

DT9837 Series

High Performance, USB Powered Modules for Sound & Vibration Analysis

DT9837 Series

USB Modules for Sound & Vibration

The DT9837 Series high accuracy five channel data acquisition modules are ideal for portable noise and vibration measurements. Four, 24-bit, IEPE (ICP®) sensor inputs are synchronized with a tachometer input to provide data streams that are matched in time, for field and laboratory use. These rugged, small modules are self powered via the USB connection to a PC or laptop. No external power supply is needed, making them ideal for portable measurement applications.

Key Features:

- **Runs on USB Power...** ideal for portable applications... no external power supply needed
- **Four Simultaneous, 24-bit** Delta-Sigma A/D channels for high resolution measurements
- Support for **IEPE** (Integrated Electronic Piezoelectric) inputs, including use of a **4 mA current source** and AC or DC coupling
- Up to **105.4 kHz** sampling rate per channel
- Input range of **±10 V** with software-selectable gains of 1 and 10 for an effective input range of **±10 V** and **±1 V**
- **Software-programmable trigger** type (software, external digital trigger, or analog threshold trigger) to start the analog input operation. For DT9837A modules only, analog input threshold value is an option.
- Return the value of tachometer counter 0 in the analog input data stream, to measure the period or frequency of the **tachometer input signal synchronously with analog input measurements**
- For the DT9837A and DT9837B modules only, the ability to read the value of tachometer counter 1 in the analog input data stream, to **precisely correlate tachometer measurements** with analog input measurements
- For the DT9837A-OEM and DT9837B modules only, support for reading the value of gate counter 2 in the analog input data stream, to **precisely correlate gate input measurements** with analog input measurements
- For DT9837A modules only, support for reading analog output values in the analog input data stream, to **correlate input and output values**
- One 24-bit D/A converter
 - For the DT9837 module, waveform capability of up to 8,192 samples; for the **DT9837A module, single value, waveform, and continuous streaming output**
 - For the DT9837, output rate fixed at 46.875 kSamples/s; for the **DT9837A, programmable output rate** from 10 kSamples/s to 52.734 kSamples/s
 - Output range of **±10 V**

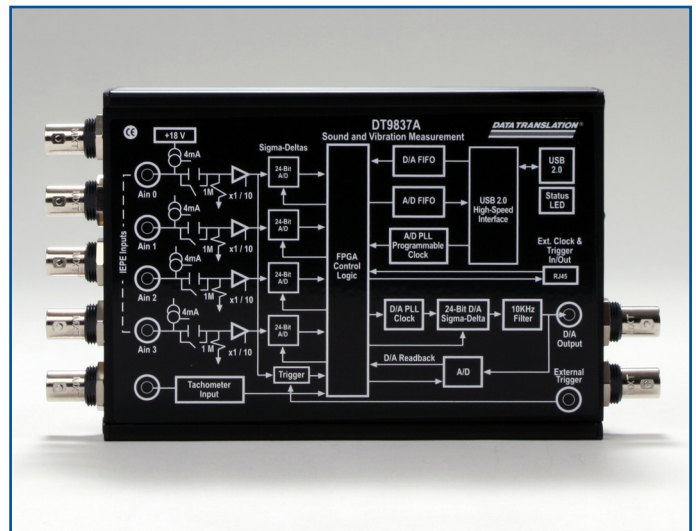


Figure 1. The DT9837A has 4 simultaneous IEPE sensor inputs plus a synchronous tachometer input and is ideal for portable noise and vibration measurement applications.

	DT9837	DT9837A	DT9837B
Analog Input Features			
4, single-ended, simultaneous channels	●	●	●
24-bit Resolution	●	●	●
AC/DC/4mA	●	●	●
Max Sampling Rate/Ch	Up to 52.7 kHz	Up to 52.7 kHz	Up to 105.4 kHz
1 Tachometer	●	●	●
±30V Tachometer Input Range	●	●	●
Synchronized with AO	●	●	●
Analog Output Readback Capability		●	
Analog Output Features			
1 Channel	●	●	
24-bit Resolution	●	●	
Max Sampling Rate	46.875 kHz	Up to 52.7 kHz	
Streaming Mode		●	
Buffer Mode	●	●	
Synchronized with AI		●	
Trigger Types	Software trigger only	Software trigger, external digital trigger, or analog threshold trigger	
Other Features			
Multiple Module Synchronization		●	●

