Compatible Windows Software

- DT-Active Open Layers
- 32-Bit Frame Grabber SDK for Windows 98/NT 4.0/2000/ME
- DT-*Acquire*
- GLOBALLAB Image2
- DT Vision Foundry

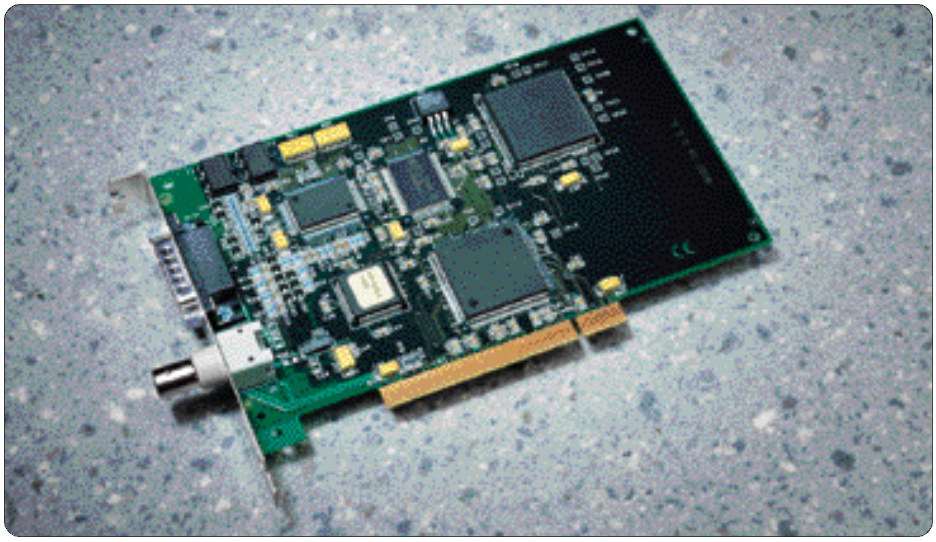
Member of MACH Series™

DT3153

Composite Color PCI Frame Grabber

Key Features

- *Input flexibility supports up to three NTSC/PAL video sources or one S-video (Y/C) and two NTSC/PAL video sources.*
- *Sync Master mode supports multiple camera configurations.*
- *High-performance scaler enhances detail in small images.*
- *General-purpose digital inputs/outputs for interfacing to peripheral devices.*
- *MACH Series™ PCI bus-mastering architecture enables acquisition and transfer to memory at 30 fps (NTSC), fps (PAL).*
- *Free DT-Acquire™ software enables you to capture, display, and save image data.*



M-5883

The DT3153 is a flexible, low-cost, composite color frame grabber for the PCI Bus.

Overview

The DT3153 is a composite color frame grabber for the PCI bus. The board can handle both composite and S-video signals, and can act as a sync master with compatible cameras. As a member of the MACH Series, it is a PCI Bus Master, capable of transferring images in real time to system memory.

32-bit True Color Format—All on the PCI Bus

The DT3153 captures composite or S-video images in NTSC and PAL formats, and passes the data directly onto the PCI bus. The image data can be output in 32-bit RGB, 15-bit RGB, or 16-bit YUV formats.

Added Camera Flexibility

Unlike other low-cost color frame grabbers, the DT3153 supports sync-master mode camera configurations. The DT3153 generates horizontal and vertical drive, as well as composite sync signals, to allow multiple cameras to be genlocked.

On-board Scaler

The DT3153 features a high-performance on-board scaler which can scale images from 100% down to 1% using linear phase interpolation, allowing small images to be viewed in great detail.

Ideal Applications

Visual Inspection
Color Machine Vision
Medical Imaging/Diagnostics
Surveillance/Security
Scientific Image Analysis

High Performance Data Transfer and Display

The DT3153 employs the industry-leading MACH Series architecture for real-time image display. Taking advantage of the PCI bus' high speed, up to 132 MB/s, the DT3153 can transfer an unlimited number of frames in real time across the bus to host memory. Using the DirectDraw™ (DDI) standard built into Windows 98/NT 4.0/2000/ME, you can display live video with non-destructive overlays without having display hardware on the frame grabber. And by using a separate VGA card for display, you are free to choose the graphics card capabilities that satisfy your particular application needs.

