Compatible Windows Software

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

DT3130 Series

BUS: PCI

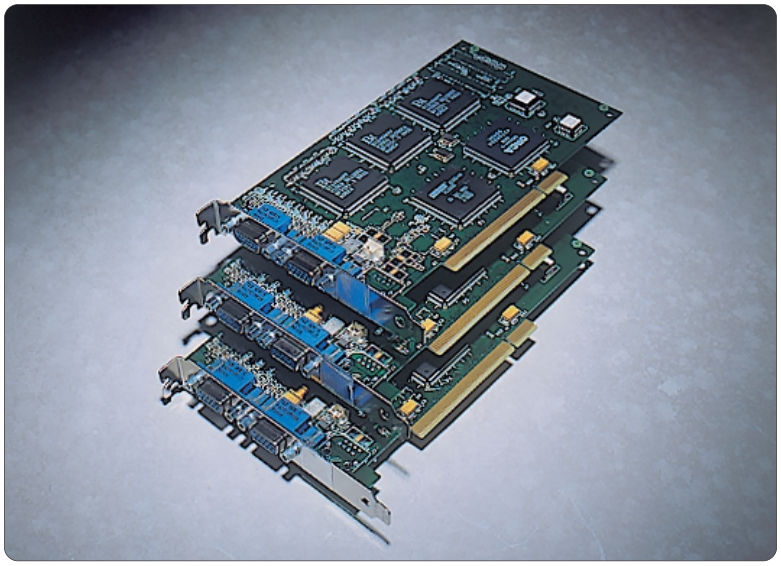
Type: Simultaneous Input Frame Grabber Boards

DT3130 Series for Machine Vision

Simultaneous Input Frame Grabber Boards for the PCI Bus

Key Features

- *Contains the functionality of up to three frame grabbers on one PCI short card, enabling multiple image acquisition at a low cost.*
- *Handles monochrome, composite color, and S-video input sources.*
- *Available option adds isolation from the hazards of an industrial environment.*
- *Programmable strobe outputs for precise camera control.*
- *12 volt camera power connection.*
- *PCI Bus Master and Scatter/Gather architecture for intelligent image data management; enables acquisition and transfer to host memory at 30 fps (RS-170/NTSC), 25 fps (CCIR/PAL).*
- *Free DT-Acquire™ software enables you to capture, display, and save image data.*



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The DT3131, DT3132, & DT3133 offer one, two, or three frame grabbers on a single half-size PCI board.

Overview

Ideal for applications requiring simultaneous image acquisition from multiple sources, low-cost DT3130 Series frame grabbers contain the functionality of up to three individual frame grabbers, all on one half-size PCI board.

An option adds isolation from the hazards of an industrial environment, letting you add the features your application requires without paying for unneeded extras.

Extensive Input Flexibility

The DT3130 Series has three different configurations:

- The DT3131 features one active input and three muxed, for up to three NTSC/PAL color cameras, or one S-video and two 170/CCIR, NTSC/PAL, cameras.
- The DT3132 includes two active inputs or six muxed, for up to six NTSC/PAL color cameras, or two S-video and four RS-170/CCIR, NTSC/PAL cameras.
- The DT3133 includes three active inputs or nine muxed, for input of up to nine RS-170/CCIR monochrome, NTSC/PAL color cameras, or three S-video and six RS-170/CCIR, NTSC/PAL cameras.

Ideal Applications

Visual Inspection
Machine Vision
Automated Medical Imaging
Surveillance

Features Summary

Board	Camera Inputs Active	Camera Inputs Muxed	External Trigger Inputs	Strobe Outputs
DT3131	1	3	1	1
DT3132	2	6	2	2
DT3133	3	9	3	3

Flexible Operation

The DT3130 Series is designed for complete operational flexibility. The on-board frame grabbers are completely independent, with independent trigger inputs and output strobes, and can be operated individually or simultaneously. This allows you to tailor the board configuration to meet your specific application requirements—whether they are for scientific image analysis of individual images or for multiple simultaneous image acquisition for machine vision applications.

Industrial Options to Meet Your Needs

Designed for use in industrial installations, the DT3130 Series frame grabbers can be equipped with isolated trigger inputs and isolated strobe outputs via an isolation option (DT3131-ISO, DT3132-ISO, DT3133-ISO).

