

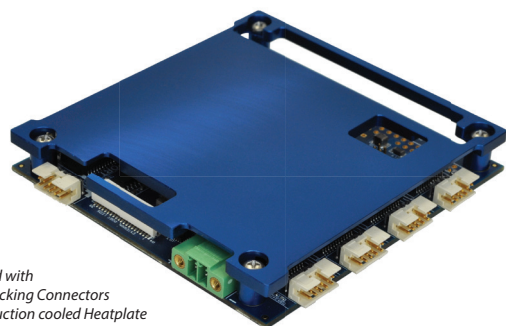
## The Xtreme/GbE Managed Carrier Ethernet Switch provides Carrier Grade Ethernet switching capabilities in an extremely small embedded form factor.

Excellent for high-end applications such as Mobile and Microwave backhaul, the Xtreme/GbE Managed Carrier Ethernet Switch is also a highly reliable way to communicate with 10/100/1000 devices in an embedded system.

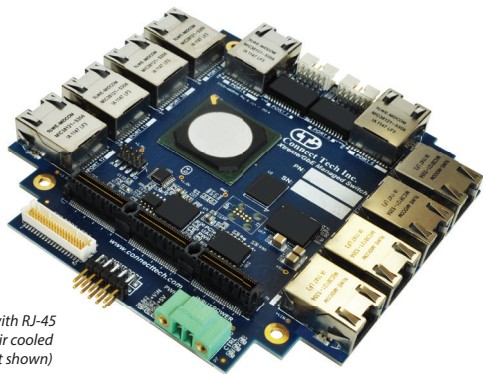
Powered by the latest generation Carrier Ethernet Switch engine the Vitesse 7428/7429. Xtreme/GbE's embedded 416 MHz MIPS 32-bit CPU, 1Gb DDR2 external memory and DMA-based frame extraction and insertion support timing over packet, Ethernet OAM, and performance monitoring.

## FEATURES

- ✓ Conduction cooled Heatplate or Air cooled Heatsink option
- ✓ 8 or 12 Port 10/100/1000 Mbps Switch
- ✓ Web GUI or CLI Management
- ✓ Carrier Grade Ethernet Switching
- ✓ Available with RJ-45 or Rugged Locking connectors
- ✓ PC/104 Compliant: 4.550" x 4.393" or Smaller
- ✓ Extended Temperature Range: -40°C to +85°C



XDG Board with  
Rugged Locking Connectors  
and Conduction cooled Heatplate



XDG Board with RJ-45  
Connector, Air cooled  
(Heatsink not shown)

