

**BUS: USB**

**Type: Simultaneous Multifunction**

### DT9836 Series

*Simultaneous Analog Input  
Multifunction Data Acquisition  
USB Modules*

#### ■ Simultaneously Captured Analog Input Channels

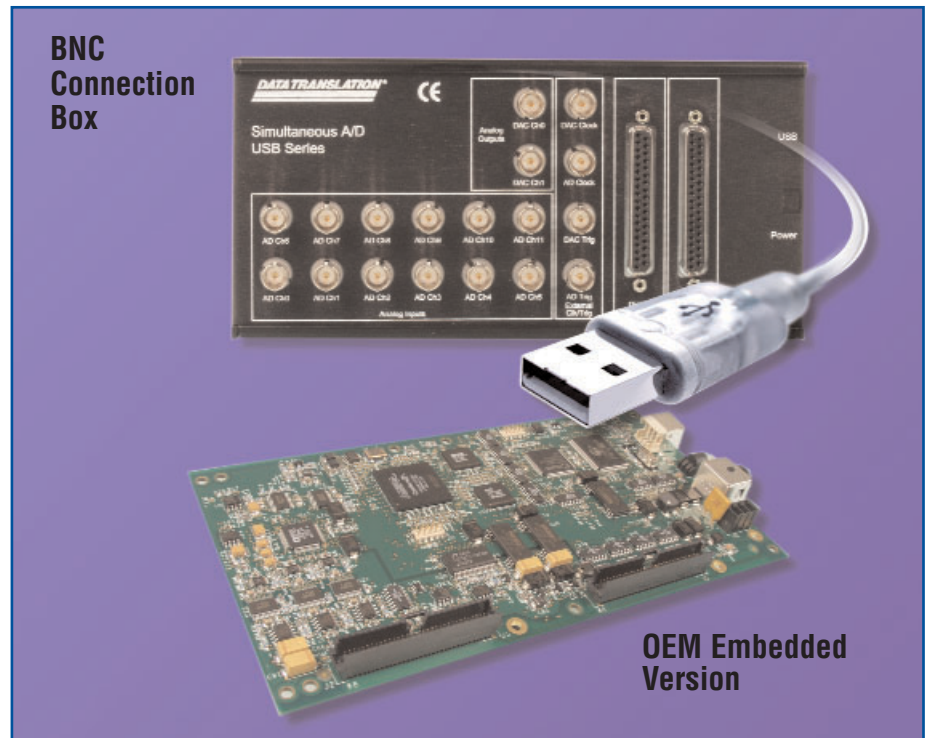
- 12 separate 16-bit A/D's guarantee less than 1 ns aperture uncertainty.
- 12 simultaneously captured analog input channels with 16-bit resolution @ 225 kHz.

#### ■ Deglitched Analog Outputs

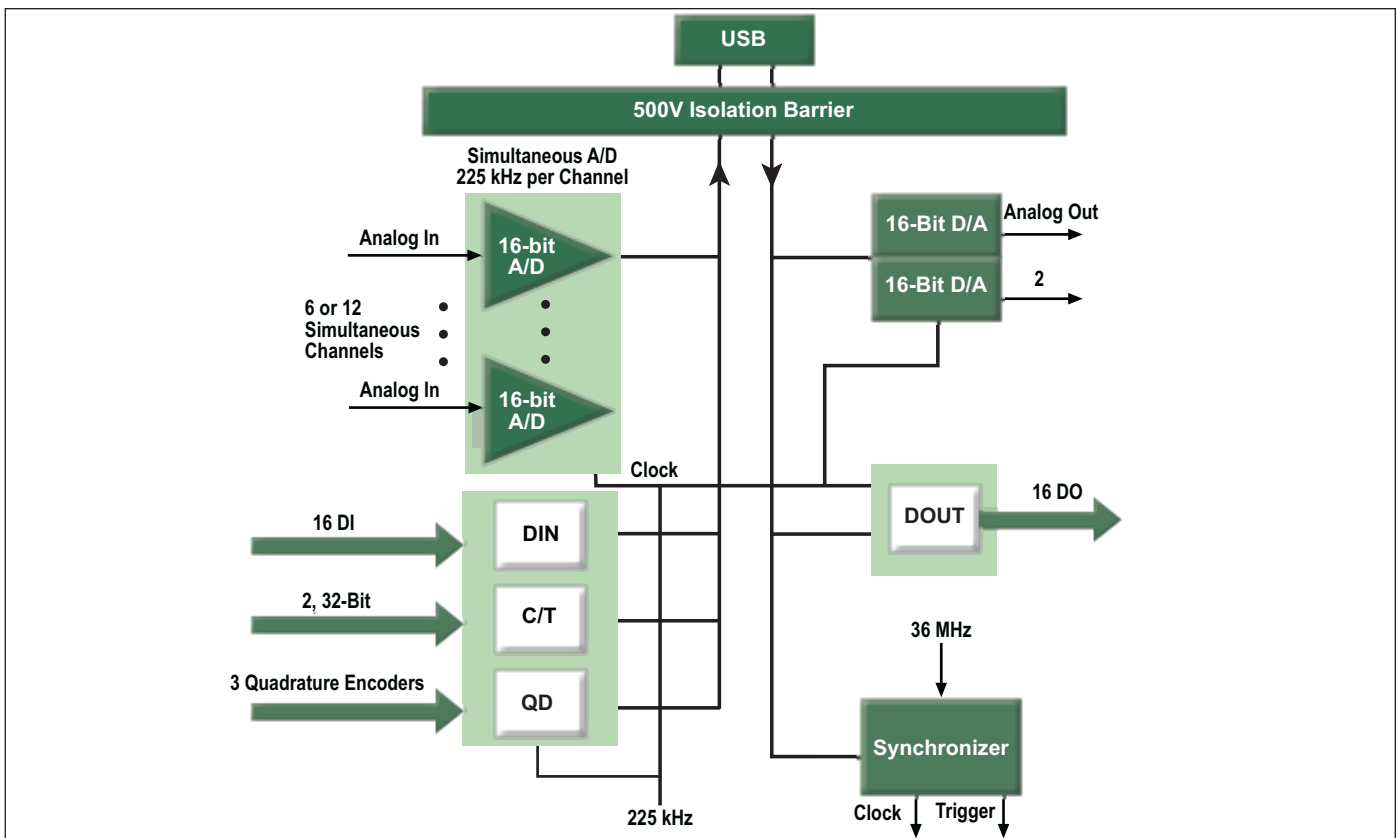
- Two simultaneous, 16-bit deglitched analog outputs for waveform generation at up to 500 kHz.