System CPU Free for Image Processing

Because system resources are not involved in transferring data with the DT3153 Bus Master design, your computer's CPU is free to perform high-speed image processing on the data you acquire. You can acquire a second image while using the host CPU to process the first.

Extensive Software Support Saves Time, Protects Your Investment

Several software products are available to help you get your application up and running quickly and easily. The Frame Grabber SDK™ (included) is a complete library of hardware-independent function calls that enables you to control the operations of Data Translation's PCI frame grabbers in Visual C or Visual C++.

Optionally, DT-Active Open Layers™ is an ActiveX® control that enables you to use Data Translation's PCI frame grabbers with graphical programming environments such as Microsoft Visual Basic and Visual C++.

Both packages adhere to Data Translation's DT-Open Layers® software architecture, which provides a common application programming interface (API) across all DT PCI frame grabbers. This means that you can easily switch from one Data Translation frame grabber to another, or add more frame grabbers, with little or no reprogramming. Adding support for a new board is as easy as installing a new driver.

Technical Support

As you develop your application, technical support is available when you need it. Extensive information is available 24 hours a day on our web site at www.datatranslation.com, including drivers, example code, bug fixes, pinouts, a searchable KnowledgeBase, and much more.

Support is also available from your point of purchase. Telephone support is free for the first 90 days; you can also request complimentary support via e-mail or fax at any time. Additional support options are available; contact your Data Translation representative for details.

Real-Time Display, Non-Destructive Overlays

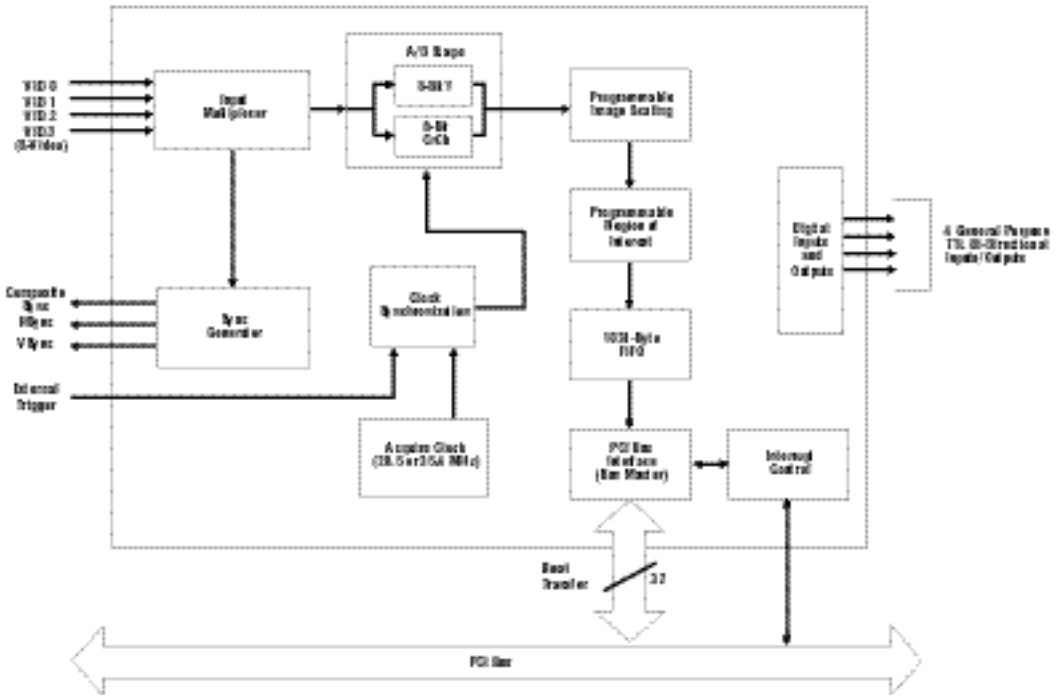
MACH Series frame grabbers employ Microsoft's DirectDraw (DDI) standard, allowing you to display real-time, live video with non-destructive overlays without adding costly display hardware (i.e. VGA circuitry) to the frame grabber. This approach offers many advantages over traditional frame grabber display and overlay methods, including:

Minimal CPU Bandwidth: The DirectDraw display technique requires minimal CPU bandwidth, leaving the CPU free to perform image processing or other tasks. Ideal for applications where display video and processing occur simultaneously, DDI allows for stagger-free images and smooth flowing, real-time video with overlays.

Upgradable Compatibility: With DDI, your MACH Series frame grabber will work with any DirectDraw-compatible graphics card. And since DirectDraw is enabled through the graphics card driver, you can upgrade an existing graphics card to DDI by simply loading a new driver.

Flexible Graphics Card Selection: Because the graphics card is not built onto the frame grabber, you are not "locked in" to the performance of the frame grabber's display circuitry. This allows you to choose the frame grabber that suits your needs and the graphics card that meets your performance requirements and budget.

Additional Features: Since DDI is the same overlay technique used by video game manufacturers, this capability gives you the ability to have non-destructive overlays of any size, shape, or color on top of live video. In addition, overlays can be translucent (semi clear), rotated, animated, or even placed over scaled images.



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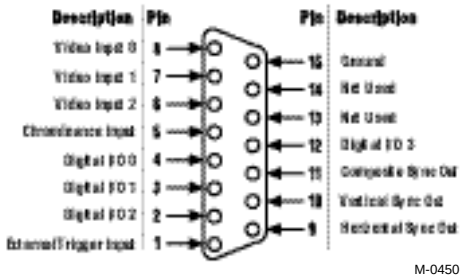
DT3153 Block Diagram

User Connections

Connecting S-Video Signals to the DT3153

To connect S-video input sources to the DT3153 frame grabber, you need to purchase an EP306 cable. Additional items that are needed include: one S-video (male) mating connector, and two solderable male BNC adapters. These can be purchased at your local electronics store.



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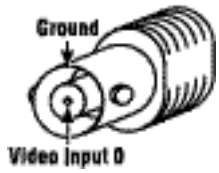
Connector J1



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Onboard BNC Connector for Single Video Input

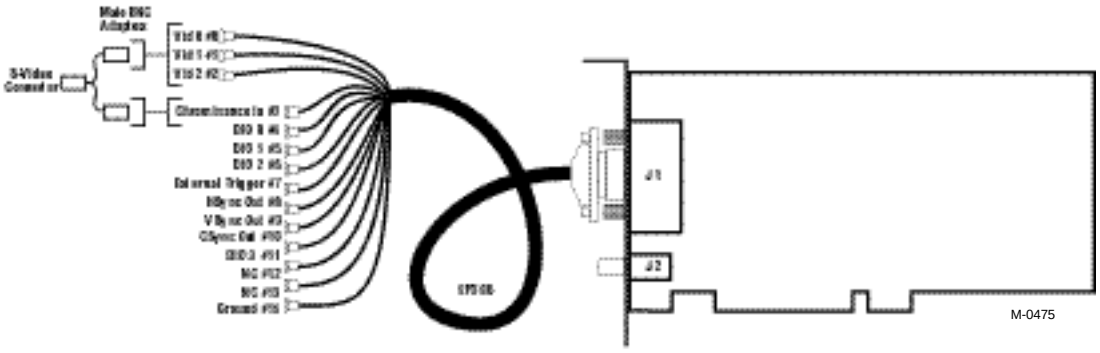

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Figure 1. Connecting the EP306 Cable to Connector J1

DT3153 (MACH Series™)

BUS: PCI

Type: Composite Color

DT3153 Specifications

All specifications are typical at +25°C and rated voltage unless otherwise specified.