Precise Camera Control

Each frame grabber on the DT3130 Series boards includes flexible HSYNC and VSYNC count capabilities, as well as a programmable output strobe. Each frame grabber's strobe output can be based on the HSYNC or VSYNC count, and can be run in one-shot, continuous, or software controlled strobe modes. The strobe outputs have both polarity and pulse-width programmability. This feature allows for precise synchronization and control of cameras and light sources for demanding applications. In addition this feature makes the DT3130 Series suitable for a variety of other applications that require the control of external events based on video sync timing.

Real-Time Display, Non-Destructive Overlays

The DT3130 Series employs 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 DT3130 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.

Extensive Software Support Saves Time, Protects Your Investment

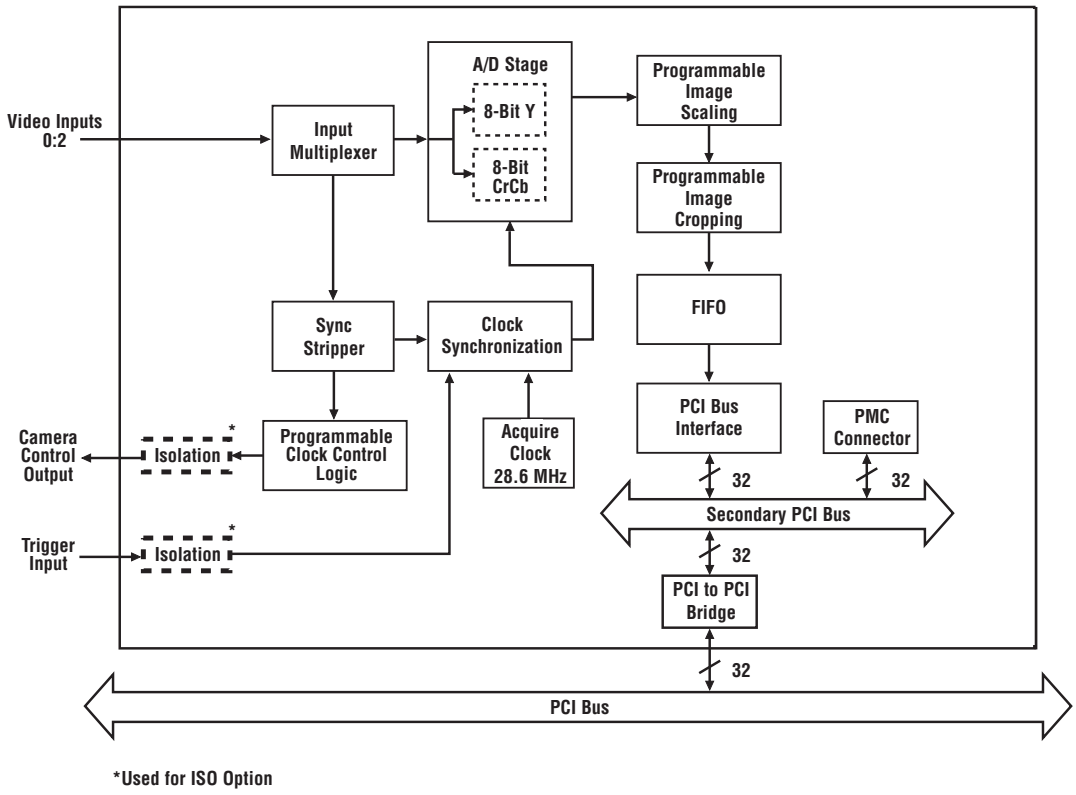
Several software products are available to help you get your application up and running quickly and easily. The Frame Grabber SDK™ (included) is a complete library of hardware-independent function calls that enables you to control the operations of Data Translation's PCI frame grabbers in Visual C or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

System CPU Free for Image Processing

Because of their PCI Bus Master design and intelligent Scatter/Gather memory-management architecture, the DT3130 Series boards handle large amounts of image data quickly and effectively, and with no CPU intervention. This leaves the host CPU free to do other tasks such as image processing, data manipulation, or other processor-intensive operations.



