

INTRODUCTION TO FIREWIRE (IEEE-1394)

Officially called IEEE-1394, Firewire by Apple or iLink by Sony, it was created in the late 1980's as a digital technology to satisfy the ever-increasing demand for video communication bandwidth.

Already found in many commercial video products, the Firewire interface is poised to hit the security & industrial imaging world. Offering high speed bi-directional transfer of data, Firewire allows the transfer of up to 400 Megabits/second of data. This makes it ideal for streaming of real-time video to a PC. Instead of having to first interface cameras to a framegrabber or imaging board, digital video now goes straight from the camera to the PC. Firewire also supports networking of multiple devices in 'star' or 'tree' formats. Standard cable lengths are generally up to 10 metres, with up to 70 metres when used with Firewire HUBS, or up to 200 metres when using a Fiber Optic extender. For PC's without a Firewire interface, PCI & Cardbus (PCMCIA) products are available.

THE ADVANTAGES OF FIREWIRE INCLUDE:

- ⊕ Cameras are automatically recognized and software supported according to their features.
- ⊕ Hardware can be interchanged or upgraded without reconfiguration.
- ⊕ Cameras and processing resources can be shared, while keeping strict bandwidth allocation rules.
- ⊕ Direct corresponding pixel to data without need for a framegrabber or classic synchronization systems.
- ⊕ Dynamic changes of features during operation
- ⊕ Most cameras can be powered directly from the FireWire link

E-PLA741 1.3 Megapixel BW Machine Vision FireWire Camera

The **E-PLA741** is our most popular machine vision camera. It is a monochrome 1.3 megapixel digital FireWire camera with global shutter, external trigger and a rich set of on-board features that provides high-quality digital video streams to the computer. The new E-PLA741 combines the functionality of a frame grabber with a CMOS imager to provide a solid machine vision camera in a simple to use package.



Colour/Mono	Mono
Resolution	1280 x 1024
Frame Rate	8000 max, 105 @ 640 x 480, 27 @ 1280 x 1027
Bit Depth	8 or 10
Pixel Pitch	6.7 µm
Lens Mount	C 2/3
Interface	FireWire
Trigger Type	H/W or S/W
Shutter Type	Global & Rolling
Gen Purpose Outputs	2 Multi-function

E-PLA742 1.3 Megapixel Colour Machine Vision FireWire Camera

The **E-PLA742** is a colour 1.3 megapixel digital FireWire camera with global shutter, external trigger and a rich set of on-board features that provides high-quality digital video streams to the computer.

With triggering and GPO capabilities on-board the camera and no need for a separate frame grabber in the computer, your system complexity and cost are reduced. Data from the camera is transferred to the computer over a standard, inexpensive FireWire adapter and cable, which supplies camera power and provides all control inputs.



Colour/Mono	Colour
Resolution	1280 x 1024
Frame Rate	8000 max, 105 @ 640 x 480, 27 @ 1280 x 1027
Bit Depth	8 or 10
Pixel Pitch	6.7 µm
Lens Mount	C 2/3
Interface	FireWire
Trigger Type	H/W or S/W
Shutter Type	Global
Gen Purpose Outputs	2 Multi-function

E-PLA781 6.6 Megapixel **BIW** Machine Vision FireWire Camera

The **E-PLA781** is a cost effective high-resolution color inspection camera. The 6.6 megapixel resolution allows fine details to be resolved within a larger field of view. The camera is fully controlled by software and can be synchronized with an external trigger or strobes. A rich set of features makes the E-PLA781 very flexible and easy to use.

Fully enabled by software, the E-PLA781 can be integrated quickly into industrial vision applications.



Colour/Mono	Colour
Resolution	1280 x 1024
Frame Rate	8000 max, 105 @ 640 x 480, 27 @ 1280 x 1027
Bit Depth	8 or 10
Pixel Pitch	6.7 µm
Lens Mount	C 2/3
Interface	FireWire
Trigger Type	H/W or S/W
Shutter Type	Global
Gen Purpose Outputs	2 Multi-function

E-PLA782 6.6 Megapixel **Colour** Machine Vision FireWire Camera

The **E-PLA782** is a cost effective high-resolution color inspection camera. The 6.6 megapixel resolution allows fine details to be resolved within a larger field of view. The camera is fully controlled by software and can be synchronized with an external trigger or strobes. A rich set of features makes the E-PLA782 very flexible and easy to use. Fully enabled by software, the E-PLA782 can be integrated quickly into industrial vision applications.