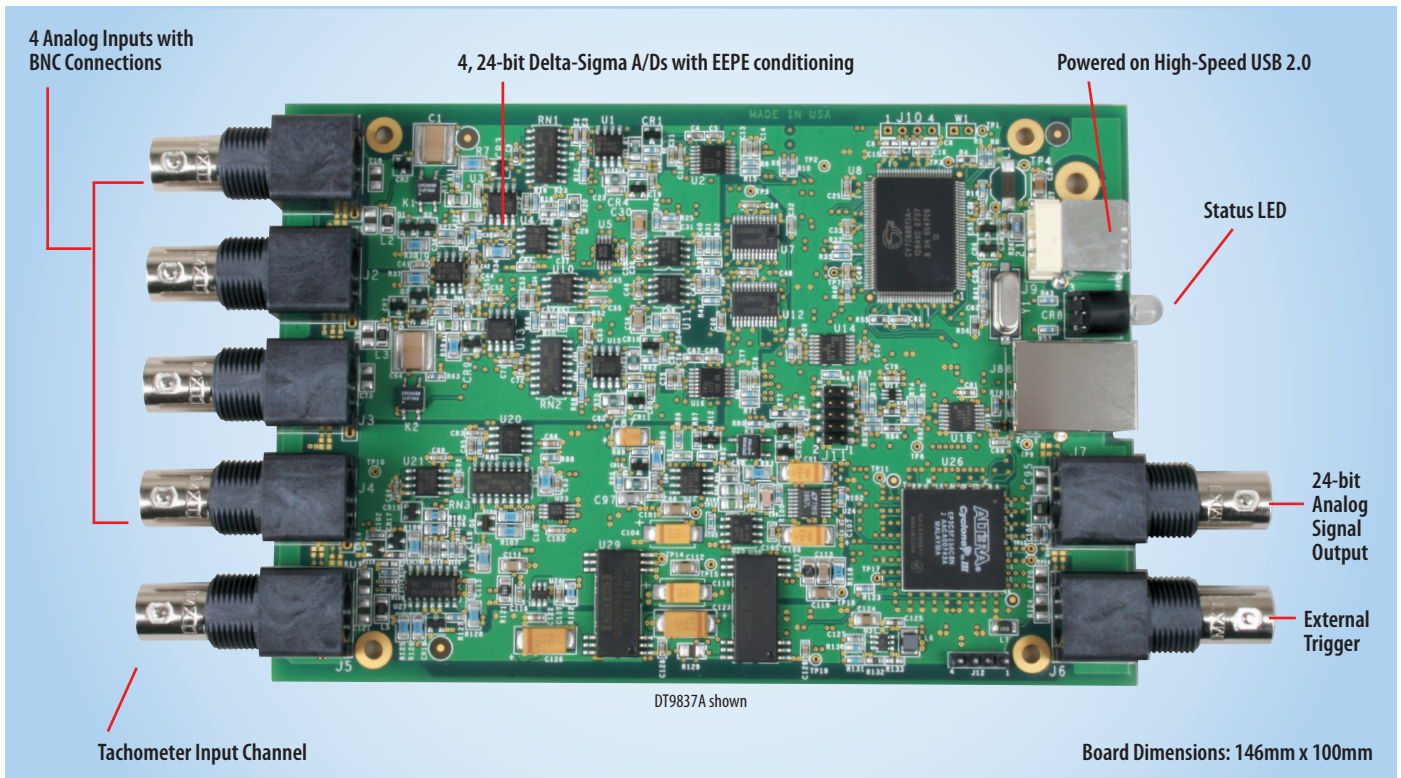


Figure 2. A board-level version of the DT9837A is available (DT9837A-OEM). These modules provide BNC connectors for easy signal connections. The DT9837A-OEM provides an additional gate input connector for precisely correlating analog input and gate input measurements.

- For the DT9837, a software trigger starts the analog output operation; for the DT9837A, select a software trigger, external digital trigger, or analog threshold trigger to start the analog output operation
- Internal clock source (shared between the analog input and analog output subsystems)
- For DT9837A and DT9837B modules only, an RJ45 synchronization (LVDS) connector for synchronizing acquisition on multiple modules (2 and 4, respectively)

Analog Input Channels

The DT9837 Series modules support four analog input channels and a tachometer input. Software-selectable gains of 1 and 10 provide effective input ranges of ± 10 V and ± 1 V. The DT9837 Series modules use 24-bit Delta-Sigma analog-to-digital converters (ADCs) that provide anti-aliasing filters based on the clock rate. These filters remove aliasing, which is a condition where high frequency input components erroneously appear as lower frequencies after sampling.

DT9837 Series modules can acquire a single value from a single analog input channel, a single value from all the analog input channels simultaneously, or multiple values from a group of analog input channels, as well as the data tachometer counter 0. On the DT9837A and DT9837B module, data can also be acquired from tachometer counter 1 and gate counter 2. Additionally, the DT9837A allows you to read the value of the analog output readback channel.

IEPE Functions

Applications that require accelerometer, vibration, noise, or sonar measurements often use IEPE sensors. IEPE conditioning is built-in to the analog input circuitry of the DT9837 Series modules. The modules support the following software-programmable IEPE functions for each of the four analog inputs:

- Excitation current source – Enable or disable the use of a 4 mA, internal excitation current source. By default, the excitation current source is disabled.
- Coupling type – Select whether AC coupling or DC coupling is used. By default, DC coupling is selected for the DT9837 and DT9837A modules, and AC coupling is selected for the DT9837B module.

Tachometer Input Features

The DT9837 Series modules accept one ± 30 V, 32-bit tachometer input signal. On the DT9837, this signal has a maximum frequency of 380 kHz and a minimum pulse width of 1.3 μ s. On the DT9837A and DT9837B, this signal has a maximum frequency of 1 MHz and a minimum pulse width of 0.4 μ s. The threshold voltage is fixed at ± 2 V with 0.5 V of hysteresis.

You can measure the frequency or period of the tachometer input signal using tachometer counter 0. On the DT9837A and DT9837B modules, you can also measure the phase of the tachometer input signal in relation to the A/D sample using tachometer counter 1.

