Compatible Windows Software

- DT-Active Open Layers
- 32-Bit Frame Grabber SDK for Windows 98/NT 4.0/2000/ME
- DT-*Acquire*
- GLI/2
- DT Vision Foundry

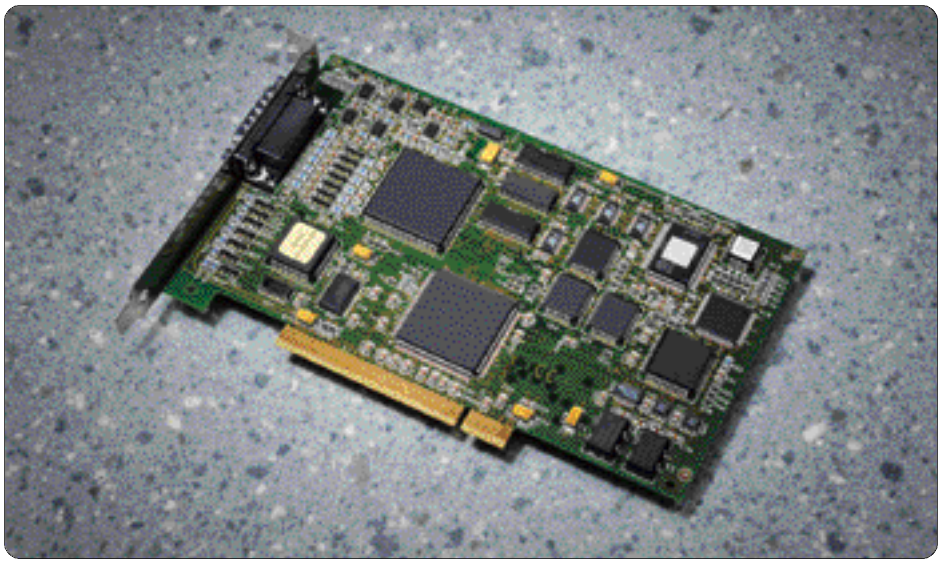
Member of MACH Series™

DT3154

RGB Color PCI Frame Grabber

Key Features

- *Composite sync output allows synchronization of multiple cameras.*
- *High-performance scaler enhances detail in small images.*
- *MACH Series™ PCI bus-mastering architecture enables acquisition and transfer to memory at 30 fps (NTSC).*
- *Digital Clock Sync™ reduces jitter to less than ±4 ns (max) for high-accuracy data sampling.*
- *General-purpose digital inputs/outputs for interfacing to peripheral devices.*
- *Sync Sentinel™ improves image capture with VCRs.*
- *Free DT-Acquire™ software enables you to capture, display, and save image data.*



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The DT3154 is a flexible, 24-bit RGB color frame grabber for the PCI Bus.

Overview

The DT3154 is a flexible RGB color frame grabber for the PCI bus. It can handle both NTSC and PAL format RGB video signals, and features a composite sync output and a high-performance onboard scaler. As a member of the MACH Series, it is a PCI bus master capable of transferring images in real time to system memory

24-bit RGB Color Format—All on the PCI Bus

The DT3154 digitizes 24-bit RGB color images from analog video sources in NTSC and PAL formats, and passes the data directly onto the PCI bus. The image data can be output in 24-bit RGB and 16-bit formats.

Added Camera Flexibility

Unlike other low-cost RGB color frame grabbers, the DT3154 features a composite sync output, which allows users to synchronize multiple cameras so no frames are lost when switching between inputs. The DT3154 also features two multiplexed “banks” of inputs so two RGB cameras (or other analog RGB signal sources) can be connected. Additional input modes also allow the use of three monochrome cameras or one dual-channel progressive-scan camera such as the Sony XC7500 and XC8500.

Ideal Applications

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

On-board Scaler

The DT3154 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.

Sync Sentinel for Excellent VCR Compatibility

For improved image capture with VCRs, even in pause mode, proprietary on-board circuitry ignores extra sync pulses and inserts sync pulses where they are missing for accurate image acquisition.

