet extraction/inspection/insertion capabilities. Programmable or data driven discrete outputs can be used to control end node devices on or off the network as well as feedback into the **iES-12** from discrete inputs.

With multiple time sources and outputs the **iES-12** provides end node device IRIG time signals. **iES-12** contains a high time accuracy internal GPS receiver and a hardware based IEEE-1588v2 time engine both able to drive the internal IRIG-A/B/G Time Code Generator (TCG) for time outputs.

The integrated board stack architecture and front panel allow for user specific functions and connector interfaces to be implemented without compromising system architecture or integrity.



- (12) Tri-Speed Ports (Expandable to 16) with Layer 2 Switch Management & Diagnostics
- Programmable FPGA/Soft CPU(s) with (2) 2.5Gbps Ethernet Switch Interfaces
- Internal GPS Receiver & IRIG-A/B/G Time Code Generator
- IEEE-1588v2 Clocks: Master, Slave, Ordinary/Boundary or Transparent (P2P & E2E)
- Up to (16) Programmable Discrete Outputs & (16) Programmable Discrete Inputs
- Up to (4) IRIG DC/1PPS Outputs & (4) IRIG AM Outputs
- Full Non-Blocking Wire Speed Performance for All Frame Sizes Up to 9.6KB
- CLI, Web GUI or SNMP Command, Control & Monitoring

integrated Ethernet Switch-12 Features

• Switch Capabilities Overview

- (12) 10/100/1000 Speed Ports (Standard)
- (4) Additional Ports (Option)
- 1-4 PTP Ordinary/Transparent/Boundary Clocks
- 8K MAC Address
- 4K VLAN's (IEEE 802.1Q)
- VLAN Q-in-Q (IEEE 802.1ad) (Carrier Ethernet)
- 8K L2 Multicast Group Addresses
- 8K IPv4/IPv6 Multicast Groups
- MLDv1 & MLDv2 w/ Source Forwarding
- 8 Priorities & 8 QoS Queues per Port
- Jumbo Frames up to 9.6KB
- Programmable MTU Per Port
- Port Mirroring & Link Aggregation (IEEE 802.3ad)
- Rapid Spanning Tree Protocol (IEEE 802.1w)
- Multiple Spanning Tree Protocol (IEEE 802.1s)
- Full-Duplex Flow Control (IEEE 802.3X)
- Packet Filtering Engine w/ up to 256 Entries
- Port Ingress Policing w/ Flow Control
- Flood Controllers (Broadcast/Multicast/Unicast)
- Port/MAC-Based Access Control (IEEE 802.1X)
- Time Sync'ed Audio/Video Bridging (AVB)
- Integrated Cable Diagnostics
- CLI, Web GUI & SNMP Configure & Monitoring

• Open/GND Discrete Outputs

- 12 Port Activity (Standard)
- 1 Fault (Standard)
- 3 Additional (Option)
- Programmable (Option)

• Open/GND Discrete Inputs

- 5 Programmable (Standard)
- 1 Reset (Standard)
- 10 Additional Lines (Option)

• IRIG-A/B/G Time

- 3 DC Code/1PPS Outputs (Standard)
- 1 Additional DC (Option)
- 3 AM Code Outputs (Standard)
- 1 Additional AM (Option)

• RS-232 COM Port

- Configurable

• GPS Receiver

- 30ns RMS 15ns Compensated
- Cold Start 26s, Hot Start 1s

• FPGA

- Altera Cyclone 4GX
- (2) 2.5Gbps Switch Interfaces
- NIOS Soft CPU(s)
- User Programmable (Option)

Dimensions		Width 5.2" x Length 7.1" x Height 2.6"
Power	MIL-STD-704A	28VDC @ 25 Watts Max
Temperature	MIL-STD-810F	-40C to +75C
Altitude	MIL-STD-810F	60,000' Extended, 70,000' 2 Minutes
Vibration	MIL-STD-810F 515.5, 519.4	With Gun Fire
Shock	MIL-STD-810F 503.4	
Loads	MIL-STD-810F	± 10g operating, + 15g ultimate
Explosive Atmosphere	MIL-STD-810F 511.4	
Humidity	MIL-STD-810F	100% Condensing
EMI/EMC	MIL-STD-461	
Standard Connectors	MIL-DTL-38999	