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Compatible Windows Software

- DT Vision Foundry
- GLOBAL LAB Image/2

Member of MACH Series™

DT3155

High-Accuracy Monochrome PCI Bus Frame Grabber



The DT3155 is a high-accuracy, monochrome frame grabber for the PCI Bus.

Key Features

- *Flexible A/D allows precise match of input range to video source.*
- *Digital Clock Sync™ reduces jitter to less than ±5 ns (max) for high-accuracy data sampling.*
- *General-purpose digital outputs for interfacing to peripheral devices.*
- *Specially designed Fidelity™ circuitry ensures accurate data sampling.*
- *MACH Series™ PCI bus-mastering architecture enables acquisition and transfer to memory at 30 fps (RS-170/NTSC).*
- *Sync Sentinel™ improves image capture with VCRs.*
- *Ships with valuable software bundle featuring WDM drivers, software evaluations, a Frame Grabber SDK, and DT-Acquire ready-to-run application.*

Overview

The DT3155 is a frame grabber for the PCI bus built using proprietary circuitry that assures high accuracy in a variety of demanding imaging applications. Operating as a bus-master on the PCI bus, the DT3155 transfers images continuously in real-time, to system memory for processing or display.

High Performance Data Transfer and Display

The DT3155 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 DT3155 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 2000/XP, 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.

Ideal Applications

Machine Vision

Motion Analysis

Medical Imaging/Diagnostics

High Accuracy for Scientific and Industrial Image Processing

The DT3155 is designed specifically for scientific and industrial applications where data accuracy is critical. The board uses several proprietary circuits to assure accurate data sampling.

UltraSharp™ Analog Design for Crisp Edges

Our high-speed analog circuitry delivers sharp images, even across severe grayscale transitions.

Digital Clock Sync™ for Low Pixel Jitter

More consistent timing yields more accurate data. Our Digital Clock Sync has no more than ±5 ns max. (±3.5 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 DT3155 to sync immediately to the incoming signal, on the first frame.

Flexible A/D for Optimum Resolution
Allows you to precisely match the input range to your video source to maximize the effectiveness of the A/D converter. Digitally adjustable black level (1.28–306 mV) and white level (502–1009 mV) control let you select from more than 65,000 ranges. The board is also software-configurable for RS-170 or CCIR operation.

Sync Sentinel™ for Excellent VCR Compatibility
For improved image capture with VCRs, even in pause mode, onboard circuitry ignores extra sync pulses and inserts sync pulses where they are missing for accurate image acquisition.

System CPU Free for Image Processing

Because system resources are not involved in transferring data with the DT3155's 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's CPU to process the first.

External Trigger, General Purpose Digital Outputs

The DT3155 accepts an external trigger so that image acquisition can be synchronized with an event external to the PC. It also provides eight programmable TTL-level digital outputs for controlling or actuating external devices.

Extensive Software Support

The included Imaging Omni CD provides the tools you need to set up your Data Translation PCI frame grabber and develop imaging applications.

The Imaging Omni CD includes:

- DT-Acquire – Use this ready-to-run software application to verify the operation of your Data Translation frame grabber during startup, and to capture, display and save images.
- Frame Grabber SDK – This allows Microsoft C programmers to develop your own application software in Windows 2000/XP.
- Device Driver – You must install this device driver to use your Data Translation frame grabber with any of the supported software packages or utilities. The device driver is for use with Windows 2000/XP.
- DT Vision Foundry Evaluation – DT Vision Foundry is a versatile and extensible machine vision software package that integrates powerful vision tools with multiple programming environments to provide a robust, flexible, easy-to-use visual inspection package. DT Vision Foundry is supported under Windows 2000/XP. The Imaging Omni CD lets you evaluate the great new features of DT Vision Foundry for 14 days.
- GLOBAL LAB Image/2 Evaluation – GLI/2 is a complete image analysis software package, ideal for scientific and general-purpose applications that require measuring, classification, counting, and other analysis. GLI/2 is supported under Windows 2000/XP. The Imaging Omni CD lets you evaluate the great new features of GLI/2 for 14 days.
- Documentation – User and Getting Started Manuals in PDF format.