#### ■ Simultaneous Operation of All Subsystems

- Perform analog I/O, digital I/O, counter/timer, and quadrature decoding operations at the same time.



**Figure 1.** DT9836 Series modules are available in two configurations: BNC connection box and OEM embedded version. Both have 500 V galvanic isolation.



**Figure 2.** The DT9836 Series provides USB 2.0 multifunction modules for simultaneous acquisition of up to 12 analog inputs. D/A, DIO, and C/T subsystem operation are also supported. This detailed block diagram shows the relationship of each subsystem and the control signals used in the series.

### ■ Enhanced Digital I/O

- 16 Digital input lines can be clocked synchronously at the analog input rate; 16 digital output lines can be clocked synchronously at the analog output rate. One bank of eight digital input lines also supports interrupt-on-change.

### ■ Enhanced Counter/Timer Features

- Two 32-bit counter/timer channels can be clocked synchronously at the analog input rate and support event counting, frequency measurement, period measurement, pulse width measurement, continuous pulse output, one-shot, repetitive one-shot, and up/down counting operations.

- Three quadrature decoders allow you to connect quadrature encoder inputs to determine X/Y positioning and rotation.

### ■ Flexible Clocking and Triggering

- Independent clock sources (internal and external TTL-level) for pacing analog inputs and analog outputs.
- Independent trigger sources (internal, external TTL-level, and external analog threshold) for starting analog input and analog output operations.
- Flexible acquisition modes for input operations, and flexible output modes (single value, continuous, and waveform generation) for output operations.

### ■ 500 Volt Galvanic Isolation

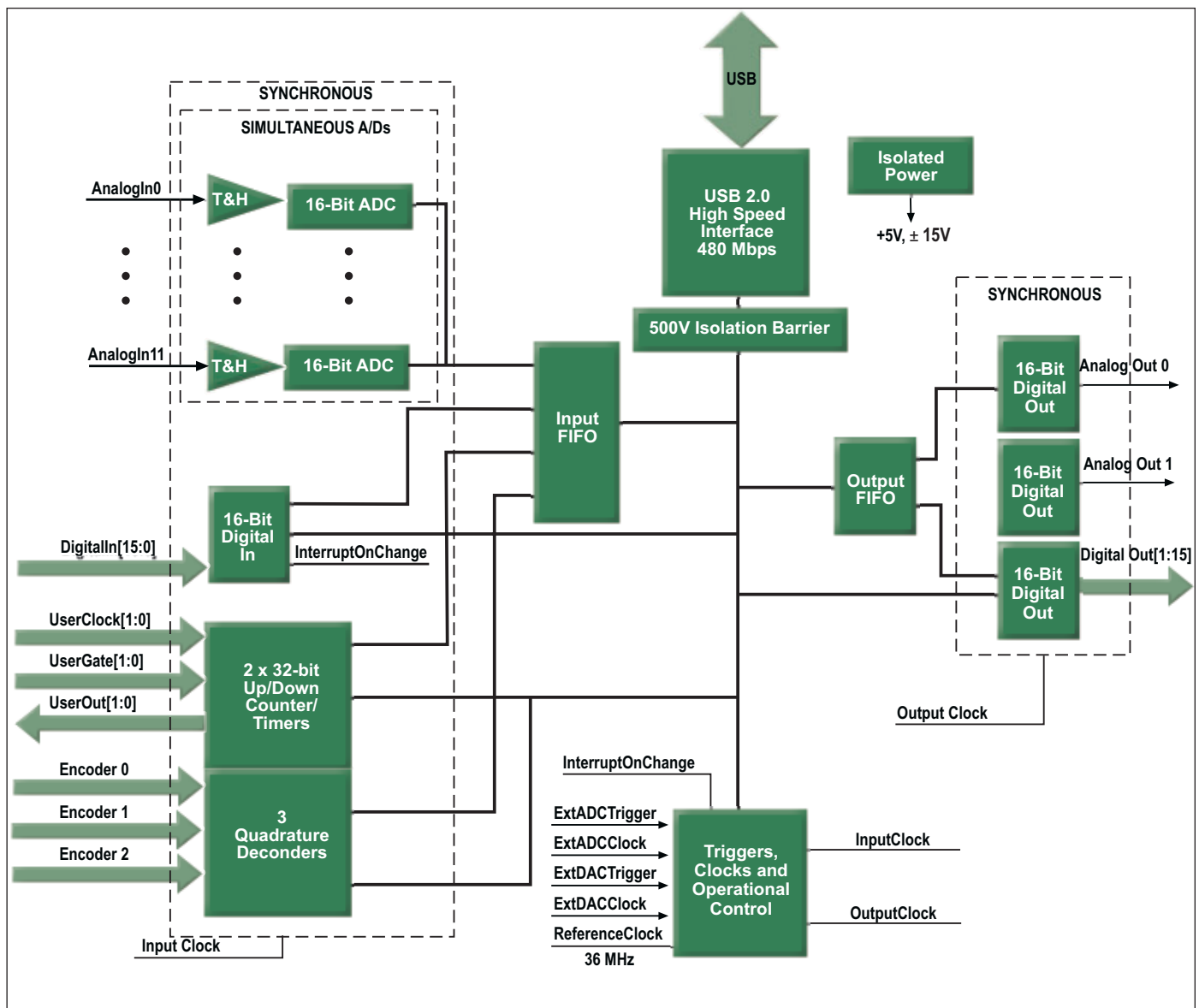
- Prevent ground loops to maximize analog signal integrity and protect your computer.

### ■ High-Speed USB 2.0

- Transfer data at rates up to 480 Mbps.

### ■ Many Software Choices

- The Data Acquisition OMNI CD is shipped with the module and includes Ready-to-Measure™ software, DT-Open Layers device drivers for Windows 2000/XP, an evaluation version of DT Measure Foundry, and more.



**Figure 3.** Detailed block diagram of this multifunction modules shows A/D's run simultaneously and synchronize with all other board functions. Up to 12 A/D converters, 2 D/A converters, 16 high-speed digital input and output lines, 2 32-bit user counter/timers and 3 quadrature decoders are all isolated from the high speed USB 2.0 bus, and is powered by an isolated external power supply.

