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Find the *Aitech Defense Systems C690* at our website: ***Click HERE***

C690

3U VPX Managed GbE and PCIe Switch

Aitech
Embedded Computing *without* Compromise



- **Rugged 3U VPX Single-Slot Integrated Managed GbE and PCIe Gen2 Switch**
- **Gigabit Ethernet Switch**
  - Layer 2 and Layer 3 Management
  - Full Wire-Speed Non-Blocking Forwarding
  - Three standard port configurations
    - 8 x 1000Base-BX/KX
    - 6 x 1000Base-BX/KX + 2 x 1000Base-T
    - 5 x 1000Base-T
- **PCIe Gen2 Switch**
  - Six PCIe x4 Ports (default configuration)
  - User Configurable as up to 20 Ports
  - Low Latency Cut-Through Architecture
  - Transparent/Non-Transparent Support
- **OpenVPX (VITA 65) Compliant**
- **Board Resources**
  - Temperature Sensors
  - Elapsed Time Recorder
  - Real Time Clock
  - Power Monitor
- **Built-In Test Support**
- **Conduction and Air-Cooled Versions**
- **2LM Option per VITA 48.2**
- **Vibration and Shock Resistant**



C690

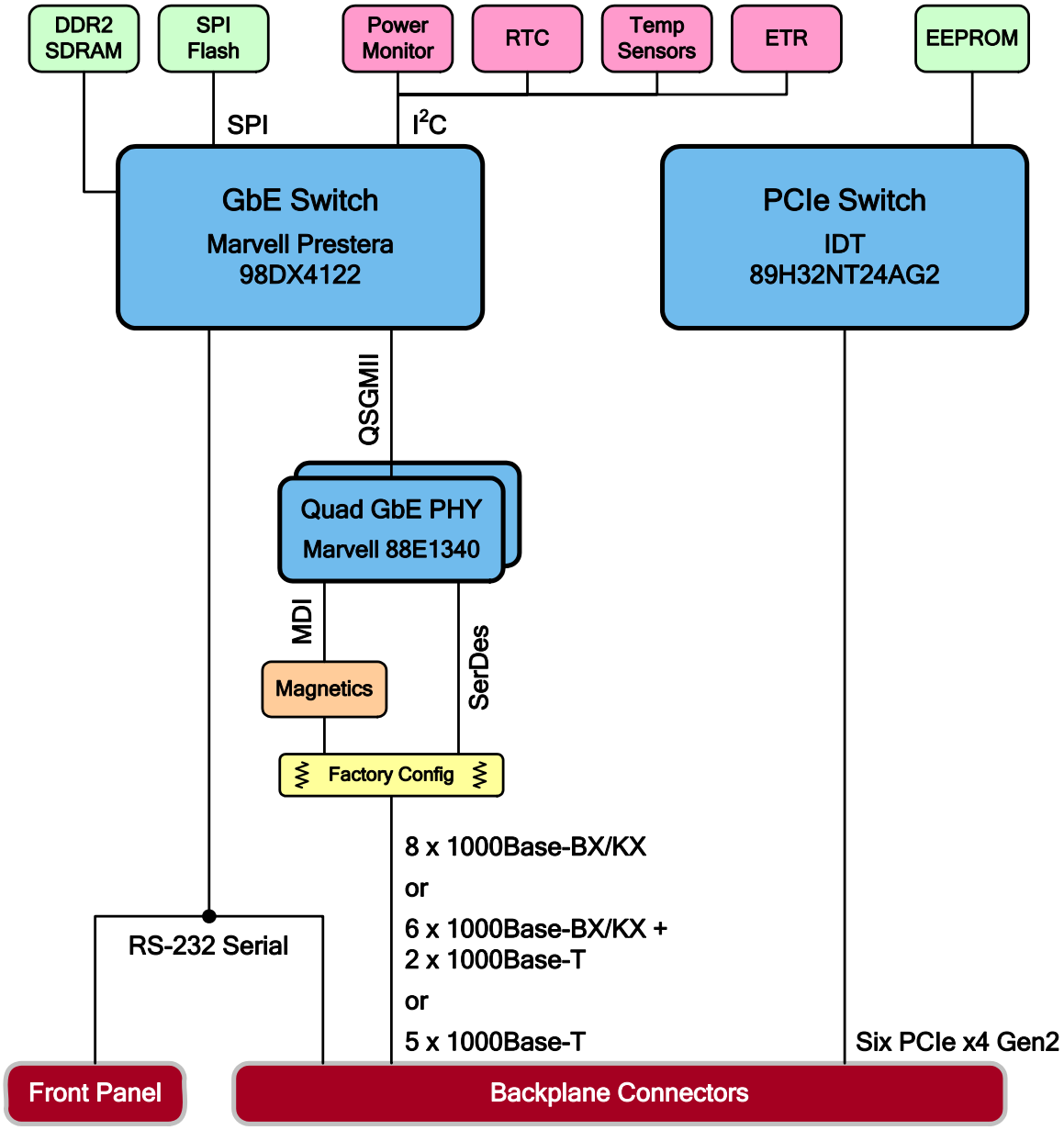
3U VPX Managed GbE and PCIe Switch

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Aitech's C690 is a high-performance 3U VPX integrated managed Gigabit Ethernet and PCI Express Switch for embedded and harsh environment applications.

Managed switching of up to eight Gigabit Ethernet ports is performed by the Marvell® Prestera® 98DX4122 Gigabit Ethernet Switch Controller and Marvell's Routing OS. An embedded web server provides a convenient and intuitive graphical switch management interface via a web browser. Command line switch management is also supported over network and RS-232 connections.

PCIe switching of up to 20 ports / 24 lanes is performed by the IDT 89H32NT24AG2 Gen2 PCIe switch, which provides powerful switching capabilities and integrated DMA engines for fast data transfers between VPX cards. Flexible configuration options allow setting of different port/lane combinations and allocations for Transparent and Non-Transparent ports.



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Board Architecture