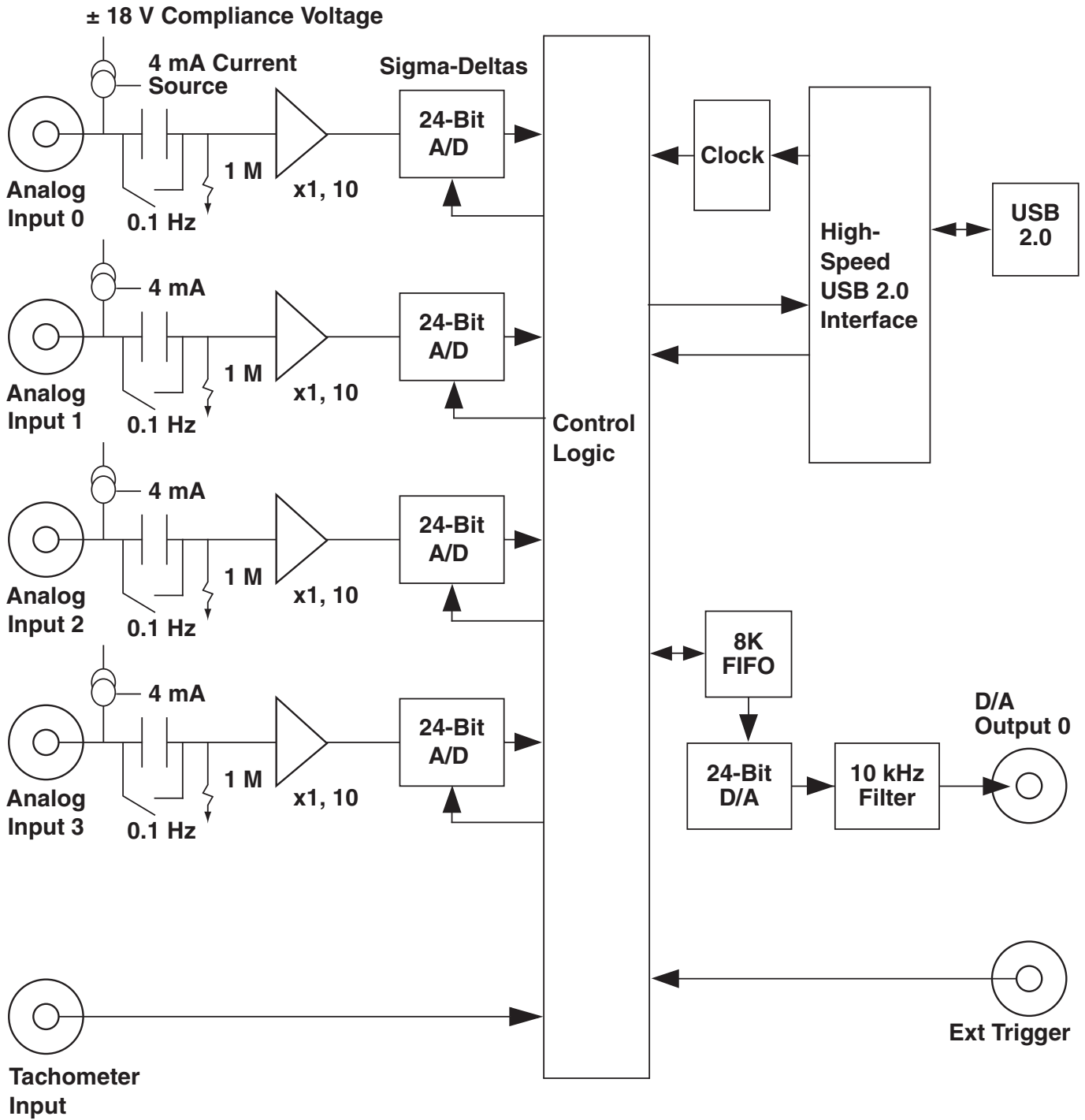


Figure 3. DT9837 Block Diagram

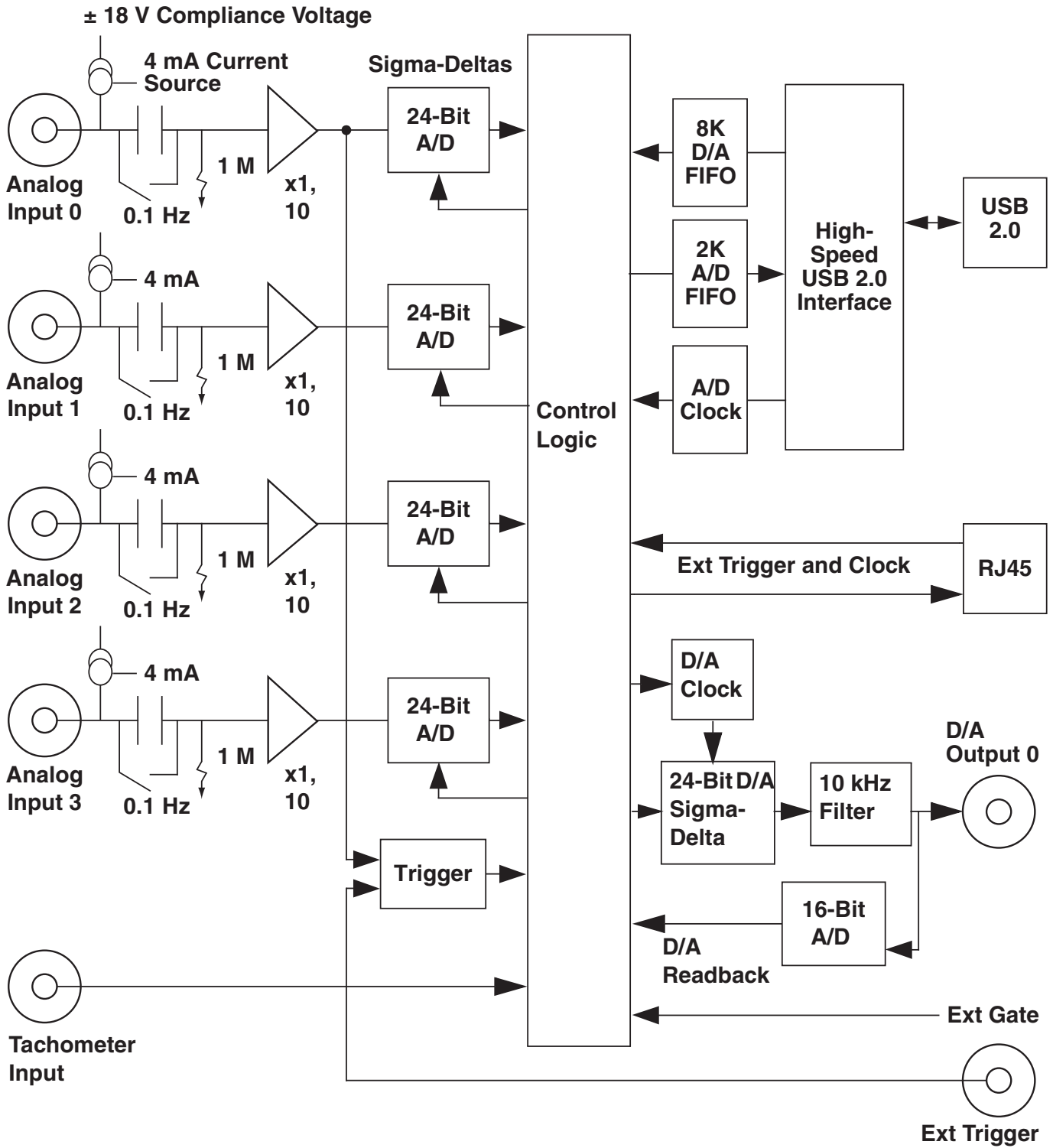


Figure 4. The DT9837A block diagram above shows the readback of the D/A output in the analog input data stream to allow all data to be synchronized in one data stream. The 24-bit Delta-Sigma A/D with D/A readback allows precise time correlation between D/A output and all analog inputs.

