C691

3U VPX Unmanaged GbE and PCIe Switch

Aitech
Embedded Computing *without* Compromise

- **Rugged 3U VPX Single-Slot Integrated Unmanaged GbE and PCIe Gen2 Switch**
- **Gigabit Ethernet Switch**
  - Unmanaged, No Configuration Required
  - 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
    - One additional 1000Base-T Port at Front Panel in air-cooled versions
- **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**
- **Conduction and Air-Cooled Versions**
- **2LM Option per VITA 48.2**
- **Vibration and Shock Resistant**

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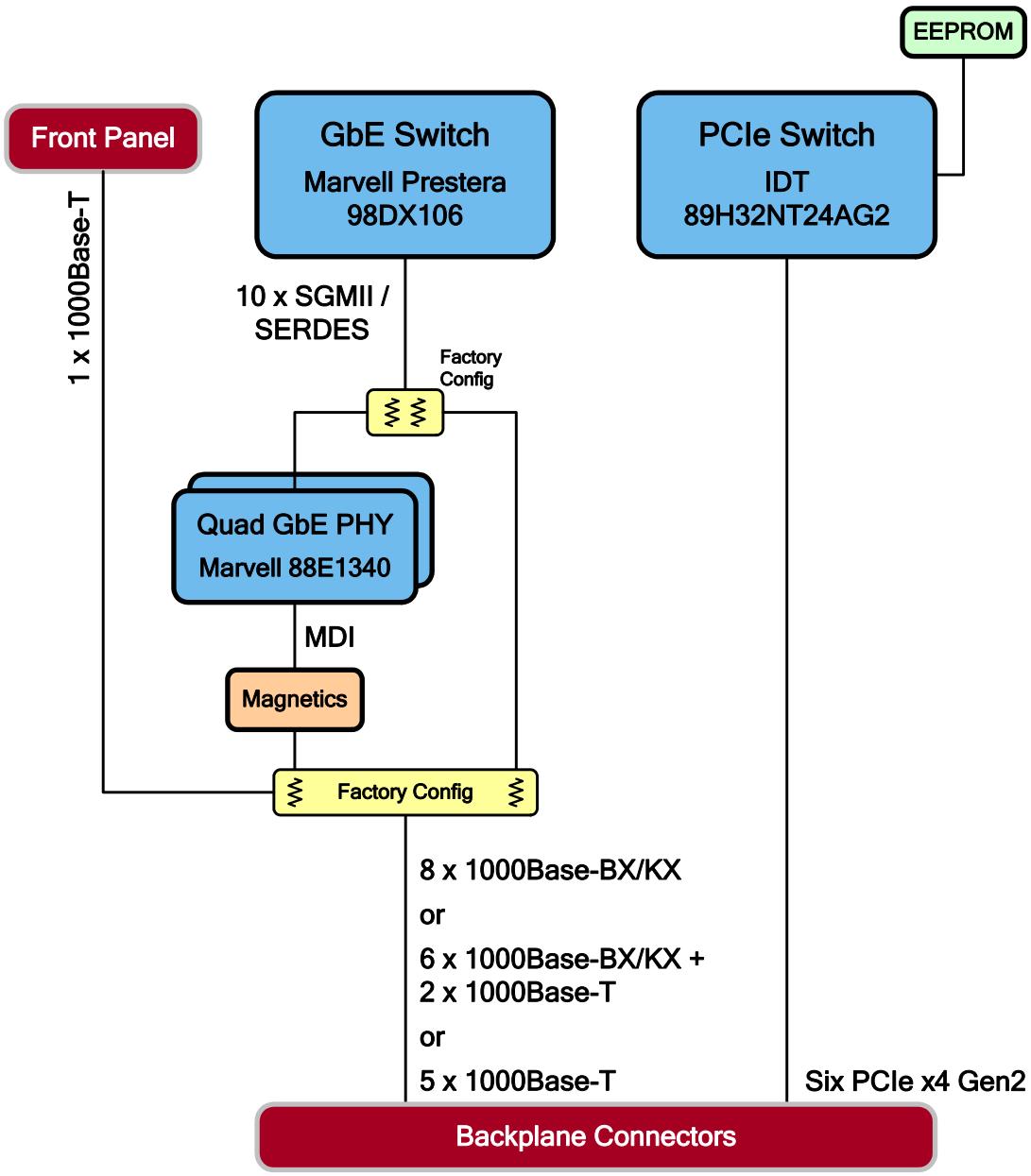
Aitech's C691 is a high-performance 3U VPX integrated unmanaged Gigabit Ethernet and PCI Express Switch for embedded and harsh environment applications.

