DT335 and DT335-50

Low-Cost, Digital I/O Boards for the PCI Bus

Key Features

- *32 digital I/O lines for non-clocked monitoring or control of high channel-count applications.*
- *Interrupt on bit change detection for monitoring critical signals.*
- *Two versions:*
  - *DT335 — All signals are brought out to a dedicated 68-pin connector.*
  - *DT335-50 — All signals are brought out to a dedicated 50-pin connector.*
- *Supported by Measure Foundry™, test and measurement application builder software that lets you easily create complex measurement applications.*

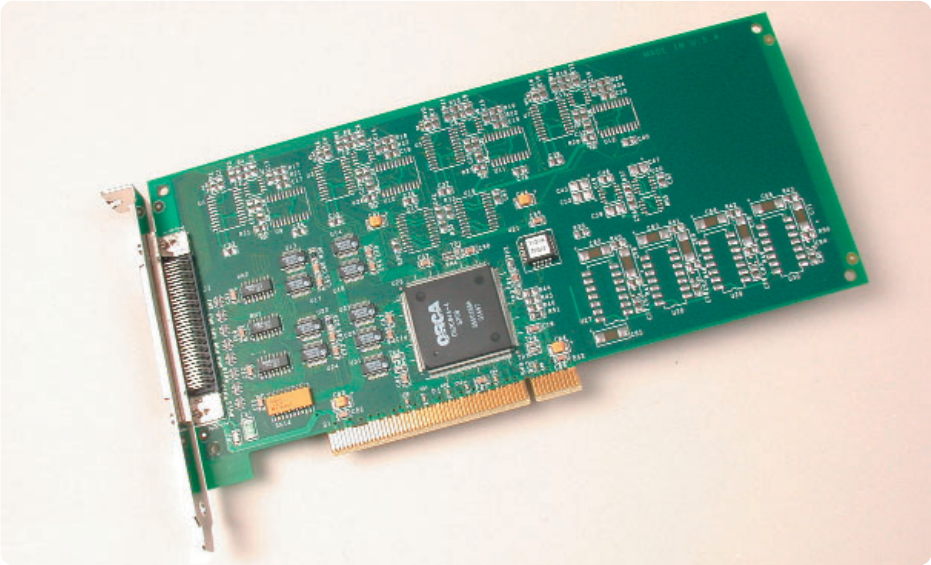


Figure 1. The DT335 features 32 digital I/O lines and interrupt on change.

Overview

Ideal for applications requiring control capabilities, the DT335 and DT335-50 both include 32 digital I/O lines.

32 Digital I/O Channels for High Channel-Count Requirements

Both boards provide 32 digital I/O lines, grouped into four 8-bit ports. You can program each port for either input or output. Digital outputs are capable of driving external solid-state relays (sink 24 mA and source 15 mA).

The DT335 and DT335-50 boards can generate an interrupt when any of the eight digital I/O lines corresponding to one of the 8-bit digital ports changes state. This feature is useful when you want to monitor critical signals or when you want to signal the host computer to transfer data to or from the board. You can enable the interrupts on a bit-by-bit basis on this port.

Easy User Connections – DT335

All signals are brought out to a dedicated 68-pin connector on the backplate of the DT335 board. The STP68 screw terminal panel is available to simplify connections. The EP305 cable connects the board to the STP68 screw terminal panel.

Easy User Connections – DT335-50

All signals are brought out to a dedicated 50-pin connector on the backplate of the DT335-50 board. The DT758-C screw terminal panel can be used to simplify connections.

Features Summary

	Digital I/O			
Port	Lines per port	Type	Interrupt on Bit Change Detection	SSR Drive
A,B,C	8 bidirectional	Level-sensitive	No	Yes
D	8 bidirectional	Level-sensitive	Yes	Yes

Software

All boards ship with the Omni CD that includes the following software:

- **DT-Open Layers for .NET with DT-Display:**
  The DT-Open Layers for .NET Class Library is a collection of classes, methods, properties, and events that provides a programming interface for DT-Open Layers-compatible hardware devices. It can be used from any language that conforms to the Common Language Specification (CLS), including Visual Basic.NET, Visual C#, Visual C++.NET with managed extensions, and Visual J#.NET.
  - **DT-Display for .NET** is a control for plotting data to a Windows form. It provides a powerful and user-friendly interface for rendering data.
- **DT-Open Layers for Win32:**
  DT-Open Layers for Win32 consists of the DataAcq SDK and DTx-EZ.
  - The **DataAcq SDK** consists of the necessary header files, libraries, example programs, and documentation to develop your own DT-Open Layers data acquisition and control applications. It is intended for use with non .NET languages, such as ANSI C, Visual C++ 6.0, and Visual Basic 6.0.
  - **DTx-EZ** provides visual programming tools for Microsoft Visual Basic and Visual C++ that enable quick and easy development of test and measurement applications.