Real-Time DIsplay, Non-destructive Overlays

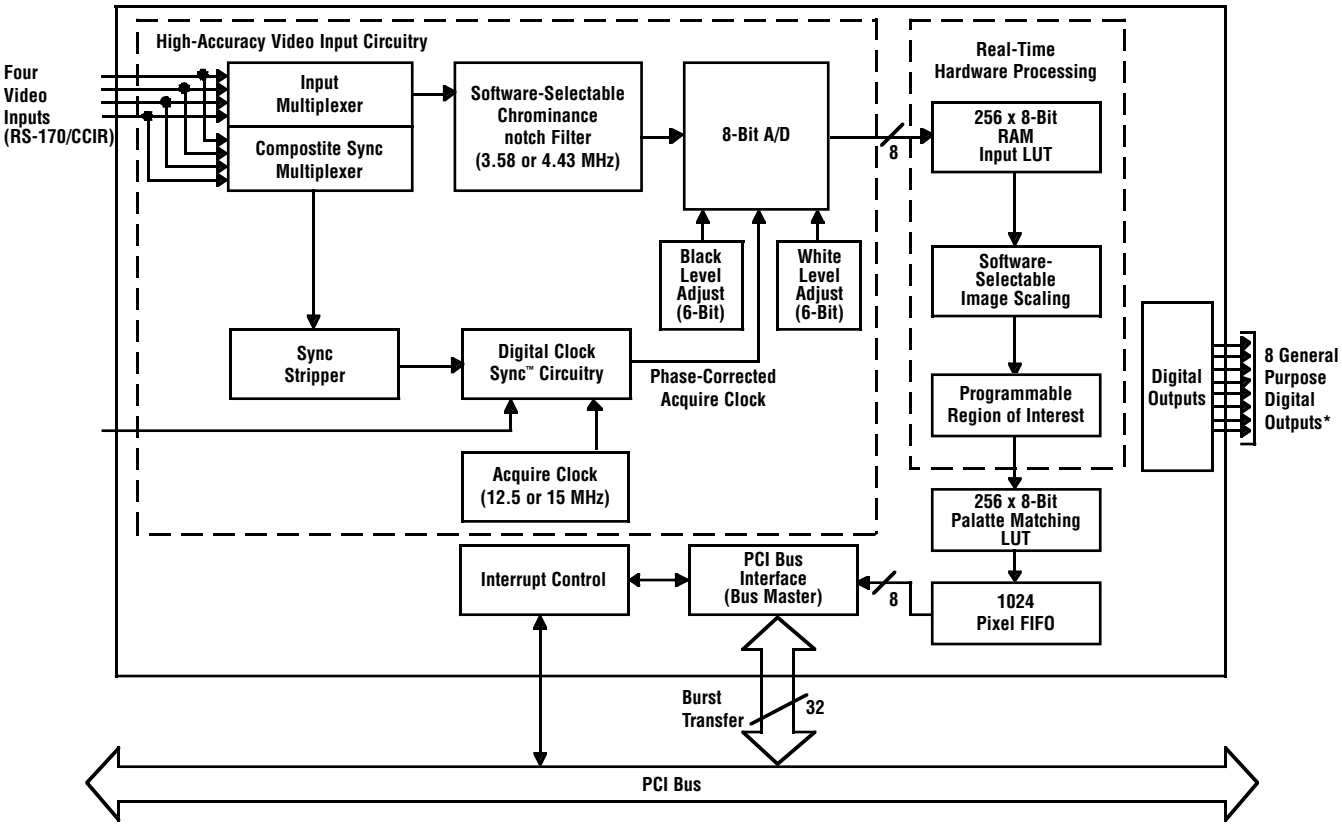
MACH Series frame grabbers employ Microsoft's DirectDraw (DDI) standard, allowing you to display real-time, live video with non-destructive overlays without adding costly display hardware (i.e. VGA circuitry) to the frame grabber. This approach offers many advantages over traditional frame grabber display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



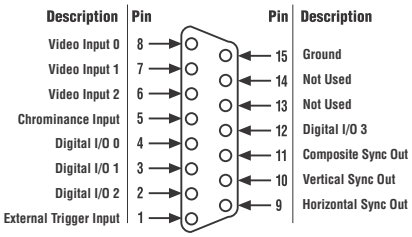
DT3155 Block Diagram

Technical Support

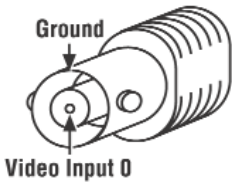
As you develop your application, technical support is available when you need it. Extensive information is available 24 hours a day on our web site at www.datatranslation.com, including drivers, example code, pinouts, a searchable KnowledgeBase, and much more.