Gigabit Ethernet switching is performed by the Marvell Prestera® 98DX106. The Ethernet switch is unmanaged and does not require any user configuration.

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® 98DX106
OpenVPX (VITA 65) Switch Slot Profiles	Supported OpenVPX (VITA 65) switch slot profiles vary according to C691 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)

I/O

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

Notes: (1) C691 I/O Variants offer different Ethernet port interfaces/quantities via factory configuration (options are specified when ordering the C691 and are not user configurable); additional Ethernet port configuration options may be available per customer request, contact an Aitech representative for more information
(2) One additional 1000Base-T port is provided at the front panel RJ45 connector of air-cooled versions

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 C691 PCIe switch is not mandatory; the PCIe switch can also be used with the default EEPROM value loaded by Aitech

Ethernet Switch Features

- Unmanaged, no user configuration required
- Full wire-speed non-blocking forwarding
- Jumbo Frame support (up to 9 kB)
- 1 Mbit on-chip buffer memory
- 8k entries forwarding database
- Base-T auto-negotiation and auto cross-over (MDI/MDI-X)
- Full and half-duplex operation
- Port Status Indicator LEDs

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Front Panel (1)

I/O	One 1000Base-T port via RJ45 connector
Pushbuttons	Ethernet switch reset pushbutton
Indicator LEDs	Board status, power supply status, and Ethernet port link status

Notes: (1) Included only in air-cooled versions of the C691

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	< 380 g (0.84 lbs)
Conduction-Cooled 2LM	3U VPX REDI 2LM (Two Level Maintenance) per ANSI/VITA 48.2	< 530 g (1.17 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	2.1 A	0.4 A	12 W
+5V only	2.4 A	–	12 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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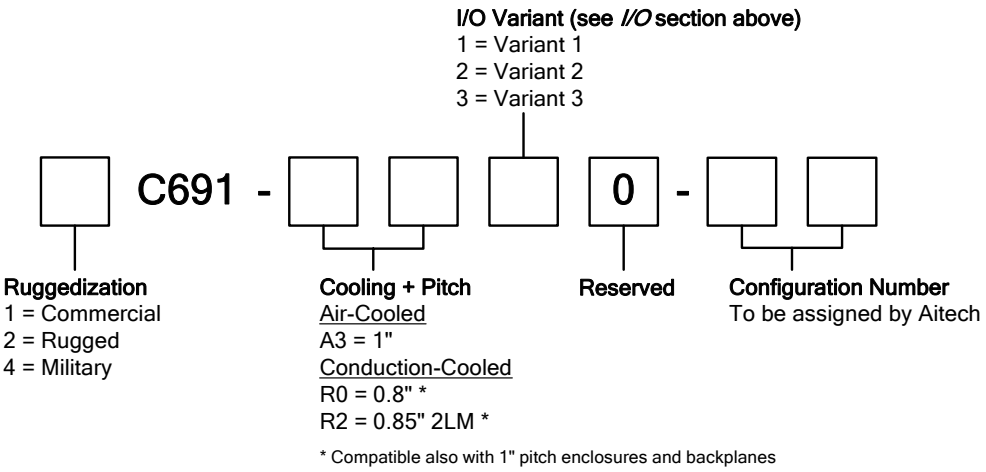
Ordering Information



* Compatible also with 1" pitch enclosures and backplanes

Example: 4C691-R020-00

Contact Aitech

Contact your Aitech sales representative for additional product information, and for inquiries regarding customized configurations of the C691 and additional software support.