Note: If you have an existing application that was written using the DataAcq SDK, we recommend that you migrate your application to use the DT-Open Layers for .NET Class Library. This will guarantee compatibility with future Data Translation hardware and software.

- **Drivers:**
  The 32-bit WDM device drivers make your application cross-platform compatible. These drivers support Data Translation USB and PCI boards using Windows 2000/XP.

You can choose to install demo versions of the following software from the CD:

- **Measure Foundry** is an open, powerful application builder for test and measurement systems. No programming is required!
- **quickDAQ** is a high performance, ready-to-run application that lets you acquire, plot, analyze, and save data to disc at 2MHz per channel without writing any code. quickDAQ supports applications from temperatue measurement to high-speed testing and analysis.
- **LV-Link** contains all necessary VIs, examples, and documentation to use Data Translation hardware in LabVIEW 8.0 and greater.

The following software is available as a free download from our web site.

- **DAQ Adaptor for MATLAB™** to access the visualization and analysis capabilties of MATLAB from The MathWorks™.

Cross-Series Compatibility Saves Programming Time, Protects Your Investment

Virtually all Data Translation data acquisition boards, including the DT330 Series, are compatible with the DT-Open Layers software standard. This means that if your application was developed with one of Data Translation's software products, you can easily upgrade to a new Data Translation board, now or in the future. Little or no reprogramming is needed. For example, if you are currently using a Data Translation DT2815 data acquisition board, upgrading to a DT330 Series board is simple – just load the new drivers and you're done.

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.

Accessories

STP68 Screw Terminal Panel and EP305 Cable

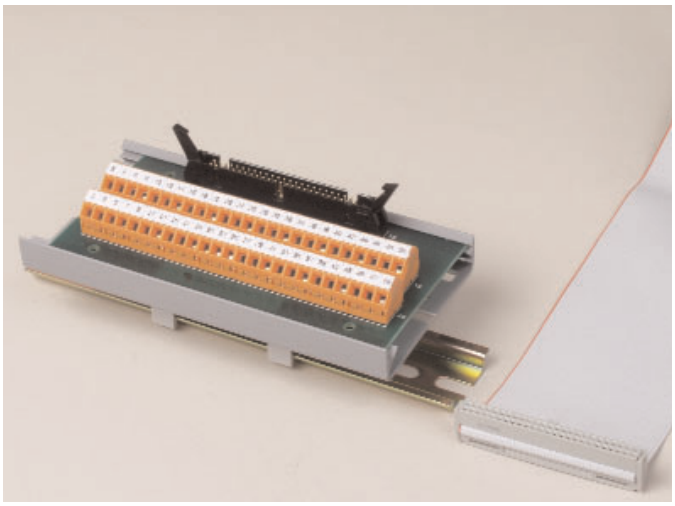
The STP68 screw terminal panel together with the EP305 cable simplifies the connection of digital I/O and counter/timer signals to the DT335 Series boards. Accommodating all user connections on convenient screw clamp connectors, the STP68 mounts on a panel and includes nylon standoffs for table-top applications. The panel measures 3.9375 in. (100 mm) wide by 3.9375 in. (100 mm) long.

The EP305 is a 68-pin, 79 in., twisted pair, shielded cable that connects the board to the STP68 screw terminal panel.

DT335 Series Manuals

The DT335 Series getting started and user's manuals are provided in Adobe Acrobat PDF format on the CD-ROM provided with the board; you can view and print them using Acrobat Reader. You can also purchase a hard copy of these manuals, if you wish.

DT758-C — Screw Terminal Panel and Included Cable



The DT758-C is a screw terminal panel which accommodates all digital I/O connections on the DT335-50. It comes with a 1 meter cable. The DT758-C measures 7.6 x 13.5 x 6.4 cm. Included is a mounting bracket for wall or panel mounting. The bracket measures 3.6 x 18.4 x .64 cm.

The EP195 is a paddle board with a 50-pin connector to the DT335-50 using the EP035 cable (sold separately). It splits into two 50-pin connectors (16 lines each) that drive Opto-22 signal conditioning modules, connected to the EP195 with one or two EP036 cables (sold separately).

