

C690

3U VPX Managed GbE and PCIe Switch



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- 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



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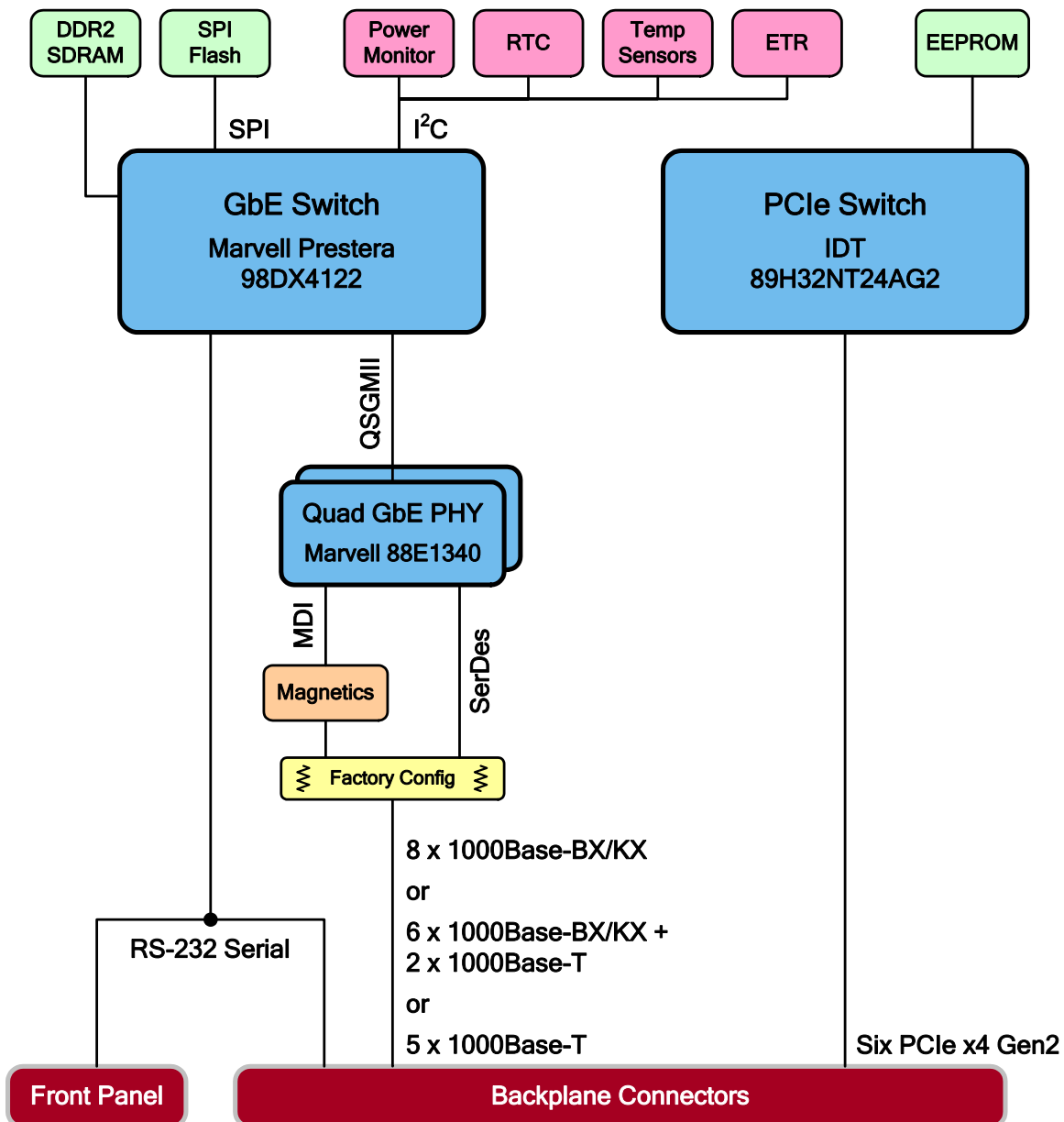
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Aitech's C690 is a high-performance 3U VPX integrated managed Gigabit Ethernet and PCI Express Switch for embedded and harsh environment applications.