DT3154 (MACH Series™)

BUS: PCI

Type: RGB Color

High Performance Data Transfer and Display

The DT3154 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 DT3154 can transfer an unlimited number of consecutive frames, in real-time, across the bus to host memory. And by 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 expensive display hardware on the frame grabber. By using a separate VGA card for display, you are free to choose the graphics card that satisfies your particular application needs and performance requirements.

System CPU Free for Image Processing

Because system resources are not involved in transferring data with the DT3154 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.

Digital Clock Sync™ for Low Pixel Jitter

More consistent timing yields more accurate data. Our Digital Clock Sync has no more than ±4 ns max. (±2.5 ns typical) jitter, twice as good as the best phase-locked loop circuits. This permits flawless operation with asynchronous input devices, which output only one frame at a time, permitting the DT3154 to sync immediately to the incoming signal, on the first frame.

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.

Real-Time Display, Non-Destructive Overlays

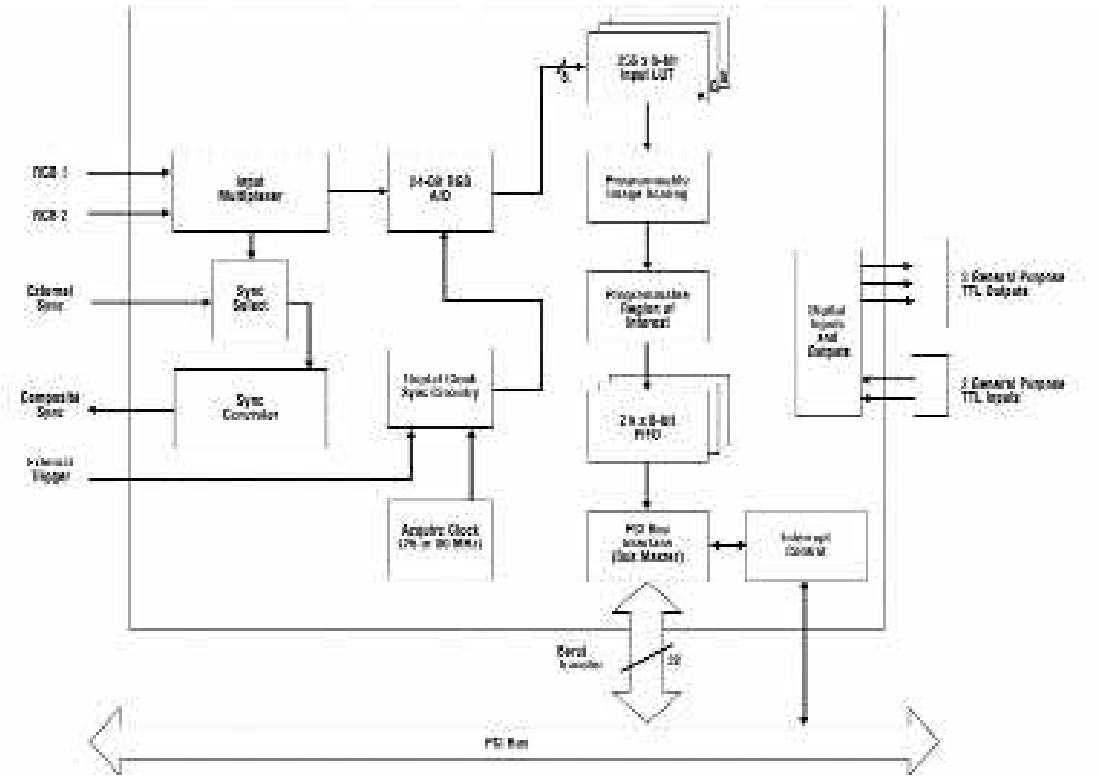
MACH Series frame grabbers employ Microsoft's DirectDraw (DDI) standard, allowing you to display real-time, live video with non-destructive overlays without adding costly display hardware (i.e. VGA circuitry) to the frame grabber. This approach offers many advantages over traditional frame grabber display 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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DT3154 Block Diagram

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.