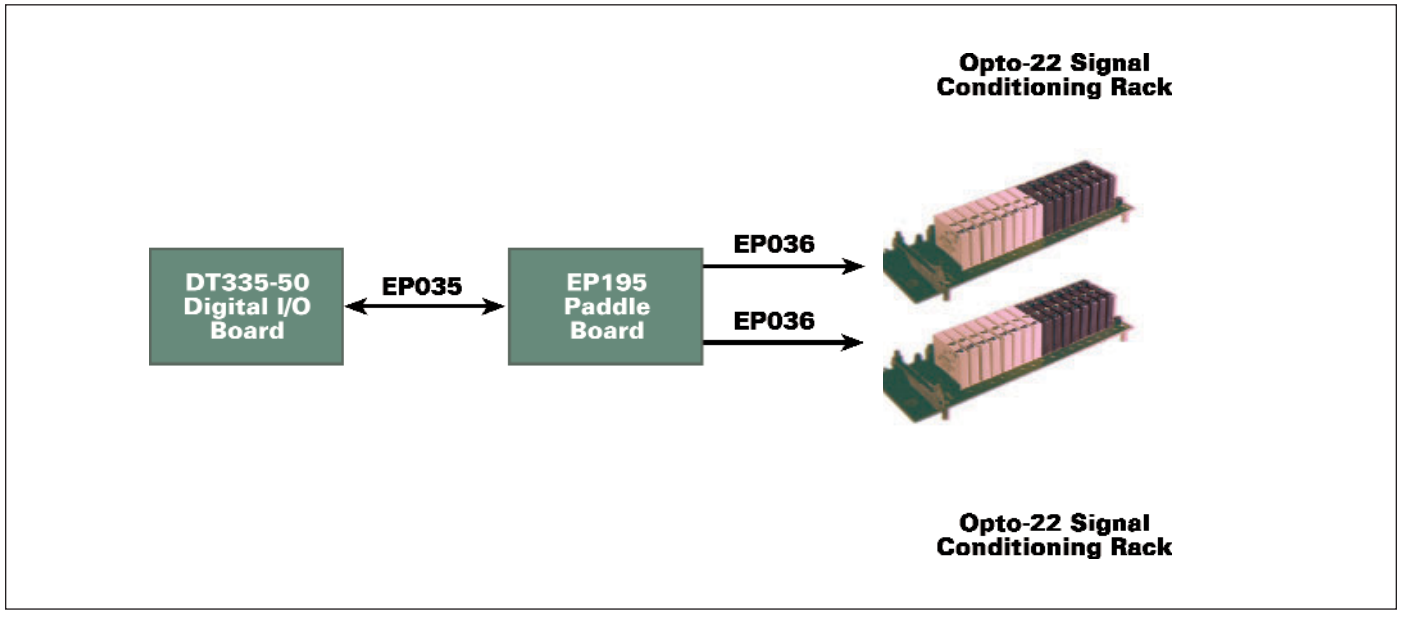


Figure 2. For signal conditioning on digital I/O lines, the DT-335-50 can be used with Opto-22 signal conditioning modules.