## HARDWARE SPECIFICATIONS

|                               |                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ethernet Switch Engine</b> | Vitesse VSC7428 Carrier Grade Ethernet Switch Chipset (XDG004-009)<br>Vitesse VSC7429 Carrier Grade Ethernet Switch Chipset (XDG010, XDG013)<br>A powerful embedded 416 MHz RISC 32-bit CPU, with DDR2 external memory and DMA-based frame extraction and insertion supports timing over packet, Ethernet OAM, and performance monitoring. |
| <b>Memories</b>               | 1Gb DDR2 SDRAM<br>128Mb Serial NOR Flash                                                                                                                                                                                                                                                                                                   |
| <b>Port Type</b>              | Gigabit ethernet (10/100/1000 Mbps)                                                                                                                                                                                                                                                                                                        |
| <b>Connectors</b>             | RJ-45s or Rugged Locking Pin Headers (see part numbers on page 2)                                                                                                                                                                                                                                                                          |
| <b>Layer 2 Switching</b>      | 802.1Q VLAN switch with 8K MACs and 4K VLANs<br>Push/pop up to two VLAN tags<br>IPv4/IPv6 multicast<br>Policing with storm control and MC/BC protection<br>RSTP and MSTP support<br>Hardware and software-based learning<br>Link aggregation (IEEE 802.3ad)<br>Independent and shared VLAN learning (IVL, SVL)<br>Jumbo frame support      |
| <b>Management Access</b>      | Web Interface<br>RS-232 Serial Interface (CLI)<br>Software API<br>PCIe/104 Bus                                                                                                                                                                                                                                                             |
| <b>Indicator LEDs</b>         | 2 LEDs per port (available on RJ-45 and through external connector)<br>Power Rail LEDs<br>Status LEDs                                                                                                                                                                                                                                      |
| <b>Standalone Operation</b>   | Switch can be used as a standalone unit OR it can be paired with an embedded SBC.                                                                                                                                                                                                                                                          |
| <b>Input Voltage</b>          | Wide input range: +9V to +36V DC with Reverse Polarity Protection<br>Can be powered from external connector OR directly from expansion bus                                                                                                                                                                                                 |
| <b>Power Consumption</b>      | Idle: 0.3A, 3.6W Typical: 0.35A, 4.2W Max: 0.5A, 6W (with +12V input)                                                                                                                                                                                                                                                                      |
| <b>Bus Interface</b>          | No bus connector populated<br>PC/104 bus pass through (for sourcing power only)<br>PCIe/104 bus (sourcing power and management interface)                                                                                                                                                                                                  |
| <b>Dimensions</b>             | PC/104 compliant: 3.775" x 3.550" (95.89mm x 90.17mm)<br>Tallest Top Side Component: Heatsink 0.375" (9.5mm)                                                                                                                                                                                                                               |
| <b>Conformal Coating</b>      | Humiseal 1B31, Acrylic based (XDG036)                                                                                                                                                                                                                                                                                                      |
| <b>Operating Temp</b>         | -40°C to +85°C (chipset rated to +125°C/+257°F thermals) (-40°C to +185°C)                                                                                                                                                                                                                                                                 |

