FIREBIRD CAMERA LINK

80-Bit Frame Grabber Low Profile

- Camera Link Frame Grabber
- Low Profile (half-height) PC form-factor
- Supports Base, dual Base, Medium,
- Full and 80-bit (Deca) modes, with PoCL
- 4-lane PCI Express 2.0 (Gen2) interface

FEATURES

- Supports the latest v2.1 Camera Link interface.
- Half-length PCI Express form-factor.
- Low profile or full height bracket options available.
- Camera Link Mini connectors (HDR/SDR).
- Supports PoCL (Power over Camera Link).
- Comprehensive I/O.
- ActiveDMA engine – acquisition with zero CPU usage.
- Supported by the proven ActiveSDK.
- Supports GenICam for CLProtocol & GenCP cameras.
- Includes GenICam GenTL Producer.

OVERVIEW

FireBird Camera Link 80-bit Low Profile is a member of Active Silicon's state-of-the-art FireBird frame grabber family. The low profile design allows the **FireBird Low Profile** board to be used in small embedded PC enclosures and 2U rack mount cases where the full height PC cards are not suitable.

FireBird is designed for ultimate performance using Active Silicon's proprietary DMA Engine technology, "ActiveDMA". This technical innovation applies RISC based processor techniques and guarantees zero CPU intervention, high speed and low latency image data transfers.

FireBird supports the latest version 2.1 Camera Link specification, including both 80-bit modes: 8-bit 10-tap and 10-bit 8-tap modes – often referred to as Camera Link "Deca", at clock rates up to 85 MHz. The 4-lane PCIe 2.0 (Gen2) interface used on the **FireBird** is fast enough to cope with the full data rate that the Camera Link 80-bit interface can support. The **FireBird** also supports capture from two simultaneous Base Camera Link cameras as well as single Base, Medium and Full configurations.

FireBird is supported by Active Silicon's software development kit, ActiveSDK. This is available as a separate item, and allows rapid system development and integration. It provides comprehensive example applications and optimized runtime libraries, and supports a variety of operating systems via a common API, including Windows, Linux and QNX.

Drivers for third party applications are also available such as Cognex VisionPro, HALCON, Common Vision Blox, StreamPix, LabVIEW etc. As well as functions that control the hardware, the libraries include general purpose functions for the manipulation and display of images.

FireBird also supports GenICam for Camera Link cameras which support CLProtocol, including those using GenCP. A GenTL Producer is provided as part of the **FireBird** driver installation which allows the frame grabber to be used with GenICam GenTL compliant applications.

The **FireBird Camera Link 80-bit Low Profile** can be purchased with either a full height PC card bracket for use in regular PCs or with a low profile PC card bracket to fit into small embedded PC enclosures and 2U rack mount cases.

With full height bracket

With low profile bracket

SPECIFICATION SUMMARY

Camera Link Interface:	**FireBird** is fitted with 26-way Camera Link Mini connectors (HDR/SDR) and screwlocks as specified in the Camera Link v2.1 specification. LEDs by each connector show the link status.
Camera Clock:	**FireBird** supports effective clock rates from DC to the Camera Link maximum of 85MHz, using the Camera Link Strobe (STB) and Data Valid (DVAL) signals.
PoCL:	**FireBird** supports Power over Camera Link (PoCL) functionality and is able to provide power to PoCL enabled cameras via the Camera Link data cable, therefore removing the need for a separate power supply. In addition to this **FireBird** implements *SafePower,* an intelligent sense mechanism which detects the presence of a PoCL camera before applying power to it. This safety mechanism ensures that power is not applied to conventional non-PoCL cameras. **FireBird** can supply up to 4W at a nominal 12V to a Base mode PoCL camera, or 8W to Medium/Full/80-bit cameras, as required by the Camera Link specification. Both Camera Link connectors support PoCL, which with *SafePower* allows the use of any combination of PoCL and conventional cameras.
Buffer Memory:	320 MBytes of DDR3 memory is fitted for buffering between the Camera Link interface and the PCI Express bus.
PCI Express:	4-lane PCIe 2.0 (Gen2) interface typically providing 1.7 Gbytes/sec transfer from **FireBird** to the PC, subject to PC performance.