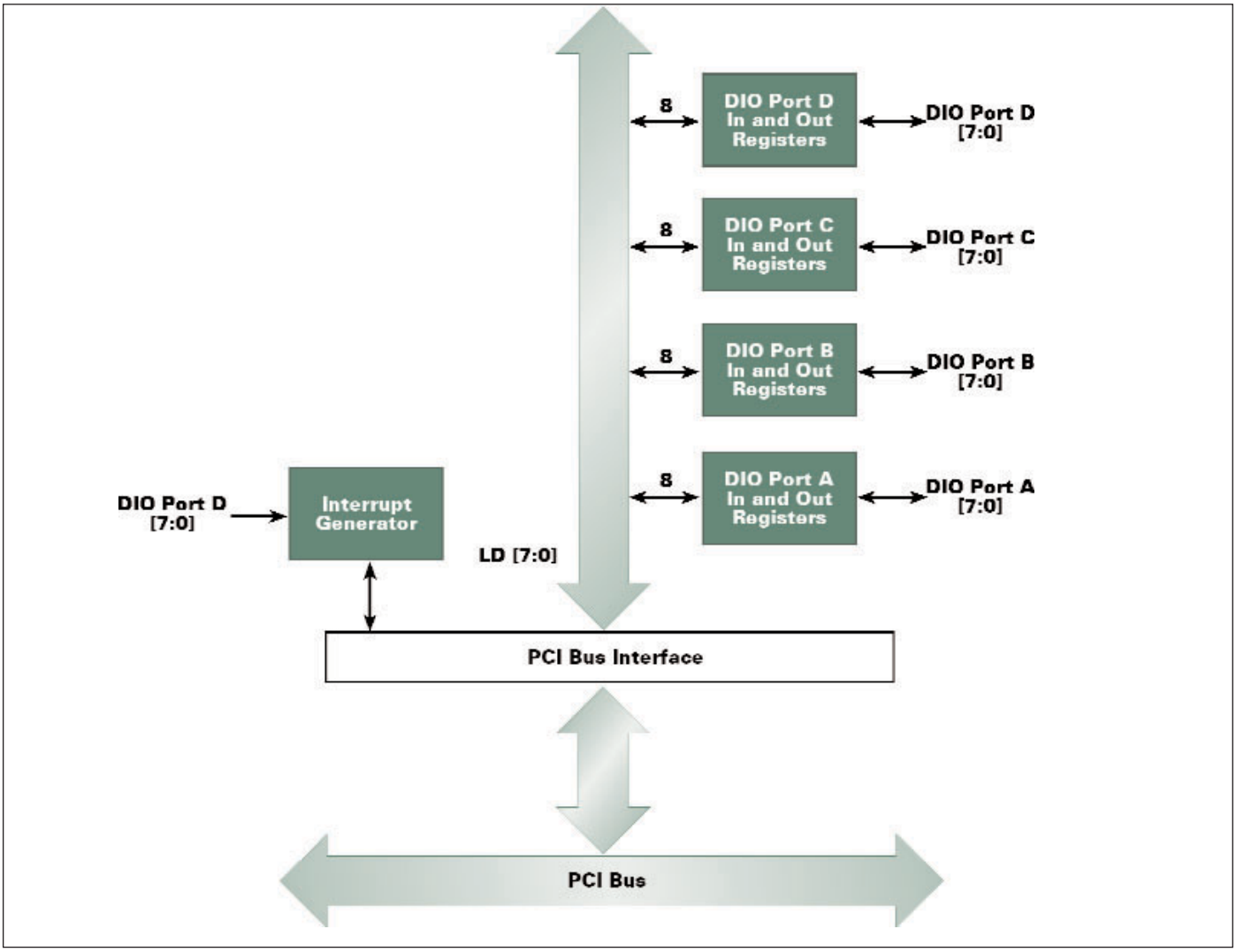


Figure 3. DT335 and DT335-50 Block Diagram

Digital I/O

	Ports A, B, C	Port D
Number of lines	8 bidirectional per port	8 bidirectional
Inputs		
Input type:	Level-sensitive	Level-sensitive
High-level input voltage:	2.0 V minimum	2.0 V minimum
Low-level input voltage:	0.8 V maximum	0.8 V maximum
Minimum pulse width:	Not applicable	66 ns high and low*
Outputs		
Output driver high voltage:	2.4 V minimum (IOH = –15 mA)	2.4 V minimum (IOH = –15 mA)
Output driver low voltage:	0.5 V maximum (IOL = 12 mA)	0.5 V maximum (IOL = 12 mA)

*The minimum pulse width applies only to interrupt-on-change detection. Pulses less than the minimum may not be detected as a change.

User Connections - DT335 68-Pin Connector

Pin Number	Signal Description	Pin Number	Signal Description
1	+5 V Output	2	No Connect
3	Digital Ground	4	Digital I/O Port D, Line 7
5	Digital I/O Port D, Line 5	6	Digital I/O Port D, Line 3
7	Digital I/O Port D, Line 1	8	Digital Ground
9	Digital I/O Port C, Line 7	10	Digital I/O Port C, Line 5
11	Digital I/O Port C, Line 3	12	Digital I/O Port C, Line 1
13	Digital Ground	14	Digital I/O Port B, Line 7
15	Digital I/O Port B, Line 5	16	Digital I/O Port B, Line 3
17	Digital I/O Port B, Line 1	18	Digital Ground
19	Digital I/O Port A, Line 7	20	Digital I/O Port A, Line 5
21	Digital I/O Port A, Line 3	22	Digital I/O Port A, Line 1
23	Digital Ground	24	No Connect
25	No Connect	26	No Connect
27	No Connect	28	No Connect
29	No Connect	30	No Connect
31	No Connect	32	No Connect
33	No Connect	34	No Connect
35	Power Ground	36	No Connect
37	Digital Ground	38	Digital I/O Port D, Line 6
39	Digital I/O Port D, Line 4	40	Digital I/O Port D, Line 2
41	Digital I/O Port D, Line 0	42	Digital Ground
43	Digital I/O Port C, Line 6	44	Digital I/O Port C, Line 4
45	Digital I/O Port C, Line 2	46	Digital I/O Port C, Line 0
47	Digital Ground	48	Digital I/O Port B, Line 6
49	Digital I/O Port B, Line 4	50	Digital I/O Port B, Line 2
51	Digital I/O Port B, Line 0	52	Digital Ground
53	Digital I/O Port A, Line 6	54	Digital I/O Port A, Line 4
55	Digital I/O Port A, Line 2	56	Digital I/O Port A, Line 0
57	Digital Ground	58	No Connect
59	No Connect	60	No Connect
61	No Connect	62	No Connect
63	No Connect	64	No Connect
65	No Connect	66	No Connect
67	No Connect	68	No Connect