# Simultaneous, High Accuracy Performance

## OEM Embedded Version

**Precision Measurements...**  
True 16-bit A/D at up to 225 kHz throughput per channel for measuring multiple input signals simultaneously

**Designed for Low Noise ...**  
12-layer PCB provides optimal grounding and shielding to maintain signal integrity

**High-Speed USB 2.0 ...**  
USB 2.0 connector for data transfer at up to 480 Mbps

**Three Quadrature Decoders ...**  
For X/Y positioning and rotation

**No Limits ...**  
Full simultaneous operation of all subsystems

**Fully Protected ...**  
500 V galvanic isolation protects your computer and maintains signal integrity

**Euro Card Compliance ...**  
100 mm size

**Simultaneous Analog Inputs ...**  
Up to 12 simultaneously sampled analog input channels

**Ultra Digital I/O ...**  
Full digital I/O flexibility for time stamping, pattern recognition, and synchronizing with external events

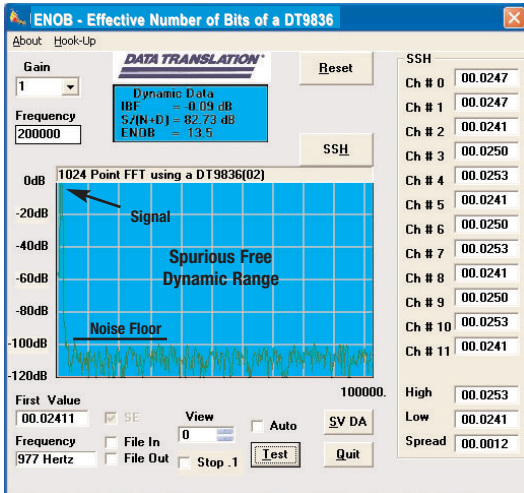
**Full-Featured Counter/ Timers ...**  
Two 32-bit counter/timers ideal for automotive testing applications.

**Pure Signal Generation ...**  
Two waveform, deglitched DACs

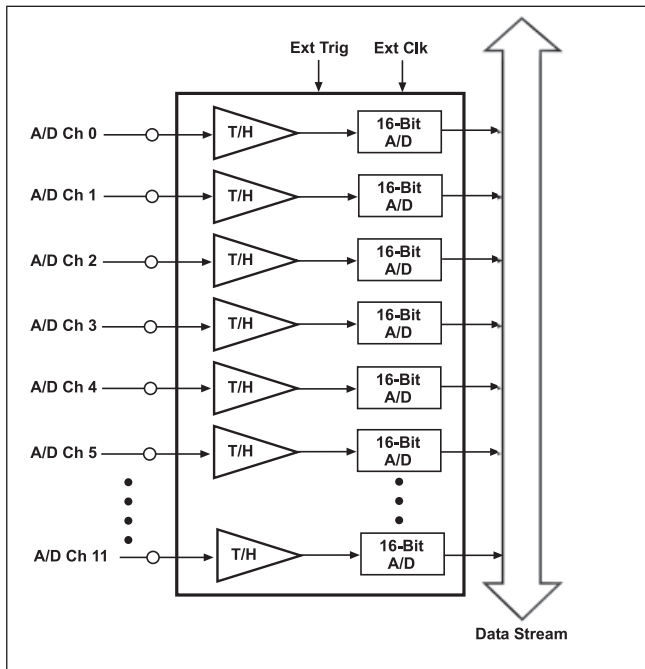
**External Control ...**  
Flexible clocks and triggers

**Flexible Power Connections ...**  
+5 V connector; a secondary +5 V connector is provided for embedded applications

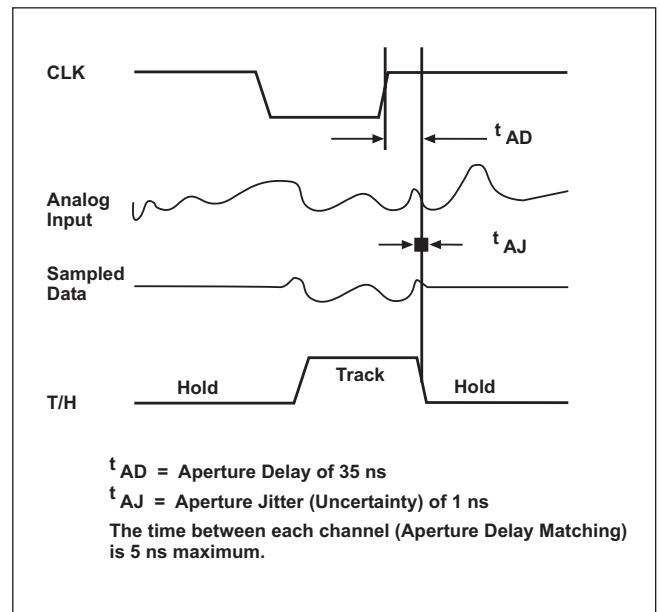
Figure 4. Screw terminal panels are available for the OEM embedded version to make connecting signals easy (see Figures 14 and 15).



**Figure 5.** This graph shows the outstanding quality of the DT9836 Series for all error sources ... with ENOB rating of 13.5 bits and SFDR of 96 dB. The data on the right shows that the match between channels at 1 kHz is 1.2 mV including all noise and aperture errors.



**Figure 6.** The DT9836 Series features 6 or 12 independent, successive-approximation A/D converters with track-and-hold circuitry. Each converter uses a common clock and trigger for simultaneous sampling of all analog inputs at up to 225 kS/s per channel.



**Figure 7.** The DT9836 Series A/D design features built-in accuracy. A maximum aperture delay of 35 ns (the time that it takes the A/D to switch from track to hold mode) is well matched at 5 ns across all track-and-hold circuits, virtually eliminating the channel-to-channel skew that is associated with multiplexed inputs. A maximum aperture uncertainty of 1 ns (the jitter or variance in aperture delay), virtually eliminates phase noise in data.

## Overview

The DT9836 Series provides simultaneous analog input operations at up to 225 kHz throughput per channel. Each analog input has its own A/D converter to eliminate phase shift between channels - a problem with multiplexed architectures where all inputs share one A/D converter. As a result, the DT9836 Series allows you to correlate simultaneous measurements of 6 or 12 analog inputs at the maximum rate of the sample clock .

All modules feature 6 or 12 analog inputs, 2 waveform analog outputs, 16 digital input lines, 16 digital output lines, 2 counter/timer channels, and 3 quadrature decoders. All subsystems can be run simultaneously.