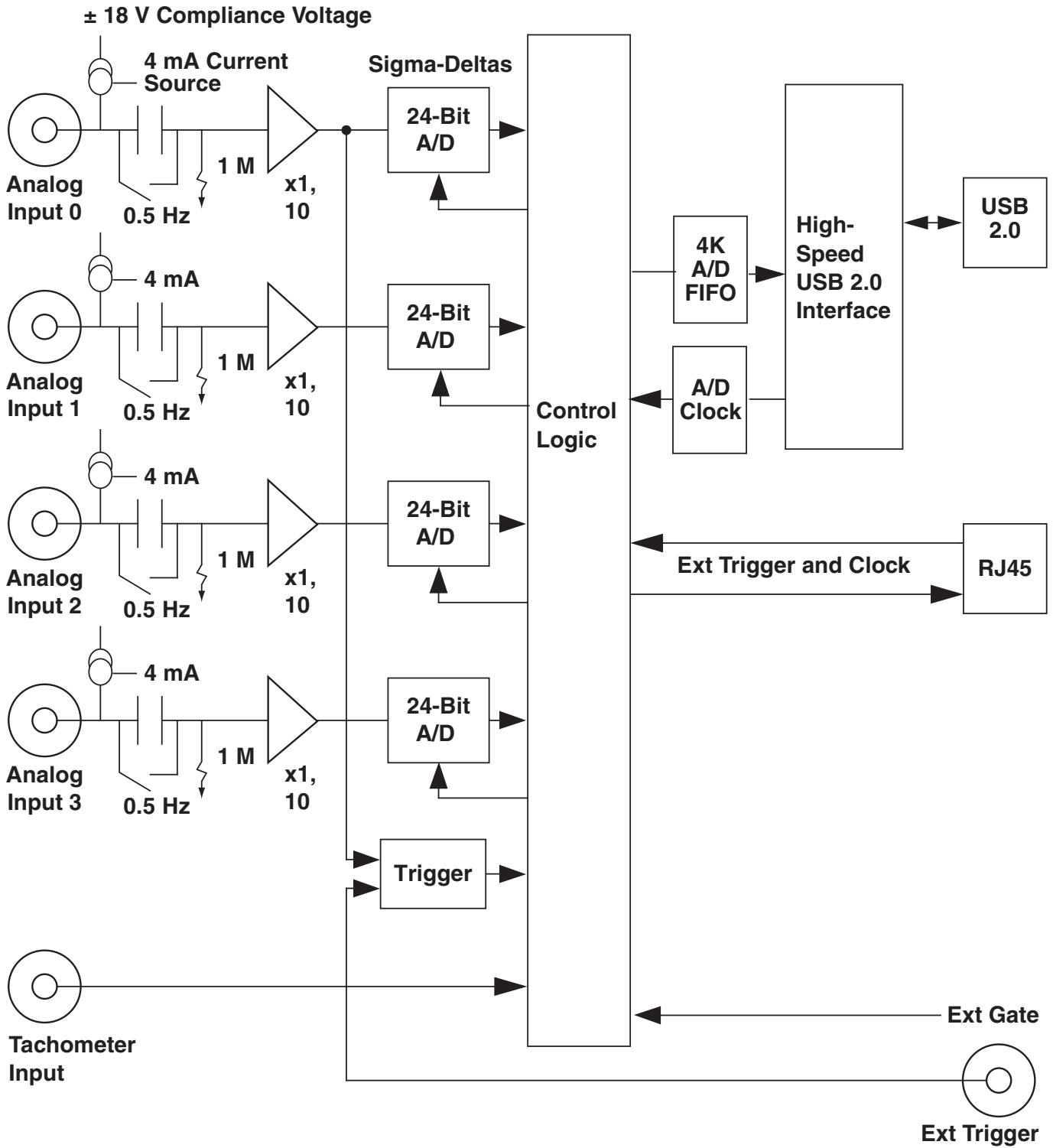


Figure 5. DT9837B Block Diagram

Frequency or Period Measurements – Tachometer Counter 0

Use frequency or period measurements to calculate the rotation speed for high-level (± 30 V) tachometer input signals. An internal 12 MHz counter (tachometer counter 0) is used for the measurement, yielding a resolution of 83 ns ($1/12$ MHz).

Read the number of counts between two consecutive starting edges of the tachometer input signal by including channel 4 in the analog input channel list. On the DT9837 module, the starting edge is always rising; on the DT9837A and DT9837B modules, the starting edge is programmable (either rising or falling).

Specify the following parameters for tachometer counter 0 using the Open Layers Control Panel applet:

- The starting edge of the tachometer input signal to use for the measurement (rising or falling edge). On the DT9837 module, the starting edge is always the rising edge.
- The value read between measurements (either zero, the default value, or the previous measurement value). On the DT9837 module, this value is always the previous measurement value.
- A flag (called Stale) indicating whether or not the data is new. If the Stale flag is set as Used (the default value), the most significant bit (MSB) of the value is set to 0 to indicate new data; reading the value before the measurement is complete returns an MSB of 1. If the Stale flag is set to Not Used, the MSB is always set to 0. On the DT9837 module, the MSB is always 0 (not used).

