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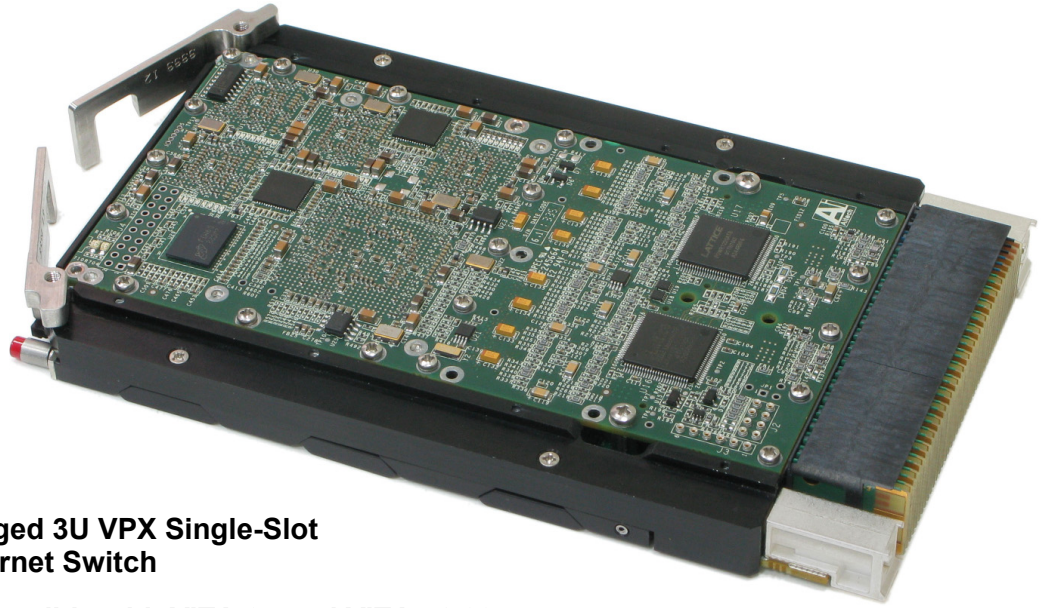
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# C680
## 3U VPX Gigabit Ethernet Switch