## Simultaneous, High-Resolution Analog Inputs

DT9836 Series modules are available in two analog input channel configurations:

- 12-channel or 6-channel.
- Each analog input signal has its own analog-to-digital converter with sam

pling rates of up to 225 kHz and 16-bit resolution.

- The board supports input signal ranges of +/- 10 V and +/-5 V. By configuring each analog input channel for the input range that you want, you can connect many output transducers directly to the module.
- Aperture Uncertainty is found during the track and hold transition and is less than 1nS (Fig. 7). This virtually eliminates any phase noise from channel to channel acquisition giving the cleanest possible signal capture.

## Simultaneous, High-Speed, High-Resolution Analog Outputs

DT9836 Series has 2 simultaneous deglitched analog output channels. Each analog output channel has its own digital-to-analog converter and provides an output signal range of +/- 10 V. The resolution of the analog outputs is 16-bits and you can achieve a maximum update rate of 500 kSamples/second.

You can update the analog output channels as you are acquiring analog input data for gap-free simultaneous stimulus and response. In addition, you can update the digital output lines with the analog output channels at the analog output rate.

## Flexible Output Modes

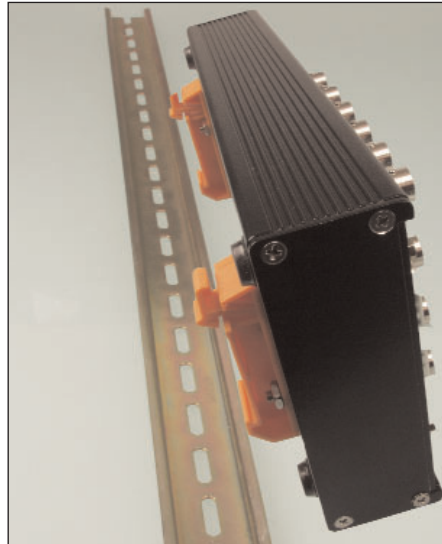
Using the DT9836 Series, you can output a single value from a single analog output channel or multiple values from multiple analog output channels. An output channel list gives you the flexibility of updating only the analog output channels you want or updating the digital output lines with specified analog output channels at the D/A clock rate. You can update analog output channels at up to 500 kSamples/s.

The DT9836 features the following output modes:

- Continuous output mode – Choose this mode if you want to accurately control the period between conversions of individual output channels in the output channel list.
- Waveform mode – Use this mode if you want to output waveforms repetitively from an output FIFO on the module, minimizing communication overhead with the host computer. If you specify only one channel in the output-channel list, you can load a waveform containing up to 128 kSamples into the output FIFO. If you specify all the analog output channels and the digital output lines in the output-channel list, you can load a waveform containing up to 24 kSamples into the output FIFO. Using waveform mode, you can update multiple channels at up to 500 kSamples/s.

## High-Speed Digital I/O Lines

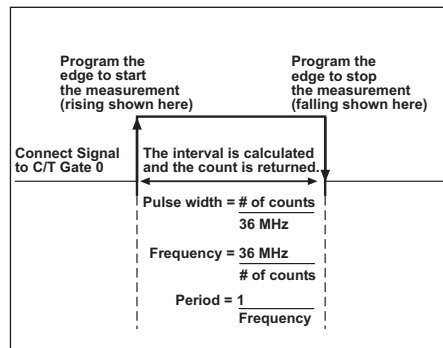
DT9836 Series modules feature 16 digital input lines and 16 digital output lines. The first eight digital input lines can also be used for interrupt on change. You can read all the digital input lines simultaneously with the analog input channels at the A/D clock



**Figure 8.** With the optional DIN rail mounting kit (BNC-DIN-RAIL-KIT), you can mount the DT9836 BNC model to a standard DIN rail.

rate. The digital input lines can also be clocked separately as the only channel in the channel-gain list at up to 225 kSamples/second.

For digital output operations, you can update all the digital output lines with the analog output channels at the D/A output clock rate.



**Figure 9.** Programmable edges allow you to use counter/timers to measure the pulse width, frequency, and period of a signal.

## Flexible Clocks and Triggers

For maximum flexibility, all DT9836 Series modules provide independent clocks and triggers for the A/D and D/A subsystems. This allows you to trigger and clock the analog output subsystem synchronously with, or independent of, the analog input subsystem. Each subsystem supports an internal clock and external clock input, as well as the following trigger types: software command, analog threshold, and external digital input trigger.

## Multifunction Counter/Timers

All DT9836 Series modules feature two 32-bit user counter/timers. If you wish, you can read the value of the counter/timer channels with the analog input channels and digital input lines at the A/D clock rate. The following counter/timer functions are supported: event counting, frequency measurement, pulse width measurement, period measurement, continuous pulse output, one-shot, repetitive one-shot, and up/down counting operations. Programmable gates, edges, clocks, and output signals are also supported.

## Quadrature Decoder

The Quadrature Decoder module contains three quadrature decoders which will allow simultaneous decoding of three quadrature encoded inputs. The quadrature decoders may be used to provide relative or absolute position or, by calculating the difference between samples, the rotational speed. Each quadrature decoder supports 'A', 'B', and 'Index' inputs. Where the index input may be used to zero out the positional count and the A and B input relationships are used to increment or decrement the positional count. There are input filters on each of the inputs with a selectable filter clock frequency to eliminate noise on the input signals.

## Flexible Packaging Configurations

DT9836 Series modules are available in two packaging configurations: a BNC connection box and an OEM embedded version. The BNC connection box is available for 12 or 6 input channels. The BNC configurations are enclosed in metal boxes with standard BNC and Dsub connectors, 2 BNCs for connecting analog outputs, and 4 BNCs for connecting external clocks and triggers. The BNC configuration ships with a +5 V galvanically isolated power supply and power cable (Fig. 11), EP348 USB 2.0 cable, and Data Acquisition OMNI CD.

The OEM configuration, ideal for embedding in test systems, provides all the functionality of the DT9836 Series in PC-board form. This configuration ships with a USB 2.0 cable and Data Acquisition OMNI CD.

## Easy Signal Connections

### BNC Connection Box

#### Analog Input BNC Connections

6 or 12 analog input BNCs

#### Analog Output BNC Connections

2 analog output BNCs

#### Digital I/O D-Sub Connector

Access all of the digital I/O signals



#### Analog Output & Counter/Timer D-Sub Connector

Access all of the analog output quadrature decoders counter/timer, signals

#### External Clock & Trigger BNC Connections

External A/D clock and trigger BNCs and external D/A clock and trigger BNCs

Figure 10. The BNC connection box is available for easy signal connections.