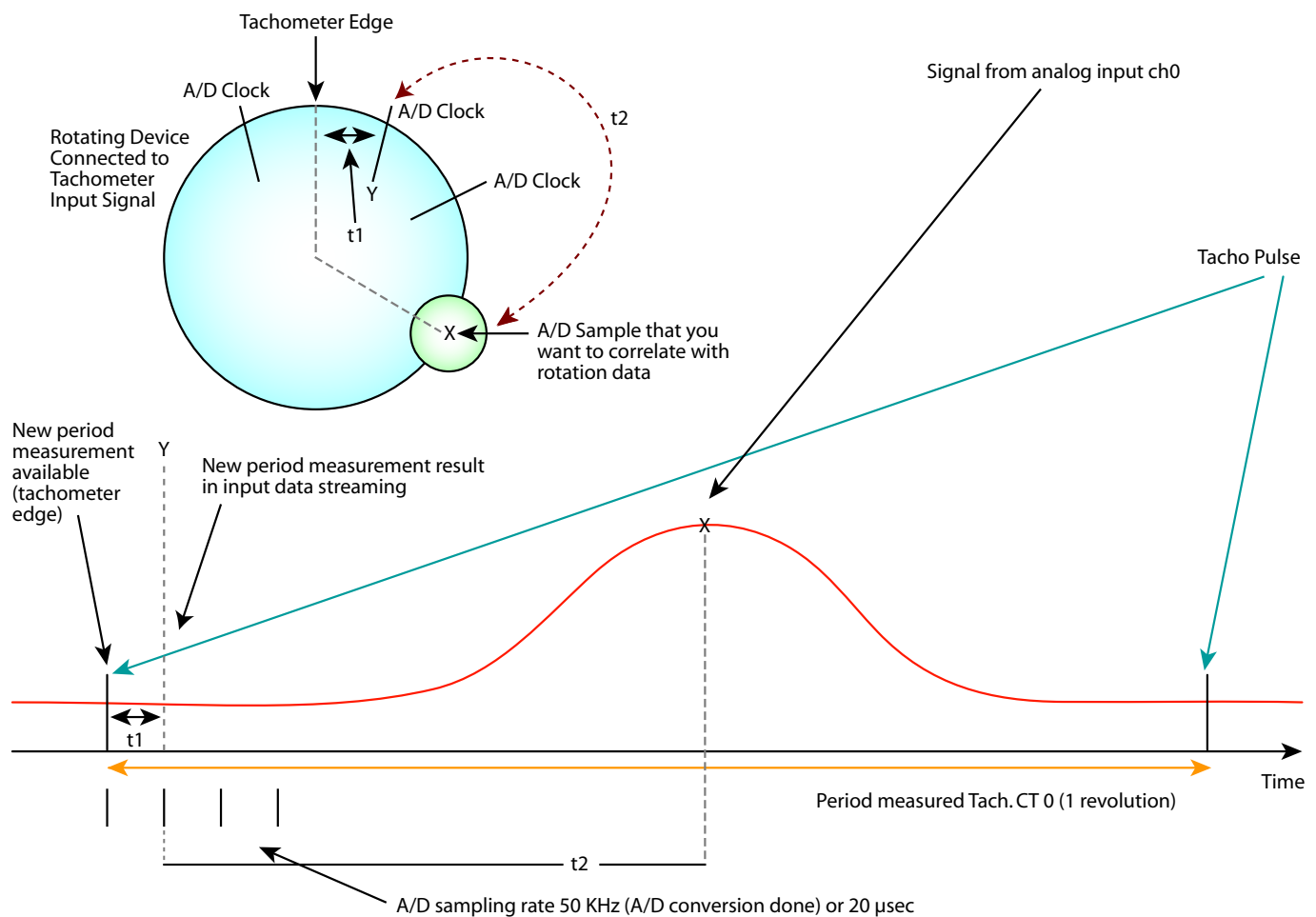


Figure 6. By connecting a rotating device to the tachometer input of the DT9837A, you can measure the frequency or period of the rotating device. The DT9837A also provides the ability to accurately measure the time between the tachometer edge and the next A/D sample or between the A/D sample and the next tachometer edge, so that you can precisely correlate A/D data with rotation data. For example, assume that you want to correlate A/D sample X from analog channel 0 to an angular position of the rotating device. This can be accomplished by using a tachometer signal that always occurs at the top, center position of the rotating device as a reference and measuring the time between the tachometer signal and the next A/D sample (Y). Since you know the frequency of the A/D sample clock (50 kHz, in this case), you know when A/D sample X occurred in relation to A/D sample Y ($t2 = 1/50\text{kHz} \times \text{num samples from Y to X}$). By using the Tachometer Counter 1 to measure the time ($t1$) between the tachometer signal and A/D sample Y, you can calculate exactly where A/D sample X occurred in time from the tachometer signal (result = $t1 + t2$). Given the rotation speed of Tachometer Counter 0, you can then calculate the angular position of A/D sample X

When the operation is started, the internal 12 MHz counter starts incrementing when it detects the first starting edge of the tachometer input and stops incrementing when it detects the next starting edge of the tachometer input. When the measurement is complete, the counter/timer remains idle until it is read. On the next read, either 0 or the current value of the tachometer input (from the previous measurement operation) is returned depending on the module and the Control Panel settings, described above, and the next operation is started automatically.

The software automatically synchronizes the value of the tachometer input with the analog input measurements, so that all measurements are correlated in time. The tachometer input is treated like any other channel in the analog input channel list; therefore, all the triggering and conversion modes supported for analog input channels are supported for the tachometer input.

Phase Measurements – Tachometer Counter 1

On the DT9837A and DT9837B modules, measure the phase of the tachometer input in relation to the A/D sample by reading tachometer counter 1. To read the value of this counter, specify channel 5 in the analog input channel list.

An internal 48 MHz clock (with 21 ns resolution) is used to calculate the measurement, which allows you to precisely correlate tachometer measurements with the analog input data.

Specify the following parameters for tachometer counter 1 using the Open Layers Control Panel applet:

- The signal that starts the measurement: A/D sample, rising edge of the tachometer input signal, or falling edge of the tachometer input signal
- The signal that stops the measurement: A/D sample, rising edge of the tachometer input signal, or falling edge of the tachometer input signal

Note: Note that if you choose to start the measurement using the A/D sample, choose a tachometer edge to stop the measurement. Likewise, if you choose to stop the measurement using the A/D sample, choose a tachometer edge to start the measurement.

- The value of the Self-Clear flag, which determines the value that is read between measurements (either 0 or the previous measurement value)

Gate Input Features

The DT9837A-OEM module provides a 4-pin gate input connector for connecting a TTL gate input signal. The DT9837B module provides a BNC connector for connecting a gate input signal.

Read the value of gate counter 2 to measure the time between the following signals:

- Completion of the A/D sample to the rising or falling edge of the gate input signal
- Rising or falling edge of the gate input signal to the rising or falling edge of the gate input signal, which you can use to determine the pulse width of the gate signal
- Rising or falling edge of the gate input signal to the completion of the A/D sample

For these measurements, specify channel 6 in the analog input channel list. An internal 48 MHz clock (with 21 ns resolution) is used for the measurements, which allows you to precisely correlate analog input data with measurements from the gate input signal.

Specify the following parameters for gate counter 2 using the Open Layers Control Panel applet:

- The signal that starts the measurement: A/D sample, gate rising edge, or gate falling edge
- The signal that stops the measurement: A/D sample, gate rising edge, or gate falling edge

Note: Note that if you choose to start the measurement using the A/D sample, choose a gate input edge to stop the measurement. Likewise, if you choose to stop the measurement using the A/D sample, choose a gate input edge to start the measurement.

If you choose the start and stop the measurement using the same gate edge, be aware that the stopping edge does not restart the measurement; the next starting edge will start the next measurement.

- The value of the Self-Clear flag, which determines the value that is read between measurements (either 0 or the previous measurement value)

Programmable A/D Clock

The DT9837 Series modules support an internal clock, which is derived from the USB clock. Use software to specify the internal clock source and the frequency at which to pace the input and output operations and to start the sample clock. For the DT9837 and DT9837A, the sampling frequency ranges from 195.3 Hz to 52.734 kHz. For the DT9837B, the sampling frequency ranges from 195.3 Hz to 105.469 kHz. The actual frequency that the module can achieve may be slightly different than the frequency specified due to the accuracy of the clock. The actual clock frequency can be determined using software.