User Connections - DT335-50 50-Pin Connector

Pin Number	Signal Description	Pin Number	Signal Description
1	Digital Ground	2	Digital Ground
3	Port A, Line 0	4	Port B, Line 0
5	Port A, Line 1	6	Port B, Line 1
7	Port A, Line 2	8	Port B, Line 2
9	Port A, Line 3	10	Port B, Line 3
11	Port A, Line 4	12	Port B, Line 4
13	Port A, Line 5	14	Port B, Line 5
15	Port A, Line 6	16	Port B, Line 6
17	Port A, Line 7	18	Port B, Line 7
19	+5 V Out (1 A maximum)[a]	20	+5 V Out (1 A maximum)[a]
21	Digital Ground	22	Digital Ground
23	Digital Ground	24	Digital Ground
25	Digital Ground	26	Digital Ground
27	Digital Ground	28	Digital Ground
29	Digital Ground	30	Digital Ground
31	+5 V Out (1 A maximum)[a]	32	+5 V Out (1 A maximum)[a]
33	Port C, Line 0	34	Port D, Line 0
35	Port C, Line 1	36	Port D, Line 1
37	Port C, Line 2	38	Port D, Line 2
39	Port C, Line 3	40	Port D, Line 3
41	Port C, Line 4	42	Port D, Line 4
43	Port C, Line 5	44	Port D, Line 5
45	Port C, Line 6	46	Port D, Line 6
47	Port C, Line 7	48	Port D, Line 7
49	Digital Ground	50	Digital Ground

Power, Physical, and Environmental Specifications

Power	
+5 V	405 mA + output current nominal
Physical	
Dimensions	6.875 inches (length) by 4.2 inches (width) (PCI short card)
I/O Connector - DT335:	68-pin AMP (#749621-7)
I/O Connector - DT335-50:	50-pin 3m (#3425-6650)
Certification and Compliance	FCC Class A verified; will not compromise FCC compliance of host computer CE
Environmental	
Operating temperature range:	0° C to 70° C
Storage temperature range:	–25° C to 85° C
Relative humidity:	To 95%, noncondensing

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 contact your local reseller.

DT335 and DT335-50

Each DT335 and DT335-50 board is shipped with the Data Acquisition Omni CD, which includes DT-Open Layers-compliant drivers for Microsoft Windows 2000/XP, ready-to-run software, and a comprehensive user's manual in PDF format. Manuals are available in hard-copy form for an additional charge.

Accessories for DT335

- STP68 — Screw terminal panel
- STP68-DIN — STP68 screw terminal panel equipped for DIN-rail mounting
- EP305 — 68-pin, 79 in., shielded cable for connecting STP68
- DT335 — manual set in hard-copy form

Accessories for DT335-50

- DT758-C — STP and cable
- EP195 — Paddle board
- EP035 — Flat ribbon cable assembly
- EP036 — Flat ribbon cable assembly
- DT335-50 — Manual set in hard-copy form

Software

The following software can be purchased separately:

- Measure Foundry is an open, powerful application builder for test and measurement systems.
  SP1300-CD
- quickDAQ is a high-performance, ready-to-run application that lets you acquire, plot analyze, an save data to disk at up to 2 MHz per channel.
  SP8501-CD
- LV Link to access the power of our boards through LabVIEW.
  SP0811

Data Translation now offers free downloads on the Web for:

- DAQ Adaptor for MATLAB to access the analysis and visualization tools in MATLAB.