## BNC Box Assembly

### Includes OEM Version

#### Faceplate of BNC Connection Box

Easy signal connections

#### OEM Embedded Version

DT9836 Series board

#### CE-Compliant Enclosure

Maintains signal integrity

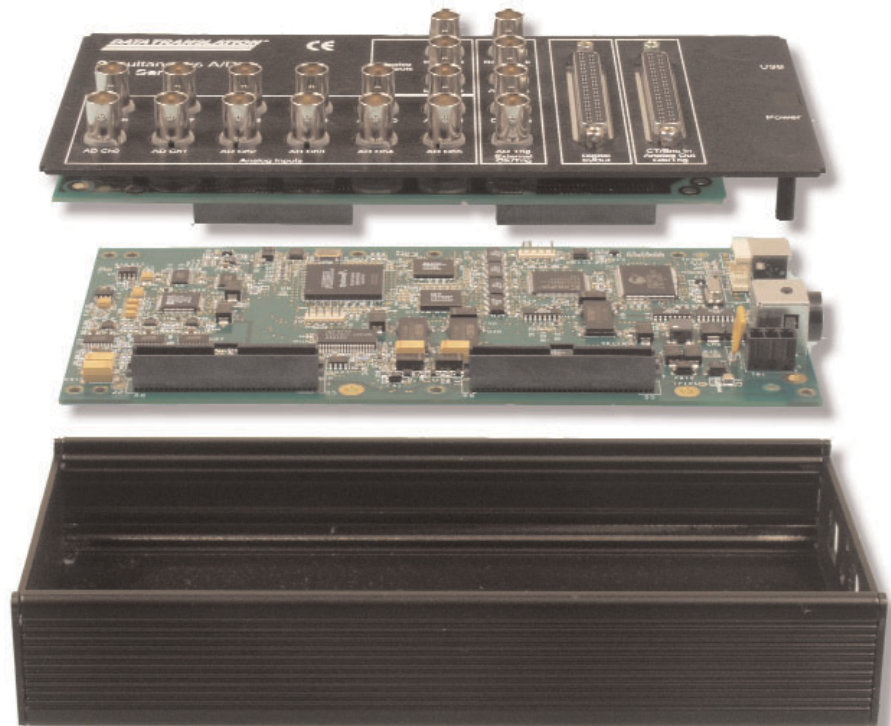


Figure 11. The BNC connection box packages the OEM embedded version of the DT9836 Series in a CE-compliant enclosure.

## Power

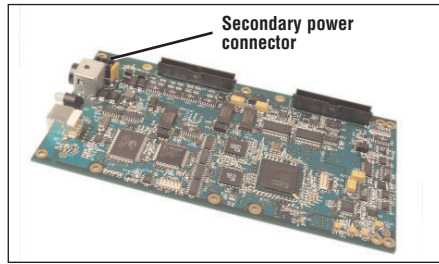
The BNC connection box include a +5 V power supply and power cable for quick setup. OEMs can purchase these options separately as EP348 (see Figure 10). A secondary power connector is also provided for OEMs to allow custom power wiring (see Figure 13).



**Figure 12.** EP348 includes a galvanically isolated power supply of +5 V and a power cable. It is included with the BNC configurations of the DT9836 Series.

## USB 2.0 Compatibility

The DT9836 Series is fully compatible with USB 2.0 and USB 1.1. USB 2.0 extends the speed of connection to up to 480 Mbps. For optimal performance, it is recommended that you use the DT9836 Series with a USB 2.0 port. The DT9836 Series can be used with a USB 1.1 port, but at USB 1.1 performance.



**Figure 13.** OEMs, DT9836 Series modules include a secondary power connector for custom wiring.

## 500 V Galvanic Isolation Protects Your Data

Computers are susceptible to ground-spikes through any external port. These spikes can cause system crashes and may even cause permanent damage to your computer. DT9836 Series modules feature 500 Volts of galvanic isolation to protect your computer from ground-spikes and to ensure a reliable stream of data.

## Accessories for OEM Configurations

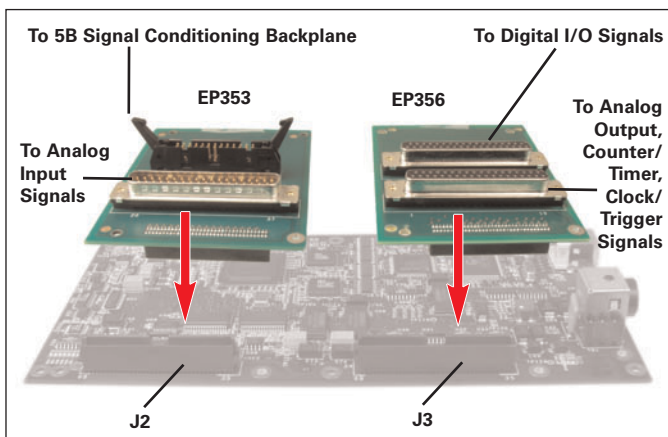
For applications where you want to embed a DT9836 Series module inside other equipment, use the OEM packaging configuration (no enclosure) with the following optional accessories:

- EP348 – A +5 V power supply. It is included with the BNC connection box. (See Figure 12.)
- EP353 – This accessory panel plugs into connector J2 of a DT9836 Series module and provides one 37-pin, D-

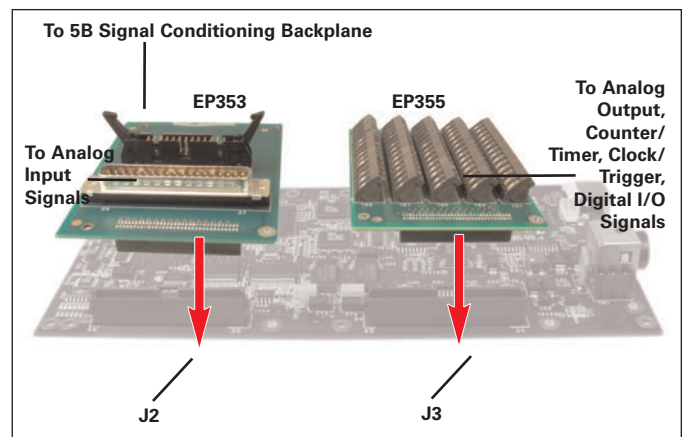
sub connector for attaching analog input signals and one 26-pin connector for attaching a 5B signal conditioning backplane. (See Figure 14.)