PCIe Switch Controller	IDT 89H32NT24AG2
Ethernet Switch Controller	Marvell Prestera® 98DX4122 running Marvell Routing OS
OpenVPX (VITA 65) Switch Slot Profiles	Supported OpenVPX (VITA 65) switch slot profiles vary according to C690 I/O Variant (see *I/O* below) • **SLT3-SWH-6F8U-14.4.9** Compatible with Variant 1 SWH = Switch board, 6F = Six fat pipes (PCIe x4), 8U = Eight ultra thin pipes (1000Base-BX/KX) • **SLT3-SWH-6F6U-14.4.1** Compatible with Variant 2 SWH = Switch board, 6F = Six fat pipes (PCIe x4), 6U = Six ultra thin pipes (1000Base-BX/KX) • **SLT3-SWH-4F-14.4.4** Compatible with All Variants SWH = Switch board, 4F = Four fat pipes (PCIe x4)
Board Resources	• Temperature Sensors • Elapsed Time Recorder • Real Time Clock • Power Monitor

I/O

	I/O Variant (1)		
	1	**2**	**3**
10/100/1000Base-T Marvell 88E1340 PHY devices and on-board GbE magnetics	0	2	5
1000Base-BX/KX Supports both backplane applications and external SFP modules	8	6	0
RS-232 Serial Ethernet switch management console port	1		
PCIe User configurable as up to 20 ports via on-board EEPROM device	Six x4 Ports		

Notes: (1) C690 I/O Variants offer different Ethernet port interfaces/quantities via factory configuration (options are specified when ordering the C690 and are not user configurable); additional Ethernet port configuration options may be available per customer request, contact an Aitech representative for more information

PCIe Switch Features

- User configurable via on-board EEPROM device (1)
- Supports Gen2 (5 GT/s) and Gen1 (2.5 GT/s) speeds
- Low latency cut-through architecture
- Automatic per port link width negotiation
- Supports 128 Bytes to 2 kB maximum payload size
- Supports up to 8 independent switch partitions
- Transparent / Non-Transparent (NT) port configuration (up to 8 ports configurable as NT)
- DMA support
- Multicast support
- Port Status Indicator LEDs

Notes: (1) User configuration of the C690 PCIe switch is not mandatory; the PCIe switch can also be used with the default EEPROM value loaded by Aitech