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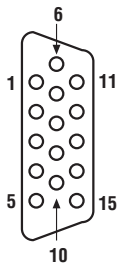
DT3131 Block Diagram

3131 User Connections

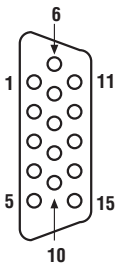
Description	Pin
N/C	8
N/C	7
N/C	6
Strobe Out +	5
N/C	4
N/C	3
Trigger in –	2
Trigger in +	1



Pin	Description
15	12V Ground
14	+12V
13	N/C
12	N/C
11	N/C
10	Strobe Out –
9	N/C

Connector J1

Description	Pin
N/C	8
N/C	7
N/C	6
GND	5
C0	4
VID2 or Y0	3
VID1	2
VID0	1



Pin	Description
15	Analog Ground
14	N/C
13	N/C
12	N/C
11	N/C
10	Ground
9	N/C

Connector J2

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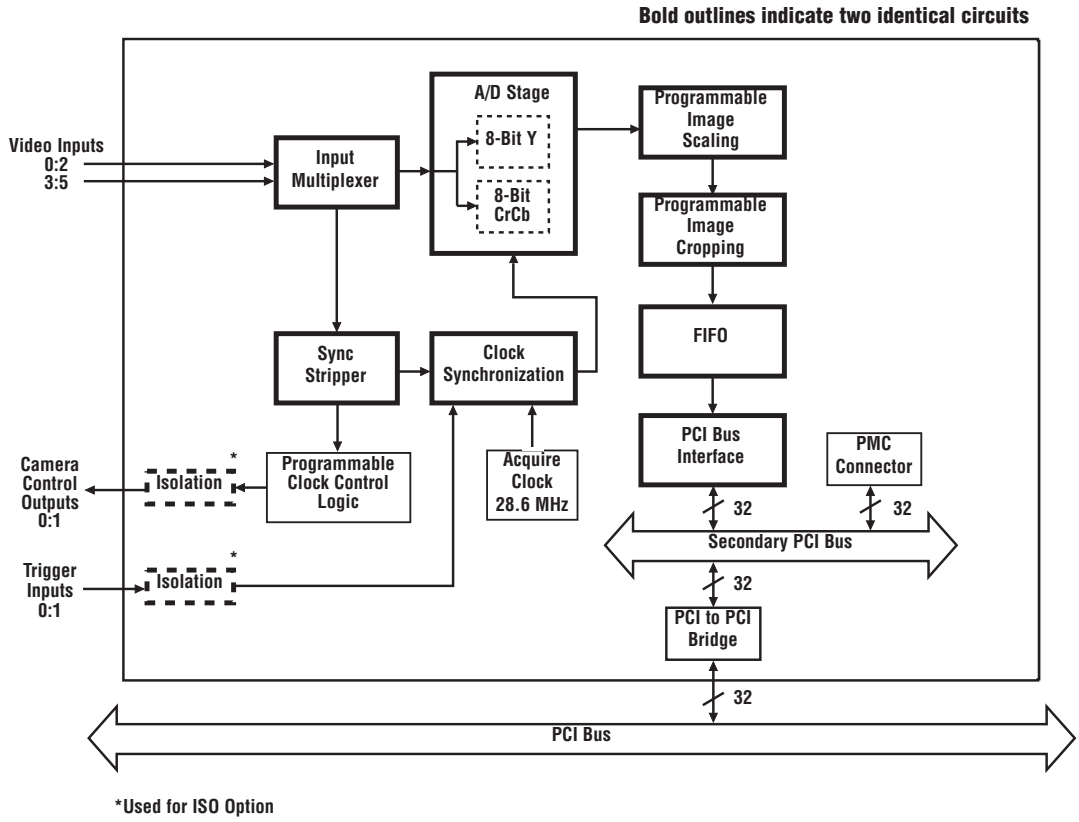

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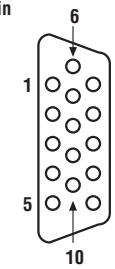
DT3132 Block Diagram

3132 User Connections

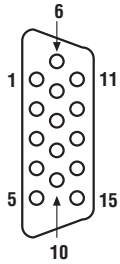
Description	Pin
Strobe Out 1+	8
N/C	7
N/C	6
Strobe Out 0+	5
Trigger in 1–	4
Trigger in 1+	3
Trigger in 0–	2
Trigger in 0+	1



Pin	Description
15	12V Ground
14	+12V
13	N/C
12	N/C
11	N/C
10	Strobe Out –
9	Strobe Out 1–