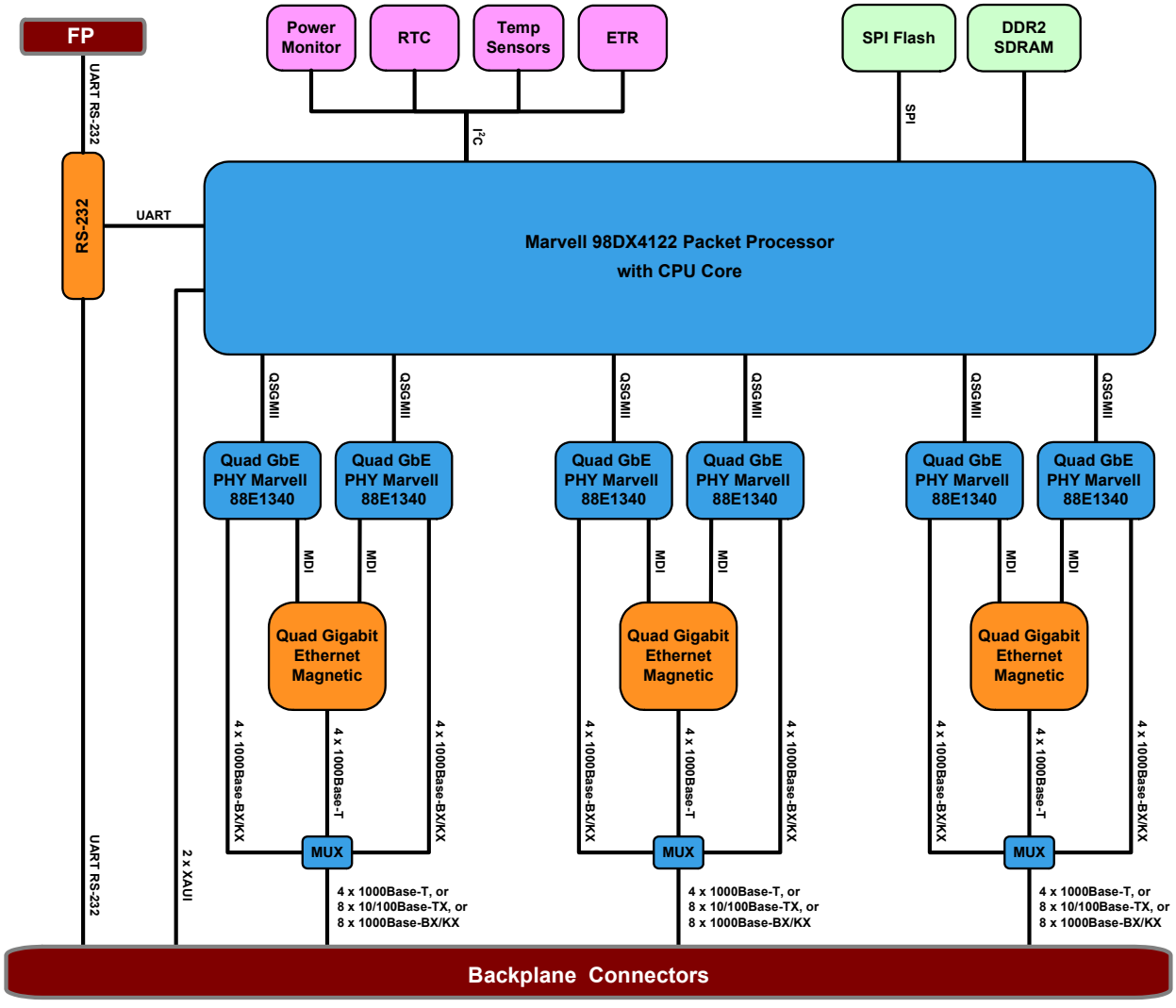
- Rugged 3U VPX Single-Slot Ethernet Switch
- Compatible with VITA 65 and VITA 46.20
- Layer 2 and Layer 3 Management
- Up to 24 Fast/Gigabit Ethernet Ports, Three Standard Configurations
  - 12 x 10/100/1000Base-T Ports
  - 24 x 1000Base-BX/KX Ports
  - 24 x 10/100Base-TX Ports
- Two 10-Gigabit Ethernet Ports
- Full Wire-speed Non-blocking Forwarding
- IP Routing Functionality
- Advanced Spanning Tree Algorithms (RSTP, MSTP)
- Access Control List (ACL) Support
- QoS Management
- IPv4/v6 Differentiated Services (DiffServ)/DSCP Traffic Prioritization
- Web and CLI Configuration and Monitoring
- 802.1Q-based VLAN Support
- Port-level Security via 802.1X Authentication
- SNMP v1, v2c, v3 Support
- Supports OSPF v3, PIM
- 4/8/16 Group LAG Support with Protocol (LACP)
- All types of Storm Control
- Port Mirroring for Noninvasive Monitoring of Switch Traffic
- Jumbo Frame Support (10 kB)
- IPMI Support
- Elapsed Time Recorder
- Temperature Sensors
- Conduction and Air-Cooled Versions
- VITA 48 (REDI) Compliant Option
- Vibration and Shock Resistant

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**A member of the Aitech Rugged Group**
19756 Prairie Street, Chatsworth, CA 91311
Tel: (888) Aitech-8 (248-3248) Fax: (818) 407-1502 e-mail: sales@rugged.com web: www.rugged.com

## *Managed Gigabit Ethernet VPX Switch*

Aitech's C680 is a high-performance 3U VPX Gigabit Ethernet Switch for embedded and harsh environment applications. The C680 is based on the Marvell® Prestera® 98DX4122 Gigabit Ethernet Switch Controller and Marvell's Routing OS. The C680 includes an embedded web server, providing HTML pages that allow the user to manage the switch. The simplified browser-based user interface is an intuitive management tool, enabling convenient use of the switch's comprehensive feature set for a better-optimized network. Command line administration is also supported over network and RS-232 connections.