Color/Mono	Colour
Resolution	2208 x 3000
Frame Rate	88 @ 640 x 480, 5 @ 2208 x 3000
Bit Depth	8 or 10
Pixel Pitch	3.5 µm
Lens Mount	C 1
Interface	FireWire
Trigger Type	H/W or S/W
Shutter Type	Rolling with Fast Reset
Gen Purpose Outputs	2 multi-function

E-MEGAPIXEL High Resolution Machine Vision Lenses

These lenses are suitable for use with our range of 2/3" mega-pixel cameras. They provide ultra-low distortion & high resolution close-up imaging for machine vision applications.

These are the finest lenses for factory automation where high quality and precision are imperative. High resolution is achieved by thoroughly compensating for aberrations and distortion, a critical requirement of image processing.



MODEL	E-22HA	E-219HA	E-219HB	E-25HA	E-25HB	E-17HD	E-17HF	E-20HA	E-20HC	E-35HB	E-21HA	E-21HC	E-1A1HA/HB
Format	2/3"	2/3"	2/3"	2/3"	2/3"	2/3"	2/3"	2/3"	2/3"	2/3"	2/3"	2/3"	2/3"
Focal Length	6.5 mm	8 mm	8 mm	12 mm	12 mm	16 mm	16 mm	25 mm	25 mm	35 mm	50 mm	50 mm	75 mm
Iris Range	F1.8	F1.4-16	F1.4-16	F1.8-16	F1.8-16	F1.4-16	F1.4-16	F1.6-16	F1.6-16	F2.1-22	F2.8-22	F2.8-22	F3.9-32

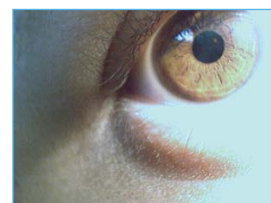
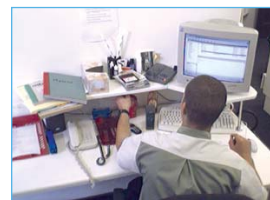
E-FIRE-I Mini FireWire Colour Camera

The **E-Fire-i** is a high quality, low cost colour digital camera with FireWire interface. Its superior VGA picture quality and lightweight housing clearly distinguishes it from other FireWire or USB cameras.

The camera allows you to display, control and record full-size VGA still images and live videostreams, with uncompromised quality, at the touch of a single button. Its smart attachment clip, compact size and very low power consumption makes it the perfect companion for all Desktop and Firewire equipped notebooks. This includes monitoring applications, video conferencing and home or office surveillance.

Several cameras can be daisy-chained and viewed simultaneously on a PC, via the E-Fire-i Software and the camera's two FireWire ports. E-Fire-i Software allows the user to monitor one or multiple cameras. At the touch of a single button, the user can store snapshots or live videostream, change and adjust all camera settings for each and every camera connected.

- ⊕ 1/4" Sony Progressive Colour CCD Sensor
- ⊕ Integrated 4.65mm lens with anti-reflective coating
- ⊕ 42° Horizontal View
- ⊕ Electronic Iris
- ⊕ 1/3400sec - 1/31sec Shutter Auto/Manual
- ⊕ **Resolution:** 640 x 480
- ⊕ **Effective pixels:** (H x V) 659 x 494
- ⊕ **FPS:** 30fps @ 640x480 YUV 4:1:1 (12 bits) or 15fps 640x480 RGB-24 (24 bits)
- ⊕ **Video Mode:** YUV 4:1:1, 4:2:2, 4:4:4, RGB 24-bit
- ⊕ **Backlight compensation:** 6 modes + OFF
- ⊕ Manual or Automatic White Balance
- ⊕ 2 x IEEE1394 Ports (Firewire @ 400Mbps)
- ⊕ Connect & monitor multiple cameras simultaneously
- ⊕ Adj. Brightness, Gamma, Sharpness, Hue, Saturation & Gain
- ⊕ Power via IEEE-1394 bus / via ext. power jack (8-30VDC)
- ⊕ **Power Consumption:** 450mW (standby) 1W (operation)
- ⊕ **Operating Temp:** -10 to 50°C
- ⊕ **Weight:** 60 grams
- ⊕ **Dimensions:** 62 x 62 x 35mm (W x H x D)