Connector J1

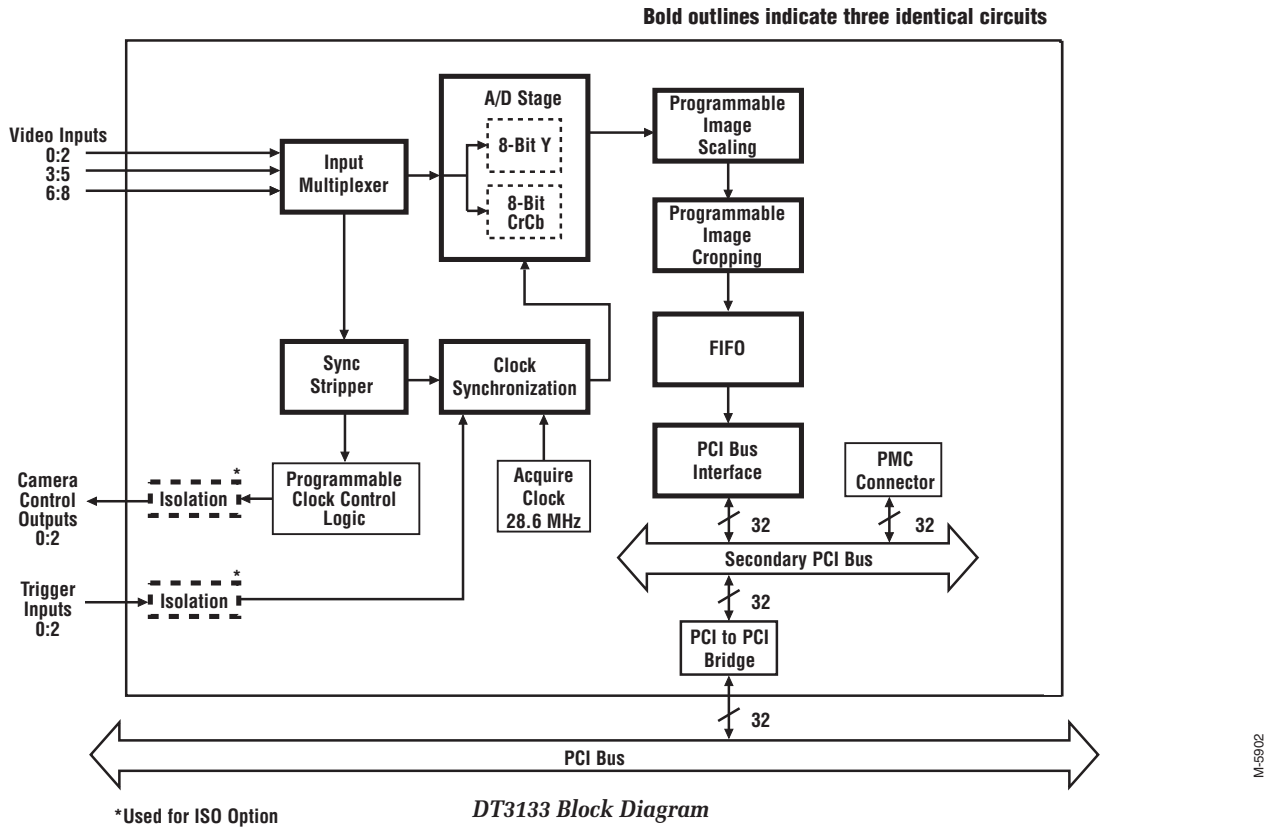
Description	Pin
VID5 or Y1	8
VID4	7
VID3	6
GND	5
C0	4
VID2 or Y0	3
VID1	2
VID0	1



Pin	Description
15	Analog Ground
14	N/C
13	N/C
12	N/C
11	N/C
10	Ground
9	C1

Connector J2

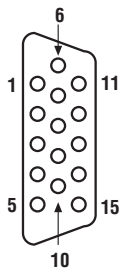
M-5899



DT3133 Block Diagram

3133 User Connections

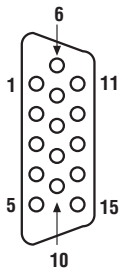
Description	Pin
Strobe Out 1+	8
Trigger in 2–	7
Trigger in 2+	6
Strobe Out 0+	5
Trigger in 1–	4
Trigger in 1+	3
Trigger in 0–	2
Trigger in 0+	1



Pin	Description
15	12V Ground
14	+12V
13	N/C
12	Strobe Out 2–
11	Strobe Out 2+
10	Strobe Out 0–
9	Strobe Out 1–

