

# Data Acquisition and Signal Conditioning Driver Software Options

## NI-DAQmx

- Compatible with more than 300 data acquisition devices
- Full-featured driver software for Windows and Linux®
- High-performance driver engine
- Fast single-point and multithreaded I/O
- Automatic code generation with the DAQ Assistant
- Virtual channels for simple measurement configuration
- Multiple-device synchronization
- Optimized integration with LabVIEW VIs and analysis
- API for LabVIEW, ANSI C/C++, C#, Visual Basic .NET, and Visual Basic
- Free data-logging software included

## NI-DAQmx Base

- Compatible with more than 80 data acquisition devices
- Multiplatform driver for Linux, Mac OS X, Windows Mobile, Windows CE, and Windows Vista/XP
- Subset of NI-DAQmx functionality
- Similar programming interface to NI-DAQmx
- Basic DAQ driver for LabVIEW and ANSI C

## Measurement Hardware DDK

- Custom-driver development tools
- Register-level programming interface
- Designed for OEM customers
- Data acquisition for virtually any OS



## Overview

The quality of the driver software is just as important as the quality of the measurement hardware. National Instruments provides three levels of data acquisition (DAQ) software, each with its own unique features. The result is a complete offering of data acquisition software to simplify use of National Instruments DAQ hardware in any application.



## Three Levels of DAQ Driver Software

1. NI-DAQmx is full-featured, high-performance driver software that maximizes productivity and performance through an intuitive programming interface and added software.
2. NI-DAQmx Base is a basic multiplatform DAQ driver with a subset of NI-DAQmx functionality.
3. NI Measurement Hardware DDK is a development kit for the creation of custom drivers using register-level programming.

**Note:** Not all drivers work with all devices. Visit [ni.com/support/daq/versions](http://ni.com/support/daq/versions) to check compatibility.

## NI-DAQmx Driver Software

NI-DAQmx is full-featured, high-performance driver software that maximizes productivity and performance through an intuitive programming interface and included measurement services. It works with broad ranges of programming languages, devices, buses, sensors, and even mixed-signal types. NI-DAQmx is the best option almost every time for Windows and Linux development.

**Note:** National Instruments recommends using the latest version of NI-DAQmx driver software for application development in NI LabVIEW, LabWindows™/CVI, and Measurement Studio 7.x or later on Windows and Linux.

## Included Measurement Services<sup>1</sup>

NI-DAQmx includes a collection of measurement services designed to save data acquisition system developers time and money. A few of these services include:

**Measurement & Automation Explorer (MAX)** – software for configuring, calibrating, testing, and managing your hardware

**DAQ Assistant** – software for creating configuration-based data acquisition tasks and automatic code generation in popular application development environments

**LabVIEW SignalExpress LE** – free software specifically designed for basic data-logging applications

**NI Device Monitor** – software that provides a true plug-and-play experience for developers using USB DAQ modules

<sup>1</sup>Windows version only.

## Data Acquisition and Signal Conditioning Driver Software Options

### NI-DAQmx Base Driver Software

NI-DAQmx Base offers a subset of NI-DAQmx functionality on Windows, Linux, Mac OS X, Windows Mobile, and Windows CE OSs. This driver software includes ready-to-use LabVIEW VIs and C function examples similar to those included in the full-featured NI-DAQmx software.

National Instruments built NI-DAQmx Base driver software using the Measurement Hardware DDK and developed the software almost entirely in the multiplatform LabVIEW graphical development environment. This lightweight, agile architecture makes it possible to quickly develop NI-DAQmx Base for additional OSs and devices in the future.

Developers creating applications for Windows or Linux systems should consider using the latest in full-featured NI-DAQmx.

### Measurement Hardware DDK

The Measurement Hardware DDK (Driver Development Kit) provides development tools and a register-level programming interface for the development of custom driver software. Designed for OEM customers developing applications that require nonstandard OSs, it offers access to the full device register map and provides examples for completing common measurement and control functions. The Measurement Hardware DDK works with a selection of NI multifunction, analog output, digital I/O, and counter/timer I/O devices, including M Series, E Series, and S Series devices. Standard phone and e-mail support are not available for Measurement Hardware DDK users.

