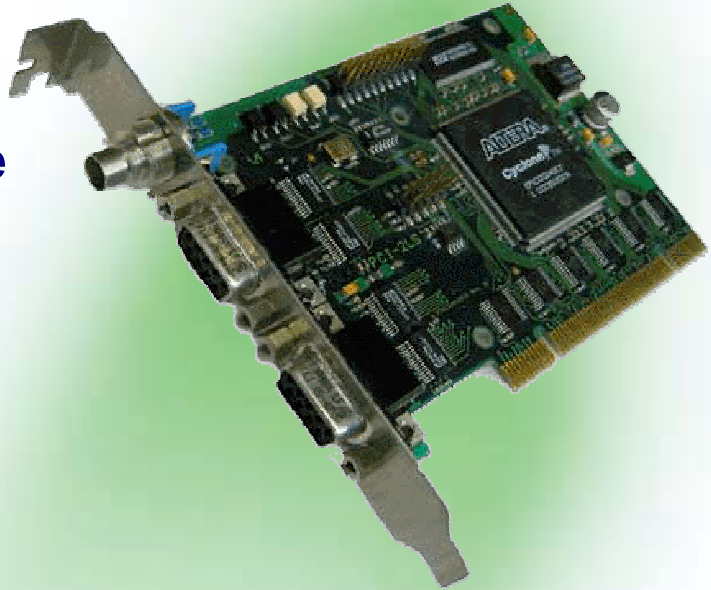


## PCI-2LS Interface



- **Dual camera interface**
- **Serial LVDS protocol**
- **Opto-isolated trigger I/O**
- **Low-cost frame-grabber**
- **Up to 7 metre transmission**
- **DMA frame capture**
- **Software drivers**

The PCI-2LS is an interface card that accepts one or two LS cameras and provides a compact, low-cost frame-grabber solution for machine vision systems.

The serial LVDS protocol allows communication with cameras over a standard LVDS cable that can be up to 7 metres long.

The on-board FPGA provides all the functionality expected from a frame-grabber and has ample room for programme expansion in order to accommodate special applications.

The interface has also two trigger inputs and two outputs that are fitted with opto-couplers to provide complete isolation between the two channels.

Trigger Input-output can be used to synchronise image capture with external events, to control flash lighting or to synchronise two or more cameras for simultaneous operation.

In addition to the trigger I/O there are eight auxiliary input-output lines provided on a flat-

cable header mounted on the PCB. These general purpose I/O lines are intended for special user-applications such as the synchronisation of two PCI-2LS interfaces in one PC or the addition of a piggy-back extension PCB.

Camera power is provided on each connector resulting in a single, combined data and power cable between interface and camera.

The interface is equipped with a DMA controller to allow images to be captured directly into PC memory without software interaction.

The controller issues interrupts to the user's application to indicate progress and termination of the capture process.

Software interface routines and sample programs can be found the Application Program Interface library contained in C-Cam Technologies Software Development Kit (SDK).

The routines in CCAPI allow the programmer to acquire and display images in a very short time and with little in-depth knowledge of the sensor, camera or interface.

# PCI-2LS Interface

## Interface Resources

**Memory** 16 Mbytes  
**FPGA Logic** > 750,000 gates

## Compatible Cameras

**BC-Family** BCi4-LS  
 BCi4-6600-LS  
 BCi5-LS

## Interface Specifications

**Interface type** Serial LVDS  
**Interface connector**  
 LS 2 x Sub-D 9S (female)  
 Trigger I/O Binder 712 series 5P (male)  
 Auxiliary I/O 20 pole flat-cable header

## Mechanical Specifications

**Dimensions** PCI format  
 135 x 80 x 18 mm.  
**Weight** 100 grams

**Cable length**  
 LVDS up to 7m

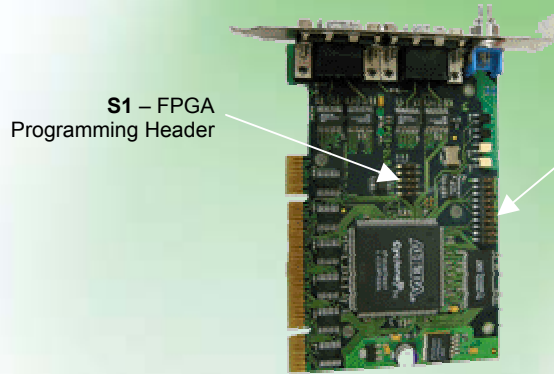
## Environmental Requirements

**Operating temperature** 0°C to +50°C  
**Storage temperature** -30°C to +80°C  
 (non-condensing conditions)

**Remote Trigger** via opto-isolated inputs  
**Trigger output** Opto-isolated,  
 open-collector transistor

## Power Requirements

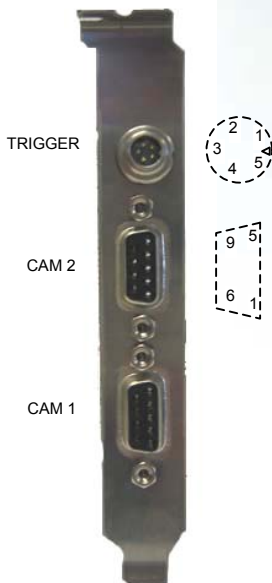
**Interface LS Camera** 12volts <4W. from PCI bus  
 Power supply through  
 Interface cable  
 < 2.5W per camera



**S2 - Auxiliary I/O Connector**

| Signal | Pin | Pin | Signal |
|--------|-----|-----|--------|
| Ground | 1   | 2   | Ground |
| I/O 0  | 3   | 4   | Ground |
| I/O 1  | 5   | 6   | Ground |
| I/O 2  | 7   | 8   | +3.3v  |
| I/O 3  | 9   | 10  | +3.3v  |
| I/O 4  | 11  | 12  | +5v    |
| I/O 5  | 13  | 14  | +5v    |
| I/O 6  | 15  | 16  | Ground |
| I/O 7  | 17  | 18  | Ground |
| Ground | 19  | 20  | Ground |

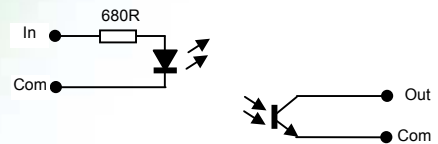
PCI-2LS Interface



## Trigger Input-Output

Binder 715 series 5P (male)

| Pin | Signal   |
|-----|----------|
| 1   | Input 1  |
| 2   | Input 2  |
| 3   | Common   |
| 4   | Output 1 |
| 5   | Output 2 |



## LS Interface (Cam1/Cam2)

Sub-D 9S

| Pin | Signal    |     |
|-----|-----------|-----|
| 1   | Ground    |     |
| 2   | Tx+       | Out |
| 3   | +12 volts |     |
| 4   | Rx-       | In  |
| 5   | Ground    |     |
| 6   | Ground    |     |
| 7   | Tx-       | Out |
| 8   | Rx+       | In  |
| 9   | Ground    |     |

## Connector on LS Camera

Binder 715 series 7P (male)

| Pin | Signal    |     |
|-----|-----------|-----|
| 1   | Ground    |     |
| 2   | Rx -      | In  |
| 3   | Rx+       | In  |
| 4   | +12 volts |     |
| 5   | Tx +      | Out |
| 6   | Tx -      | Out |
| 7   | Ground    |     |

Note: In/Out with respect to camera

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