C680 mechanical and electrical design guarantees reliable operation over the full range of rugged application environments. It is available in industry standard 0.8" pitch conduction-cooled or 1" pitch air-cooled form factors. The C680 is also available in a 0.85" pitch conduction-cooled version for the VITA 48 (VPX REDI) configuration, providing support for two level maintenance requirements.




**C680 Block Diagram**

# Functional Description

## System Architecture

Aitech's C680 is based on the Marvell Prestera 98DX4122 Multi-Layer Gigabit Ethernet Switch packet processor. The Prestera is able to perform Layer 2 and Layer 3 routing and switching for up to 24 Fast/Gigabit Ethernet Ports and up to two 10-Gigabit Ethernet ports. An integrated high performance low power ARM compatible Sheeva™ CPU core operating at 800 MHz functions as a Service Processor and interfaces to a high speed DDRII-320 MHz memory controller.

Six multiplexed multi-rate network QSGMII ports, connected to six quad PHY controllers, support up to 24 Fast/Gigabit Ethernet ports. Two XAUI links are routed to the backplane, providing two 10-Gigabit Ethernet ports.

Board management devices include power controller, elapsed time recorder, temperature sensors and RTC residing on the Prestera's I²C bus.

## Port Description

The C680 is offered in three standard variants, offering a choice of the following Ethernet port configurations:

- 12 x 10/100/1000Base-T Gigabit Ethernet Ports
- 24 x 1000Base-BX/KX SERDES Ports
- 24 x 10/100Base-TX Fast Ethernet Ports

All standard C680 variants also include two 10-Gigabit Ethernet ports.

All configurations are performed at the factory per customer order. Additional configurations are available by customer request.

## OpenVPX Slot Profile

The C680 supports two standard VPX switch slot profiles (see ordering information) as defined in the OpenVPX specification (VITA 65):

- **SLT3-SWH-2F12T**
  SWH = Switch board
  2F = Two fat pipes (XAUI)
  12T = Twelve thin pipes (1000Base-T)
- **SLT3-SWH-2F24U**
  SWH = Switch board
  2F = Two fat pipes (XAUI)
  24U= 24 ultra-thin pipes (1000Base-BX/KX)

## Port Features

- Auto Negotiation Supported
- Auto MDI/MDIX Supported
- Head of Line (HOL) Blocking Prevention Supported
- Flow Control (IEEE 802.3X) Support
- Back Pressure Support
- Jumbo Frames Support
- Cable Analysis
- Manual Port Control and Identification Supported

## Mirroring

- Port Mirroring Supported
- VLAN Mirroring Supported

## MAC Address Support

- VLAN-Aware MAC-based Switching Supported
- MAC Address Aging Supported
- Up to 16K MAC Entries
- Static MAC Entries Supported

## VLAN Support

- Up to 4094 VLANs Supported
- Predefined Default VLAN
- Protected Ports Supported
- Private VLAN Edge Supported
- GVRP & GARP Supported
- Protocol-based VLANs Supported
- Port-based VLANs Supported
- Subnet-based VLANs Supported
- MAC-based VLANs Supported
- Nested VLANs (QinQ) Supported
- Multicast VLAN Registration (MVR) Support
- Multicast TV VLAN Support
- Auto Voice VLAN Support

## Multicast

- Static Multicast Groups (256 Groups Supported)
- IGMP Snooping Supported (IGMP v1, v2, & v3)
- MLD Snooping Supported (MLD v1 & v2)
- Unregistered Multicast Filtering Supported
- IGMP Querier Supported