Video Input

Video Format: Composite video and S-Video (Y/C) formats; NTSC (60 Hz), PAL (50 Hz); software selectable

Timing Format: Standard 60 Hz and 50 Hz format timing supported; software selectable

Inputs: 3 NTSC/PAL inputs or 1 S-Video (Y/C) and 2 NTSC/PAL inputs; ac coupled

Video Signal: 1 Volt peak-to-peak, 75 ohms

Spatial Resolution: 640 x 480 (60 Hz), 768 x 576 (50 Hz)

Acquisition

Digitization: Twin 8-bit A/Ds, one for monochrome data and one for chroma data; data derived to YCrCb

Pixel Jitter: ±6 nsec max

Aspect Ratio: 1:1 square pixels, depending on scaling factors

Frame Grab Speed: 1/30 s (60 Hz) or 1/25 s (50 Hz)

Modes: Interlaced (start on next even, next odd, or next field), single frame or continuous operation; all software selectable.

On-Board Processing

Region Of Interest: Programmable ROI window defines video data to be transferred to memory; pixels outside window are discarded

Scaling: Images scalable to 4 pixels by 4 lines, performed using linear phase interpolation; software selectable.

Data Formats

Image data can be output in 32-bit RGB, 15-Bit RGB and 16-bit YUV formats

Control Signals

External Trigger Inputs: One, TTL levels, software selectable on rising/falling edge

Sync Select: Sync can be generated internally or stripped from the video input channel used

Sync/Control Outputs: VSYNC, HSYNC, Composite Sync; signals provided to camera(s), board acts as Sync Master

Digital Inputs/Outputs: Four general-purpose bi-directional TTL input/output lines; TTL levels, fan-out of seven TTL loads each

Video Display

Uses PC's graphics card and monitor for display. Real-time video display and non-destructive, real-time animated overlays performed using Direct Draw (DDI)

Video Transfer Rate

20 MB/s typical, 132 MB/s max. Board operates as a Bus Master using Burst Mode for data transfer to host memory

Power Requirements

+5V @ 2 A typical

Physical/Environmental

Form: Half-size PCI bus board (short card)

Dimensions: 10.7cm x 17.5 cm (4.2 in. x 6.875 in.)

Weight: 150 g (5.3 ounces)

Operating Temperature: 0° to 50° C (32° to 122° F)

Storage Temperature: –25° to 70° C (–13° to 158° F)

Relative Humidity: Up to 90%, non-condensing

Warranty

One year limited parts and labor

System Requirements

Due to the high data-throughput available from the DT3153, the following PC configuration requirements are recommended:

- Pentium-class processor, 133 MHz or faster; Pentium II recommended
- At least one available PCI Bus slot
- Microsoft Windows 98/NT 4.0/2000/ME
- Triton PCI chipset (or better) and supporting system BIOS
- 16 MB of system RAM minimum for Windows 98; 32 MB minimum for Windows NT 4.0/2000/ME
- CD-ROM drive
- 3.5 in. high-capacity disk drive (for software installation)
- DDI-compatible graphics adapter

Ordering Summary

All Data Translation hardware products are covered by a 1-year warranty. For prices please consult a price list, visit our web site, or contact your local reseller.

DT3153

The DT3153 is shipped with DT-Acquire™ software, software driver, 32-bit SDK and a Getting Started manual.

- DT3153

Note: Call for information on OEM and volume discounts.

Accessories

- EP306—1.5 m (5 ft.) cable assembly; accommodates three composite video inputs or one S-video and two composite inputs; external trigger input; and all four bi-directional digital I/O channels; connects to board using a mini D-shell connector

Software

All software packages include a copy of the software on CD-ROM, a user's manual, and 90 days of complimentary telephone support.

- DT-Active Open Layers
  ActiveX control for Microsoft Visual Basic 5.0 or higher, Visual C++ 5.0 or higher, running under Windows 98/NT 4.0/2000/ME
  SP0974-CD

For other compatible software, consult the software section of this handbook, or call for details.