Internally, the value specified for the internal clock frequency is multiplied by 512 (for frequencies of 52.734 kHz or less) or 256 (for frequencies greater than 52.734 kHz) to set the oscillator on the module. For example, if an internal clock frequency of 50 kHz is specified, the module sets the internal oscillator for the A/D converters to 25.6 MHz. The maximum timebase is 27 MHz.

Once the sample clock is started, the module requires 39 clock pulses before the first A/D conversion is completed (39/sample rate) due to the group delay of the converters. The software automatically adjusts for the group delay to provide only valid data in each buffer.

The tachometer data (which does not have the 39 sample group delay) is synchronized with the analog data stream. This is done through the firmware and device driver by caching the tachometer data and aligning it in time with the analog data in the user's data buffers.

Programmable Input Triggers

A trigger is an event that occurs based on a specified set of conditions. Analog input operations start when the module detects the initial trigger event and stops when either all the buffers that have been queued to the subsystem have been filled or you stop the operation.

The DT9837 Series modules support the following trigger sources for starting analog input operations:

- Software trigger – Using the internal trigger, analog input operations start based on a software command.
- External digital (TTL) trigger – An external digital (TTL) trigger event occurs when the module detects a rising-edge transition on the signal connected to the Ext Trig BNC connector on the module. Using software, specify the trigger source as an external, positive digital (TTL) trigger.

Note: On the DT9837A and DT9837B modules, if you configure the synchronization mode as slave, the RJ45 connector accepts trigger and clock signals from the master; you cannot use the Ext Trig BNC connector on the slave module.

- Analog threshold trigger – For the DT9837 module only, an analog threshold trigger event occurs when the signal attached to analog input channel 0 rises above 1.0 V (the fixed threshold level). Using software, specify the trigger source as a positive threshold trigger.

For the DT9837A and DT9837B modules, an analog threshold trigger event occurs when the signal attached to analog input channel 0 rises above a user-specified threshold value from 0.2 V to 9.8 V with 0.1 V of hysteresis. Using software, specify the trigger source as a positive threshold trigger.

Note: Channel 0 does not have to be included in the channel list for the analog threshold trigger to work.

On the DT9837A and DT9837B modules, if you configure the synchronization mode as slave, the RJ45 connector accepts trigger and clock signals from the master; you cannot use the analog threshold trigger on the slave module.

Analog Output Operations

The DT9837 and DT9837A modules support one 24-bit analog output channel with an output range of ± 10 V. Note that on the DT9837A module only, you can read back the value of the analog output channel through the analog input channel list. A two-pole, 10 kHz Butterworth filter is applied to prevent noise from interfering with the output signal. The analog output channel powers up to a value of $0\text{ V} \pm 10\text{ mV}$.

The output clock on the DT9837 and DT9837A modules is derived from the USB clock to produce the output clock frequency. On the DT9837 module, the clock frequency is fixed at 46.875 kHz. On the DT9837A module, you can program the clock frequency to value between 10 kHz and 52.734 kHz. Use software to specify an internal clock source and to specify the clock frequency for the analog output subsystem. Internally, the value that you specify for the analog output clock frequency is multiplied by 512 to set the oscillator on the module. The maximum timebase for the DT9837 is 24 MHz; the maximum timebase for the DT9837A is 27 MHz. Due to the group delay of the Delta-Sigma D/A converter, the DT9837 requires 34 clock pulses and the DT9837A requires 29 clock pulses once the analog output sample clock is started before the first D/A conversion is completed.

The DT9837 and DT9837A modules support single-value and waveform analog output operations. The DT9837A module also supports continuous analog output operations and provides the ability to read the value of the analog output channel in the analog input data stream.

Single-Value Mode

Single-value mode is the simplest to use but offers the least flexibility and efficiency. Use software to specify the analog output channel that you want to update, and the value to output from that channel. The value is output from the specified channel immediately. For a single-value operation, you cannot specify a clock source, trigger source, or buffer. Single-value operations stop automatically when finished; you cannot stop a single-value operation.

Note: On the DT9837 module, ensure that no analog input operations are running before performing an analog output operation or an error will be reported.

Waveform Generation Mode

Waveform generation mode is supported on both the DT9837 and DT9837A modules. In this mode, a waveform, which is specified in a single buffer, is output repetitively. On the DT9837, allocate a buffer less than or equal to 8192 samples, and then fill the buffer with the waveform that you want to output. On the DT9837A, you can allocate a buffer of any size, and then fill the buffer with the waveform that you want to output. When it detects a software trigger, the host computer transfers the entire waveform pattern to the FIFO on the module, and the module starts writing output values to the analog output channel at the specified clock rate. The module recycles the data, allowing you to output the same pattern continuously without any further CPU or USB bus activity. When it reaches the end of the FIFO, the module returns to the first location of the FIFO and continues outputting the data. This process continues indefinitely until you stop it.

Notes: On the DT9837, an error will be reported if you specify a buffer with greater than 8192 samples (the size of the FIFO on the module).

If you want to output data from the analog output channel on the DT9837 module while acquiring analog input data, ensure that you set up and start the analog output operation before starting the analog input operation, or an error will be reported.

Continuous Analog Output Operations

Continuous analog output operations are supported on the DT9837A module only. Use continuously paced analog output mode to continuously output buffered values to the analog output channel at a specified clock frequency. Use software to fill multiple output buffers with the values that you want to write to the analog output channel. When it detects the specified trigger, the module starts writing the values from the output buffer to the analog output channel at the specified clock frequency. The operation repeats continuously until either all the data is output from the buffers or you stop the operation.

Note: Make sure that the host computer transfers data to the output channel list fast enough so that the list does not empty completely; otherwise, an underrun error results.

We recommend that you allocate a minimum of two buffers for a continuously paced analog output operation. Data is written from multiple output buffers continuously; when no more buffers of data are available, the operation stops. The data is gap-free.

To stop a continuously paced analog output operation, you can stop queuing buffers for the analog output system, letting the module stop when it runs out of data, or you can perform either an orderly stop or an abrupt stop using software. In an orderly stop, the module finishes outputting the specified number of samples, and then stops; all subsequent triggers are ignored. In an abrupt stop, the module stops outputting samples immediately; all subsequent triggers are ignored.