Developers considering the Measurement Hardware DDK should also study the advantages of industry-leading NI-DAQmx and NI-DAQmx Base software.

|   | NI-DAQmx<br>High-Performance Multithreaded Driver            | NI-DAQmx Base<br>Multiplatform Basic Driver | Measurement Hardware DDK<br>Custom Driver Development Tools |
|---|--|---|---|
| <b>Bus and OS Support</b>                                   |  |   |   |
| PCI/PXI/PCI Express/PXI Express                             | Windows Vista (32- and 64-bit)/XP/2000, Linux                | Linux, Mac OS X                             | Linux, Mac OS X, QNX, RTX, Intime                           |
| USB   | Windows Vista (32- and 64-bit)/XP/2000                       | Linux, Mac OS X, Windows Mobile/CE          | Linux, QNX, Windows Mobile/CE                               |
| PCMCIA  | Windows XP/2000  | Windows Mobile                              | Windows Mobile/CE   |
| CompactFlash  | –  | Windows Mobile                              | –   |
| <b>Programming Languages</b>                                |  |   |   |
| Programming languages                                       | LabVIEW, ANSI C/C++, C#, Visual Basic .NET, and Visual Basic | LabVIEW, ANSI C                             | LabVIEW, ANSI C   |
| LabVIEW interface   | Complete polymorphic VIs and property nodes                  | Limited polymorphic VIs                     | Register-level VIs  |
| <b>Additional Measurement Services</b>                      |  |   |   |
| Development speed   | ●  | ○   | ○   |
| DAQ Assistant code generation                               | ● <sup>1</sup>   | –   | –   |
| Multithreaded I/O performance                               | ●  | –   | –   |
| Driver footprint  | ○  | ●   | ●   |
| Test panels   | ●  | ○   | –   |
| Automatic sensor scaling                                    | ●  | –   | –   |
| Single programming interface for all hardware and I/O types | ●  | ●   | –   |
| Measurement examples  | >3000  | ~30   | ~30   |
| <b>Hardware</b>   |  |   |   |
| M Series  | ●  | ●   | ●   |
| S Series  | ●  | ●   | ●   |
| E Series  | ●  | ●   | ●   |
| B Series  | ●  | ●   | ●   |
| USB DAQ   | ●  | ●   | ●   |
| SC Series   | ●  | –   | –   |
| SCXI  | ●  | –   | –   |
| DSA   | ●  | ●   | ●   |
| Digital I/O   | ●  | ●   | ●   |
| Timing I/O  | ●  | –   | –   |
| AO  | ●  | ●   | ●   |

KEY: ● Best, ○ Better, ○ Good, ● Some devices supported.

<sup>1</sup>Windows only.

For the latest information on applicable devices and OSs or new features, visit [ni.com/daq/software](http://ni.com/daq/software).

# NI Services and Support



NI has the services and support to meet your needs around the globe and through the application life cycle – from planning and development through deployment and ongoing maintenance. We offer services and service levels to meet customer requirements in research, design, validation, and manufacturing. Visit [ni.com/services](http://ni.com/services).

## Local Sales and Technical Support

In offices worldwide, our staff is local to the country, giving you access to engineers who speak your language. NI delivers industry-leading technical support through online knowledge bases, our applications engineers, and access to 14,000 measurement and automation professionals within NI Developer Exchange forums. Find immediate answers to your questions at [ni.com/support](http://ni.com/support).

## Training and Certification

NI training is the fastest, most certain route to productivity with our tools. NI training can shorten your learning curve, save development time, and reduce maintenance costs over the application life cycle. We schedule instructor-led courses in cities worldwide, or we can hold a course at your facility. We also offer a professional certification program

that identifies individuals who have high levels of skill and knowledge on using NI products. Visit [ni.com/training](http://ni.com/training).



## Professional Services

Our NI Professional Services Team is composed of NI applications and systems engineers and the worldwide National Instruments Alliance Partner program of more than 600 independent consultants and integrators. Services range from startup assistance to turnkey system integration. Visit [ni.com/alliance](http://ni.com/alliance).

## Software Maintenance and Support Programs

NI offers service programs that provide automatic upgrades to your application development environment and higher levels of technical support. Membership in our service programs ensures that you always have the latest advances in productivity and receive live, on-demand access to NI applications engineers through phone and e-mail to assist in developing your solutions. Service programs are cost-effective and simplify software purchasing as an annual, fixed cost, making it easier to plan and budget than intermittent individual upgrades. For details, visit [ni.com/ssp](http://ni.com/ssp).

### No Service Membership

- Upgrades purchased separately
- Online support only through KnowledgeBase, Discussion Forums, and Developer Zone
- Access to KnowledgeBase, example code, troubleshooting wizards, solutions, and white papers

### Standard Service and Support Membership

- Automatic upgrades included
- Access to all online support including KnowledgeBase, Discussion Forums, Developer Zone, example code, troubleshooting wizards, solutions, and white papers
- Support by NI applications engineers through direct phone or e-mail access
- Exclusive access to on-demand training modules through the Services Resource Center

### Premier Service and Support Membership

- All the benefits of Standard Service
- Support by NI senior applications engineers through direct phone or e-mail access with extended hours of operation



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