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) <ul style="list-style-type: none">• 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 | <ul style="list-style-type: none">• 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 (5GT/s) and Gen1 (2.5GT/s) speeds
- Low latency cut-through architecture
- Automatic per port link width negotiation
- Supports 128 Bytes to 2kB 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 | <ul style="list-style-type: none">• Auto Negotiation Supported• Auto MDI/MDIX Supported• Head of Line (HOL) Blocking Prevention Supported• Flow Control (IEEE 802.3X) Support• Back Pressure Support | <ul style="list-style-type: none">• Jumbo Frames Support (10kB)• Cable Analysis• Manual Port Control and Identification Supported• Full and Half-Duplex Operation• Port Status Indicator LEDs |
| Mirroring | <ul style="list-style-type: none">• Port Mirroring Supported | <ul style="list-style-type: none">• VLAN Mirroring Supported |
| MAC Address Support | <ul style="list-style-type: none">• VLAN-Aware MAC-based Switching Supported• MAC Address Aging Supported | <ul style="list-style-type: none">• Up to 16K MAC Entries• Static MAC Entries Supported |
| 802.1Q-based VLAN Support | <ul style="list-style-type: none">• 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 | <ul style="list-style-type: none">• 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 | <ul style="list-style-type: none">• Static Multicast Groups (256 Groups Supported)• IGMP Snooping Supported (IGMP v1, v2, & v3)• Unregistered Multicast Filtering Supported | <ul style="list-style-type: none">• MLD Snooping Supported (MLD v1 & v2)• IGMP Querier Supported |
| Spanning Tree | <ul style="list-style-type: none">• 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 | <ul style="list-style-type: none">• STP BPDU Guard Supported• BPDU Flooding/Filtering Supported (when STP is disabled on the switch or on the port)• Loopback Detection Supported |
| Link Aggregation | <ul style="list-style-type: none">• Up to 8 LAGs Supported, each with up to 8 port members | <ul style="list-style-type: none">• LACP Support• LAG Balancing Algorithm Support |
| Access Control Lists | <ul style="list-style-type: none">• Up to 2k ACLs Supported• MAC ACL Condition Supported | <ul style="list-style-type: none">• IP ACL Condition Supported• Time-based ACL Supported |
| Supported ACL Actions | <ul style="list-style-type: none">• Forward Packet• Drop Packet | <ul style="list-style-type: none">• Drop Packet and Disable Ingress Port |
| QoS/CoS and Rate Limiting | <ul style="list-style-type: none">• 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 | <ul style="list-style-type: none">• QoS Statistics• Ingress Rate Limiting Accurate Mechanism• Egress Rate Limiting (Shaping)• Rate Limiting Action in ACL• Packet Storm Control |
| System IP Address Management | <ul style="list-style-type: none">• Static Assignment of up to 32 IP Addresses• Management VLAN• DNS Client | <ul style="list-style-type: none">• IPv6 Host• DHCP Server• DHCP Relay Option 82 |