Reading the Analog Output Value in the Analog Input Data Stream (DT9837A Module Only)

On the DT9837A module, you can read back the value of the analog output channel in the analog input data stream. Specify channel 7 in the analog input channel list to read back the value of the analog output channel.

When the analog input operation is started, the value of the analog output channel is returned in the analog input data stream. (An analog value is returned.) The software automatically synchronizes the value of the analog output channel with the analog input measurements, so that all measurements are correlated in time.

Programmable Output Triggers

The DT9837 and DT9837A modules support the following trigger sources for starting analog output operations:

- Software trigger – A software trigger event occurs when you start the analog output operation (the computer issues a write to the module to begin conversions). Using software, specify the trigger source for D/A subsystem 0 as a software trigger.
- External digital (TTL) trigger – This trigger source is supported on the DT9837A only. An external digital (TTL) trigger event occurs when the module detects a rising-edge transition on the signal connected to the Ext Trig BNC connector on the module. Using software, specify the trigger source for D/A subsystem 0 as an external, positive digital (TTL) trigger. *Note: If you configure the synchronization mode as slave, the RJ45 connector accepts trigger and clock signals from the master; you cannot use the Ext Trig BNC connector on the slave module.*
- Analog threshold trigger – This trigger source is supported on the DT9837A only. An analog threshold trigger event occurs when the signal attached to analog input channel 0 rises above a user-specified threshold value from 0.2 V to 9.8 V with 0.1 V of hysteresis. Using software, specify the trigger source for D/A subsystem 0 as a positive threshold trigger. Use D/A subsystem 1 to program the threshold value. *Note: If you configure the synchronization mode as slave, the RJ45 connector accepts trigger and clock signals from the master; you cannot use the analog threshold trigger on the slave module.*

Triggering Acquisition on Multiple Modules

Note: For DT9837A and DT9837B modules, you can synchronize acquisition on multiple modules using the RJ45 (LVDS) synchronization connector.

The internal clock on the DT9837 module, and on the DT9837A and DT9837B modules when the synchronization mode is none, is derived from the USB clock and provides the timing for both the analog input and analog output subsystems on the module.

You can start acquisition on multiple modules by connecting all modules to a shared external trigger input. When triggered, the modules start acquiring data at the same time. Using this connection scheme, the measurements of one module may not be synchronous with the measurements of another module due to logic delays in the clocking and USB circuitry.

Synchronizing Acquisition on Multiple DT9837A or DT9837B Modules

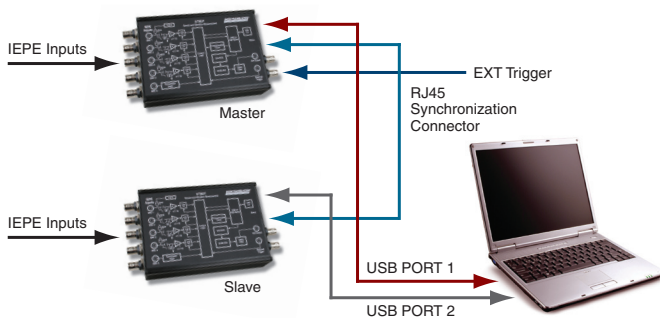


Figure 7. A Master/Slave component in Measure Foundry allows two DT9837A or DT9837B modules to operate in perfect synchronization for 8 IEPE inputs and 2 tachometer inputs.

DT9837A and DT9837B modules provide an RJ45 (LVDS) synchronization connector to connect and synchronize multiple DT9837A or DT9837B modules. In this scheme, one module is the master and the other modules are the slave. Specify the synchronization mode (master, slave, or none) of the RJ45 connector using software.

When configured as a master, the RJ45 synchronization connector outputs trigger and clock signals. When configured as a slave, the RJ45 connector accepts trigger and clock signals from the master; you cannot use the Ext Trig BNC connector or the analog threshold trigger on the slave module in this configuration. When configured as none (the default mode), the DT9837A or DT9837B module uses the USB clock instead of the RJ45 synchronization connector. The synchronization mode remains set until changed or until the application exits.

When you stop the master module, the slaves continue to run and return data until you stop the analog input subsystem on the slave modules. Be sure to stop the analog input subsystems on all DT9837A or DT9837B modules before disconnecting the cable from the RJ45 connectors.

You can connect multiple modules in one of two ways. Figure 8 shows how to connect a maximum of two DT9837A or DT9837B modules by daisy chaining them together through the RJ45 connector.

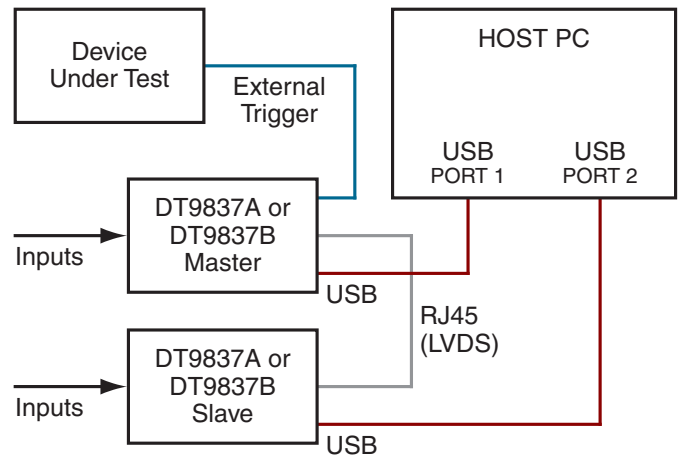


Figure 8. Synchronizing two DT9837A or DT9837B Modules by Daisy Chaining the RJ45 connectors (shown using External Trigger).

Figure 9 shows how to connect a maximum of four DT9837A or DT9837B modules by using an RJ45 distribution panel, where the panel contains four RJ45 connectors that are wired in parallel.

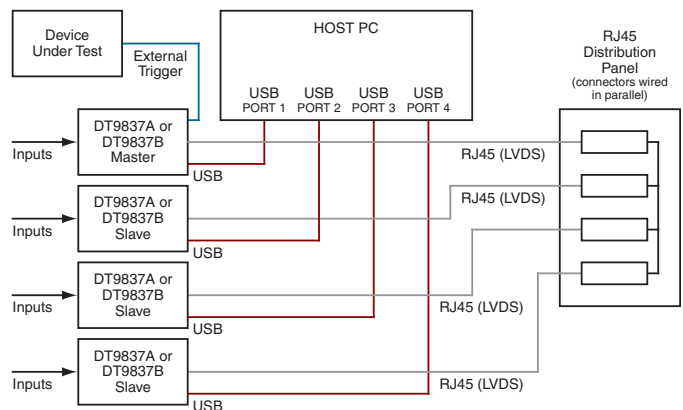


Figure 9. Synchronizing four DT9837A or DT9837B modules using an RJ45 distribution panel (shown using External Trigger).