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.

User Connections



Connector J1



Onboard BNC Connector for Single Video Input

Single Video Input Only

If you want to connect only a single video input to the DT3155, connection can be made to a female BNC connector on the board; any user-supplied cable with a male BNC connector can be used

Other User Connections

To access other user signals, a cable assembly connecting to the DT3155's 25-pin D-shell connector is required

Compatible Cable Assembly

The EP306 cable assembly accommodates four composite video inputs or three composite inputs and an external sync input; and all of the DT3155's eight digital outputs on male BNC connectors

Mating Connector

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

DT3155 (MACH Series™)

BUS: PCI

Type: Monochrome

Specifications

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

Video Input

Video Format: RS-170, RS-330, and NTSC (60 Hz) or CCIR and PAL (50 Hz); interlaced; software selectable

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

Inputs: 4 monochrome composite inputs; ac coupled

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

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

Chrominance Filters: Notch type, 3.58 MHz (60 Hz) or 4.43 MHz (50 Hz); software selectable

Acquisition

Digitization: 8-bits, 256 gray levels

Pixel Jitter: ±3.5 nsec typical, ±5 nsec max

Accuracy: Integral non-linearity ±0.5 LSB; RMS Noise 0.7 LSB

Aspect Ratio: 1:1, square pixels

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.

Input Ranges: Programmable, over 65,000 ranges available; Black Level range of 1.275 V to 306 mV in 255 steps of 1.195 mV each; White Level range of 502 mV to 1.009 V in 255 steps of 2.58 mV each

Onboard Processing

Input LUT: 256 x 8-bit; allows for gray scale threshold adjustments on image in real-time

Palette-Match LUT: 256 x 8-bit; matches image gray scale map to the palette used by Windows, ensures proper gray scale image display

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

Scaling: Scales images to 1/4 size; useful for reducing size of image on Windows display; operates by discarding every other pixel and transferring only one field; software selectable

Data Formats

Image data can be output in 8-bit monochrome format

Control Signals

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

Sync Select: Sync can be stripped from any of the four video inputs. Sync detection level is software programmable for 50, 75, 100 or 125 mV.

Digital Outputs: Eight general-purpose TTL outputs, fan-out of two 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

10 to 12 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 @ 100 mA typical;
–12 V@ 100 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° C to 50° C (32° F to 122° F)

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

Relative Humidity: Up to 90%, non-condensing

Warranty

One year limited parts and labor

DT3155 System Requirements

- Pentium-III class processor
- 32-bit/33MHz PCI bus and supporting BIOS
- At least one available PCI Bus slot
- Microsoft Windows 2000/XP
- 256 MB of system RAM minimum
- CD-ROM drive (for software installation)
- Graphics controller with DirectX driver

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.

DT3155

The DT3155 frame grabber is shipped with the Imaging Omni CD, a valuable software bundle which includes evaluations of DT Vision Foundry and GLOBAL LAB Image/2, WDM device drivers, complete documentation, a software development kit, and a ready-to-run software application.

- DT3155

Note: Call for information on OEM and volume discounts.

Accessories

- EP306—1.5m (5 ft.) cable assembly; accommodates four composite video inputs or three composite inputs and an external sync input; external trigger input; and all of the DT3155's eight digital outputs on male BNC connectors; connects using a mini D-shell connector

Software

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

- DT Vision Foundry Machine Vision Software
  SP1400-CD Development
  SP1402-CD Run-Time
- GLOBAL LAB Image/2 Image Analysis Software
  SP1500-CD
- DT-Active Open Layers ActiveX Control
  SP0974-CD

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