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| | | |
|--|---|--|
| IP Routing | <ul style="list-style-type: none">• Up to 128 Static Routes• Up to 1024 ARP Entries• Proxy ARP Supported | <ul style="list-style-type: none">• L3 DHCP Relay Supported• UDP Relay Supported• RIP v2 Supported |
| Security | <ul style="list-style-type: none">• 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) | <ul style="list-style-type: none">• 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 | <ul style="list-style-type: none">• Embedded Web Server provides HTML Pages for Switch Management from Web Browser Interface | <ul style="list-style-type: none">• HTTP/HTTPS (SSL v3) Supported |
| CLI Switch Management | <ul style="list-style-type: none">• Multi-Session Telnet Connections Supported• SSH Connections Supported | <ul style="list-style-type: none">• RS-232 Console Port Connection Supported |
| Management Features | <ul style="list-style-type: none">• Inactivity Timer for Management Sessions• Password Security Supported• Cryptography Supported• Certificate Expiration Support• Event Logging Supported• Multiple User Support | <ul style="list-style-type: none">• 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 | <ul style="list-style-type: none">• Configuration File Handling• Clearing and Deleting | <ul style="list-style-type: none">• HTTP/S Down/Upload of Configuration Files• Auto Configuration Backup |
| SNMP | <ul style="list-style-type: none">• SNMP v1, v2c, and v3 Supported• MIB File Support | <ul style="list-style-type: none">• Other MIB Placing• OID Placing |
| Monitoring | <ul style="list-style-type: none">• CPU Utilization• Port/Link Utilization• TCAM Utilization• RMON Support | <ul style="list-style-type: none">• sFlow (flow monitoring) Support• Power Supply Status• Temperature Status |
| Extended L3 Features | <ul style="list-style-type: none">• Dual IP Stack Support• RIP v6 Support• OSPF v3 Support | <ul style="list-style-type: none">• Routing Table Management and Route Redistribution• Route Maps Supported• PIM Support |
| Built-In Tests | <ul style="list-style-type: none">• Power-Up BIT• Background Periodic/Continuous BIT | <ul style="list-style-type: none">• 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 | < 470g (1.04 lbs) |
| Conduction-Cooled | 3U VPX REDI per ANSI/VITA 48.2 | < 380g (0.84 lbs) |
| Conduction-Cooled 2LM | 3U VPX REDI 2LM (Two Level Maintenance) per ANSI/VITA 48.2 | < 530g (1.17 lbs) |

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

Power

| Supplies ⁽¹⁾ | +5V | +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°C) ⁽²⁾ | AC3 (-40 to +70°C) ⁽²⁾ | AC4 (-40 to +85°C) ^(1,2) | CC3 (-40 to +70°C) ⁽³⁾ | CC4 (-40 to +85°C) ^(1,3) |
| Non-Operating Temp. | C1 (-40 to +85°C) | C3 (-50 to +100°C) | C4 (-55 to +125°C) | C3 (-50 to +100°C) | C4 (-55 to +125°C) |
| 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 - 100% | | | | |
| Conformal Coating | N/A Acrylic (Silicone and Urethane Optional) | | | | |

Notes: (1) -55°C available, contact an Aitech representative for more information

(2) Operating ambient air temperature (with sufficient airflow)

(3) Operating card edge temperature

(4) Non-condensing

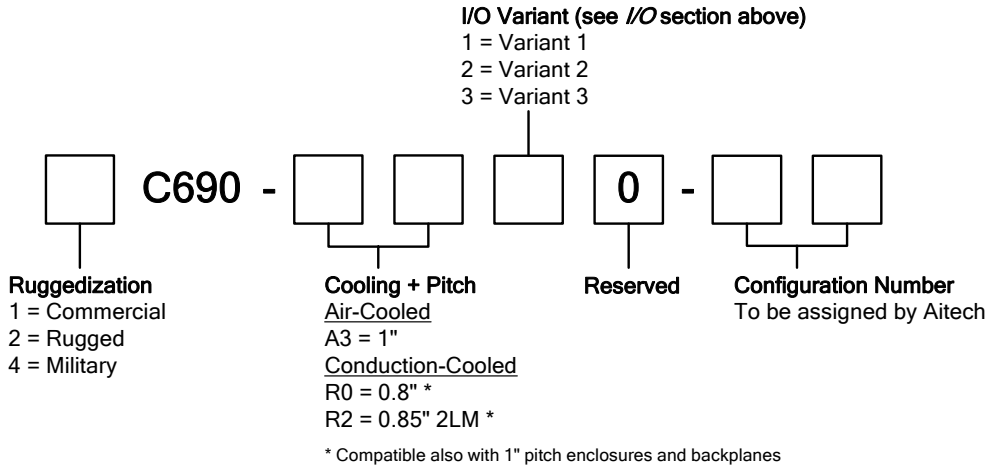
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Ordering Information



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.

