DAQ Adaptor for MATLAB®

Interface Software for MATLAB

Key Features

- **High performance data acquisition**

— *Access the power of all Data Translation USB and PCI data acquisition boards.*

- **Easy interface within MATLAB**

— *Control and acquire measurement data directly into MATLAB.*

- **Access to live measured data in MATLAB**

— *Provides easy access to analog I/O and digital I/O data.*

- **A single environment for acquisition, analysis, and visualization**

— *Directly access measurement data from MATLAB and utilize its engineering analysis functions.*

Figure 1. Measurement and analysis is accomplished easily using USB data acquisition and the DAQ Adaptor. MATLAB users now have a single, integrated, easy-to-use environment for acquiring signals into MATLAB.

Overview

The DAQ Adaptor is a software interface tool that allows MATLAB users direct access to analog and digital I/O data. Used together with MATLAB from The MathWorks® and their Data Acquisition Toolbox, a single integrated environment is provided to support the entire data acquisition and analysis process.

With these tools, a Data Translation module can be configured within MATLAB to access all the built-in features of the hardware device. All Data Translation's USB and PCI boards can be accessed for a full range of performance capabilities. Analysis and visualization features of MATLAB can be incorporated into the design to analyze data, save it for post-processing, and make changes based on analysis results.

The Basics

The DAQ Adaptor integrates with MATLAB Data Acquisition Toolbox, providing access to Data Translation hardware. Users create DT-Open Layers subsystems, an API for all Data Translation data acquisition boards, add channels to them, and perform single or streaming I/O operations. MATLAB then provides an array of analysis and display features to process input data and generate output data. The DAQ Adaptor for MATLAB provides users with a convenient way to combine the speed and precision of Data Translation's USB and PCI boards with the powerful analysis and data presentation features of MATLAB.

Analog I/O Boards

The full range of Data Translation analog and digital input/output boards can be directly accessed within MATLAB. The advanced processing capability supported by MATLAB is a perfect complement to the high performance features of the DT9834 series for USB or the DT3010 series for PCI. When high speed, high resolution signals need to be measured and analyzed, these boards, along with MATLAB, are an excellent combination.

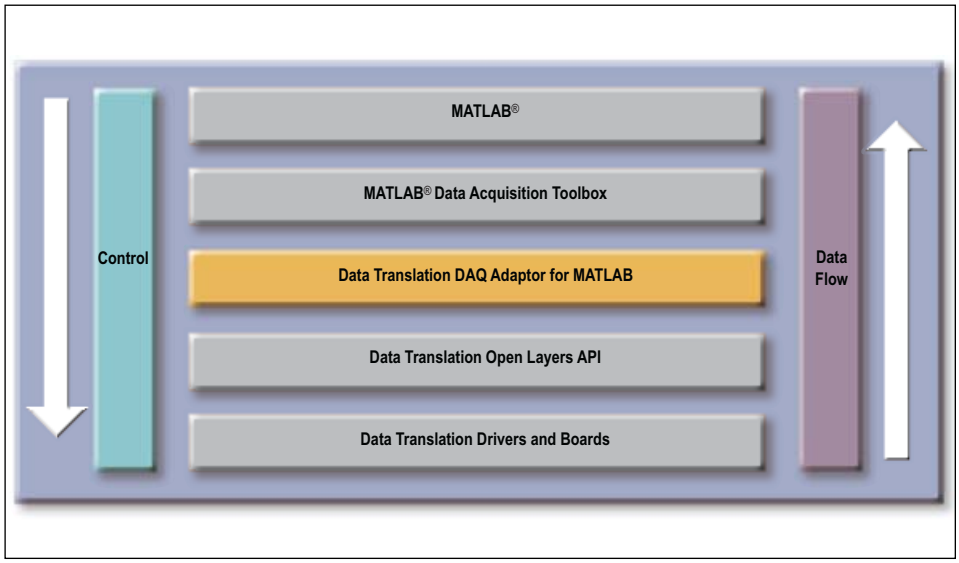

Figure 2. The above diagram depicts the hierarchy of control and data flow. DT-Open Layers provides all the board specific logic so that just one adaptor can be used for all Data Translation boards.

The DAQ Adaptor for MATLAB supports all DT-Open Layers compliant hardware.

Recommended Data Acquisition Boards:

- **DT9836-12-2-BNC**. . . Simultaneous acquisition of 12 channels at 225 kHz each for USB.
- **DT9834-16-4-BNC** . . . Excellent for signal bandwidths up to 500 kHz on 16 channels for USB.
- **DT3010** . . . Perfect for high speed, high channel count applications to 1.25 MHz for PCI.

For low cost applications, consider:

- **DT9816 or DT9816-A** . . . Simultaneous acquisition of 16 channels at 150 kHz each for USB.

For applications requiring the highest accuracy, consider:

- **DT9822** . . . 4 input channels with 24-bit resolution for USB.

For temperature measurement applications, consider:

- **DT9806** . . . built-in CJC with 16-bit resolution for USB.

Controlling Your Acquisition

The Data Acquisition Toolbox from The MathWorks supports a wide range of functions for controlling your acquisition. Users can set event information, evaluate the acquisition status, define triggers and callbacks, preview data while the device is running, and perform analysis on the fly. The DAQ Adaptor for MATLAB interface tool supports all these functions as well by creating a clean interface to the MATLAB program.

Supported Boards

USB

High Performance Modules

- DT9836 Series — (Simultaneous, High Speed, Multifunction)
- DT9834 Series — (High Speed, Multifunction)

General Purpose Modules

- DT9800 Series — (General Purpose, Multifunction) DT9801, DT9802, DT9803, DT9804
- DT9835 — (Digital I/O, High Channel Count)

Temperature Measurement Modules

- DT9805 Series — (CJC, Multifunction) DT9805, DT9806

Highest Accuracy Modules

- DT9820 Series — (High Accuracy, Multifunction) DT9821, DT9822

ECONseries Modules

- DT9810/12/13/14 — (Low Cost, Multifunction)
- DT9816/16-A — (Low Cost, Simultaneous A/D)
- DT9817/17-H — (Low Cost, Digital I/O)

PCI

High Performance

- DT3010 Series — (High Speed, Multifunction) DT3010, DT3016
- DT3000 Series — (High Speed, High Resolution) DT3001, DT3002, DT3003, DT3004, DT3005

General Purpose

- DT330 Series — (Multifunction) DT331, DT332, DT333, DT334
- DT320 Series — (High Resolution, Multifunction) DT321, DT322
- DT335 and DT351 — (Digital I/O) DT340 (Counter Timer)

Low Cost

- DT300 Series — (Low Cost, Multifunction) DT301, DT302, DT303, DT304

System Requirements

- MATLAB version — xxxx