- EP355 – This screw terminal panel plugs into connector J2 or J3 of a DT9836 Series module and provides 14-position screw terminal blocks for attaching analog input, or analog output, digital I/O, counter/timer, and clock and trigger signals. (See Figure 15.)
- EP356 – This accessory panel plugs into connector J3 of a DT9836 Series module and provides two 37-pin, D-sub connectors. You can use one of these connectors to attach analog output, counter/timer, trigger, and clock signals, and the other connector to attach digital I/O signals. (See Figure 14.)
- EP333 – This cable connects the STP37 screw terminal panel to a 37-pin female connector on the EP356 or BNC box.
- EP360 – This cable connects the STP37 screw terminal panel to a 37-pin male (Analog Input) connector on the EP353 or BNC box.
- STP37 – This screw terminal panel allows you to connect analog input, digital I/O, analog output, counter/timer, and clock/trigger signals from the EP353 or EP356 screw terminal panel, or BNC box.

## Accessories for OEM Embedded Versions

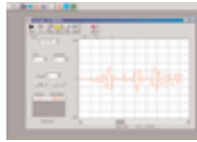


**Figure 14.** This example shows an EP353 accessory panel, which plugs into connector J2, and an EP356 accessory panel, which plugs into connector J3. Use the EP353 to attach analog input signals and a 5B signal conditioning backplane. Use the EP356 to attach analog output, counter/timer, trigger, and clock, or digital I/O signals.



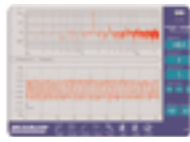
**Figure 15.** Use the EP353 to attach analog input signals and a 5B signal conditioning backplane. The EP355 screw terminal panel plugs into the J3 connector of a DT9836 Series module. You can attach analog output, counter/timer, trigger, clock, and digital I/O signals to the screw terminal blocks.

# Options for Solution Development



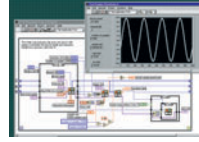
## Quick DataAcq

Ready-to-measure, source code included



## Scope

Chart recording & multi-channel oscilloscope functions



## LV Link

Access the power of our boards through LabVIEW



## DTx-EZ

Free Visual Studio Development Tools



## DT Measure Foundry

Graphical programming, drag & drop, no code, no wires

## Software

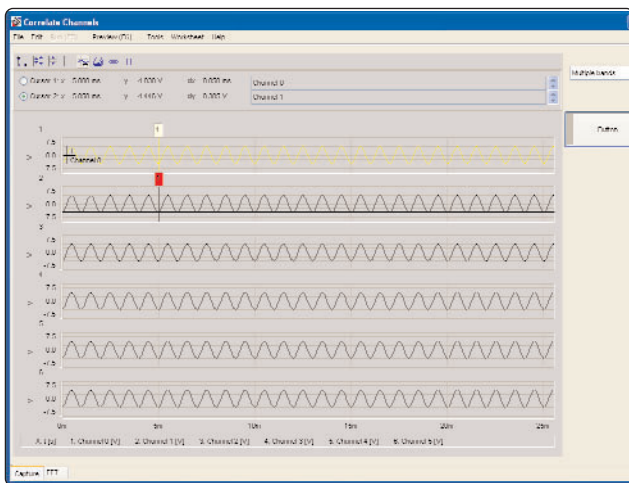
The DT9836 Series ships with the Data Acquisition OMNI CD, which includes DT-Open Layers device drivers for Windows 2000/XP, Ready-to-Measure applications (called Scope and Quick Data Acq) that allow you to take data immediately upon setup, and an evaluation version of our test and measurement builder, DT Measure Foundry. For maximum flexibility, the DT9836 Series operates under all prominent software applications, including

LabVIEW, Visual Basic, and more. These software choices allow users of all levels – from programmers to application users – the ability to access the functionality of the DT9836 Series modules.

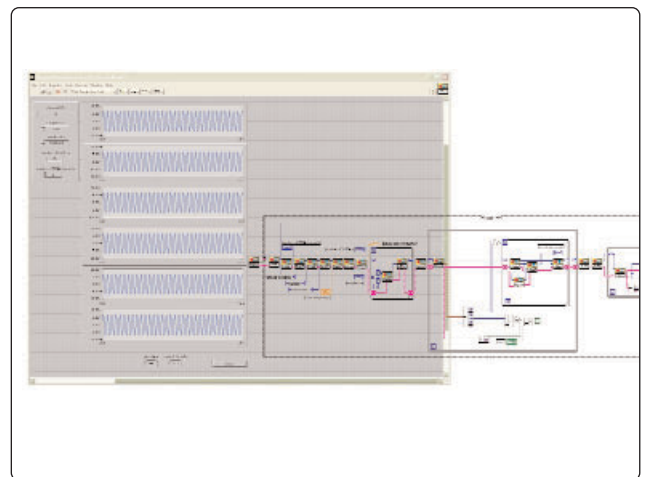
## Cross-Series Compatibility Saves Programming Time, Protects Your Investment

Virtually all Data Translation data acquisition boards, including the DT9836 Series, are compatible with the

DT-Open Layers software standard. This means that if your application was developed with one of Data Translations software products, you can easily upgrade to a new Data Translation board. Little or no reprogramming is needed. For example, if you are currently using a DT3016 board on a PCI bus, upgrading to a DT9836 Series module on the USB bus is simple – just load and configure the new driver and you're done.



**Figure 16.** DT Measure Foundry can be used to analyze and correlate signals in real time, print results, or save files for post processing.



**Figure 17.** DT-LV Link is a high-level data acquisition hardware link to LabVIEW that provides a collection of Virtual Instruments (VIs).