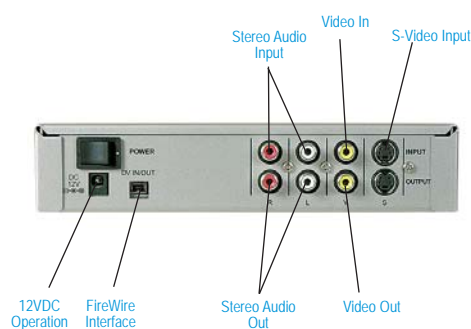
MODEL	Description
E-FIRE-I	Mini FireWire Colour Camera Includes E-Fire-I Software and 1x 2m Firewire Cable

E-DV2001 FireWire to Video & Video to FireWire Converter

The **E-DV2001** is a firewire to video and video to firewire converter box. Featuring composite video/audio & S-video inputs and outputs, the E-DV2001 can be used in two ways. Firstly for applications requiring transfer of analog video/audio to a PC, the unit can be set in the encode mode. Typical analog products include VCRs, camcorders, cctv cameras and the like. This is helpful in transferring analog recordings to a PC for editing or conversion into digital format. In it's second mode, the E-DV2001 can be set to decode, allowing a digital firewire device such as a camera to be converted back to analog and outputted as a standard analog video signal.

No special software is needed as the unit is automatically detected by the host PC and works with most commercial video editing packages.

- ⊕ 1 Video Input (RCA) & 1 Video Output (RCA)
- ⊕ 1 Stereo Audio Input (RCA) & 1 Audio Output (RCA)
- ⊕ S-Video Input/Output
- ⊕ 4-Pin Firewire Connector
- ⊕ Compatible with DV, Digital-8, Video-8, Hi-8, VHS, S-VHS, VHS-C, S-VHS-C
- ⊕ Encode Mode (Analog to Firewire)
- ⊕ Decode Mode (Firewire to Analog)
- ⊕ Metal Enclosure
- ⊕ Reset Button & LED Indicators for power & firewire-in/out
- ⊕ **Operating Temp:** 0° to 50°C
- ⊕ 12VDC Operation
- ⊕ **Dimensions:** 192 x 40 x 130mm (W x H x D)



E-FireCard-400 2-Port PCMCIA FireWire (IEEE-1394) Interface Card

A **E-FireCard-400** equips your notebook with the highest quality FireWire ports money can buy. These allow your notebook to host Digital cameras, CD-RWs and any other external FireWire device available. The **E-FireCard-400** comes with dual 6-pin ports conforming to the most widely used type of cables in the market. No need for cable extensions or expensive break-outs boxes. Any simple 6pin cable will do your job and save you money!

Host Bus characteristics:

- ⊕ Type II PCMCIA (CardBus)
- ⊕ Host Interface Protocol is 32bit Bus Master DMA
- ⊕ Host Bus Data Transfer Rate Up to 133 MBytes/sec burst rate
- ⊕ Supports hot swapping and plug-n-play, **OS Support**
- ⊕ Windows 98SE/Me/2000/XP



MODEL	Description
E-FireCard-400	2-Port PCMCIA FireWire (IEEE-1394) Interface Card Includes Fire-i Software (FireWire camera & control Utility) & 2m 6-6pin Cable

E-FireBoard-Red 3-Port PCMCIA FireWire (IEEE-1394) Interface Card

The **E-FireBoard-Red** is a fast and reliable digital interface card for all external FireWire-enabled devices. With this card, Digital Cameras, Hard Drives, CD-RWs, DVD drives and Digital Camcorders can be connected easily to a PC.

Featuring firewire 3-port ports, this single chip, OHCI-compliant host adapter provides plug 'n' play connectivity for FireWire devices and peripherals. Due to its 8 synchronous transmit/receive channels, the **E-FireBoardRed** host adapter can be used to simultaneously control and display up to 8 FireWire digital cameras.

- ⊕ 3 FireWire ports
- ⊕ Via Chipset 6306, revision 46
- ⊕ 8 DMA channels (Direct Memory Access)
- ⊕ Supports 100, 200 and 400 Mbps throughout
- ⊕ OHCI compliant/Compatible with any FireWire device or peripheral
- ⊕ Real time copying for large data files: Read: 20Mbps / Write: 21.5 Mbps
- ⊕ 400Mbps - up to 50MB/sec data rates
- ⊕ Internal power connector
- ⊕ Supports repeater functionality



MODEL	Description
E-FireBoard-Red	3-Port PCI FireWire (IEEE-1394) Interface Card

E-FireBoard-400 Advanced 3-Port PCI FireWire (IEEE-1394) Interface Card

Developer's equipment has to be as stable and as widely tested as possible.