I/O:	The following I/O lines are provided for triggers, optical shaft encoders, exposure control and general I/O: • 4 opto-isolated inputs. • 4 opto-isolated outputs. • 4 TTL inputs, 5V tolerant. • 4 TTL I/O, 5V logic. • 4 RS-422 inputs. • 4 RS-422 outputs. All these I/O signals are provided on a 50-way header on the **FireBird** board.
Fan Controller:	The fan speed is linked to the temperature of the FPGA die for optimum cooling and noise level.

CONFORMANCE

PCI Express Interface:	PCI Express 2.0 (Gen2) 4-lane interface to Specification Revision 3.1, with a max payload size of 512 bytes. **FireBird Camera Link 80-bit Low Profile** supports both Short (32-bit) and Long (64-bit) Address packets. It also generates Posted Writes for image data, thus achieving transfer rates in excess of 1.7 GBytes/sec, subject to host performance. The board requires 16 MBytes of address space.	
Camera Link:	**FireBird Camera Link 80-bit Low Profile** conforms to v2.1 of the Camera Link specification.	
Approvals:	EU	CE mark for compliance with EMC EN 55022:2010 (class A) and EN 55024:2010 in accordance with EU directive 2014/30/EU. RoHS compliance to RoHS3 directive 2015/863/EU.
	USA	EMC FCC Class A.
		The printed circuit board is manufactured by UL recognised manufacturers and has a flammability rating of 94V-0.

PHYSICAL AND ENVIRONMENTAL DETAILS

Dimensions:	PCB:	168mm by 69mm.
	Overall:	175mm by 69mm.
Weight:	100g (with low profile PC card bracket) 104g (with full height PC card bracket)	
Power consumption (typical):	+3.3V 200mA	+12V 400mA Up to 4W per Camera Link connector for PoCL
	Measured during acquisition from a single 80-bit camera running at 85MHz.	
Storage Temperature:	-15°C to +85°C.	
Operating Temperature:	0°C to +60°C (ambient environment).	
Relative Humidity:	10% to 90% non-condensing (operating and storage).	

ORDERING INFORMATION

PART NUMBER	*DESCRIPTION*
AS-FBD-1XCLD-2PE4L-L	**FireBird Camera Link 80-bit Low Profile** frame grabber, low profile PCI Express form factor with a low profile PC card bracket.
AS-FBD-1XCLD-2PE4L-F	**FireBird Camera Link 80-bit Low Profile** frame grabber, low profile PCI Express form factor with a full height PC card bracket.
AS-ACTIVESDK-WIN	Software Development Kit for *Windows* operating system.
AS-ACTIVESDK-LIN	Software Development Kit for *Linux* operating system.
AS-CBL-CL-SP-y-xM	Camera Link cable *x* metres in length, Camera Link Mini (SDR/HDR) to Camera Link Mini (SDR/HDR), suitable for both PoCL and conventional cameras. *y* indicates different cable type options. The standard stock length is 4m. High-flex rating and longer length cables are also available, as well as Camera Link Mini (SDR/HDR) to Camera Link (MDR) cables – contact your distributor for details.

THE FIREBIRD RANGE

The following products are also available in the range:

- High performance CoaXPress CXP-12 and CXP-6 frame grabbers in single, dual and quad configurations.
- Optical link solutions with CoaXPress over Fiber.
- Camera Link frame grabbers - in non-PC form-factors such as CompactPCI Serial.

THE ONCILLA RANGE

Oncilla Machine Vision Solutions can provide a full vision solution for Camera Link interfaces:

Oncilla Machine Vision Computer – Camera Link. A machine vision Industrial PC system with a AS-FBD-1XCLD-2PE4 frame grabber installed.

CONTACT DETAILS

Headquarters:

Active Silicon Ltd
1 Waterside Court, Waterside Drive,
Langley, Berks, SL3 6EZ, UK.

Tel: +44 (0)1753 650600
Email info@activesilicon.com
Website: www.activesilicon.com

North America:

Active Silicon, Inc.
479 Jumpers Hole Road, Suite 301,
Severna Park, MD 21146, USA.

Tel: +1 410-696-7642
Email: info@activesilicon.com
Website: www.activesilicon.com

28-Nov-2024