## Spanning Tree

- Per-device Spanning Tree (IEEE 802.1D)
- Rapid Spanning Tree – RSTP (IEEE 802.1W)
- Multiple Spanning Tree – MSTP (IEEE 802.1S)
- Spanning Tree Fast Link Option
- STP Root Guard Supported
- STP BPDU Guard Supported
- BPDU Flooding/Filtering Supported (when STP is disabled on the switch or on the port)
- Loopback Detection Supported

## Link Aggregation

- Up to 8 LAGs Supported, each with up to 8 port members
- LACP Support
- LAG Balancing Algorithm Support

### *Access Control Lists*

- Up to 2k ACLs Supported
- MAC ACL Condition Supported
- IP ACL Condition Supported
- Time-based ACL Supported

### *Supported ACL Actions*

- Forward Packet
- Drop Packet
- Drop Packet and Disable Ingress Port

### *QoS/CoS and Rate Limiting*

- QoS Basic Mode Supported
- QoS Advanced Mode Supported
- Trust Configuration in Basic Mode
- Port Based Priority Supported
- Queue Mapping for 8 and 4 Queue Devices
- QoS Policy Customization
- QoS Statistics
- Ingress Rate Limiting Accurate Mechanism
- Egress Rate Limiting (Shaping)
- Rate Limiting Action in ACL
- Packet Storm Control

### *System IP Address Management*

- Static Assignment of up to 32 IP Addresses
- Management VLAN
- DNS Client
- IPv6 Host
- DHCP Server
- DHCP Relay Option 82

### *IP Routing*

- Up to 128 Static Routes
- Up to 1024 ARP Entries
- Proxy ARP Supported
- L3 DHCP Relay Supported
- UDP Relay Supported
- RIP v2 Supported

### *Security*

- MAC-based Port Security Supported
- IEEE 802.1X Support
- Guest VLAN Support
- Unauthenticated VLAN Support
- Dynamic VLAN Assignment Supported
- Dynamic ACL (DACL) for Ingress Supported
- Remote Authorization and Authentication (RADIUS) Support (8 servers)
- Radius Accounting Supported
- TACACS+ Support (8 servers)
- Local Authentication Support
- Authentication Method Configuration & Priority
- DHCP Snooping Supported
- IP Source Guard Supported
- Dynamic ARP Inspection Supported

### *Graphical Switch Management Interface*

- Embedded Web Server provides HTML Pages for Switch Management from Web Browser Interface
- HTTP/HTTPS (SSL v3) Supported

### *CLI Switch Management*

- Multi-Session Telnet Connections Supported
- SSH Connections Supported
- RS-232 Console Port Connection Supported

### *Management Features*

- Inactivity Timer for Management Sessions
- Password Security Supported
- Cryptography Supported
- Certificate Expiration Support
- Event Logging Supported
- Multiple User Support
- Soft Reset Supported
- SNTP (Simple Network Time Protocol) Support
- Ping Facility Supported
- Traceroute Supported
- LLDP (IEEE 802.1AB) + LLDP MED Supported
- Switch Auditing Supported

### *Configuration Management*

- Configuration File Handling
- Clearing and Deleting
- HTTP/S Down/Upload of Configuration Files
- Auto Configuration Backup

### *SNMP*

- SNMP v1, v2c, and v3 Supported
- MIB File Support
- Other MIB Placing
- OID Placing

### *Monitoring*

- CPU Utilization
- Port/Link Utilization
- TCAM Utilization
- RMON Support
- sFlow (flow monitoring) Support
- Power Supply Status
- Temperature Status

### *Extended L3 Features*

- Dual IP Stack Support
- RIP v6 Support
- OSPF v3 Support
- Routing Table Management and Route Redistribution
- Route Maps Supported
- PIM Support

### *Front Panel Connectors and Switches*

The air-cooled version of the board is provided with a front panel, including the following:

- Two Power and System Status bicolor LEDs
- One RS-232 Debug Connector
- Reset Pushbutton

## *Mechanical Features*

The C680 is available in air-cooled, conduction-cooled, and conduction-cooled REDI mechanical formats; all are single slot 3U modules.

