U3X4-PCIE4XE304

- Host Bus: PCIe x4 Gen 2 (20.0 Gb/s)
  - Compliant with PCI Express Base Specification Revision 2.0
- Four independent USB 3.0 Host Controllers (**Renesas uPD720202; USB IF TID 380000043**)
  - Compliant with Universal Serial Bus 3.0 specification Revision 1.0
  - Compliant with Intel's eXtensible Host Controller Interface (xHCI) specification Revision 1.0
- Supports UASP (USB Attached SCSI Protocol)
- WHQL certified driver support for Windows 7, Windows Vista and Windows XP
- Linux xHCI support under Linux kernel version 2.6.31 and after
- Four USB 3.0 Cable Ports with USB 3.0 cable port lock mechanism
  - Three A-type Receptacle, **USB IF TID 360000003**
    - USB 3.0 Vision Standard cable port lock mechanism (pitch: 22mm)
  - One Right A-type Receptacle, **USB IF TID 360000055**
    - IOI Standard cable port lock mechanism
- USB Bus Power Input: 12V Step-Down to 5V from either PCIe 12V or Power Connector 12V

Introduction

The U3X4-PCIE4XE304 is a Quad channel USB 3.0 to PCI Express x4 Gen 2 Host Adapter.

U3X4-PCIE4XE304 is designed with Two key components.

- 8-Lane, 6-Port PCI Express Switch.
- PCI Express to USB 3.0 Single Chip Host Controller (Renesas uPD720202; USB IF TID 380000043).
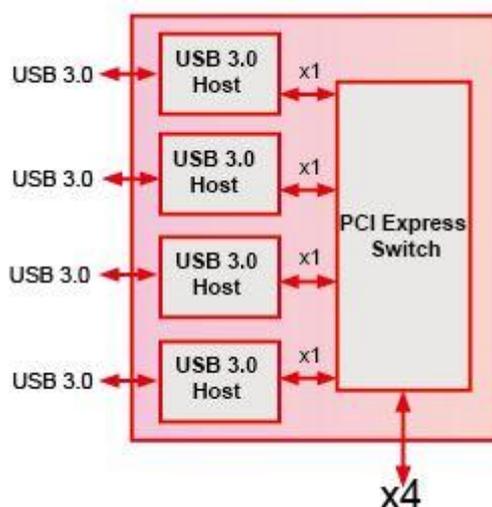
Utilizing the standard PCI Express Switch, the 8-Lane/6-Port PCI Express Switch provides the most efficient fan-out solution for integrating four PCI Express to USB 3.0 Single Chip Host

controllers into a small board design. Each USB 3.0 to PCI Express Single Chip Host controller takes advantages of 5 Gbps burst rate of 4-lane PCI Express bus in both directions and is fully compliant with PCI Express Base specification r2.0. This solution provides full PCI Express and USB 3.0 functionality and performance.

Technical Specifications

PCI Express	- Standards compliant - Compliant with PCI Express Base Specification Revision 2.1 - Compliant with PCI Express CEM Specification Revision 2.0 - Compliant with PCI-to-PCI Bridge Architecture Specification Revision 1.2 - Compliant with Advanced Configuration Power Interface (ACPI) Specification - PCI Power Management Spec r1.2 - PCI Express Power Management - Link power management states: L0, L0s, L1, L2/L3 Ready, and L3 - Device states: D0 and D3hot - Active state power management for L0s and L1 states - Port Arbitration Round Robin (RR) and Weighted RR and Time-based Weighted RR - Extended Virtual Channel capability - Two Virtual Channels (VC) and Eight Traffic Class (TC) support - Independent TC/VC mapping for each port - Provides VC arbitration selection: Strict Priority, Round Robin (RR) and Programmable Weighted Round-Robin - Supports Isochronous Traffic - Isochronous traffic class mapped to VC1 only - Strict time based credit policing - Supports "Cut-through"(Default) as well as "Store and Forward" mode for switching packets - Peer-to-peer switching between any two downstream ports - Supports up to 512-byte maximum payload size (setting to 256-byte) - Enhanced Features 150ns typical latency for packet running through switch without blocking - Supports Access Control Service (ACS) for peer-to-peer traffic

	o Supports Address Translation (AT) packet for SR-IOV application o Supports OBFF and LTR
Jumper	Virtual Channel 1 Disable: The unused VC1 queues (buffer) can be reassigned to VC0 and enable each of the ingress ports to handle more data traffic bursts. This virtual channel resource relocation feature enhances the performance of the PCIe Switch further. Enable: Isochronous traffic class mapped to VC1 only
USB Features	• Compliant with USB 3.0 Specification Revision 1.0 • Compliant with Intel's eXtensible Host Controller Interface (xHCI) specification Revision 1.0 • Each USB port supporting SS/HS/FS/LS data rates (5Gbps/ 480Mbps/ 12Mbps/ 1.5Mbps) • Supports UASP (USB Attached SCSI Protocol)
Advanced Power Saving	• Support all USB 3.0 Power States: U0, U1, U2 and U3 • Support USB 2.0 Link Power management (LPM) o USB-IF LPM PDK Standard • PCIe Active State Power Management (ASPM) L0s and L1

USB3 cable lock mechanism	• Provides the threaded holes for the jack-screws of USB 3.0 A Plug w/Jackscrew lock Cable
	   o 3-port USB 3.0 Vision Standard cable port lock mechanism or IOI Standard cable port lock mechanism
	   o 1-port IOI Standard cable port lock mechanism

USB Bus Power Input	• 12V Step-Down to 5V from either **PCIe 12V** or **Power Connector 12V** (IDE 4-pin or SATA 15-pin)

Computer Platform

Computer with PCI Express slot (x4, x8, x16)

Note: For the best performance (5.0 Gbps), U3X4-PCIE4XE304 should be installed in a PCIe Gen 2 compliant slot in the host computer. Most computers have PCIe Gen 2 (5.0 Gbps) throughput on x8 or x16 slots. A PCIe Gen 1 compliant slot reaches up to 2.5 Gbps throughput.

Operating System Requirements

- If OS is Windows 8 or later , there are inbox driver for Renesas USB 3.0 Host Controller. OS will detect the presence of new hardware and then install Renesas USB 3.0 Host Controller driver automatically.
- USB 3.0 Host Drivers Kit (x86 and x64) for
    - Windows XP
    - Windows Vista
    - Windows 7
    - Windows Server 2008 Release 2

Certifications

- CE Test: Pass
- FCC Test : Pass
- VCCI Test: Pass
- RCM Test: Pass

Physical Dimensions

- 101mm(H)x115mm(L)
- NW: 86.2g