Connector J1

Description	Pin
VID5 or Y1	8
VID4	7
VID3	6
GND	5
C0	4
VID2 or Y0	3
VID1	2
VID0	1



Pin	Description
15	Analog Ground
14	C2
13	VID8 or Y2
12	VID7
11	VID6
10	Ground
9	C1

Connector J2

M-5899

DT3130 Series Specifications

Video Input

Video Format: Composite video and S-video (Y/C) formats; 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 timing formats are supported; software selectable

Inputs:

DT3131: 1 active input at any one time; 1 active composite out of 3 multiplexed composite, or 1 S-video and 2 composite; all inputs ac coupled

DT3132: 2 simultaneously active inputs at any one time; 2 active composite out of 6 multiplexed composite, or 2 S-video and 4 composite; all inputs ac coupled

DT3133: 3 simultaneously active inputs at any one time; 3 active composite out of 9 multiplexed composite, or 3 S-video and 6 composite; 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: Twin 8-bit A/Ds, one for monochrome, and one for chroma; data derived to YCrCb format.

Pixel Jitter: ±6 nsec maximum

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

Frame Grab Speed: 1/30 s (60 Hz), 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 scaleable to 4 pixels by 4 lines, performed using linear phase interpolation; software selectable

Data Formats

Image data can be output in 32, 24, 16, and 15-bit RGB, 16-bit YUV, or 8-bit monochrome formats

Control Signals

External trigger inputs: DT3131: 1 total; DT3132: 2 total, DT3133: 3 total TTL levels—one per active video input

Camera strobe outputs: DT3131: 1 total; DT3132: 2 total, DT3133: 3 total—one per active video input; individually controllable; TTL levels; Programmable HSYNC and VSYNC counts; Strobe output pulse-width programmable from 3.3 to 427 msec with selectable polarity

Control Signal Isolation: Available via the ISO option.

Video Display

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

Video Transfer Rate

55 MB/s typical, 132 MB/s max. Board operates as a Bus Master using Burst Mode for data transfer to host memory. Intelligent Scatter/Gather architecture used for image data management in host memory.

Power Requirements

+5 V @ 1 A typical

+12 V @ 1.5 A max (for camera power) via CPU power supply harness

Physical and 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

ISO Option

Factory-installed option provides isolation for all DT3130 Series control signal inputs and outputs

Trigger Inputs

Number: 3 inputs

Isolation: optical isolation, ≥250 VDC

Logic High input voltage 3.5-32 VDC

Logic Low input voltage <1.0 VDC

Input resistance 3.3 k Ω typical

Strobe Outputs

Number: 3 outputs

Isolation: optical isolation, ≥250 VDC

Maximum Load current 100 mA

Maximum load voltage 40 VDC

Overcurrent protection @300 mA

System Requirements

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

Ordering Summary

All Data Translation hardware products are covered by a 1-year warranty. For pricing information see a current price list, visit our web site, or call your local reseller.

The DT3130 frame grabber is shipped with the Imaging Omni CD, which includes device drivers for all DT PCI frame grabbers, DT-Acquire image-capture software application, example programs with source code, Frame Grabber SDK, and product documentation in PDF format.

- DT3131—Single frame grabber board, 3 inputs (muxed), 1 active (RS-170/NTSC, CCIR/PAL)
- DT3132—Double frame grabber board, 6 inputs (muxed), 2 simultaneously active (RS-170/NTSC, CCIR/PAL)
- DT3133—Triple frame grabber board, 9 inputs (muxed), 3 simultaneously active (RS-170/NTSC, CCIR/PAL)
- DT3131-ISO*—DT3131 with isolation option
- DT3132-ISO*—DT3132 with isolation option
- DT3133-ISO*—DT3133 with isolation option

*This is not a user-installable option and must be factory installed when ordered. Call for information on OEM and volume discounts.

Accessories

- EP311—6 m (2 ft.) 15-pin cable for video connection (up to 3 cameras simultaneous)
- EP312—1.0 m (3 ft.) 15-pin cable for control signal connection (up to three triggers, three strobes, and 12V power)
- EP314—.6 m (2 ft.) cable for connection of up to 9 cameras multiplexed
- EP317—2 m (6 ft.) cable forS-video connection (1 camera)
- DT3130 Series 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 Active X Control SP0974-CD
- For other compatible software, consult the software section of this handbook, or call for details.