## DT9836 Series Hardware Specifications (At +25° C and Rated Voltage, Unless Otherwise Specified)

### Analog Inputs

Number of inputs	6 or 12 SE Simultaneous
Resolutions	16 bits
Range	+/-10, +/-5 V

### A/D Throughput

Per channel	225 kS/s
Channel bandwidth	2.5 MHz to -3 dB point

### Sample and Hold

Aperture uncertainty	1 ns
Aperture delay	35 ns
Aperture match	5 ns
Gain match	+/-0.015%
Zero match	+/-1.5 mV

### System Accuracy (% of FSR)

Gain=1	+/-0.015%
Bipolar Input Range	+/-10 V, +/-5 V
Output Coding	Offset binary

### Maximum Input Voltage without Damage

Power On	+/- 35 V
Power Off	+/-20 V

### Input Impedance

	100 M $\Omega$ , 10 pf
Bias Current	+/-1 nA
Integral Nonlinearity	+/-0.015%
Differential Nonlinearity	+/-0.003%
Inherent Quantizing Error	+/-1/2 LSB
A/D Zero Drift(/ ° C)	+/-25 $\mu$ V/ ° C
Gain Drift (of FSR/ ° C)	+/-50 ppm/ ° C

### Analog Outputs

Number of DACs	2 Simultaneous
Resolution	16-bits

### Settling Time to 0.01% of FSR

10 V Step	5 $\mu$ s
100 mV Step	2 $\mu$ s
Throughput	500 kS/s
Slew Rate	10 V/ $\mu$ s
Glitch Energy	12 nV-s typical
Output Range	+/-10 V

### Data Coding

Bipolar	Offset Binary
Output Current	+/-5 mA
Output Impedance	0.1 $\Omega$
Capacitive Driver Capability	0.004 $\mu$ F
Protection Against	Short Circuit to analog ground
Integral Nonlinearity	1 LSB
Differential Nonlinearity	1 LSB
Inherent Quantizing Error	+/-1/2 LSB
Gain Error	Adjustable to Zero
Zero Error	Adjustable to Zero
Gain Drift	+/-30 ppm of FSR/ ° C
Zero Drift (Bipolar)	+/-10 ppm of FSR/ ° C

**DT9836 Series Hardware Specifications (At +25° C and Rated Voltage, Unless Otherwise Specified) - continued.**

**Digital I/O Subsystem (All models)**

Number of DIO	32 (16 in/16 out), 1 dynamic digital output
Number of Ports	2, 16-bit
Logic Family	LVTTTL
Logic Sense	Positive true
Input Type	Level sensitive
Input Termination	Inputs tied to +3.3 V with 15 k $\Omega$ pullup resistors
Input Logic Load	1 LVTTTL load
Logic High Input Voltage	2.0 V minimum
Logic Low Input Voltage	0.8 V maximum
Logic Low Input Current	-0.4 mA maximum
Fan-out	12 mA
Logic High Output Voltage	2.0 V minimum
Logic Low Output Voltage	0.8 V maximum
Logic High Output Current	-12 mA maximum
Logic Low Output Current	12 mA maximum
Interrupt on Change	Yes
Clocked with the sample clock	Yes
Software I/O Selectable	No

**Counter Timer\* (All models)**

Channels	2 user counter/timers; 3 quadrature decoders
Resolution	32 bits/channel

**External A/D and D/A Triggers (All Models)**

**Triggering Sources:**

Internal	Software initiated
External	Software selectable
Input Type	Edge sensitive
Logic Family	LVTTTL
Logic Load	1 LVTTTL load
Input Termination	2.2 k $\Omega$ pullup to +3.3 V
Logic Low Input Voltage	0.8 V maximum
Logic High Input Current	25 $\mu$ A maximum
Logic Low input Current	-0.25 mA maximum

**Minimum Pulse Width**

Clock High	25 ns
Clock Low	25 ns

**Triggering Modes:**

Single Scan	Yes
Continuous Scan	Yes
Triggered Scan	Yes

**Onboard A/D Clocks**

Base Frequency	36 MHz
Divisor Range	3 to 4,294,967,295
Usable Range	225 kHz to 0.00838 Hz

**Onboard D/A Clocks**

Base Frequency	36 MHz
Divisor Range	3 to 4,294,967,295
Usable Range	500 kHz to 0.00838 Hz

\* Has same logic high and low voltage and current specifications as the digital I/O lines.

## DT9836 Series Hardware Specifications (At +25 ° C and rated Voltage, Unless Otherwise Specified)- continued.

### External A/D and D/A Clocks

Input Type	Edge sensitive, rising-edge or falling-edge programmable
Logic Family	LVTTTL
Logic Load	1 LVTTTL load
Input Termination	2.2 k $\Omega$ pullup to +3.3 V
Logic High Input Voltage	2.0 V
Logic Low Input Voltage	0.8 V
Logic Low Input Current	1.2 mA
Oscillator Frequency	DC to 225 kHz maximum (A/D); DC to 500 kHz maximum (D/A)
<b>Minimum Pulse Width</b>	
Clock High	25 ns
Clock Low	25 ns

### Interface Characteristics

Compatible Bus	USB 2.0 or 1.1
Interface Type	Bulk
Windows	DT-Open Layers Drivers
Plug 'N Play	USB Windows
OEM Board I/O Connectors	2, 68-pin connectors
Fully packaged	Enclosure with BNC and D-Sub connectors, or board-only

### Power Requirements

+5 Volts	+/-5%, @ 2 A Maximum
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### Physical /Environmental

Dimensions (OEM Embedded Version)	190 mm x 100 mm
Dimensions (BNC Box Version)	215.9 mm (L) x 105.9 mm (W) x 50 mm (H)
Weight (OEM Embedded Version)	4.6 oz.
Operating Temperature Range	-0 to +55 ° C
Storage Temperature Range	-25 to 85 ° C
Relative Humidity	to 95% non-condensing

## OEM Embedded Version - Connector J2\* Pin Assignments

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	+5 V Analog	18	Reserved	35	Digital Ground	52	Reserved
2	Reserved	19	Analog Ground	36	Analog Ground	53	Analog Ground
3	Analog Ground	20	Reserved	37	Analog Ground	54	Reserved
4	Reserved	21	Analog Ground	38	Reserved	55	Analog Ground
5	Analog Ground	22	Reserved	39	Analog Ground	56	Reserved
6	Reserved	23	Analog Ground	40	Reserved	57	Analog Ground
7	Analog Ground	24	Analog In 5	41	Analog Ground	58	Analog In 11
8	Reserved	25	Analog Ground	42	Reserved	59	Analog Ground
9	Analog Ground	26	Analog In 4	43	Analog Ground	60	Analog In 10
10	Reserved	27	Analog Ground	44	Reserved	61	Analog Ground
11	Analog Ground	28	Analog In 3	45	Analog Ground	62	Analog In 9
12	Reserved	29	Analog Ground	46	Reserved	63	Analog Ground
13	Analog Ground	30	Analog In 2	47	Analog Ground	64	Analog In 8
14	Reserved	31	Analog Ground	48	Reserved	65	Analog Ground
15	Analog Ground	32	Analog In 1	49	Analog Ground	66	Analog In 7
16	Reserved	33	Analog Ground	50	Reserved	67	Analog Ground
17	Analog Ground	34	Analog In 0	51	Analog Ground	68	Analog In 6