A custom metal frame integral to the conduction-cooled version of the C680 provides excellent rigidity and shock resistance.

### VPX REDI (VITA 48)

The conduction-cooled C680 is optionally offered in a VPX REDI compliant configuration, supporting two-level maintenance per VITA 48, with top and bottom covers shielding the complete C680 assembly.

### Dimensions

| | |
|---|---|
| Air-cooled: | per ANSI/VITA 46.0 |
| Conduction-cooled: | per ANSI/VITA 46.0 |
| Conduction-cooled REDI: | per VITA 48.2 |

### Weight

| | |
|---|---|
| Air-cooled: | < 420 g (0.93 lbs) |
| Conduction-cooled: | < 500 g (1.10 lbs) |
| Conduction-cooled REDI: | < 590 g (1.30 lbs) |

### Thermal Management

Careful mechanical design, including custom heatsinks combined with a metal frame, allow for optimal heat dissipation and relief of the board. The C680 is also equipped with three temperature sensors, located at temperature-critical locations, to monitor board temperature and provide temperature data to user.

### Power Requirements

The C680 takes all its power from the VPX backplane. It should be provided with +3.3 V and +5.0 V as defined by the VPX specification.

Other power supplies used by C680 resources are integrated on board.

Total power consumption depends on configuration and assembly options. Maximum power consumption is 20 W, as follows:

| | |
|---|---|
| +3.3 V | 1.5 A |
| +5.0 V | 3.0 A |

## *Environmental Features*

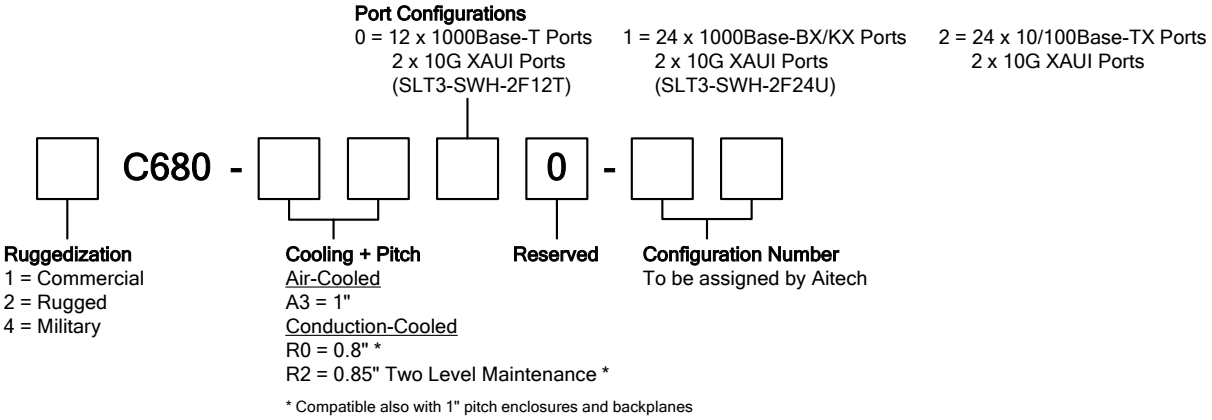
Please refer to the Aitech Ruggedization datasheet.

## *Accessories*

For system integration and other development purposes, the TM680 Rear Transition Module (RTM) provides convenient access via standard connectors to all C680 I/O interfaces. The RTM supports both the air-cooled and conduction-cooled versions of the C680 when mounted in a commercial air-cooled chassis.

# C680
# 3U VPX Gigabit Ethernet Switch

## Ordering Information




* Compatible also with 1" pitch enclosures and backplanes

**Example:** 4C680-R000-00

For more information about the C680 or any Aitech product, please contact Aitech Defense Systems sales department at (888) Aitech-8 (248-3248).

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