Over 50 thousand **E-FireBoard-400** boards have been sold to developers world-wide. These have been tested in the most demanding applications including Industrial Automation, Robotics and Machine Vision. In environments where predictability comes first, the **E-Fireboard-400** delivers this and more.

- ⊕ Advance PCI Firewire Adapter Card for Firewire Developer's
- ⊕ Supports IEEE-1394 & 1394a-2000 Supplement for High Performance
- ⊕ 3 Fully Compliant Cable Ports at 100/200/400 Mbps
- ⊕ Cable Ports Monitor Line Conditions for Active Connection to Remote Node
- ⊕ Crystal Oscillator & PLL Provide Tx/Rx Data at 100/200/400 Mbps & Link-Layer Controller Clock @ 50 MHz
- ⊕ Node Power-Class Information Signaling for System Power Management
- ⊕ Cable Power Presence Monitoring



MODEL	Description
E-FireBoard-400	Advanced 3-Port PCI FireWire (IEEE-1394) Interface Card. Includes Fire-i Software (FireWire camera & control Utility) & 2m 6-6pin Cable

E-FireRepeater FireWire Repeater

The **E-FireRepeater** is a 3-port pocket-size Hub that allows you to:

- add a connection point into an existing link
- extend FireWire Cable lengths (tested for up to 110 meters)
- add or reinforce DC Power Supply capability of your FireWire connection

Technical Characteristics

3-port, 3.3V, Physical Layer Device, FireWire Bus Transfer Rate 100/200/400 Mbps, Compliant with IEEE-1394.a

- ⊕ External 12-30V power supply input (adapter not incl.)
- ⊕ Compact size
- ⊕ Shielded plastic case



MODEL	Description
E-FireRepeater	3-port repeater to extend the FireWire network topology

Cables FireWire Cables

Our high quality FireWire cables provide you no dataloss, guaranteed durability and 400 Mbps high speed data transmission. All cables are compatible with PC FireWire enabled, Apple FireWire and Sony i.Link devices. Each cable features quad shielding (outer and inner shield), as well as top quality high-density connectors. Several models are available ranging from 0.5 metres up to 10 metres.



E-Firewire-CAB-10

MODEL	Description
E-Firewire-CAB-05	0.5m IEEE-1394 cable - 6pin to 6pin
E-Firewire-CAB-1	1m IEEE-1394 cables - 6pin to 6pin
E-Firewire-CAB-2	2m IEEE-1394 cables - 6pin to 6pin
E-Firewire-CAB-2-4P	2m IEEE-1394 cables - 6pin to 4pin
E-Firewire-CAB-2-4P4P	2m IEEE-1394 cables - 4pin to 4pin
E-Firewire-CAB-45	4.5m IEEE-1394 cables - 6pin to 6pin



E-Firewire-CAB-1

MODEL	Description
E-Firewire-CAB-45-4P	4.5m IEEE-1394 cables - 6pin to 4pin
E-Firewire-CAB-10	10m IEEE-1394 cables - 6pin to 6pin
E-Firewire-CAB-10-4P	10m IEEE-1394 cables - 6pin to 4pin
E-Firewire-CAB-20-4P	10m IEEE-1394 cables - 6pin to 4pin
E-Firewire-CAB-20-4P4P	10m IEEE-1394 cables - 4pin to 4pin

E-M4-100 Fibre Optic FireWire Repeater

The **E-M4-100** is a product for extending FireWire signals long distances. With these one can extend the signal range upto 500 meters. The product consists of a fibre optic transmitter and receiver. The transmitter features 2 FireWire 6-pin connectors and the receiver the same. These products can be used for machine vision applications or long distance data transfer. They are plug-and-play and do not require any special software.

- ⊕ **Distance:** 500 meters using 50/125 Multi-mode Fibre
- ⊕ Complies with IEEE1394a and IEEE1394b
- ⊕ 400Mbps Full duplex data rate
- ⊕ **Power:** Self powered or via external 12VDC supply
- ⊕ **Dimensions (TX/RX):** 99 x 22 x 89 mm



MODEL	Description
E-M4-100	Fibre Optic FireWire Repeater