\* Mating Connector: Amp 1-104068-8

## OEM Embedded Version - Connector J3\* Pin Assignments

Pin	Signal	Pin	Signal
1	Quad Dec 3 Index	35	Quad Dec 3B
2	Quad Dec 3A	36	Digital Ground
3	Quad Dec 2 Index	37	Quad Dec 2B
4	Quad Dec 2A	38	Digital Ground
5	Quad Dec 1 Index	39	Quad Dec 1B
6	Quad Dec 1A	40	Digital Ground
7	Counter 1 Out	41	Counter 1 Gate
8	Counter 1 Clock	42	Digital Ground
9	Counter 0 Out	43	Counter 0 Gate
10	Counter 0 Clock	44	Digital Ground
11	Digital Ground	45	Reserved
12	Digital Input 15	46	Digital Out 15
13	Digital Input 14	47	Digital Out 14
14	Digital Input 13	48	Digital Out 13
15	Digital Input 12	49	Digital Out 12
16	Digital Input 11	50	Digital Out 11
17	Digital Input 10	51	Digital Out 10
18	Digital Input 9	52	Digital Out 9
19	Digital Input 8	53	Digital Out 8
20	Digital Input 7	54	Digital Out 7
21	Digital Input 6	55	Digital Out 6
22	Digital Input 5	56	Digital Out 5
23	Digital Input 4	57	Digital Out 4
24	Digital Input 3	58	Digital Out 3
25	Digital Input 2	59	Digital Out 2
26	Digital Input 1	60	Digital Out 1
27	Digital Input 0	61	Digital Out 0
28	External ADC Clock	62	External ADC Trigger
29	External DAC Clock	63	External DAC Trigger
30	Digital Ground	64	Digital Ground
31	Reserved	65	Reserved
32	Reserved	66	Reserved
33	Analog Out 1	67	Analog Out 1 Return
34	Analog Out 0	68	Analog Out 0 Return

\* Mating Connector: Amp 1-104068-8

**DT9836 User Manuals**

The DT9836 Series includes a getting started manual and user's manual. Manuals are provided in electronic (PDF) format on the Data Acquisition OMNI CD provided with the module. You can also purchase hard copies.

**Technical Support**

As you develop your application, application engineers are available during normal business hours to discuss your

requirements. Extensive information, including drivers, example code, pinouts, a searchable Knowledgebase, and much more, is available 24 hours a day on our web site at [www.datatranslation.com](http://www.datatranslation.com). 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 email or fax at anytime.

**Ordering Guide:**

All DT9836 Series modules are shipped with a USB cable and the Data Acquisition OMNI CD, which includes DT-Open Layers-compliant device drivers for Microsoft Windows 2000/XP, an evaluation version of DT Measure Foundry, Ready-to-Measure software, and comprehensive manuals in PDF form. The EP348 (power supply) is included with the BNC box configuration.

**DT9836**

**-XX**

**-X**

**-XXX**

**Analog Inputs (2 versions)**  
 06 = 6 single-ended channels  
 12 = 12 single-ended channels

**Analog Outputs (2 versions)**  
 0 = 0  
 2 = 2

**PAK = Package Configuration (2 versions)**

OEM = Board-level embedded version for maximum flexibility (no power supply).  
 BNC = A metal box enclosure with either 12 or 6 BNCs for single-ended analog inputs. If you select a model with analog outputs, 2 BNCs are provided for connecting analog output signals. The BNC box configuration provides 4 BNCs for connecting external clocks and triggers. (EP348 power supply and power cable included.)

**BUS: USB**

Type: **Simultaneous Multifunction**

**Ordering Summary**

**Accessories (Sold Separately)**

- EP348 — A +5 V power supply (included with BNC configurations).
- EP353 — Accessory panel for attaching analog input signals and 5B signal conditioning backplanes (for OEM configurations only).
- EP355 — Screw terminal panel for attaching analog I/O and digital I/O signals (for OEM configurations only).
- EP356 — Accessory panel for attaching analog output, counter/timer, trigger, clock signals, and digital I/O signals (for OEM configurations only).
- 5B01 — A 16-channel 5B Series backplane used with the EP353 and AC1315.
- 5B08 — An 8-channel 5B Series backplane used with the EP353 and AC1315.
- AC1315 — Cable that connects to a 5B01 or 5B08.
- EP333 — Cable between STP37 and EP356 or BNC box.
- EP360 — Cable between STP37 and EP353 or BNC box.
- STP37 — Screw terminal panel for EP356, EP353, or BNC box.
- BNC-DIN-RAIL-KIT — DIN rail mounting kit.

**Software**

The Omni CD includes:

- DT-Open Layers device drivers for Windows 2000/XP
- Evaluation copy of DT Measure Foundry test and measurement application builder for Windows 2000/XP. SPI300-CD
- Quick DataAcq — ready-to-measure software application, source code included.

**Free Software Downloads**

Data Translation now offers free downloads on the Web for:

- DT-LV Link to access the power of our boards through LabVIEW.
- DTx-EZ to access visual programming tools for Microsoft Visual Basic and Visual C++.
- Scope — chart recording/oscilloscope function application.

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**Module Ordering Summary**

Board	Analog In Simultaneous	Analog Out	Resolution	Input Ranges	Throughput	Digital In	Digital Out	Counters*	Packaging
DT9836-06-2-BNC	6SE	2	16	+/-10, 5V	225 kS/s	16	16	5	BNC Box
DT9836-06-2-OEM	6SE	2	16	+/-10, 5V	225 kS/s	16	16	5	OEM Embedded Version
DT9836-06-0-BNC	6SE	0	16	+/-10, 5V	225 kS/s	16	16	5	BNC Box
DT9836-06-0-OEM	6SE	0	16	+/-10, 5V	225 kS/s	16	16	5	OEM Embedded Version
DT9836-12-2-BNC	12SE	2	16	+/-10, 5V	225 kS/s	16	16	5	BNC Box
DT9836-12-2-OEM	12SE	2	16	+/-10, 5V	225 kS/s	16	16	5	OEM Embedded Version
DT9836-12-0-BNC	12SE	0	16	+/-10, 5V	225 kS/s	16	16	5	BNC Box
DT9836-12-0-OEM	12SE	0	16	+/-10, 5V	225 kS/s	16	16	5	OEM Embedded Version

\*\* Two user counter/timers and three quadrature decoders.