Compatible Cameras*

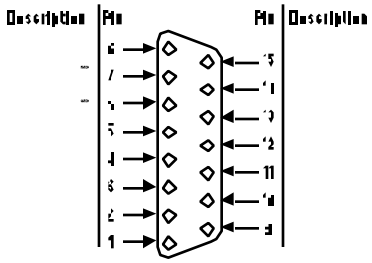
RGB Color:
Any standard 50 Hz or 60 Hz, RGB format camera

Dual-channel Progressive Scan (Monochrome):

- Sony XC7500
- Sony XC8500
- Costar MV-10

*Visit www.datatranslation.com/products for the most up-to-date camera compatibility information. Subject to change due to vendor model/specification changes. 2/01

User Connections



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Connector J1

Compatible Cable Assembly
EP306; for input and output connections

Mating Connectors
AMP 747953-1 or equivalent
(15-pin female D-shell connector)

DT3154 (MACH Series™)

BUS: PCI

Type: RGB Color

DT3154 Specifications

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

Video Input

Video Format: RS-170, NTSC format RGB (60 Hz) or CCIR, PAL format RGB (50 Hz); interlaced and/or non-interlaced/progressive-scan; software selectable

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

Inputs: 2 sets of RGB inputs (three channels each); can be used for 2 RGB cameras, 2 sets of three monochrome cameras each (using interlace separation mode), or can be reconfigured to support specified dual-channel progressive-scan monochrome cameras; all 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: 8-bits x 3, 24-bits total

Pixel Jitter: ±2.5 nsec typical, ±4 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 or non-interlaced/progressive-scan (start on next even, next odd, or next field for interlaced), single frame or continuous operation; all software selectable.

Input Ranges: Programmable, Offset Level range of 0 V to 306 mV in steps of 4.86 mV; Reference Level range of 338 mV to 1.2 V in steps of 13.68 mV

On-Board Processing

Input LUT: Three 256 x 8-bit ILUTs; allow for threshold adjustments on image in real-time

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. Scaling disabled when image data is output in 16-bit format

Data Formats

Image data can be output in 24-bit RGB and 16-bit formats

Control Signals

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

External Sync Inputs: One, signal provided from camera(s), sync detection level is software programmable for 50 or 125 mV.

Sync Select: Sync can be stripped from any of the six video inputs or taken from the dedicated external sync input. Sync detection level is software programmable for 50 or 125 mV.

Sync/Control outputs: One Composite Sync output; signal provided to camera(s), board acts as Sync Master

Digital inputs/outputs: Two general-purpose TTL inputs, Three general-purpose TTL outputs, 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 to 35 MB/s typical, 132 MB/s max. Board operates as a Bus Master using Burst Mode for data transfer to host memory

Power Requirements

+5 V @ 2 A typical

–12 V@ 200 mA typical

Physical/Environmental

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

Dimensions: 10.7 cm 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

DT3154 System Requirements

Due to the high data-throughput available from the DT3154, 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
- DDI-compatible graphics adapter

Contact Data Translation for additional information on minimum system requirements.

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.

DT3154

The DT3154 is shipped with a CD-ROM containing DT-Acquire software, a DT-Open Layers device driver, 32-bit SDK and a comprehensive User's Manual in PDF form. Manuals are available in hard-copy form for an additional charge.

- DT3154

Note: Call for information on OEM and volume discounts.

Accessories

- EP306 — 1.5 m (5 ft.) cable assembly; accommodates two sets of RGB video inputs and an external sync input; external trigger input; a composite sync output; and the DT3154's three digital outputs and two digital inputs on male BNC connectors; connects using a mini D-shell connector
- DT3154 User's Manual in hard-copy form

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++ or higher, running under Windows 98 or Windows NT 4.0/2000/ME
  SP0974-CD

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