FIREBIRD USB 3.0
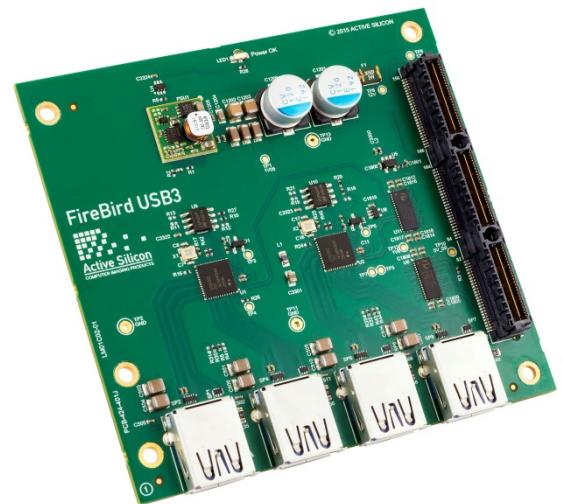## Quad USB 3.0 Host Controller

Active Silicon
COMPUTER IMAGING PRODUCTS

- **4-Port USB 3.0 Host Controller**
- **PCIe/104 form factor**
- **2 x PCIe x1 Gen2 interfaces**
- **USB3 Vision™ compliant**

FEATURES

- 4 x USB 3.0 compliant downstream ports.
- Dual full USB 3.0 bandwidth architecture with each channel split into 2 x USB 3.0 ports.
- Based on proven Renesas USB 3.0 Host Controller.
- Compliant with USB 3.0 specification Rev.1.0 and Intel xHCI specification Rev. 1.0.
- Support for USB3 Vision cameras.
- Compliant with GenICam™ vision standard.
- Rugged PCIe/104 form-factor.
- Universal operation: Type 1 or Type 2 hosts.
- Supports stack up or stack down configurations.
- Windows and Linux support.

OVERVIEW

The **FireBird Quad USB 3.0 Host Controller** supports four USB 3.0 ports arranged as two ports per host controller with each controller having its own PCI Express x1 Gen2 interface to give a combined total data throughput of 10 Gbps. The USB 3.0 Host Controllers used are the proven Renesas μPD720202.

Many USB 3.0 Host Controllers found on motherboards and processor modules share bandwidth with other devices typically resulting in inconsistent performance in demanding applications such as high-speed acquisition from USB3 Vision cameras. The **FireBird Quad USB 3.0 Host Controller** solves this problem by configuring each pair of USB3.0 ports to use a single lane Gen2 PCI Express interface. Similarly this architecture provides a balance between cost and performance – so that two USB 3.0 devices may operate simultaneously at full bandwidth, or four devices operating simultaneously sharing the combined bandwidth of two full speed links.

Software support is based on the proven Renesas driver stack which provides compatibility with USB 3.0 Vision cameras and the GenICam standard – and these international vision standards in turn provide compatibility with a wealth of third-party applications allowing rapid product development and integration.

SPECIFICATION SUMMARY

USB 3.0 Interface:	Renesas µPD720202 USB 3.0 Host Controller supporting the following modes: SuperSpeed (5 Gbps), High Speed (480 Mbps), Full Speed (12 Mbps) and Low Speed (1.5 Mbps).
USB Connectors:	USB 3.0 Type-A connectors.
Power Output:	Each USB 3.0 port provides 5V at 900mA with a hardware option to increase if required.
PCI Express:	Two single lane PCIe Gen2 interfaces support a combined total bandwidth of 10 Gbps (5 Gbps per single lane Gen2 interface) from the USB 3.0 Host Controller to the host PC.

CONFORMANCE

USB 3.0		Compliant with USB 3.0 specification Rev.1.0 and Intel xHCI (eXtensible Host Controller Interface) specification Rev. 1.0.
PCI Express:		PCI Express Base Specification Revision 2.0.
PCIe/104		PC/104 Specification for PCIe/104 Revision 2.1.
Approvals:	EU	C€ mark for compliance with EMC EN 55022:2010 (class A) and EN 55024:2010 in accordance with EU directive 2004/108/EC.
		RoHS compliance to RoHS2 directive 2011/65/EU.
	USA	EMC FCC Class A.
		The printed circuit board is manufactured by UL recognised manufacturers and has a flammability rating of 94-V0.

PHYSICAL AND ENVIRONMENTAL DETAILS

Dimensions:	PCB:	PCIe/104 standard size: 3.8 x 3.6 inches (96.5mm x 91.4mm).	
Weight:	70g		
Power consumption	+3.3V	+12V	Does not include powering devices for which the 5V is used.
(typical):	68mA	85mA	With two USB 3.0 devices connected and running at SuperSpeed (5 Gbps).
Storage Temperature:	-40°C to +85°C.		
Operating Temperature:	0°C to +70°C (ambient environment).		
Relative Humidity:	10% to 90% non-condensing (operating and storage).		

ORDERING INFORMATION

PART NUMBER	DESCRIPTION
AS-FBD-4XUSB3-5-104-2PE2	**FireBird Quad USB 3.0 Host Controller** interface card.

THE FIREBIRD RANGE

The following products are also available in the range:

- High performance CoaXPress frame grabbers in single, dual and quad configurations.
- Camera Link frame grabbers: Base, Medium, Full, Deca (80 bit), Dual-Deca.
- HD-SDI frame grabbers.

Some variants in the range are also available in non-PC form-factors such as PC/104-Express and XMC.

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CONTACT DETAILS

Pyramid Imaging

Pyramid Imaging, Inc.
945 East 11th Avenue
Tampa, FL 33605
www.pyramidimaging.com
sales@pyramidimaging.com
+1 813 984 0125

19-Feb-2016

March 2016