# XTREME/GBE

## MANAGED CARRIER ETHERNET SWITCH

### SOFTWARE SPECIFICATIONS

|                     |                                                                                                                                                                                                                                                                                                                                                                         |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Port control</b> | Port Speed/Duplex Mode/Flow Ctrl<br>Port Frame Size (Jumbo frames)<br>Port State (administrative status)<br>Port Status (link monitoring)<br>Port Statistics (MIB counters)<br>Port VeriPHY (cable diagnostics)                                                                                                                                                         | <b>MIBs</b>            | RFC 1213 MIB II<br>RFC 1215 TRAPS MIB<br>RFC 4188 Bridge MIB<br>RFC 3635 Ethernet-like MIB<br>RFC 3411 SNMP Management Frameworks<br>IEEE 802.1 MSTP MIB<br>IEEE 802.1AB LLDP-MIB (LLDP MIB included in a clause of the STD)<br>RFC 3621 LLDP-MED Power (POE) (No specific MIB for POE+ exists)<br>Private MIB framework                                                                                                                                                            |
| <b>QoS</b>          | Traffic Classes (8 active priorities)<br>Port Default Priority<br>QoS User Priority<br>Input priority mapping<br>QoS Control List (QCL Mode)<br>Storm Control for UC, MC and BC<br>Port policers<br>Global/VCAP (ACL) policers<br>Port egress shaper<br>Queue egress shapers<br>TRTCM (two rate three color market)<br>Scheduler mode (Strict or Weighted Fair Queuing) | <b>L2 Switching</b>    | Auto MAC addr. Learning/Ageing<br>MAC Addresses – Static<br>Virtual LAN<br>Private VLAN – Static<br>Port Isolation – Static<br>IEEE-802.1ad Provider Bridge (Native or Translated VLAN)<br>Rapid Spanning tree – RSTP, STP<br>Loop Guard<br>Link Aggregation – Static<br>Link Aggregation – LACP<br>IGMPv2 snooping<br>Port Mirroring (Ingress and Egress Mirroring)                                                                                                                |
| <b>Power Saving</b> | Cold start<br>Cool start<br>ActiPHY<br>PerfectReach<br>EEE Power Management<br>LED Power Management<br>Thermal Protection                                                                                                                                                                                                                                               | <b>Management</b>      | DHCP Client<br>HTTP Server<br>CLI - Console Port<br>Industrial Standard CLI<br>Industrial Standard Configuration<br>Management access filtering<br>HTTPS<br>System Syslog<br>Software Upload via web<br>SNMP v1 / v2c / v3 Agent<br>SNMP multiple trap destinations<br>IEEE 802.1AB-2005 Link Layer Discovery – LLDP<br>Configuration Download/Upload - XML<br>Configuration Download/Upload - Industrial Standard<br>Loop detection restore to default<br>Symbolic Register Access |
| <b>L3 Switching</b> | IPv4 Unicast: RIPv1/RIPv2                                                                                                                                                                                                                                                                                                                                               | <b>Synchronization</b> | SNTP & client                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Security</b>     | Port-Based 802.1X<br>Multiple 802.1X<br>Web & CLI Authentication<br>ACLs for filtering/policing/port copy                                                                                                                                                                                                                                                               |                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Part Number | GBE Port Count | GBE Connector Type                  | Thermal Solution            | PC/104 BUS Connector Option |
|-------------|----------------|-------------------------------------|-----------------------------|-----------------------------|
| XDG004      | 8              | RJ-45's                             | Air Cooled Heatsink         | None                        |
| XDG005      | 8              | RJ-45's                             | Air Cooled Heatsink         | PC/104                      |
| XDG006      | 8              | RJ-45's                             | Air Cooled Heatsink         | PCle/104                    |
| XDG007      | 8              | Rugged Locking Pin Headers          | Air Cooled Heatsink         | None                        |
| XDG008      | 8              | Rugged Locking Pin Headers          | Air Cooled Heatsink         | PC/104                      |
| XDG009      | 8              | Rugged Locking Pin Headers          | Air Cooled Heatsink         | PCle/104                    |
| XDG010      | 12             | RJ-45's & Rugged Locking Pin Header | Air Cooled Heatsink         | PCle/104                    |
| XDG012      | 12             | RJ-45's & Rugged Locking Pin Header | Air Cooled Heatsink         | None                        |
| XDG013      | 12             | Rugged Locking Pin Headers          | Air Cooled Heatsink         | PCle/104                    |
| XDG016      | 8              | RJ-45's                             | Conduction Cooled Heatplate | None                        |
| XDG017      | 8              | RJ-45's                             | Conduction Cooled Heatplate | PC/104                      |
| XDG018      | 8              | RJ-45's                             | Conduction Cooled Heatplate | PCle/104                    |
| XDG019      | 8              | Rugged Locking Pin Headers          | Conduction Cooled Heatplate | None                        |
| XDG020      | 8              | Rugged Locking Pin Headers          | Conduction Cooled Heatplate | PC/104                      |
| XDG021      | 8              | Rugged Locking Pin Headers          | Conduction Cooled Heatplate | PCle/104                    |
| XDG022      | 12             | RJ-45's & Rugged Locking Pin Header | Conduction Cooled Heatplate | PCle/104                    |
| XDG023      | 12             | Rugged Locking Pin Headers          | Conduction Cooled Heatplate | PCle/104                    |
| XDG036      | 8              | RJ-45's                             | Air Cooled Heatsink         | None                        |

| Part Number | Cable                               |
|-------------|-------------------------------------|
| CKG019      | Ruggedized Cable Kit for XDG007/8/9 |
| CKG029      | Cable Kit for XDG010                |
| CKG033      | Ruggedized Cable Kit for XDG013     |

**Connect Tech Inc.**

**Tel:** +1.519.836.1291

**Toll:** 800.426.8979 (North America)

**Email:** sales@connecttech.com

**www.connecttech.com**

**RoHS**

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