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Ethernet Switch Features

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 (10 kB) • Cable Analysis • Manual Port Control and Identification Supported • Full and Half-Duplex Operation • Port Status Indicator LEDs
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
802.1Q-based 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) • Unregistered Multicast Filtering Supported	• MLD Snooping Supported (MLD v1 & v2) • 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

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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
Built-In Tests	• Power-Up BIT • Background Periodic/Continuous BIT	• Initiated BIT • Covers all major Ethernet switch hardware devices

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Front Panel (1)

I/O	Ethernet switch management RS-232 serial console port via 9 pin Micro-D connector
Pushbuttons	Ethernet switch reset pushbutton
Indicator LEDs	Power status and Built-In Test status

Notes: (1) Included only in air-cooled versions of the C690

Mechanical

	Form Factor & Dimensions (1)	Weight
Air-Cooled	3U VPX REDI per ANSI/VITA 48.1	< 470 g (1.04 lbs)
Conduction-Cooled	3U VPX REDI per ANSI/VITA 48.2	< 500 g (1.11 lbs)
Conduction-Cooled 2LM	3U VPX REDI 2LM (Two Level Maintenance) per ANSI/VITA 48.2	< 590 g (1.31 lbs)

Notes: (1) See *Ordering Information* below for available pitches

Power

Supplies (1)	+5 V	+3.3V_AUX	Total (2)
+5V and +3.3V_AUX	3.7 A	0.4 A	20 W
+5V only	4.0 A	–	20 W

Notes: (1) Current is drawn from the backplane +3.3V_AUX supply if available (+3.3V is generated on board if +3.3V_AUX is not available), the +5V backplane supply is always required (+12V, +3.3V, and ±12V_AUX backplane supplies are not required)
(2) All Ethernet and PCIe ports active, PCIe Gen2 operation

Environmental

Specs per VITA 47	Air-Cooled			Conduction-Cooled	
	Commercial	**Rugged**	**Military**	**Rugged**	**Military**
Operating Temp.	AC1 (0 to +55 ºC) (2)	AC3 (-40 to +70 ºC) (2)	AC4 (-40 to +85 ºC) (1,2)	CC3 (-40 to +70 ºC) (3)	CC4 (-40 to +85 ºC) (1,3)
Non-Operating Temp.	C1 (-40 to +85 ºC)	C3 (-50 to +100 ºC)	C4 (-55 to +125 ºC)	C3 (-50 to +100 ºC)	C4 (-55 to +125 ºC)
Vibration	V1	V2	V2	V3	V3
Operating Shock	OS1	OS1	OS1	OS2	OS2
Altitude	15,000 ft.	35,000 ft.	70,000 ft.	35,000 ft.	70,000 ft.
Relative Humidity (4)	0 - 90%	0 - 95% with Acrylic (Standard),			
Conformal Coating	N/A	0 - 100% with Urethane (Optional)			

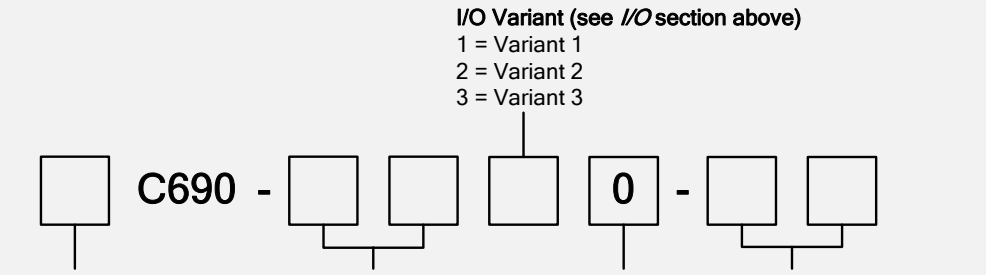
Notes: (1) -55 ºC available, contact an Aitech representative for more information
(2) Operating ambient air temperature (with sufficient airflow)
(3) Operating card edge temperature
(4) Non-condensing

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Ordering Information



* Compatible also with 1" pitch enclosures and backplanes

Example: 4C690-R020-00

Contact Aitech

Contact your Aitech sales representative for additional product information, and for inquiries regarding customized configurations of the C690 and additional software support.



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