When synchronizing multiple modules, start the slave modules before starting the master module. If you start the master module before the slaves, the slaves never start; you will see a delay of approximately 20 seconds if you try to stop or abort the analog input operation on a slave module that is waiting for a trigger.

When the master module is triggered (using any of the supported trigger sources), both the master and the slave modules start acquiring data at the same time (within one A/D conversion of the clock). Note that you can set the clock rate to be the same or different on each module.

Software Options

Many software choices are available for application development, from ready-to-measure applications to programming environments.

The following software is available for use with USB modules and is provided on the Data Acquisition Omni CD:

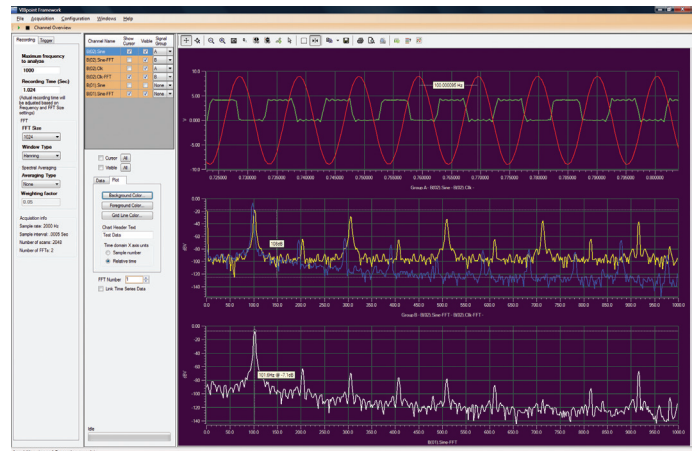
■ VIBpoint™ Framework Application

- ❑ An evaluation version of this software is included all DT8837 instrument modules
- ❑ Discover and select available hardware
- ❑ Configure all input channel settings, such as: enable state, clock rate, AC/DC coupling, gain, counter and tachometer edges, etc.
- ❑ Load/Save hardware configurations
- ❑ Acquire data from multiple modules or instrument modules
- ❑ On each device, acquire data from all channels on one board, or across multiple boards synchronized with Wired Trigger Bus (DT8837)
- ❑ Display acquired data during acquisition
- ❑ Perform FFTs (Fast Fourier Transforms) on the acquired analog input data. FFT size and window type are user selectable. FFT averaging modes include: Linear, Exponential, and Peak Hold.
- ❑ Use a chart recorder to display snapshot of data and log it to disk for later analysis
- ❑ Use the channel overview to view data in a digital display
- ❑ Save data to disk, to comma- or tab-separated file, or open in Excel
- ❑ Supports all VIBpoint models

■ **Measure Foundry®** – An evaluation version of this software is included on the Data Acquisition Omni CD. Measure Foundry® is a drag-and-drop test and measurement application builder designed to give top performance with ease-of-use development.

■ **Measurement Applets** – Included in the Measure Foundry evaluation version. These small applications, developed with Measure Foundry, can be modified or combined to provide a specific solution. Order the full development version of Measure Foundry to develop applications using real hardware.

■ **quickDAQ application** – An evaluation version of this .NET application is included on the Data Acquisition Omni CD. quickDAQ acquires analog data from all devices supported by DT-Open Layers for .NET software at high speed, plots it during acquisition, analyzes it, and/or saves it to disk for later analysis. Note: quickDAQ supports analog input functions only. DT9817 and DT9835 modules are DIO only and are not supported.



VIBpoint Framework Application

- **Quick DataAcq application** – The Quick DataAcq application provides a quick way to get up and running using your USB module. Using this application, verify key features of the module, display data on the screen, and save data to disk.
- **DT-Open Layers® for .NET Class Library** – Use this class library if you want to use Visual C#® or Visual Basic® for .NET to develop application software for your USB module using Visual Studio® 2003/2005/2008; the class library complies with the DT-Open Layers standard.
- **DataAcq SDK** – Use the Data Acq SDK to use Visual Studio 6.0 and Microsoft® C or C++ to develop application software for your USB module using Windows®; the DataAcq SDK complies with the DT-Open Layers standard.
- **DTx-EZ** – DTx-EZ provides ActiveX® controls, which allows access to the capabilities of your USB module using Microsoft Visual Basic or Visual C++®; DTx-EZ complies with the DT-Open Layers standard.
- **DAQ Adaptor for MATLAB** – Data Translation's DAQ Adaptor provides an interface between the MATLAB® Data Acquisition (DAQ) toolbox from The MathWorks™ and Data Translation's DT-Open Layers architecture.
- **LV-Link** – An evaluation version of this software is included on the Data Acquisition Omni CD. Use LV-Link to use the LabVIEW™ graphical programming language to access the capabilities of your USB module.

Cross-Series Compatibility Saves Programming Time, Protects Your Investment

Virtually all Data Translation data acquisition modules, including the DT9837 Series, are compatible with the DT-Open Layers® software standard. This means any application developed with one of Data Translation's software products can easily be upgrade to a new Data Translation module with little to no reprogramming needed.

User Manual

The DT9837 Series modules include a user's manual that provides getting started and reference information. The manual is provided in electronic (PDF) format on the Data Acquisition Omni CD provided with the module.

Technical Support

Application engineers are available by phone and email during normal business hours to discuss your application requirements. Extensive product information, including drivers, example code, pinouts, a searchable Knowledge Base, and much more, is available 24 hours a day on our website at: www.datatranslation.com.

For more information about the DT9837 Series, including specifications, please visit: <http://www.datatranslation.com/info/DT9837/>

Ordering Summary

All Data Translation hardware products are covered by a 1-year warranty. For pricing information, please visit our website or contact your local reseller.

Hardware

- DT9837
- DT9837-OEM
- DT9837A
- DT9837A-OEM
- DT9837B
- DT9837B-OEM

Accessories

- BNC DIN Rail Kit

Software

The following software is available for purchase separately:

- Measure Foundry
- quickDAQ
- LV-Link

Free Software Downloads

The following software is available for free download from our website:

- DAQ Adaptor for MATLAB
- Measurement Applets